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October 31, 2023

VIA RESS AND EMAIL

Nancy Marconi
Registrar
Ontario Energy Board
2300 Yonge Street, 27th Floor
Toronto, ON M4P 1E4

Dear Nancy Marconi:

**Re: Enbridge Gas Inc. (Enbridge Gas, or the Company)
EB-2020-0091 – Enbridge Gas Asset Management Plan Addendum - 2024**

As promised in the Integrated Resource Planning (IRP) Framework proceeding, Enbridge Gas will file an Asset Management Plan (AMP) or an Addendum to the AMP annually. The AMP describes system needs and constraints up to 10-years in the futures and will be filed every two years, while the Addendum provides updates to forecasts for the year in which it is filed and the following year. Each document also provides the status of consideration of IRP alternatives in regards to meeting these system needs.

During the deferred rebasing term, the AMP or an Addendum to the AMP has been filed in the annual rate applications to support the request for Incremental Capital Module (ICM). In 2022, EGI filed an AMP in the 2024 Rebasing application identifying the 10-year system needs for 2023 - 2032 (2023 – 2032 AMP). The 2023 – 2032 AMP is included as Appendix C in this filing.

For 2023, Enbridge Gas is filing an Addendum to the AMP as a stand-alone document with a cover letter as there is no ICM request for 2024 Rates. The Addendum provides an update to the capital budget for 2023 and 2024 set out in the 2023 – 2032 AMP. This Addendum should be reviewed in conjunction with the 2023 – 2032 AMP. Any changes beyond 2024 will be addressed in Enbridge Gas's 's 2025 – 2034 AMP which will be filed in Q4 2024.

Similar to prior years, the Addendum to the AMP is being filed for information purposes and Enbridge Gas is not seeking any approvals in relation to this filing.

October 31, 2023

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Please contact the undersigned if you have any questions.

Sincerely,

Rakesh Torul
Technical Manager, Regulatory Applications

cc: David Stevens, Aird and Berlis LLP
EB-2020-0091 and EB-2022-0200 Intervenors

EGI Asset Management Plan Addendum – 2024

October 31, 2023



Company: Enbridge Gas Inc.

Owned by: Asset Management Department

Controlled Location: Asset Management TeamSite

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1 Overview

Enbridge Gas Inc. (Enbridge Gas, EGI or the Company) filed an Asset Management Plan for the period of 2023 – 2032 (2023 – 2032 AMP) as part of Phase 1 of EGI’s 2024 Rebasing Application¹. This addendum provides an update to the Capital Budget for 2023 and 2024 set out in the 2023 – 2032 AMP . This addendum is not a standalone document and should be reviewed in conjunction with the 2023 – 2032 AMP. Given the dynamic nature of the ongoing identification of risks and opportunities as well as the execution of projects, this addendum only addresses changes impacting the current year (2023) and 2024 Budget year forecast. Any changes beyond 2024 will be addressed in EGI’s 2025 – 2034 AMP (to be filed in Q4 2024) and reflect the outcomes from EB-2022-022 Phase 1 OEB Decision as appropriate.

EGI’s 2025 – 2034 AMP will:

- Outline the proposed core Capital Plan for EGI from 2025 to 2034; and
- Identify Integrated Resource Planning (IRP) opportunities to meet system needs out to 2034.

Since the 2023 – 2032 AMP was filed in October 2022, there have emerged changes in investment needs and new developments for existing projects. EGI has reviewed these changes to understand their impact on the Capital Plan for 2023 and 2024. As described in Sections 2 and 3 below, the process for updating the 2023 and 2024 capital budgets involved the identification of changes/updates on an exception basis relative to the Capital Plan that was included in the 2023 – 2032 AMP. Updates are consistent with and reflect the updated 2023 and 2024 capital budgets as set out in EGI’s July 6, 2023, Capital Update filing in *EB-2022-0200*². The overall principles and asset lifecycle strategies outlined in the 2023 – 2032 AMP have not changed.

The updated 2024 Capital Budget is presented by asset class in **Table 1.0-1** below:

Table 1.0-1: Summary of 2024 Capital Spend - Total EGI (Includes Overheads)

2024 Capital Budget	Total EGI*
Growth	387.4
Distribution Pipe	357.1
Distribution Stations	83.5
Utilization	152.1
Compression Stations	37.9
Liquefied Natural Gas	8.3
Transmission Pipe & Underground Storage	264.1
Fleet & Equipment	31.5
Real Estate & Workplace Services	63.0
Technology & Information Systems	102.4
Extended Alliance (EA) Fixed Overheads (O/H)	39.8
TOTAL	1,527.1³

*Costs are expressed in millions of Canadian dollars.

¹ EB-2022-0200, Exhibit 2, Tab 6, Schedule 2

² EB-2022-0200, Exhibit 2, Tab 5, Schedule 3

³ The 2024 Capital Budget is consistent with EB-2022-0200, Exhibit 2, Tab 5, Schedule 3 and includes PREP and Energy Transition adjustments per **Section 5.2**. The number excludes Community Expansion and CNG/RNG.

In this addendum, the following variances are shown by asset class:

- **Table 6.0-1:** updated 2024 Capital Budget versus the 2024 Capital Plan previously filed in the 2023 – 2032 AMP,
- **Table 6.0-2:** updated 2024 Capital Budget versus the 2023 Capital Budget previously filed in the 2023 – 2032 AMP, and
- **Table 6.0-3:** updated 2023 Capital Budget versus the 2023 9+3 Forecast previously filed in the 2023 – 2032 AMP

This addendum is representative of the best available information as of **September 2023**.

2 Monthly Forecast Process

As part of the process to review and prepare its Monthly Forecast, EGI used the capital specified in the given year's Workplan as a starting point. The Workplan gets finalized and approved at the beginning of each year and confirms which investments will be executed. This process aligns with the AIPM⁴ process.

Each month, EGI undertakes a capital forecasting exercise where the Asset Managers for each asset class identify changes to the capital requirements, considering factors such as emerging needs, changing circumstances, potential for investment deferral, acceleration or re-pacing of investments, and project execution risks. All requests for emerging or revised projects must be supported with clear information regarding the purpose, need, and timing of the updated projects. A thorough review is performed to understand relevant project uncertainties and ensure that as much risk and opportunity are addressed as possible in the Monthly Forecast within the applicable capital constraint.⁵

More specifically, the approval process for the 2023 Workplan included the following steps:

1. Sign-off by Asset Management on investments submitted
2. Review by Asset Management, Finance, and subject matter advisors (to confirm portfolios for 2023)
3. Review by affected Directors
4. Review by Asset Management Steering Committee
5. Review and sign-off by the Vice President of Engineering and Integrity

⁴ Appendix C, 2023 – 2032 AMP, Section 4.3 Asset Investment Planning and Management (AIPM) Process

⁵ For 2023, the applicable capital constraint was established based on the 2023 capital forecast that was provided in the capital update in the 2024 rebasing application (EB-2022-0200, Exhibit 2, Tab 5, Schedule 4, Table 7).

3 Budget Refresh Process for 2024

As part of the process to review and refresh its 2024 Budget, EGI used the 2024 Capital Forecast included in the 2023 – 2032 AMP as a starting point and identified/made updates on an exception basis. The process aligns with the annual AIPM⁶ process used to manage the budget throughout the year.

Asset Managers for each asset class identified changes to the capital requirements considering factors such as emerging needs, changing circumstances, potential for deferral, acceleration or re-pacing of investments, and project execution risks. All requests for emerging or revised projects must be supported with clear information regarding the purpose, need, and timing of the updated projects. A thorough review is performed to understand relevant project uncertainties and ensure that as much risk and opportunity are addressed as possible in the 2024 Budget within the applicable capital constraint.⁷

More specifically, the approval process for the 2024 Budget included the following steps:

1. Sign-off by Asset Management on investments submitted
2. Review by Asset Management, Finance, and subject matter advisors (to confirm portfolios for 2024)
3. Review by affected Directors
4. Review by Asset Management Steering Committee
5. Review and sign-off by the Vice President of Engineering & Integrity
6. Approval of 2024 Budget by EGI President
7. Approval of 2024 Budget by Enbridge Inc. Board of Directors

⁶ Appendix C, 2023 – 2032 AMP, Section 4.3 Asset Investment Planning and Management (AIPM) Process

⁷ For 2024, the applicable capital constraint was established based on the 2024 forecast provided in the capital update in the 2024 rebasing application (EB-2022-0200, Exhibit 2, Tab 5, Schedule 4, Table 8).

4 Strategic Priorities Updates

Enbridge's 2023 Enterprise Strategic Priorities (see **Figure 4.0-1**) are defined to enable the organization to achieve its vision to be the leading energy delivery company in North America. Asset Management actions and decisions align with these strategic priorities, contribute to EGI's success, and support the Company's purpose of fueling people's quality of life, while maintaining the foundation of the business, supporting the energy transition, and positioning the Company for future growth.

Our strategic priorities



Safety and Operational Reliability



Extend Growth



Maintain Strong Balance Sheet



Disciplined Capital Allocation



Lead in Energy Transition

Figure 4.0-1: Enbridge's 2023 Enterprise Strategic Priorities

5 Asset Management Developments for 2024

5.1 IRP Asset Management Plan Evaluation Update

In 2021, the OEB released its Decision and Order on EGI's IRP proposal⁸, indicating that EGI's AMP should include the status of consideration of IRP plans in meeting system needs, the result of binary screening, and details on the evaluation. EGI continues to evaluate investments within the AMP for IRP implementation potential to eliminate, reduce, or defer the project scope based on the technical and economic feasibility. **Appendix B – IRP (Updated)** reflects the current state of this IRP evaluation process.

Investments that have passed the binary screening stage can be categorized as growth or non-growth investments. EGI uses this categorization, along with the investment's in-service date and forecasted costs to prioritize the Company's IRP evaluations. The rationale behind this categorization and prioritization is that EGI has found, via its technical evaluations, that the implementation of an IRP alternative (IRPA) is more likely to impact the scope of growth-driven investments, given that non-growth investments are driven by the need to maintain the integrity and reliability of existing system assets to serve customers on the network.

Since the filing of the 2023 – 2032 AMP, 1194 investments have been added to the 2023 to 2032 forecast (to be referred to as "new investments to Appendix B"), which were not included in the original Appendix B. A large portion of these new investments to Appendix B are related to carryover project costs from prior year investments and other smaller, quick-response investments that are funded through blanket accounts, e.g. emergent safety issues. The attached **Appendix B – IRP (Updated)** includes investments from the 2023 – 2032 AMP as well as the new investments to Appendix B. Each investment in the **Appendix B – IRP (Updated)** has been binary screened.

Within the rebasing proceeding, EGI indicated that it would complete the technical evaluations for the investments within the 2023 – 2032 AMP by Q3, 2023; however, with the addition of the new investments to Appendix B, EGI has decided to continue to prioritize completing IRP evaluations for all growth driven investments in Appendix B, as opposed to completing IRP evaluations for all investments from the original 2023 – 2032 AMP filed in 2022. This ensures that EGI remains focused on those investments with a higher likelihood of being impacted by an IRPA.

- EGI is targeting to complete the technical evaluations of both the remaining and new investments to Appendix B that are growth driven by the end of 2023. The results will be reflected in the 2023 IRP Annual Report.
- All remaining non-growth investments, except for the Enhanced Distribution Integrity Management (EDIMP)⁹ related investments and other select investments, will have their IRP technical evaluation deferred to the following year. EGI is targeting to complete the technical evaluations for both the remaining and new pipeline investments from the 2023 – 2032 AMP and results to be reflected 2025 – 2034 AMP. EGI is also looking to assess if any of these investments could be grouped and targeted with a regional IRPA Plan.

The following list highlights the IRP evaluation progress of the 3087 investments in the 2023 – 2032 AMP:

- 809 (26.2%) were deemed not subject to any IRP process because they related to non-gas-carrying investments.
- 1392 (45.1%) were screened out using binary screening.
- 632 (20.4%), at the time of filing this addendum, had undergone a completed technical evaluation, and 63 had passed the evaluation.
- 254 (8.2%) remain to undergo technical evaluation or have the evaluation currently in progress as of the time of filing.

⁸ EB-2020-0091

⁹ See Section 5.3 below and EB-2022-0200, Decision on Settlement Proposal, Exhibit O1, Tab 1, Schedule 1, pp. 30-31, August 17, 2023, where parties agreed to the establishment of a DIMP Variance Account that will track EGI's spending on the DIMP and EDIMP programs.

- 43 investments under the Asset Class of Growth are in the queue to have their technical evaluations completed by the end 2023.
 - 5 investments under the Asset Class of Transmission Pipe & Underground Storage will have the options assessed prior to the Leave to Construct (LTC) application.
 - 197 investments under the Asset Class of Distribution Pipe have an IRP evaluation status of “On Hold”¹⁰. These investments will be re-evaluated annually for project scope and timing updates to allow for appropriate resource allocation for the IRP evaluation process.
 - 9 investments in the EDIMP have a technical evaluation status of “In Progress” and are awaiting further integrity assessment to confirm project scope and timing. Preliminary technical evaluations have been conducted based on the current scope of the investments in 2023 – 2032 AMP. Technical evaluations will be updated to include the scope impacts of the Asset Management portfolio from the EDIMP integrity assessment.
- Investments that have passed the technical evaluation will proceed to the economic evaluation stage. No economic evaluations have been completed at the time of filing this addendum.

The following list highlights the IRP evaluation progress of the 1194 new investments to Appendix B:

- 140 (11.7%) were deemed not subject to any IRP process because they related to non-gas-carrying investments.
 - 904 (75.7%) were screened out using binary screening.
 - 66 (5.5%), at the time of filing this addendum, had undergone a completed technical evaluation, and none had passed the evaluation.
 - 84 (7.0%) remain to undergo technical evaluation or are being technically evaluated as of the time of filing this addendum.
- 24 investments under the Asset Class of Growth are in the queue to have their technical evaluations completed by the end of 2023.
 - 60 investments under the Asset Class of Distribution Pipe and Distribution Station have an IRP evaluation status of “On Hold”. These investments will be re-evaluated annually for project scope and timing updates to allow for appropriate resource allocation for the IRP evaluation process.

5.2 Energy Transition

EGI has incorporated Energy Transition¹¹ impacts to the Customer Connections forecast and ensured appropriate adjustments have been reflected in the Growth and Utilization asset classes, including Customer Connections portfolios under Growth, in the updated 2024 Budget under **Table 6.0-1**. These impacts are in alignment with undertaking response *EB-2022-0200*, *Exhibit J14.2*, and lower Gas Infrastructure - Growth & Customer Connections investment by \$2.0M in 2024 due to the reduction in customer attachments by 322¹² after Energy Transition assumptions are incorporated. Note that Energy Transition assumptions had previously been incorporated into the Distribution System Reinforcement forecast under Growth in the 2023 – 2032 AMP and in the Capital Update¹³ filed in Phase 1 of the rebasing application.

EGI has committed to evolving its Energy Transition plan, including conducting a regional Energy Transition analysis with stakeholder engagement, which the Company proposes to file with the next rebasing application.¹⁴ In the interim, EGI will continue to evolve its demand forecasting process, including to review and, where required, update the Energy Transition assumptions used in the forecasts of customer additions, design hour, and design day. EGI intends that future IRP

¹⁰ On hold due to project timing/scoping to be confirmed.

¹¹ EB-2022-0200, Exhibit 1, Tab 10, Schedule 4

¹² EB-2022-0200, Exhibit I.2.6-ED-94, Table 2

¹³ EB-2022-0200, Exhibit 2, Tab 5, Schedule 4

¹⁴ EB-2022-0200, Reply Argument, paragraph 78, filed October 11, 2023

assessments included with a LTC, or IRP plan filed with the OEB will incorporate the assessment of demand forecast sensitivities to consider Energy Transition related uncertainties.¹⁵ In its Reply Argument in EB-2022-0200, EGI has proposed updated customer attachment policies to be in effect as of January 1, 2025. The implications of these changes will be reflected in the 2025 – 2034 AMP.

5.3 Integrity Management Program Enhancements

EGI continues to evolve its Integrity Management Program based on industry best practices and incident learnings. EGI has developed a quantitative risk model to assess the risk for pipeline assets within the distribution system that identifies and prioritizes assets approaching the end of life that need replacing. Ninety-nine percent of the transmission pipeline assets are already assessed using the quantitative risk model with the balance to be incorporated by the end of 2023. Improvements have been made to the transmission risk model to include additional hazards, consequences, and the application of Safety Targets, to align with EGI's risk evaluation criteria.

In addition, EGI recently introduced an EDIMP which is a targeted program to manage the Integrity threats of higher-priority distribution pipelines, by improving the understanding of the condition, fitness for service, and risks associated with the operation of those assets.

5.4 Growth Strategy Developments

5.4.1 Panhandle Regional Expansion Project

The Panhandle Regional Expansion Project (PREP)¹⁶ is required to provide a reliable, secure, economical natural gas supply to meet the growing design day demand of the EGI Panhandle Transmission System which serves in-franchise markets (including residential, commercial, and industrial customers). The project need was originally determined based on nonbinding Expression of Interest (EOI) conducted in February 2021 followed by a binding Reverse Open Season (ROS) in October 2021.

On June 10, 2022, EGI applied to the OEB under docket *EB-2022-0157* for LTC the following facilities, which were also reflected in EGI's 2023 – 2032 AMP and Capital Forecast filed in *EB-2022-0200 Exhibit 2, Tab 6, Schedule 2*:

- Approximately 19 km of Nominal Pipe Size (NPS) 36 natural gas pipeline with a Maximum Operating Pressure (MOP) of 6,040 kPag from the existing Enbridge Gas Dover Transmission Station in the Municipality of Chatham-Kent to a new valve site in the Municipality of Lakeshore (Panhandle Loop); and,
- Approximately 12 km of NPS 16 natural gas pipeline with a MOP of 6,040 kPag in the Municipality of Lakeshore, the Town of Kingsville, and the Municipality of Leamington (Leamington Interconnect).

On February 1, 2023, EGI filed a letter stating that, following the receipt of new cost information, the Company also reassessed the capacity position of the Panhandle System based on actual 2022 attachments and their system locations, as well as updated 2023 customer demand. As a result, the Company anticipated that incremental demand for Winter 2023/2024 could be accommodated and that the project's in-service date could be deferred one year from November 1, 2023, to November 1, 2024. Based on this, EGI asked the OEB to continue holding the application in abeyance until no later than August 2023. On February 23, 2023, EGI launched a second nonbinding EOI and concurrent binding ROS for the Panhandle Market. As a result of the EOI and ROS, the original project in-service date was deferred one year, from November 1, 2023, to November 1, 2024. In addition, EGI also adjusted the project's proposed scope by removing the Leamington Interconnect.

On June 16, 2023, EGI filed its amended LTC application for PREP based on the following scope of proposed facilities:

- No change in scope to the Panhandle Loop (i.e., 19 km of NPS 36 natural gas pipeline), with an updated estimated in-service date of November 1, 2024 (previously November 1, 2023). The Leamington Interconnect has been removed from the application.

¹⁵ EB-2022-0200, Reply Argument, paragraph 128, filed October 11, 2023

¹⁶ EB-2022-0157

- PREP also includes ancillary measurement, pressure regulation, and station facilities within the Township of Dawn Euphemia and in the Municipality of Chatham-Kent.

Construction of PREP to meet the needs of customers in the Panhandle Market will be contingent upon the OEB's grant of leave-of-construct in *EB-2022-0157* as well as approval of EGI's proposed levelized cost treatment for PREP in *EB-2022-0200*.

Further details about PREP are available within the filed evidence in *EB-2022-0157* and **Table 6.0-1** and **Table 6.0-3**.

5.4.2 Kingston Reinforcement Project

The East Kingston Creekford Rd Reinforcement project was a planned \$24.3 million capital reinforcement for 2024. As originally reflected in the 2023 – 2032 AMP, the proposed facility project was a replacement of the entire existing NPS 6 pipeline from Westbrook check measurement station (CMS) to the Woodbine town border station (TBS) to account for forecasted growth and to address class location and depth of cover issues which exist on the current Kingston Lateral.¹⁷ The growth in the Kingston area is driven by general service growth. As described below, Enbridge Gas has implemented two IRPAs to defer this project. Deferring this project provides additional time to assess and determine if a pipeline replacement project is needed, or if Ontario's energy transition will impact growth in a way, and in time, to avoid additional infrastructure.¹⁸

The project was a 6.2 km NPS 8, 6,895 kPa relocation project off the lateral feeding the City of Kingston, Ontario, with a project in-service date of 2024. The drivers of this project included growth and system integrity issues. EGI reviewed this project for IRPAs including:

- Supply-side alternatives: Incremental pressure from TC Energy and Compressed Natural Gas (CNG).
- Demand-side alternatives: Enhanced Targeted Energy Efficiency (ETEE), and a Contract & Interruptible Rates review.

The Company implemented a CNG option that supported the system in peak demand conditions for winters of 2022/2023 and 2023/2024. The CNG alternative will be reviewed in 2024 to determine if this solution is still required for the winter of 2024/2025. EGI implemented an in-franchise binding ROS which offered contract customers within the proposed project service area an opportunity to turn back or reduce their existing contracted capacity. One response was received from a contract customer to reduce their firm contracted capacity, thereby reducing the total peak demand on the system. For further details on this IRPA, please refer to the 2022 Non-Commodity Deferral Disposition application, *EB-2023-0092, Exhibit H*.

As mentioned above, in addition to addressing the increased forecasted demands, the proposed facility project would also address the depth of cover and class location issues on the current Kingston lateral. The depth of cover has been identified as a "medium risk" issue and has since been deemed acceptable for continued monitoring and assessment of the exposed location. Changes in depth of cover are event-based. As such, any timelines for remediation will be based on findings from monitoring programs. The class location compliance issues can also be monitored, but not indefinitely; however, a delay to 2027 appears reasonable, and the monitoring during this period will identify if action is required sooner. The proposed IRPAs are not able to address the class location and depth of cover concerns; therefore, Enbridge Gas will continue to monitor these assets to ensure the risk remains tolerable. As the project is reassessed to identify when future system reinforcement may be required, remedies to the class location and depth of cover concerns will be considered.

¹⁷ EB-2020-0091, OEB Decision and Order, p. 80

¹⁸ EB-2023-0092, Exhibit C, Tab 1

5.5 Distribution Pipe Strategy Developments

5.5.1 St. Laurent Pipeline Replacement Project

The St. Laurent Pipeline Replacement Project (SLPRP) involves a critical pipeline that directly or indirectly serves natural gas to approximately 165,000 residential, commercial, industrial, and institutional customers in the City of Ottawa and Gatineau, Quebec. The pipeline traverses a highly urban location and is near residential, commercial and office buildings, as well as high-traffic motorways such as the 417 Highway and the St. Laurent Boulevard.

Following the 2022 OEB decision to reject the LTC application¹⁹, Enbridge Gas reassessed the reliability of the St. Laurent Pipeline by gathering additional condition information. Approximately 39% of the St. Laurent pipeline system was inspected using an in-line inspection (ILI) crawler tool. Several key observations informed the reliability assessment:

- Presence of significant corrosion: several corrosion features were of significant depth (>50% depth), including one with reported depth of 80% or greater (ILI tool is unable to size defects greater than 80% depth of the Nominal Wall Thickness (NWT)). The feature was considered to require immediate repair to ensure safety and reliable service and was subsequently urgently replaced in November 2022. There is a significant possibility that additional severe corrosion features exist on the uninspected segments of the line.
- Degraded ILI tool performance: The tool's performance was degraded as compared to the vendor's stated specifications for sizing and detection. This included an apparent under call bias (i.e., actual defect dimensions were more severe than reported in the ILI).
- High number of suspected third-party damage features: 386 dents were identified over the 4.5 kms of inspected length.

A risk assessment was performed to evaluate the risk related to the continued operation of the pipeline in its current state. Using the data gathered, a Quantitative Risk Assessment (QRA) has been completed to assess the residual risk of the St. Laurent Pipeline system. The QRA uses industry standard reliability methods and published failure rates to form a comprehensive in-depth assessment of potential threats that could affect the pipeline. The reliability of the pipeline was compared against industry failure rate thresholds and significant incident benchmarks. Additionally, the QRA was supplemented with consequences of various outcomes and mapped to the Enbridge Standard Operational Risk Assessment Matrix.

Based on the assessment and evaluation criteria, Enbridge Gas concluded that:

- 8.8 km of the 11.2 km pipeline (79%) fails the CSA Z662 - Annex O reliability thresholds. Several segments fail the reliability thresholds by several orders of magnitude.
- The rate of estimated significant incidents on the St. Laurent Pipeline, is much higher than the historical average observed in the industry (e.g. PHMSA²⁰ Database).
- The pipeline risks plotted on the Enbridge Standard Operational Risk Matrix shows that many of the Financial, Operational Disruption, and Health & Safety Risk scenarios meet the Enbridge definition of "High Risk" or "Very High Risk."

Subject to the receipt of LTC, construction work is scheduled to begin in 2024 with \$75.7M being put into service in 2024, \$140.5M in 2025, and \$7.2M for restoration and final service work in 2026. A LTC application will be filed with the OEB in November 2023, which will detail the relevant analysis and findings, including IRP considerations and options assessment. The variance description accounting for forecast changes between the 2023 – 2032 AMP and this addendum (including changes related to the SLPRP) has been provided in **Table 6.0-2**.

¹⁹ EB-2020-0293

²⁰ Pipeline and Hazardous Materials Safety Administration

5.6 Compression Station Developments

5.6.1 Dawn to Corunna

The Dawn to Corunna Replacement Project involves the construction of approximately 20 km of NPS 36 natural gas pipeline between the Corunna Compressor Station (CCS) and the Dawn Operations Centre, as well as associated station work. The CCS and the Dawn Operations Centre are the two main compression locations of the Dawn Hub. The project enables the retirement of 7 compressor units at the CCS to address known obsolescence, reliability, and safety risks and maintain equivalent withdrawal, injection and working capacity of the Dawn Hub.

The current cost forecast for this project is approximately \$376M and is a refined forecast using contractor Request for Proposal (RFP) estimates, detailed engineering design, and actual costs from current construction activities. The current cost forecast represents an approximately \$125M increase from the original cost estimate as filed in EB-2022-0086 (\$251M), which was derived using preliminary design stage information and Request for Information (RFI) quotes from contractors.

6 Summary of Capital Expenditures

Table 6.0-1 compares the 2024 Capital Plan that was included in the 2023 – 2032 AMP versus the updated 2024 Capital Budget and highlights the key drivers for notable variances. As discussed in **Section 3**, emerging and revised projects were identified and evaluated based on the existing 2024 portfolio. No changes have been reflected in the 2025 portfolio and beyond, and, as such, no updates were required to the assumptions in Section 6.4 of the 2023 – 2032 EGI AMP. No changes were made to inflation assumptions for future year projects. Updated cost estimates were prepared for new or revised 2024 projects. Projects with solution scopes still under development are not included in the 10-year portfolio of spend.

Table 6.0-1: 2024 EGI Capital Budget and Variance Explanations (Includes Overheads)

Asset Class	2024 AMP	2024 Budget	Variance	Variance Explanation
Growth	354.3	387.4	33.1	<p>Customer Connections: An increase of \$53.1M is required for customer connections and is related to an increase in new connections compounded with inflationary pressures in construction and material costs.</p> <p>Growth: A decrease of \$19.8M is primarily due to the deferral of \$24.1M for the East Kingston Creekeford Road Reinforcement²¹ through an interim solution using CNG to support system peak demands, cancellation of \$19.9M for the Wheatley 1B Panhandle Distribution Reinforcement due to change in forecasted customer demands, and deferral of several smaller growth reinforcement projects. These reductions are partially offset by \$15.2M in forecasted carryover costs from 2023, and \$9.3M of new reinforcement projects identified following review of specific customer connection projects and resultant system constraints.</p>
Distribution Pipe	368.3	357.1	(11.2)	<p>The variance of \$11.2M is primarily attributed to the deferral of \$36.1M for the Wilson Avenue project and \$18.5M for the Port Stanley replacement project so that further inspections and health assessments can be made as part of the EDIMP before finalizing the need and scope for these projects. Also deferred were \$4.7M costs associated with integrity depth of cover mitigation and \$9.2M costs for integrity initiative and geohazard mitigation. This is partially offset by a \$48.1M increase in integrity digs, which is primarily a result of an increase to the expected number of digs compounded by inflationary pressures, a \$0.5M increase in integrity retrofits, a \$3.8M increase in other pipe main replacement, relocation & service relay, \$2.5M in carryover costs from 2023 to 2024, and an \$8.7M increase in corrosion costs identified through inspections and surveys (for new mains & bridge crossing replacement projects).</p>

²¹ EB-2020-0091, OEB Decision and Order, p. 80

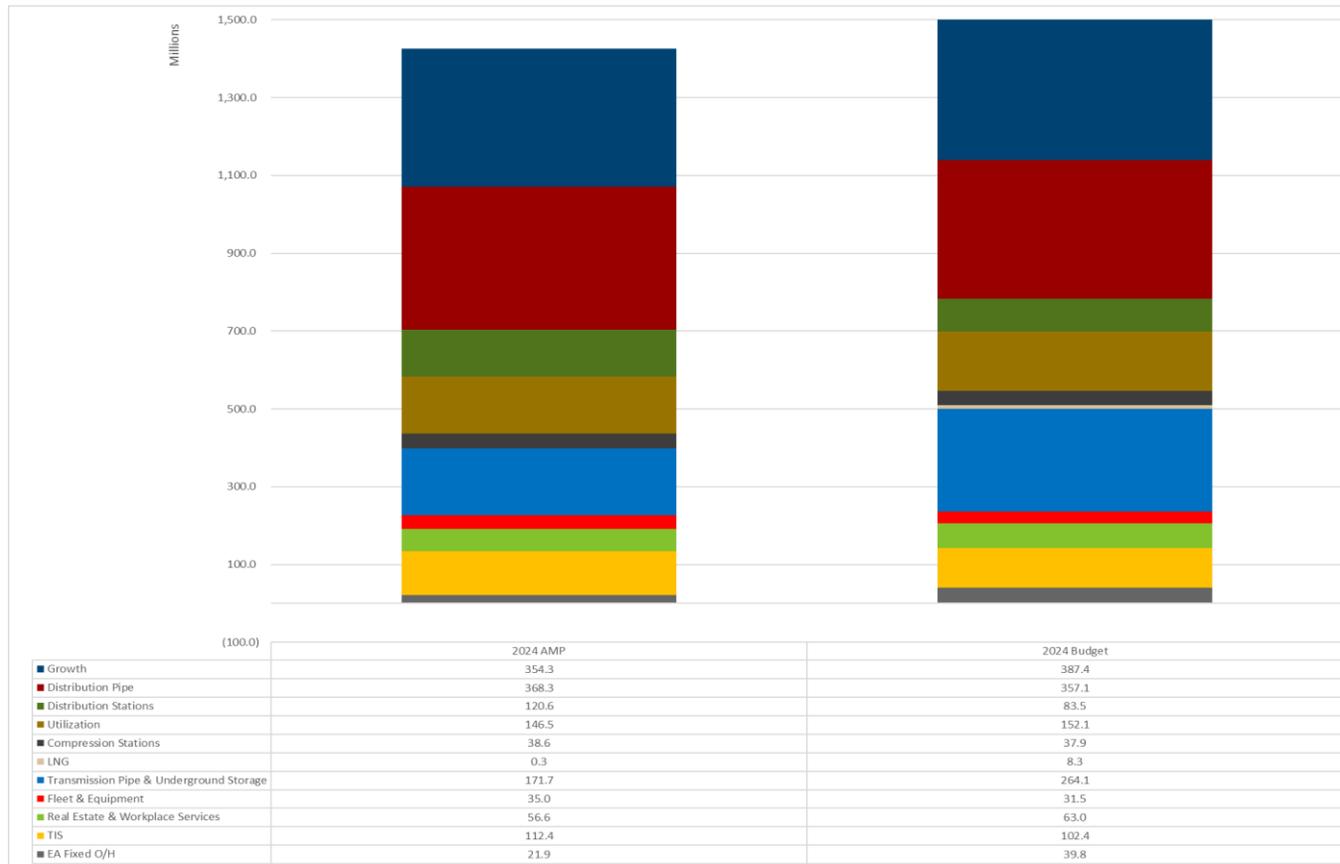
Asset Class	2024 AMP	2024 Budget	Variance	Variance Explanation
Distribution Stations	120.6	83.5	(37.1)	The decrease of \$37.1M is attributable to \$80.5M in deferral of smaller station projects during portfolio reprioritization. This is partially offset by \$8.1M in forecasted carryover costs from 2023 into 2024, \$5.6M in new station projects having been identified through inspections, and \$29.7M in cost increases on smaller station projects relating to increasing construction and material costs compared to the original estimates.
Utilization	146.5	152.1	5.6	The increase of \$5.6M is primarily a result of an increase in meter orders to ensure sufficient inventory for the increase in forecasted customer connections and meter exchanges.
Compression Stations	38.6	37.9	0.7	The increase of \$0.7M is predominantly attributable to work expected to carry forward for 2023 from the Dawn to Corunna ²² project in addition to \$2.1M of smaller projects with forecasted carryover costs, \$8.5M in new projects identified through inspection activities and failures, and approximately \$5.9M in projects where cost estimates have increased through project development from 2023 and prior years into 2024 which have added new cost pressures. These have been offset by approximately \$24.7M in project cancellations and deferrals, the most significant of which is the deferral of \$16M for the Dawn C Compression Life Cycle project to allow time for completion of the reliability assessment to inform the updated scope.
Liquefied Natural Gas	0.3	8.3	8.0	The increase of \$8M for LNG relates mainly to an unplanned \$7.6M required for an unplanned foundation replacement and overhaul of a compressor at the Hagar LNG Plant and \$0.4M in Multi-Sector Air Pollutants Regulations (MSAPR) compliance mitigations which were deferred from 2023 as part of portfolio reprioritization.
Transmission Pipe & Underground Storage	171.7	264.1	92.4	The increase of \$92.4M is primarily a result of \$189.3M of the deferral and increase in the forecast for Panhandle Regional Expansion Project (PREP) ²³ into 2024. This is partially offset by decreases from the deferral of \$23.1M for the Dawn to Parkway Expansion Project: Kirkwall to Hamilton Loop, \$50.5M for the Leamington Interconnect Project, \$7.7M for the Waubuno replacement wells, and delayed expenditures amounting to \$29.7M for the Panhandle Line Replacement. Additional increases include \$4.4M associated with filter replacements, \$10.3M

²² EB-2022-0086

²³ EB-2022-0200

Asset Class	2024 AMP	2024 Budget	Variance	Variance Explanation
				increase to integrity management primarily driven by an increase to expected number of digs compounded by inflationary pressures, and other smaller project increases determined through cost refinement.
Fleet & Equipment	35.0	31.5	(3.5)	The decrease of \$3.5M is related to \$2.2M in anticipated carryover costs and new equipment and tool investments offset by reductions during reprioritization for vehicles and equipment purchases.
Real Estate & Workplace Services	56.6	63.0	6.4	The increase of \$6.4M is primarily related to \$14.1M of cost increase for Station B attributable to inflationary pressures and execution timing, \$13.3M of deferred cost and inflationary pressures associated with the Ottawa building construction, and \$3.7M in smaller project increases, \$8.8M of project costs planned for prior years carrying into 2024 due to shifts in construction pacing and addition of several other smaller projects, with these increases offset by a \$25.2M deferral of the Kennedy Road new building construction, and \$9.4M worth of several other small reductions and deferrals relating to reprioritization of projects and forecast refinements.
Technology & Information Systems	112.4	102.4	(10.0)	The decrease of \$10.0M is related to reprioritization of the TIS Business Solutions portfolio based on business needs leading to \$11.6M in reductions and \$13.9M in deferrals offset by \$14.7M in new investments added to the forecast and some minor carryover costs.
EA Fixed O/H	21.9	39.8	17.9	The increase of \$17.9M is related to renegotiation of the Extended Alliance Contracts. EGI recently completed a competitive bid process for construction services to test the competitive market. This provided the opportunity to review the total cost structure of their service model and propose new contract terms for the future five years. Previous contracts have mitigated inflationary impacts. However, the current market conditions have driven higher inflationary increases to fixed overheads which include labour rates, fuel costs, facility, and maintenance costs. Select contracts had a provision for limited inflationary adjustment that was below market inflation. Other impacts to fixed overheads include but are not limited to business-to-business systems alignment, harmonization of policies and procedures, changing service providers in two regions (Northeast and GTA East), and increased capital investment costs. Additionally, the cost structure proposed in the new contract realigned the allocation of unit rates and fixed overhead which resulted in an overall construction cost below inflation.
Total	1,426.1	1,527.1	95.4	

* Costs are expressed in millions of Canadian dollars.



*Costs are expressed in millions of Canadian dollars.

Figure 6.0-1: Graphic view of 2024 EGI Capital Budget and Variances Explanations (Includes Overheads)

Table 6.0-2 shows the 2023 9+3 Forecast compared to the 2024 Capital Budget for EGI.

Table 6.0-2: 2023 9+3 Forecast vs 2024 EGI Capital Budget and Variance Explanations (Includes Overheads)

Asset Class	2023 9+3 Forecast	2024 Budget	Variance	Variance Explanation
Growth	377.9	387.4	9.5	<p>Customer Connections: A decrease of \$24.9M is forecasted for Customer Connections in 2024 due to the decreased estimated customer growth forecast in 2024, as well as the increased number of actual customers being added in 2023 which has driven the forecast higher in 2023.</p> <p>Growth: An increase of \$34.4M is primarily due to an increase in reinforcement projects including the HAMI: Caledonia Transmission Station Rebuild and the NW 2013 Dundalk XHP Reinforcement SRP. Other drivers include development spend to support the Hamilton Industrial Reinforcement Project, and the Enbridge Gas Distribution System Hydrogen Feasibility Study. All Reinforcement projects are subject to the IRP Assessment Process. For additional details, refer to Appendix B.</p>
Distribution Pipe	257.5	357.1	99.6	<p>The increase of \$99.6M in 2024 is primarily related to inclusion of \$69.0M to start construction of St. Laurent Pipeline Replacement Project²⁴, an increase of \$21.0M for Integrity due to an increased forecast number of digs partially offset with a reduction in retrofits, an increase of \$6.8M of Service Relays to address deferred 2023 AMP fittings, an increase of \$7.2M for additional municipal relocation work, an increase of \$15M to address deferred 2023 corrosion work, with smaller increases and decreases in Main Replacement work netting an additional \$13.9M increase in 2024. These increases are partially offset by reductions of \$20.8M and \$12.5M for the Kipling Oshawa Loop (KOL) Lakeshore Cherry to Bathurst and Parliament Street projects, respectively.</p>
Distribution Stations	63.4	83.5	20.1	<p>The increase of \$20.1M is primarily related to a \$6.9M increase in Facilities Integrity Management Program assessments from prior year deferrals driven by portfolio reprioritization, a \$10.5M increase in smaller station rebuilds, and \$2.7M in smaller increases to Gate, Feeder and A Station projects, Inside Regulator Room, and CNG projects driven by portfolio reprioritization in 2023.</p>
Utilization	168.0	152.1	(15.9)	<p>The decrease of \$15.9M in 2024 is primarily due to reductions in the Reg Refit program of \$9.3M as a result of adjustments in the forecasted number of meter exchanges, as well as reductions in overall Meter Orders by \$4.5M driven by the</p>

²⁴ EB-2020-0293

Asset Class	2023 9+3 Forecast	2024 Budget	Variance	Variance Explanation
				adjustments made to both the meter exchange program and reductions seen in the Growth portfolio. There is also an overall reduction of \$2.1M for Monitoring Systems due to reprioritization of requirements for this program.
Compression Stations	349.6	37.9	(311.7)	The decrease of \$311.7 is primarily related to the completion of several larger projects in 2023. These include the Dawn to Corunna Replacement ²⁵ and Dawn to Corunna (Dawn Tie-In) projects in 2023 totaling a reduction of \$310.9M, replacement of a failed control valve including necessary piping upgrades totaling \$3.5M, replacement of a compressor foundation at Corunna Compressor Station for \$3.2M, \$1.7M associated with valve controller upgrades to comply with the federal methane emissions regulations, and \$7.0M in smaller projects. These reductions for 2024 are partially offset by \$5.7 M to replace leaking valves, \$2.2M in initial costs related to the Waubuno Compression Life Cycle project, \$1.4M in residual costs for the Parkway Plant C Power Turbine failure, and as well as \$5.3M in increases for several other smaller investments related to portfolio prioritization.
Liquefied Natural Gas	2.0	8.3	6.3	The variance of \$6.3M is related to the difference in 2023 pre-spend and 2024 execution costs for an unplanned compressor overhaul and foundation replacement at the Hagar LNG Plant.
Transmission Pipe & Underground Storage	97.8	264.1	166.3	The increase of \$166.2M is primarily due to \$138.1M of increased expenditures for PREP ²⁶ , increase of \$10.1M in integrity forecast, \$6.1M increase in spend associated with the Crowland Wells Upgrade, wellhead upgrades and observation wells, \$8M in increases associated with filter replacements, A1 Wells replacements and Dow A McPlank Connection and finally \$2.5M for Class Location replacements. There is also a net increase of \$0.85M in Growth Projects primarily due to \$1.3M from Kirkwall to Hamilton Project. Additionally, there is a \$0.35M increase in multiple Lands/Structures investments such as atmospheric tanks replacement, platform installation and roadways & laneway improvement.
Fleet & Equipment	8.8	31.5	22.7	The increase of \$22.7M is primarily due to an increase in vehicle purchases to meet EGI's vehicle replacement strategy and in response to limited purchases in 2023 caused by a reprioritization of replacements in 2023.

²⁵ EB-2022-0086

²⁶ EB-2022-0157

Asset Class	2023 9+3 Forecast	2024 Budget	Variance	Variance Explanation
Real Estate & Workplace Services	69.6	63.0	(6.6)	The decrease of \$6.6M is attributed to the spend on building projects including Ottawa, Station B and Dawn EOC MCR.
Technology & Information Systems	44.4	102.4	58.1	The increase of \$58.1M is driven primarily by projects that are required to support process and system enhancements while in parallel reducing EGI's operational and cybersecurity risks. Significant projects include: \$15.4M General Service Rebasing Changes, \$11.8M Contract Market Systems - Technology Obsolescence, an increase of \$9.5M for Infrastructure (Hardware Replacement, Desktop & Toughbook Replacement, GPS Hardware Lifecycle, Network Sustainment), \$5.1M Utility Weather & Demand Harmonization – Rebasing, \$5.1M 5-week Planning Tool, \$3.7M Contract Market Harmonization, \$2.4M Enterprise Contact Center, \$2.3M Enterprise Contact Center, \$2.1M AWS Phase 3, and \$0.7M increases or additions to TIS investments.
EA Fixed O/H	23.7	39.8	16.1	The increase of \$16.1 million is related to renegotiation of the Extended Alliance Contracts. EGI recently completed a competitive bid process for construction services to test the competitive market. This provided the opportunity to review the total cost structure of their service model and propose new contract terms for the future five years. Previous contracts have mitigated inflationary impacts. However, the current market conditions have driven higher inflationary increases to fixed overheads which includes salary, fuel costs, facility, and maintenance costs. Select contracts had a provision for limited inflationary adjustment that was below market inflation. Other impacts to fixed overheads include but are not limited to business-to-business systems alignment, harmonization of policies and procedures, changing service providers in two regions (Northeast and GTA East), and increased capital investment costs. Additionally, the cost structure proposed in the new contract realigned the allocation of unit rates and fixed overhead which resulted in an overall construction cost below inflation.
Total	1,462.1	1,527.1	65.0	

*Costs are expressed in millions of Canadian dollars.

Table 6.0-3 shows the 2023 Capital Budget published in the 2023 – 2032 AMP compared to the 2023 9+3 Forecast for EGI.

Table 6.0-3: 2023 9+3 Forecast vs 2023 AMP Forecast and Variance Explanations (Includes Overheads)

Asset Class	2023 AMP	2023 9+3 Forecast	Variance	Variance Explanation
Growth	275.3	377.9	102.6	<p>Customer Connections: An increase in \$106.7M is related to an overall increase in forecasted new customer connections compounded with inflationary pressures in construction and material costs.</p> <p>Growth Reinforcement: There have been \$40.9M in new growth projects and increases to existing projects due to inflationary pressures of material and construction cost identified in 2023. These have been offset by equivalent savings from deferrals and reprioritization of planned growth projects following review of specific customer connection projects and resultant system constraints. As a result of the funding and deferrals and reprioritization, there is an overall decrease of \$4.1M.</p>
Distribution Pipe	261.9	257.5	(4.4)	<p>The variance of \$4.4M is driven by reductions resulting from work reprioritization, partially offset by various cost pressures in 2023. These cost pressures include a \$23.8M of 2022 carryover costs for the KOL Lakeshore Cherry to Bathurst replacement, a \$2.3M in AMP fitting works, a \$1.6M increase in class location works, a \$2.3M increase in material costs for the Marten River retrofit, a \$1M increase in construction costs for the Niagara ILI retrofit and a \$2.2M increase in integrity digs due to an increase in the number of digs. These cost pressures were partially offset by reprioritization-driven reductions of \$5.7M in anode replacement, \$16.8M in main replacement expenditures, and \$15.1M in relocation work caused by deferral of municipal works.</p>
Distribution Stations	149.3	63.4	(85.9)	<p>The decrease of \$85.9M can be attributed to three main portfolios:</p> <ul style="list-style-type: none"> • DS - Gate, Feeder & A Stations - \$47.4M total due to \$23.6M reduction for the delay of the Crowland Station, \$9.4M due to deferral of the Parkway Gate Station, \$19.2M for the delay of the Lisgar Gate Station as the project is rescoped, and \$20.4M of other smaller station projects during portfolio reprioritization; which are partially offset by \$4.6M for the St. John’s Feeder station delay and \$20.2M of other smaller projects. • DS - Integrity Initiatives - \$5.8M reduction of the Facilities Integrity Management Program (FIMP) Station program deferral. • DS - Station Rebuilds & B and C Stations - \$28.2M total due to \$9.2M reduction for the deferral of the Brantford Gate Station, \$34M for the

Asset Class	2023 AMP	2023 9+3 Forecast	Variance	Variance Explanation
				reduction of smaller station projects during portfolio reprioritization that are offset by \$15M in increases due to carry over costs from 2022 and other smaller investments. The balance of reductions can be found in the DS – CNG and DS - Inside Regulator & External Regulatory Room Program portfolios.
Utilization	136.5	168.0	31.5	The increase of \$31.5M primarily consists of \$5.3M for delayed meters ordered for 2022, an increase of \$19.2M for meters ordered to build inventory necessary to keep up with planned work, a \$6.8M increase in regulators and meter exchange labour costs associated with a moderate increase in planned work to catch up on work not completed in 2022, and some other minor increases in the portfolio.
Compression Stations	238.5	349.6	111.1	The increase of \$111.1M in compression stations is attributed to cost increase of \$118.2M for planned Dawn to Corunna ²⁷ project work in 2023, increase of \$1.2M to repair a failed control valve at Dawn, and \$1.7M increase for Emissions Compliance work; which are partially offset by deferrals of \$2.1M in obsolete control panel upgrades, \$1.3M in replacement of compression auxiliary equipment in the run to failure program, \$0.9M for FIMP, \$3.9M in worn valve replacements, as well as \$1.8M from several other reductions for other smaller investments related to portfolio prioritization.
Liquefied Natural Gas	0.8	2.0	1.2	The increase of \$1.2M is related to the 2023 pre-spend for an unplanned Hagar compressor overhaul and foundation replacement with execution planned for 2024.
Transmission Pipe & Underground Storage	280.7	97.8	(182.9)	The decrease of \$182.9M is related to deferral of \$161.2M for PREP ²⁸ , \$8.9M for the Crowland Wells Upgrade project, \$2.5M in Class Location projects, \$2M from Panhandle Line Replacement, \$3M from Well Lifecycle Replacement, and \$2.1M in A1 Wells replacement and Dow A McPlank Connection. Additionally, a total of \$3.2M in smaller projects has been removed from the forecast during portfolio reprioritization.
Fleet & Equipment	25.5	8.8	(16.7)	The decrease of \$16.7M is related to identification of \$2.3M in requirements for new tools and equipment offset by savings of \$18.9M from reprioritization for vehicles and equipment purchases.

²⁷ EB-2022-0086

²⁸ EB-2022-0157

Asset Class	2023 AMP	2023 9+3 Forecast	Variance	Variance Explanation
Real Estate & Workplace Services	52.1	69.6	17.5	The increase of \$17.5M is primarily related to a \$22.1M increase for the SMOC/Coventry (Ottawa Building) Facility project driven by a change to timing for the project. This increase has been partially offset by a \$10.1M reduction to the new Station B building through adjusted pacing of construction and other minor reductions to the forecast.
Technology & Information Systems	63.7	44.4	(19.4)	The decrease of \$19.4M is related to reprioritization of the TIS Business Solutions portfolio based on business needs resulting in \$20.3M in reductions and deferrals, partially offset by \$3.5M in carryover costs and new investments.
EA Fixed O/H	21.7	23.7	2.1	The increase of \$2.1M is related to the inclusion of third-party prework blankets in the EA Fixed Overhead asset class.
Total	1,506.0	1,462.1	(43.9)	

*Costs are expressed in millions of Canadian dollars.

7 Appendices

7.1 Appendix A

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7.2 Appendix B – IRP (Updated)

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	11794	A60: City Centre Complex - Ottawa	2024	\$ 15										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	23126	Concord St Isolated Steel Replace with Main St PE, Ottawa	2024	\$ 904										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	23190	VPM - 310 Cathcart St Header - Aldyl A	2031	\$ -										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30334	Ann St - Eastern - Area 60 -1100	2032	\$ 1,517,085										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30342	Carling Ave - Eastern - Area 60 - 1104	2031	\$ 1,769,923										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30343	Centre St - Eastern - Area 60 - 1085	2031	\$ 1,145,992										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30347	Elm St W - Eastern - Area 60 - 1726	2028	\$ 975,730										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30352	George St - Eastern - Area 60 - 1088	2028	\$ 1,446,183										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30358	Highgate Rd - Eastern - Area 60 - 1166	2029	\$ 1,198,080										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30376	Othello Ave - Eastern - Area 60 - 1096	2029	\$ 1,225,800										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30388	Stanley Ave - Eastern - Area 60 - 1069	2029	\$ 1,480,858										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	102424	Relocation Program - Area 60*	2023	\$ 12,003,660										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	501823	A60 1149 Shillington HDR Replacement	2024	\$ -										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	502861	Morrison THP Replacement	2024	\$ -										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	502862	Young St LP Replacement	2023	\$ -										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	734548	VSM-HWY 7 Dufferin St Perth	2026	\$ 567,848										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	734590	Viewmount Dr Main Lowering	2024	\$ 601,066										
Eastern	60 - Ottawa	Distribution Pipe	Fail	Emergent Safety	4665	Replacement Blanket - Area 60*	2023	\$ 17,622,254										
Eastern	60 - Ottawa	Distribution Pipe	Pass		4671	Anode Blanket - Area 60*	2023	\$ 8,010,995	Justification: The Corrosion Department conducts pipe-to-soil readings each year on EGI's steel pipelines. When a corrosion area is identified as having fallen below EGI's minimum specifications, an order for an anode installation is processed. The capital request is for 12 months.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Pipe	Pass		4767	AMP Fitting Replacement - Area 60*	2023	\$ 63,855,002	AMP Fittings are a below grade transition fittings. The inserted portion of copper tubing can fail due to internal corrosion. In these cases leaks develop immediately downstream of the AMP Fitting.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Pipe	Pass		8198	LANCASTER GATE Station - Integrity Retrofit > 30% SMYS	2026	\$ 1,613,262	Funds to install launcher (station rebuild occurred in 2016; no provisions for launcher were included) on pipeline to allow for inline inspection are required. This will allow in-line inspection of the pipeline which is required as per the Pipeline Integrity Management Program. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Pipe	Pass		8262	VSM - Preston St - LP	2026	\$ 1,628,116	Vintage Steel Mains, Isolated Steel Mains General: Vintage Steel Replacement Program is a proactive replacement program to renew aging vintage steel pipe assets before reaching their end of life. Vintage steel mains have shown signs of declining health due to the cumulative effect of poor, manufactured coating performance; construction practices; latent third-party damages to pipe coating; and the effect of stray currents from transit infrastructure such as subway and streetcars. The current failure projection model is forecasting an exponential increase in the number of corrosion-related failures, while the CSS value framework and the 40-year risk projection are showing an increase in the safety risk associated with steel main failures. Vintage steel systems also have potential to include compression couplings, shallow installation depth and shallow assemblies making pipe susceptible to third-party damage, and manufactured defects associated with seam welds and fittings.	Completed	Fail	NPS 2, cannot downsize or retire	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Pipe	Pass		10288	St. Laurent Phase 4 - Lower Section (Plastic)	2025	\$ 10,178,378	Issue/Concern: General Concerns: Vintage steel mains have shown signs of declining health due to the cumulative effective of poor manufactured coating performance, construction practices, latent third-party damages to pipe coating, and the effect of stray currents from transit infrastructure such as subway and streetcars. The current failure projection model is forecasting an exponential increase in the number of corrosion-related failures, while the CSS value framework and the 40-year risk projection are showing an increase in the safety risk associated with steel main failures. In addition to age, vintage steel mains are also susceptible to accelerated degradation and/or higher risk of third-party damage in the following ways: •Compression couplings •Shallow blow-off valve assemblies that could be damaged during excavation activities •Reduction in the original depth of cover •Continuous exposure of road salt and seasonal ground movement on bridge crossing assets •Lack of cathodic protection with pipe casings that could result in corrosion causing excessive stress or shorts on the carrier pipe that is in contact with the casing, which could lead to the loss of containment •Manufacturing defects associated with seam welds and fittings that are weak points in the distribution system and could result in a loss of containment due to prolonged exposure to stress and corrosion •Latent damages to pipe coatings that were never reported to EGI for repair and became active corrosion sites, which could hamper the effect of the corrosion protection system and result in accelerated corrosion and potentially loss of containment. Site-Specific Concerns: Unable to determine leaks due to the close proximity of the NPS 12 470 psi system. Cathodic protection was not installed until the early 1970s. Approximately 429 services are off this network. Full replacement of main comprising Network 6584 is required - the NPS 12 St. Laurent Ottawa North line is 13.3 km and operates at 275 psi as Network 658A. It runs from south of St. Laurent Control Station (6584-653-1969) to Rockcliffe Control Station (Station #68558A). It does not include the main south from St. Laurent Control Station to Industrial Avenue as well as the NPS 12 lateral main to Trans Alta (6584-1234-1235) but does include the NPS 12 lateral main along Tremblay Road (and does not include the crossing at the Rideau River to Station #61171A). In 2018, pressure increase to Avenue O was completed. In 2019/2020, approximately 3.1 km of plastic pipe was installed on Tremblay and the Avenues and the services transferred over to IP. Due to a road moratorium, 2 km of 6-inch PE IP main on St. Laurent between Donald St. and Montreal was brought forward from 2021 to 2019/2020 and approximately 80 services.	In Progress		Technical Evaluation awaiting further integrity assessment to confirm project scope and timing.						

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)										
Eastern	60 - Ottawa	Distribution Pipe	Pass		10290	St. Laurent Phase 3 - Coventry/Cummings/St. Laurent (Plastic)	2024	\$ 25,033,190	<p>Full replacement of main comprising Network 6584 is required - the NPS 12 St. Laurent Ottawa North line is 13.3 km and operates at 275 psi as Network 6584. It runs from south of St. Laurent Control Station (6584-653:1969) to Rockcliffe Control Station (Station #68558A). It does not include the main south from St. Laurent Control Station to Industrial Avenue as well as the NPS 12 lateral main to Trans Alta (6584:1234:1235) but does include the NPS 12 lateral main along Tremblay Road (and does not include the crossing at the Rideau River to Station #61171A).</p> <p>General Concerns: Vintage steel mains have shown signs of declining health due to the cumulative effective of poor manufactured coating performance, construction practices, latent third-party damages to pipe coating, and the effect of stray currents from transit infrastructure such as subway and streetcars. The current failure projection model is forecasting an exponential increase in the number of corrosion-related failures, while the CSS value framework and the 40-year risk projection are showing an increase in the safety risk associated with steel main failures. In addition to age, vintage steel mains are also susceptible to accelerated degradation and/or higher risk of third-party damage in the following ways:</p> <ul style="list-style-type: none"> - Compression couplings - Shallow blow-off valve assemblies that could be damaged during excavation activities - Reduction in the original depth of cover - Continuous exposure of road salt and seasonal ground movement on bridge crossing assets - Lack of cathodic protection with pipe casings that could result in corrosion, causing excessive stress or shorts on the carrier pipe that is in contact with the casing, which could lead to the loss of containment - Manufacturing defects associated with seam welds and fittings that are weak points in the distribution system and could result in a loss of containment due to prolonged exposure to stress and corrosion - Latent damages to pipe coatings that were never reported to EGI for repair and became active corrosion sites, which could hamper the effect of the corrosion protection system and result in accelerated corrosion and potentially loss of containment. <p>Additional drivers from recent Integrity and Risk program are being captured and prepared as part of re-filing of LTC project. This portion of the project is to install 800 m NPS 6, 525 m NPS 2 IP, transfer 27 services to IP from XHP, and abandon 1 station on Coventry and Cummings. In 2018, pressure increase to Avenue O was completed. In 2019/2020, approximately 3.1 km of plastic pipe was installed on Tremblay and the Avenues and the services transferred over to IP. Due to a road moratorium, 2 km of 6-inch PE</p>	In Progress		Technical Evaluation awaiting further integrity assessment to confirm project scope and timing.						
Eastern	60 - Ottawa	Distribution Pipe	Pass		10292	St. Laurent Phase 3 - Montreal to Rockcliffe (Plastic)	2025	\$ 4,228,821	<p>General Concerns: Vintage steel mains have shown signs of declining health due to the cumulative effective of poor-manufactured coating performance, construction practices, latent third-party damages to pipe coating, and the effect of stray currents from transit infrastructure such as subway and streetcars. The current failure projection model is forecasting an exponential increase in the number of corrosion-related failures, while the CSS value framework and the 40-year risk projection show an increase in the safety risk associated with steel main failures. In addition to age, vintage steel mains are also susceptible to accelerated degradation and/or higher risk of third-party damage in the following ways:</p> <ul style="list-style-type: none"> •Compression couplings •Shallow blow-off valve assemblies that could be damaged during excavation activities •Reduction in the original depth of cover •Continuous exposure of road salt and seasonal ground movement on bridge crossing assets •Lack of cathodic protection with pipe casings that could result in corrosion causing excessive stress or shorts on the carrier pipe that is in contact with the casing, which could lead to the loss of containment •Manufacturing defects associated with seam welds and fittings that are weak points in the distribution system and could result in a loss of containment due to prolonged exposure to stress and corrosion •Latent damages to pipe coatings that were never reported to EGI for repair and became active corrosion sites, which could hamper the effect of the corrosion protection system and result in accelerated corrosion and potentially loss of containment. <p>Site-Specific Concerns: An inability to determine leaks due to the close proximity of the NPS 12 470 psi system is a concern. Cathodic protection was not installed until the early 1970s. Approximately 429 services are off this network.</p> <p>Full replacement of main comprising Network 6584 is required - the NPS 12 St. Laurent Ottawa North line is 13.3 km and operates at 275 psi as Network 6584. It runs from south of St. Laurent Control Station (6584-653:1969) to Rockcliffe Control Station (Station #68558A). It does not include the main south from St. Laurent Control Station to Industrial Avenue as well as the NPS 12 lateral main to Trans Alta (6584:1234:1235) but does include the NPS 12 lateral main along Tremblay Road (and does not include the crossing at the Rideau River to Station #61171A).</p> <p>In 2018, pressure increase to Avenue O was completed. In 2019/2020, approximately 3.1 km of plastic pipe was installed on Tremblay and the Avenues and the services transferred over to IP. Due to a road moratorium, 2 km of 6-inch PE IP main on St. Laurent between Donald St. and Montreal was brought forward from 2021 to 2019/2020 and approximately 80 services.</p>	In Progress		Technical Evaluation awaiting further integrity assessment to confirm project scope and timing.						
Eastern	60 - Ottawa	Distribution Pipe	Pass		10293	St. Laurent Phase 3 - North/South (NPS12/16 Steel)	2025	\$ 128,006,775	<p>Assets: Install approximately 2.9 km of 6-inch PE and 122 m of 2-inch PE, transferring 135 customers to the IP, pressure decrease Hillsdale Rd. and abandon St 68882 Lansdowne/Hillsdale.</p> <p>Full replacement of main comprising Network 6584 is required - the NPS 12 St. Laurent Ottawa North line is 13.3 km and operates at 275 psi as Network 6584. It runs from south of St. Laurent Control Station (6584-653:1969) to Rockcliffe Control Station (Station #68558A). It does not include the main south from St. Laurent Control Station to Industrial Avenue as well as the NPS 12 lateral main to Trans Alta (6584:1234:1235) but does include the NPS 12 lateral main along Tremblay Road (and does not include the crossing at the Rideau River to Station #61171A).</p> <p>General Concerns: Vintage steel mains have shown signs of declining health due to the cumulative effective of poor manufactured coating performance, construction practices, latent third-party damages to pipe coating, and the effect of stray currents from transit infrastructure such as subway and streetcars. The current failure projection model is forecasting an exponential increase in the number of corrosion-related failures, while the CSS value framework and the 40-year risk projection are showing an increase in the safety risk associated with steel main failures. In addition to age, vintage steel mains are also susceptible to accelerated degradation and/or higher risk of third-party damage in the following ways:</p> <ul style="list-style-type: none"> - Compression couplings - Shallow blow-off valve assemblies that could be damaged during excavation activities - Reduction in the original depth of cover - Continuous exposure of road salt and seasonal ground movement on bridge crossing assets - Lack of cathodic protection with pipe casings that could result in corrosion, causing excessive stress or shorts on the carrier pipe that is in contact with the casing, which could lead to the loss of containment - Manufacturing defects associated with seam welds and fittings that are weak points in the distribution system and could result in a loss of containment due to prolonged exposure to stress and corrosion - Latent damages to pipe coatings that were never reported to EGI for repair and became active corrosion sites, which could hamper the effect of the corrosion protection system and result in accelerated corrosion and potentially loss of containment. <p>Additional drivers from recent Integrity and Risk program are being captured and prepared as part of re-filing of LTC project. This portion of the project is replacing the main will ensure continued operation of EGI's gas distribution system, and will mitigate safety risks to employees, contractors, and general public. This project will install 5.3 km NPS 12 Steel Gas Main, 2.1 km NPS 16 Steel Gas Main, 5.1 km Plastic Gas Main and relay all XHP services to the new plastic gas main.</p>	In Progress		Technical Evaluation awaiting further integrity assessment to confirm project scope and timing.						

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
Eastern	60 - Ottawa	Distribution Pipe	Pass		10294	St. Laurent Phase 4 - East/West (NPS12 Steel)	2024	\$ 56,735,505	Full replacement of main comprising Network 6584 is required - the NPS 12 St. Laurent Ottawa North line is 13.3 km and operates at 275 psi as Network 6584. It runs from south of St. Laurent Control Station (6584-653:1969) to Rockcliffe Control Station (Station #6B558A). It does not include the main south from St. Laurent Control Station to Industrial Avenue as well as the NPS 12 lateral main to Trans Alta (6584:1234:1235) but does include the NPS 12 lateral main along Tremblay Road (and does not include the crossing at the Rideau River to Station #61171A). General Concerns: Vintage steel mains have shown signs of declining health due to the cumulative effective of poor manufactured coating performance, construction practices, latent third-party damages to pipe coating, and the effect of stray currents from transit infrastructure such as subway and streetcars. The current failure projection model is forecasting an exponential increase in the number of corrosion-related failures, while the CSS value framework and the 40-year risk projection are showing an increase in the safety risk associated with steel main failures. In addition to age, vintage steel mains are also susceptible to accelerated degradation and/or higher risk of third-party damage in the following ways: - Compression couplings - Shallow blow-off valve assemblies that could be damaged during excavation activities - Reduction in the original depth of cover - Continuous exposure of road salt and seasonal ground movement on bridge crossing assets - Lack of cathodic protection with pipe casings that could result in corrosion, causing excessive stress or shorts on the carrier pipe that is in contact with the casing, which could lead to the loss of containment - Manufacturing defects associated with seam welds and fittings that are weak points in the distribution system and could result in a loss of containment due to prolonged exposure to stress and corrosion - Latent damages to pipe coatings that were never reported to EGI for repair and became active corrosion sites, which could hamper the effect of the corrosion protection system and result in accelerated corrosion and potentially loss of containment. Additional drivers from recent Integrity and Risk program are being captured and prepared as part of re-filing of LTC project. This portion of the project is will install approx 3.2 km NPS 12 XHP Steel Gas Main and 0.6 km of 4inch SC and abandon approx. 2.5 km of NPS 12 SC	In Progress							Technical Evaluation awaiting further integrity assessment to confirm project scope and timing.	
Eastern	60 - Ottawa	Distribution Pipe	Pass		13609	Service Relay Blanket - Area 60*	2023	\$ 51,915,854	General: A distribution service refers to the pipe between the distribution main and the customer's meter set. Over the years, different materials have been used for this asset, including steel, copper, and varying resins of plastic, each with unique characteristics that contribute to their performance over time. Services can be repaired or replaced depending on asset condition and the nature of the issue exhibited. Generally, replacement is the preferred approach to mitigate unacceptable asset condition.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Pipe	Pass		30330	2nd Ave - Eastern - Area 60 - 1197	2032	\$ 20,833	2nd Ave. - Eastern - Area 60 - 1197 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Eastern	60 - Ottawa	Distribution Pipe	Pass		30331	3rd Ave - Eastern - Area 60 - 1830	2031	\$ 3,972,695	3rd Ave. - Eastern - Area 60 - 1226 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Pipe	Pass		30332	Adelaide St - Eastern - Area 60 - 1828	2029	\$ 546,192	Adelaide St. - Eastern - Area 60 - 1218 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.						
Eastern	60 - Ottawa	Distribution Pipe	Pass		30333	Ainsley Dr - Eastern - Area 60 - 1723	2029	\$ 2,041,134	Ainsley Dr - Eastern - Area 60 - 1723 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Remove 8 m of mains from project due to overlap (updated as per regional feedback).	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.						
Eastern	60 - Ottawa	Distribution Pipe	Pass		30338	Beckwith St N - Eastern - Area 60 - 1198	2032	\$ 2,784,776	Beckwith St. N. - Eastern - Area 60 - 1198 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.						
Eastern	60 - Ottawa	Distribution Pipe	Pass		30339	Bell St - Eastern - Area 60 - 1052	2027	\$ -	Bell St. - Eastern - Area 60 - 1052 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: No timing comment was provided.	Completed	Fail	NPS 2, cannot downsize or retire						
Eastern	60 - Ottawa	Distribution Pipe	Pass		30340	Borthwick Ave - Eastern - Area 60 - 1139	2031	\$ 3,235,451	Borthwick Ave. (moratorium is until 2025) - Eastern - Area 60 - 1139 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Road work was completed in 2020. Road restrictions will be in place for a long time. The 2025 execution date is based on region's comment.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.						
Eastern	60 - Ottawa	Distribution Pipe	Pass		30341	Brock St - Eastern - Area 60 - 1485	2032	\$ 3,588,809	Brock St. - Eastern - Area 60 - 1485 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	NPS 2, cannot downsize or retire						

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
Eastern	60 - Ottawa	Distribution Pipe	Pass		30357	Herriott St - Eastern - Area 60 - 1089	2032	\$ 1,923,898	Herriott St. - Eastern - Area 60 - 1089 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There are possible road restrictions on Moffatt Asphalt Overlay.	Completed	Fail	-	-	-	-	-	
Eastern	60 - Ottawa	Distribution Pipe	Pass		30359	Irene Cres - Eastern - Area 60 - 1141	2031	\$ 2,997,416	Irene Cres. - Eastern - Area 60 - 1141 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	-	-	-	-	-	
Eastern	60 - Ottawa	Distribution Pipe	Pass		30360	James St - Eastern - Area 60 - 1112	2029	\$ 2,511,412	James St. - Eastern - Area 60 - 1112 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: CR 34 Major Rd. into Quebec might require an MTO permit. Main St. is already dual-mained and side streets could be considered. Possible CA permit may be required due to proximity to Ottawa River.	On Hold		-	-	-	-	-	
Eastern	60 - Ottawa	Distribution Pipe	Pass		30361	James St W - Eastern - Area 60 - 1184	2031	\$ 2,982,659	James St. W. - Eastern - Area 60 - 1184 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	-	-	-	-	-	
Eastern	60 - Ottawa	Distribution Pipe	Pass		30363	Lake Ave E - Eastern - Area 60 - 1145	2032	\$ 20,833	Lake Ave. E. - Eastern - Area 60 - 1145 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		-	-	-	-	-	
Eastern	60 - Ottawa	Distribution Pipe	Pass		30364	LePage Ave - Eastern - Area 60 - 1214	2030	\$ 3,942,764	LePage Ave. (execute by 2025 - paving proposed between 2022 - 2025) - Eastern - Area 60 - 1214 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Some road and sewer work was done in 2021, and paving is proposed between 2022 and 2025 - updated to reflect region's comments.	Completed	Fail	-	-	-	-	-	
Eastern	60 - Ottawa	Distribution Pipe	Pass		30365	Madawaska St - Eastern - Area 60 - 1072	2030	\$ 3,141,987	Madawaska St - Eastern - Area 60 - 1072 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	-	-	-	-	-	
Eastern	60 - Ottawa	Distribution Pipe	Pass		30366	Main St E - Eastern - Area 60 - 1172	2031	\$ 3,182,907	Main St. E. - Eastern - Area 60 - 1172 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There is 83 m of 2-inch steel being replaced. Downtown road is likely to have time restrictions.	Completed	Fail	-	-	-	-	-	
Eastern	60 - Ottawa	Distribution Pipe	Pass		30367	McCann St - Eastern - Area 60 - 1160	2032	\$ 20,833	McCann St. - Eastern - Area 60 - 1160 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		-	-	-	-	-	
Eastern	60 - Ottawa	Distribution Pipe	Pass		30368	McGonigal St E - Eastern - Area 60 - 1041	2032	\$ 2,736,119	McGonigal St. E. - Eastern - Area 60 - 1041 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	-	-	-	-	-	

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)										
Eastern	60 - Ottawa	Distribution Pipe	Pass		30369	Moffatt St - Eastern - Area 60 - 1195	2032	\$ 3,415,218	Moffatt St. - Eastern - Area 60 - 1195 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Townline Rd. and Bridge St. are main roads. There are rectifier-protected areas. Main on Townline Rd. may have to stay steel.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Pipe	Pass		30370	Montgomery Pl - Eastern - Area 60 - 1228	2030	\$ 3,199,722	Montgomery Pl. - Eastern - Area 60 - 1228 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. It is recommended to maintain pipe size for trunk mains or system resiliency. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Pipe	Pass		30372	North St - Eastern - Area 60 - 1087	2031	\$ 2,701,075	North St - Eastern - Area 60 - 1087 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. It is recommended to maintain pipe size for trunk mains or system resiliency. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Pipe	Pass		30373	Oak St - Eastern - Area 60 - 1133	2031	\$ 2,810,753	Oak St. - Eastern - Area 60 - 1133 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	NPS 2. cannot downsize or retire	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Pipe	Pass		30378	Prince Albert St - Eastern - Area 60 - 1099	2031	\$ 2,907,628	Prince Albert St. - Eastern - Area 60 - 1099 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Pipe	Pass		30379	Queen Mary St - Eastern - Area 60 - 1103	2030	\$ 3,128,574	Queen Mary St. - Eastern - Area 60 - 1103 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. It is recommended to maintain pipe size for trunk mains or system resiliency. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Pipe	Pass		30380	Queen St N - Eastern - Area 60 - 1158	2032	\$ 3,713,042	Queen St. N. - Eastern - Area 60 - 1158 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Pipe	Pass		30384	Rochester St - Eastern - Area 60 - 1222	2031	\$ 2,834,856	Rochester St. - Eastern - Area 60 - 1222 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There is the potential for road restrictions due to congested area.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Pipe	Pass		30385	Sarah St - Eastern - Area 60 - 1188	2032	\$ 2,905,002	Sarah St. - Eastern - Area 60 - 1188 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)										
Eastern	60 - Ottawa	Distribution Stations	Fail	Dollar threshold	735165	68602A STARTOP DISTRICT XHP	2024	\$ -										
Eastern	60 - Ottawa	Distribution Stations	Fail	Dollar threshold	735167	61061A PEMBROKE W. DISTRICT	2023	\$ -										
Eastern	60 - Ottawa	Distribution Stations	Pass		3455	Harmer District Station	2028	\$ 5,259,399	Issue/Concern: EGI has a high pressure (HP) to intermediate pressure (IP) district station located inside a building. The regulator station is located in the garage of a house and is not to current EGI standards. The station is located close to a school, hospital, shopping complex, and dense residential population. The Integrity team is planning an inline inspection of the Vital NPS 12 (Network 6582) and additional space is required for a receiver. Assets: Station# 68005A Related Program(s): N/A	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Stations	Pass		3608	BROCKVILLE GATE	2025	\$ 1,188,753	Brockville Gate Station is located on EGI-owned property approximately 5 km from the town of Brockville, Ontario. This station accepts natural gas from TC Energy and provides supply to two separate XHP networks. Station components include measurement, gas preheat system, pressure regulation, odourant injection and a telemetry system. This station supplies natural gas to approximately 19,463 customers in Brockville region. The following issues have been identified at this station: Pipes, Valves & Others: The existing valves at this site have experienced issues in performance and operation of the valves. Valve maintenance has been unable to remediate the problem and the valves have deteriorated to the point where the reliability is no longer acceptable. All valves will have to be replaced. The inlet of the regulator runs is a challenge every year. Heating: The boiler system was replaced in 2019. However, the glycol tank and heat exchanger will need to be replaced and relocated to meet Electrical Safety Authority (ESA) requirements. Residual glycol impacts are to be evaluated and removed as required, as a result of glycol release that was reported from a boiler inside the Boiler building. Pressure Control: The regulator station has boot-style regulators posing an undesired higher risk and high associated ongoing maintenance costs. Engineering has identified that boot-style regulators operating as both monitor and operating regulators is unacceptable. The regulator runs will have to be rebuilt. Odourization: The odourant system was installed in 2000. A new Odourant building will have to be installed to ensure adequate containment in the event of a leak. The injection pumps are located in the regulator room and will have to be relocated into the Odourant building to meet current standards. Telemetry and Electrical: The size of the Remote Terminal Unit (RTU) building is not an issue but the leaky roof is. This building not only houses the RTU but also the St. Lawrence Control Centre (CC) (this is the gas control hub for Leeds, Brockville, Bethel, St. Lawrence, Summerstown and Lancaster Gate stations, as well as International Bridge CDN and USA, and Lisgar). The transfer switch, main panel, and junction box are located in the old RTU room, which is attached to the instrumentation room, but does not violate the Electrical code. Boilers were recently replaced and can be reused as well as the inlet/outlet and tank pressure transmitters. New temperature transmitters and a new tank level gauge are needed. The ultrasonic electronics should be upgraded. The main disconnect should be taken off the Hydro pole and moved to the electrical/RTU room. There should be an upgrade to the CC Uninterruptible Power Supply (UPS) system specifically for the network switches). The odourant tank is located in an old-style, steel building. The RTU is an older Control Wave Micro (CWM), but could suffice; however, its UPS should be upgraded. There is no boiler room CO detector. The odourant injection system should be separated from the regulators. There is no weather station.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Stations	Pass		3622	SUMMERSTOWN GATE	2026	\$ -	Summerstown Gate Station is located on EGI-owned property of approximately 1,000 m2 fenced compound in South Glengarry Township, Ontario, approximately 16 km from Cornwall, Ontario, within a rural area. This station accepts natural gas from TC Energy and provides supply to an XHP network, through components within the measurement system, pressure control system, heating system, odourant system, and telemetry system. This station feeds 265 customers. The following issues have been identified at this station: Valves & Piping: The existing valves at this site have experienced issues in performance and operation of the valves. Maintenance has been performed to attempt to remediate the valves; however, the valves have deteriorated to the point where the reliability is no longer acceptable. The existing inlet and bypass valves are flange by flange and have experienced leaks through these flanges. Flanged valves on the station inlets are more prone to leaks and more difficult to repair. Odourization: The odourant system was installed in 1998. The current configuration of the odourant system does not ensure adequate containment of the odourant product in the event of a leak and does not meet the current engineering standards and approvals. Telemetry & Electrical: The existing electrical system does not meet current EGI electrical installation standards. This poses a potential electrical hazard and faulty wiring may result in lost communications. Tower: Tower is to be removed as it is not required for SCADA communications.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
Eastern	60 - Ottawa	Distribution Stations	Pass		7751	KEMPTVILLE GATE	2027	\$ -	Kemptville Gate Station is located on EGI-owned property of approximately 2,825 m2 fenced compound in the Municipality of North Grenville, Ontario, approximately 37 km south of Ottawa, within a rural area. This station accepts natural gas from TC Energy and provides supply to XHP networks, through components within the Measurement system, Pressure Control system, Heating system, Odourant system, and Telemetry system. This station supplies natural gas to approximately 3,256 customers in the Kemptville area. The following issues have been identified at this station: Pipe, Valves & Others: The existing valves at this site have experienced issues in performance and operation. Maintenance has been performed to attempt to remediate the valves; however, the valves have deteriorated to the point where the reliability is no longer acceptable. Heating: The existing boilers at this site are 22 years old and have reached end of life based on condition review and performance. Pressure Control: The Regulation system is installed within a building currently in disrepair with several leaks. The operator and monitor regulators are both double-boot style regulators and are both susceptible to boot failure should they be exposed to significant debris in the system. Repairs have been made where possible but the building continues to deteriorate. Also, the working space inside the building produces an ergonomic/safety risk to EGI employees. This will require addition of filtration or regulation replacement. Furthermore, a new building will be required to address safety/ergonomic issues at the station. Odourization: The building has containment but does not meet current standards. There are no issues with the current system. Telemetry & Electrical: The Telemetry and Electrical systems do not meet current EGI standards, do not contain backup power supply in the event of power loss, and are approaching end of useful life. The existing Remote Terminal Unit (RTU) is obsolete and is required to be upgraded to current standards along with new communications equipment in order to mitigate cybersecurity threats.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
Eastern	60 - Ottawa	Customer Connections	Pass		3758	Area 60 - Apartment Ensuite - New Construction*	2023	\$ 393,418	Vertical Subdivision - A multiple unit residential building where each suite is individually metered. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGD develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long term plans EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. Enbridge reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers; and, - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 3.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing Assets: Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered		
Eastern	60 - Ottawa	Customer Connections	Pass		3759	Area 60 - Apartment Traditional - New Construction*	2023	\$ 426,613	Apartment - An apartment customer is a multi-residential dwelling containing more than six units that is bulk-metered Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGD develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long term plans EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. Enbridge reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - and, - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing Assets: Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-	-	-
Eastern	60 - Ottawa	Growth	Pass		1024	NW 6581 Ottawa Reinforcement Phase 2 SRP	2029	\$ 70,698,549	Issue/Concern/Opportunity: Reinforcement projects broadly involve the installation of new or modification of existing gas distribution assets to maintain minimum required system pressure, maintain capacity, and meet customer demand. These projects are primarily driven by customer growth and system reliability considerations. Failure to implement reinforcement projects in a timely manner could lead to a potential inability to support increasing demands of existing customers and the addition of future customers. This network in Ottawa is predominantly made up of residential and commercial customers. In the current configuration, a high pressure network is exclusively fed by both the Ottawa and Richmond Gate Stations. An upstream flow constraint has been identified at the Ottawa Gate Station, along with a bottleneck constraint for gas fed from Richmond Gate Station. The South outlet of Ottawa Gate can be set to as low as 400 psig (normally 470 psig) while Richmond Gate is kept at 470 psig, thus flowing more gas from the west to the east. The current configuration, an existing NPS 12 high pressure pipeline along Fallowfield Road is a bottleneck for gas flowing from the west to Richmond Gate Station, and to eastern areas. The previously constructed Ottawa Reinforcement Plan (ORP) Phase 1 as well as the Strandherd River crossing has helped move gas from Richmond Gate eastward to areas of concentrated and growing gas demand. This reinforcement will assist in moving additional gas from Richmond Gate toward the areas that would be serviced by Ottawa Gate, and remove the bottleneck constraint. There were approximately 193,553 customers on the associated networks as of 2016. Assets: Existing NPS 12 HP Pipe Related Program: Not applicable	In Progress			-	-	-	-	-	-		
Eastern	60 - Ottawa	Customer Connections	Pass		3761	Area 60 - Commercial - New Construction*	2023	\$ 27,733,904	Issue/Concern: Commercial New Construction refers to a customer intending to run a commercial business in a newly-constructed building and intending to use natural gas to meet energy needs Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-		
Eastern	60 - Ottawa	Customer Connections	Pass		3762	Area 60 - Industrial - New Construction*	2023	\$ 29,554,502	Issue/Concern: Industrial New Construction refers to a customer intending to run an industrial manufacturing business in a newly-built facility and intending to use natural gas. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-		
Eastern	60 - Ottawa	Customer Connections	Pass		3764	Area 60 - Residential - New Construction*	2023	\$ 238,524,186	Issue/Concern: Residential New Construction refers to a new residential construction development of detached single homes constructed by the builder for domestic purposes. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-		

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Eastern	60 - Ottawa	Customer Connections	Pass		3765	Area 60 - Residential - Replacement*	2023	\$ 151,051,363	<p>Issue/Concern: Residential Replacement refers to a residential replacement customer using a fuel other than natural gas for domestic purposes and is converting to natural gas.</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPAs not applicable.	-	-	-	-	-	-	-	-	-
Eastern	60 - Ottawa	Growth	Pass		7743	NW 6587 L'Original Reinforcement SRP	2025	\$ 6,691,362	<p>Issue/Concern: Reinforcement projects broadly involve the installation of new or modification of existing gas distribution assets to maintain minimum required system pressure to maintain the capacity to meet customer demand. These projects are primarily driven by customer growth and system reliability considerations. Failure to implement reinforcement projects in a timely manner could lead to a potential inability to support increasing demands of existing customers and the addition of future customers.</p> <ul style="list-style-type: none"> Project Purpose/Need: This reinforcement is to add capacity within legacy Enbridge Gas Distribution's pipe network to: <ul style="list-style-type: none"> Satisfy the current contractually allowable demand of the Large Volume Contract (LVC) customer, which is 6,800 m³/h Support customer growth of the downstream High Pressure Polyethylene (HPPE) network This geographic area sits at the eastern tail end of XHP network 6587, which is fed exclusively by Lancaster gate to the southeast. Pressure Issue/Concern : The minimum system pressure was forecasted to be infeasible by 2020. Customer Growth Issue/Concern: As of 2017, there are 2,039 customers on this network. Without reinforcement, a forecasted 24 customers may not be able to be added. Risk If Not Completed: System risk without the reinforcement <ul style="list-style-type: none"> EGI may not be able to satisfy contractual demand of a large-volume customer along with supporting forecasted customer growth This network is at the mid-tail end of the East Valley line, with pressures approaching the minimum. This XHP system is operating at over 30% Specified Minimum Yield Strength (SMYS). If this line pressure drops below 30% SMYS, this reinforcement will not be sufficient. Approximately 1,430 customers would potentially be lost over the winter of 2017 – 2018. There are approximately 2,039 customers forecasted to be connected by 2017. <p>Assets (preferred option): <ul style="list-style-type: none"> Station: 62328A set to 80 psig Main: -10 km - NPS 4 XHP main - from County Rd. 17 and Hwy 11 - to Cassburn Rd. and Emerson Rd. - along Hwy 11. </p>	Completed	Pass	CNG, ETEE - CNG potentially could defer project scope. ETEE potentially could eliminate (with CNG as bridging solution), reduce or defer project scope.	In Progress								
Eastern	60 - Ottawa	Growth	Pass		102119	Brockville Gate Extension	2025	\$ 3,131,604	<p>Issue/Concern/Opportunity: Area 60 - the Maitland and Brockville regions are currently served by two Gate Stations (i.e., Brockville and Bethel). The Bethel Gate requires a rebuild to maintain safe and reliable operations; and there is an opportunity to add customers in the region if the network has more capacity.</p> <p>The preferred option is to build a lateral connected to the existing Brockville Network extending to the current Bethel Gate site; a district station would be required along with 3,500 m of pipe. Sixty-two potential customers have been identified along this route. A secondary option is to rebuild the Bethel Gate which will ensure safe and reliable operations but will not allow for the opportunity to connect potential new customers.</p> <p>Justification: Bethel Gate is scheduled for a rebuild in 2023 and the pipeline reinforcement is a second option which has added benefits of customer additions and lower future maintenance costs. Assets: Bethel Gate Station Related Program: Not applicable</p>	Completed	Fail	Timing - Market based supply side alternatives not applicable									
Eastern	60 - Ottawa	Growth	Pass		501824	Huntmar Drive Reinforcement	2026	\$ 5,200,404	<p>Reinforcement required to maintain the gas capacity in the Kanata West area for multiple developments proposed and being built currently in the area.</p> <p>Scope: Install approx. 2.8km of NPS 6 XHP Steel gas main from NPS 12 XHP at Huntmar & Hazeldean going north on Huntmar to Palladium Dr, then install a XHP-HP station at 620 Palladium Drive with its outlet tied in to the existing NPS 6 HP Steel gas main on Palladium Drive. There are no station projects directly linked to this reinforcement project.</p>	In Progress											
GTA West	20 - Mississauga	Growth	Pass		30500	NW 2103 Dundalk XHP Reinforcement SRP	2024	\$ 7,148,925	<p>NW 2103 Dundalk XHP Reinforcement SRP</p> <p>Issue/Concern/Opportunity: Inlet to Ida and Hanbury district station (Dundalk) has dropped below system minimum requirements. Gas volume and flow will be diminished with a potential to limit supply to existing and future customers. There is potential for loss of supply to existing customers during peak period demands.</p> <p>Assets: Pipe and district station Related Program: Not applicable</p>	Completed	Pass	CNG, ETEE - CNG potentially could reduce or defer project scope. ETEE potentially could reduce or defer project scope.	Planned								
Eastern	60 - Ottawa	Growth	Pass		736680	NW 6429 Rockland IP Reinforcement SRP	2024	\$ 291,327	<p>Issue/Concern/Opportunity: Increase pressures that are below new system min in multiple locations. Pressure less than the 20 psi minimum in multiple locations on the network. Reinforcements are required to bring the system within standards. The system is single-fed and is located at the tail end of the XHP 6580 network that is primarily fed by the Ottawa Gate Station. Assets: Install 30m of 1 1/4" PE IP on Du Chateau Ave from Woods St to 30 m S of Woods St Install 55m of 2" PE IP on Lalonde St from Laurier St to 55 m N of Laurier St Install 100m of 2" PE IP On Notre Dame St from Laurier St to Alma St Related Program: Not applicable</p>	Completed	Pass	CNG, ETEE - CNG potentially could defer project scope. ETEE potentially could reduce or defer project scope.	Planned								
Eastern	60 - Ottawa	Growth	Pass		736682	NW 6544 Bank St. Reinforcement SRP	2024	\$ -	<p>Issue/Concern/Opportunity: Reinforcement required to resolve operational issues and bring pressures above the 20 psig minimum system pressures and support future growth. The system being reinforced is in Ottawa central with high potential for growth. Current system pressures are below the minimum system pressures. Network is double-fed by Ottawa Gate and Richmond Gate Station Assets: 90m NPS 2 PE IP on Bank St. from Ardington Ave to Flora St. Related Program: Not applicable</p>	Completed	Pass	CNG, ETEE - CNG potentially could defer project scope. ETEE potentially could eliminate or defer project scope.	Planned								
Eastern	60 - Ottawa	Growth	Pass		736758	NW 6456 Carp Pressure Increase SRP	2024	\$ 25,485	<p>Issue/Concern/Opportunity: Reinforcement involves an in-class pressure increase to resolve operational issues and pressure low points on the network below the minimum system and support growth. The network being reinforced is single-fed and sits on the tail end of the 6583 high pressure network. Pressures are forecasted to go below the minimum system pressure by 2024. All pipes were installed after 1994. Assets: New district station replacing station near the intersection of Carp Rd. and March Rd. (Station ID: 526053). Related Investments: Not applicable</p>	Completed	Fail	See investment description, IRPAs not applicable									

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								Forecast (Includes Overhead)										
Eastern	Div_22 - Kingston	Growth	Pass		30515	SRP_LUG East_Deseronto_2810300	2023	\$ -	Station upgrades are required for additional capacity.	Completed	Pass	Low cost, low value	Planned					
Eastern	Div_22 - Kingston	Growth	Pass		30520	25TN_Rebuild SRP_LUG East_Winchester_2930100	2030	\$ 4,653,565	Station upgrades are required for additional capacity.	In Progress								
Eastern	Div_22 - Kingston	Growth	Pass		30517	15TN_Rebuild SRP_LUG East_Grafton_274050015T	2027	\$ 333,282	Station upgrades are required for additional capacity.	Completed	Pass	Low cost, low value	Planned					
Eastern	Div_22 - Kingston	Growth	Pass		30522	SRP_LUG East_Winchester_Main St_Reinforcement_NPS4_550m_1724kPa	2028	\$ 613,098	A 4-inch looping from outlet of Winchester TBS is required.	Completed	Pass	CNG, ETEE - CNG potentially could reduce or defer project scope, ETEE potentially could eliminate, reduce or defer project scope.	Planned					
Eastern	Div_22 - Kingston	Customer Connections	Pass		48471	KING: 22-21-001 Company Program - New Business - Scattered Mains - Contractor*	2023	\$ 25,971,849	Scattered Mains	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.						
Eastern	Div_22 - Kingston	Growth	Pass		30519	SRP_LUG East_Tweed_278050905T N_Rebuild	2026	\$ 265,985	Station upgrades are required for additional capacity.	Completed	Pass	Low cost, low value	Planned					
Eastern	Div_22 - Kingston	Growth	Pass		100703	SRP_LUG East_Kingston_Creekford Rd_Reinforcement_NPS8_6200m_6895kPa	2027	\$ 2,163,249	Issue/Concern/Opportunity: Kingston lateral replacement to be completed from Westbrook CMS to Woodbine TBS to account for forecast growth, and to address Class Location and depth of cover issues which exist on the current Kingston lateral. Assets: Kingston Lateral Replacement Related Program: N/A	Completed	Pass	CNG, ETEE - Potentially could reduce or defer project scope.	In Progress					
Eastern	Div_22 - Kingston	Growth	Pass		100778	King - Chesterville, Customer, Finch Reinforcement	2026	\$ 312,454	Issue/Concern/ Opportunity: The Chesterville, Finch and Customer System is primarily fed from the Winchester TBS 29301001. The pipeline run is approx. 40KM and services residential houses and commercial scale farms that have installed or are currently looking to install crop dryers. This reinforcement is required to add additional capacity to the system and maintain healthy system pressures. This area has seen significant agricultural growth which has resulted in the system falling below minimum pressures. There have been a couple low pressure calls from the customers at the end of the system. Distribution Optimization Engineering have halted future main extensions and commercial attachments. If this reinforcement is not done, we would be unable to attach future customers. Asset: 40KM of NPS 4 Steel pipe Related programs: N/A	Completed	Fail	Timing - Market based supply side alternatives not applicable						
Eastern	Div_22 - Kingston	Growth	Pass		30521	SRP_LUG East_Winchester_2930100 85TN_Rebuild	2024	\$ 197,433	Station upgrades are required for additional capacity.	Completed	Pass	Low cost, low value	Planned					
Eastern	Div_22 - Kingston	Customer Connections	Pass		500423	741680	2023	\$ 73,156,158	Kingston Customer Connections Program Items	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.						
Eastern	Div_22 - Kingston	Growth	Pass		501482	SRP_LUG East_Odesa_284050015T N_Rebuild	2026	\$ 623,712	Issue/Concern/Opportunity: Full rebuild is required as station becomes under capacity during fall peaking with the addition of new customer. The customer cannot come online unless station is rebuilt. Station is also aging and there are concerns regarding its integrity. Assets: Odessa TBS (28405001) Related Program: N/A	In Progress								
Eastern	Div_22 - Kingston	Growth	Pass		734081	King: 22-22-507 Second Street East - Tie NPS4 1210kPa Main Together	2025	\$ 183,550	Issue/Concern/Opportunity: SRPR 213 2022_002 - Identified by Distribution Optimization Engineering (DOE) in June 2021. Two sections of NPS4 1,210 kPa main on Second Street at approximately #3306 are not tied together, both ends are capped off. A records research of Union and Centra Gas confirms that this section of main was broken in 1981 when linestoppers were installed and caps were welded on. Asset: Two sections of NPS4 1,210 kPa main on Second Street at approximately #330 Related Program: N/A	Completed	Fail	Potential project scope could be replaced with NPS 2. It is recommended to maintain pipe size for trunk mains or system resiliency. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.						
Eastern	Div_22 - Kingston	Growth	Pass		734705	King: Madoc Lateral MOP Upgrade (Belleville North)	2030	\$ 2,311,292	Issue/Concern/Opportunity: Complete a Maximum Operating Pressure (MOP) upgrade on the Madoc Lateral and mitigate service line clearance and Property Line Post Regulator Sets (PLPRS) issues. Assets: Madoc Lateral Related Program: N/A	In Progress								

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Eastern	Div_22 - Kingston	Growth	Pass		48497	King - 22-20-709 McConnell Ave & Tollgate Rd PRS	2025	\$ 347,324	Issue/Concern/Opportunity: System Reinforcement is required; the existing Post Regulation Station (PRS) is undersized. Growth requires a rebuild but a relocate should be considered at the same time as this intersection will be getting widened soon. The existing station will eventually end up in a turning lane. Asset: not available Related Program: N/A	Completed	Pass	Low cost, low value	Planned					
Eastern	Div_22 - Kingston	Utilization	Pass		48483	KING- Meter & Regulator Inst Repl-Company*	2023	\$ 29,167,748	Meter & Reg Install- Replacement	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Distribution Pipe	Fail	Dollar threshold	4662	Replacement Blanket - Area 30	2023	\$ 553,396										
GTA East	30 - Richmond Hill	Distribution Pipe	Fail	Dollar threshold	30176	Yonge St 2 - GTA East - Area 30 - 1707	2029	\$ 1,544,502										
GTA East	30 - Richmond Hill	Distribution Pipe	Fail	Dollar threshold	103419	30- VSM - Major Mackenzie, Sussex To Newkirk, Replacement	2024	\$ 1,741,896										
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		4668	Anode Blanket - Area 30*	2023	\$ 2,021,443	General Description: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within the EGI system. These installations and replacements are based on the Corrosion Operating Standard established to maintain the appropriate level of cathodic protection on steel pipeline assets.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		4764	AMP Fitting Replacement - Area 30*	2023	\$ 45,774,653	AMP Fittings are a below grade transition fittings. The inserted portion of copper tubing can fail due to internal corrosion. In these cases leaks develop immediately downstream of the AMP Fitting.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		7666	VSM - Major Mackenzie and Yonge	2023	\$ -	Replacement of 287 m of NPS 6 steel main on Major Mackenzie from Newkirk Rd. to Cedar Ave. including the CN crossing.	Completed	Fail	N/A - Investment Cancelled	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		13606	Service Relay Blanket - Area 30*	2023	\$ 20,362,862	General: A distribution service refers to the pipe between the distribution main and the customer's meter set. Over the years, different materials have been used for this asset, including steel, copper, and varying resins of plastic, each with unique characteristics that contribute to their performance over time. Services can be repaired or replaced depending on asset condition and the nature of the issue exhibited. Generally, replacement is the preferred approach to mitigate unacceptable asset condition.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		30162	Ashlar Rd - GTA East - Area 30 - 1841	2028	\$ 3,092,271	Ashlar Rd. - GTA East - Area 30 - 1489 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		30163	Axminster Dr - GTA East - Area 30 - 1842	2027	\$ 4,305,782	Axminster Dr. - GTA East - Area 30 - 1490 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		30164	Church St South_2 - GTA East - Area 30 - 1382	2032	\$ 7,911,305	Church St. South 2 - GTA East - Area 30 - 1382 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		30166	Dunning Ave. - GTA East - Area 30 - 1710	2032	\$ 2,508,517	Dunning Ave. - GTA East - Area 30 - 1710 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		30167	Elgin Mills Rd E - GTA East - Area 30 - 1351	2030	\$ 7,830,618	Elgin Mills Rd. E. - GTA East - Area 30 - 1351 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		30168	Paliser Cres S - GTA East - Area 30 - 1389	2030	\$ 3,598,865	Paliser Cres. S. - GTA East - Area 30 - 1389 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		30169	Ruggles Ave - GTA East - Area 30 - 1706	2028	\$ 3,038,426	Ruggles Ave. - GTA East - Area 30 - 1706 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: This was updated based on regional feedback (Ruggles Ave. - 1706).	Completed	Fail	NPS 2, cannot downsize or retire	-	-	-	-	-	-

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GTA East	30 - Richmond Hill	Distribution Stations	Fail	Dollar threshold	735173	3256AA - MILL RD & KING SIDEROAD DISTRICT	2024	\$ 335,397										
GTA East	30 - Richmond Hill	Distribution Stations	Fail	Dollar threshold	735300	31335A GILBERT& YONGE DISTRICT (AURO)	2025	\$ 7,574										
GTA East	30 - Richmond Hill	Distribution Stations	Fail	Dollar threshold	735301	33300A ISLINGTON & HWY # 407 HP DIST	2025	\$ 7,574										
GTA East	30 - Richmond Hill	Distribution Stations	Fail	Dollar threshold	735302	33525A Bathurst & Rutherford hp-ip	2024	\$ 259,422										
GTA East	30 - Richmond Hill	Distribution Stations	Fail	Dollar threshold	735303	35053A Dufferin Langstaff (langstaff & 407)	2025	\$ 6,403										
GTA East	30 - Richmond Hill	Distribution Stations	Fail	Dollar threshold	735309	50356A COUNTY RD #55 HWY #9 DISTRICT (NEW TECLUSETH)	2023	\$ -										
GTA East	30 - Richmond Hill	Distribution Stations	Pass		1011	SCHOMBERG GATE	2024	\$ 77,497	<p>Schomberg Gate Station is located on EGI-owned property of approximately 1,250 m2 fenced compound in the Township of King, Ontario, approximately 3 km from the town of Pottageville, within a rural/urban area, in close proximity to Kettleby. This station accepts natural gas from TC Energy and provides supply to two separate XHP networks, through components within the Measurement system, Pressure Control system, Heating system, Odourant system, and Telemetry system. This station supplies natural gas to approximately 23,501 customers in the King Region. The following issues have been identified at this station:</p> <p>Compliance: An engineering assessment of the site layout has identified a conflict with the location of the Telemetry or Boiler buildings with respect to the Electrical Safety Authority (ESA) Area Classification requirements which has identified that an ignition source is in close proximity to a potential leak source, as defined within the Electrical Codes and Standards.</p> <p>Measurement: The current system does not provide measurement of the individual outlet supplies. Visibility to each outlet supply provides greater redundancy to the existing measurement and improved response capabilities.</p> <p>Valve & Piping: The existing valves at this site have experienced issues in performance and operation of the valves. Maintenance has been performed to attempt to remediate the valves; however, the valves have deteriorated to the point where the reliability is no longer acceptable.</p> <p>Heating: The existing boilers at this site have experienced trouble call/failures over the recent years, including failures of the motors and pumps, burner lock-outs and exchanger failures. Due to recent and upcoming customer growth in the King area, the existing heating system will not be capable of supplying the heating requirements to meet the demand.</p> <p>Pressure Control: The Regulation system is undersized and not capable of supplying the demand required to meet the customer growth in the King area. The configuration of the existing regulators is double boot, posing an undesired higher risk and high associated ongoing maintenance costs.</p> <p>Telemetry & Electrical: The existing electrical system does not meet current EGI electrical installation standards. This poses a potential electrical hazard and faulty wiring may result in lost communications.</p> <p>Additional Scope: Replacement of 24 m NPS 6 road crossing NW 2103 is required in order to ensure the pipeline does not exceed the required %SMYS to be designated an Integrity Management Program (IMP) main and require retrofit and inspection. The deadline of this replacement is June 11, 2024.</p>	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Distribution Stations	Pass		1013	MARKHAM GATE	2026	\$ -	<p>Markham Gate Station</p> <p>Pipe, Valves & Others: Updated Mechanical Piping is required for this station. The existing valves at this site have experienced issues in performance and operation of the valves. Maintenance has been performed to attempt to remediate the valves, however, the valves have deteriorated to the point where the reliability is no longer acceptable</p> <p>Heating System: Updated heating is required at this station. New Heat Exchanger is required including the associated piping for the glycol inlet and outlet to heating element. New boiler building will be procured as the existing building is within the ESA classification.</p> <p>Pressure Control: Not Required</p> <p>Odorant System: New Odorant system is required. This would include a new Odorant building including tank (Assume 500G – Enbridge standard). New Odorant cabinet including 2 new pumps and associated tubing from the tank equipment to cabinet. New sight glass for injection point is required. New odorant building to be outfitting with new electrical distribution and internal/external lighting. Galvanized building stairs to be accounted for.</p> <p>Telemetry/Electrical: New Control Wave Micro unit required and associated connections. Account for 1 new pressure transmitter and 1 new temperature transmitter. The telemetry and electrical systems do not meet current EGI standards, do not contain backup power supply in the event of power loss, and are approaching end of useful life. The existing RTU is obsolete and is required to be upgraded to current standards along with new communications equipment in order to eliminate cyber security threats. New Telemetry building will be required to be installed in new compliance location.</p> <p>Measurement: No information provided.</p> <p>Building: New Odorant Building required (See Odorant Scope for details). Additionally, new boiler building will need to be procured. An engineering assessment of the site layout has identified a conflict with the location of the telemetry or boiler Buildings with respect to the ESA Area Classification</p> <p>Compliance/Civil: Minor Site Grading will be required and new crash bar access and 2 sides of site.</p>	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Distribution Stations	Pass		1148	BATHURST GATE	2026	\$ -	<p>The regulators are heavy and maintenance is difficult in the current arrangement, a lifting device is needed for ergonomic reasons. The current heating system consists of condensing boilers that have condensate which will require mitigation. A conversion to noncondensing boilers is required and during the conversion three-way valves and associated piping (6,000 by Stations Op) will be added. The front gate experiences flooding and teh grade by the gate needs to be raised because water pools at the main gate.</p>	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Distribution Stations	Pass		3614	BOND HEAD GATE	2026	\$ -	<p>Bond Head Gate Station is located on EGI-owned property of approximately 1,900 m2 fenced compound in the village of Bond Head, Ontario, approximately 8.5 km west of Bradford Ontario, within a rural area, in close proximity to several homes. This station accepts natural gas from TC Energy and provides supply to two separate XHP networks and one IP network, through components within the measurement system, pressure control system, heating system, odourant system, and telemetry system. This station supplies natural gas to approximately 60,000 customers in the Alliston, Orangeville, Bradford, and northern York Region. The following issues have been identified at this station:</p> <p>Compliance: An engineering assessment of the site layout has identified a conflict with the location of the Telemetry or Boiler buildings with respect to the Electrical Safety Authority (ESA) Area Classification requirements which has identified that an ignition source is in close proximity to a potential leak source, as defined within the Electrical Codes and Standards.</p> <p>Valves & Piping: The existing valves at this site have experienced issues in performance and operation of the valves. Maintenance has been performed to attempt to remediate the valves; however, the valves have deteriorated to the point where the reliability is no longer acceptable.</p> <p>Measurement: The current Turbine meter does not provide measurement of the individual outlet supplies. Visibility to each outlet supply provides greater redundancy to the existing measurement and improved response capabilities. As well, failures have been experienced over the past year including complete meter failure and jamming. Station has a backup orifice plate meter, which has experienced several alarms.</p> <p>Heating: The existing boilers at this site are approaching 20 years old, they have had 10 trouble call/failures over the recent years, including failures of the motors and pumps, burner lock-outs and exchanger failures. Due to recent and upcoming customer growth in the Bradford/York Region area, the existing heating system will not be capable of supplying the heating requirements to meet the demand.</p> <p>Pressure Control: The regulation system is undersized and not capable of supplying the demand required to meet the customer growth in the Bradford/York Region area. The configuration of the existing regulators are double boot, posing an undesired higher risk and high associated ongoing maintenance costs.</p> <p>Odourization: The odourant system was installed in 2003. The current configuration of the odourant system does not ensure adequate containment of the odourant product in the event of a leak and does not meet the current engineering standards and approvals.</p> <p>Telemetry & Electrical: The existing electrical system does not meet current EGI electrical installation standards, the existing Telemetry building is in poor condition beyond repair. This poses a potential electrical hazard and faulty wiring may result in lost communications. The existing generator and backup supply systems have reached end of life.</p>	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered		
GTA East	30 - Richmond Hill	Distribution Stations	Pass		3624	VICTORIA SQUARE GATE	2024	\$	<p>Pipe, Valves and Others: Current actuators on the inlet, outlet and heat exchanger valves need to be commissioned and programmed for remote control by Gas Control in the Remoter Terminal Unit (RTU). The RTU will have to be upgraded to accommodate the additional input/output (I/O) as its current capacity is full. NPS 8 Becker control valve was replaced in 2016. Fuel gas supply and meter set will be required to replace outdated station.</p> <p>Measurement: The existing Measurement system is scheduled for upgrade in 2019 and it is expected that this work will be sufficient for operation in 2024. No upgrade to the Measurement system is included in this business case.</p> <p>Heating System: Existing Heating system is not in compliance with the Area Classification and will require boiler building relocation. The boilers have recently been replaced and should continue to operate. The boiler building is location in a classified area and will have to be moved and/or remediated. Exhaust fans may resolve the issue but this will be determined in detailed engineering. Heat exchangers were recently inspected (2015/2016) and will not require replacement.</p> <p>Pressure Control: Low flow regulator run was added in 2017. No additional work is required on the regulation runs.</p> <p>Odourant: Install a new Odourant building as the current metallic odourant building is without adequate containment. This building rusts, leaks in rain and spill response is hampered due to difficulty wrapping the building. The tank has bottom connections to feed the injection pumps. Odourant pumps are also in a different building and will be located appropriately in the same building as the 3,500 gallon odourant tank. This tank will have to be upzised.</p> <p>Telemetry/Electrical: RTU replacement is required from an old Bristol 3330 to a new control wave RTU. RTU upgrade is required as the current design has no available expansion capacity to accommodate new actuator, measurement inputs, additional methane and CO sensing. This will require a new RTU building. Electrical Safety Authority (ESA) compliance issues will be resolved by relocating electrical equipment. Upgrades to station wiring will be required to allow for new instrumentation. The electrical service will be upgraded to accommodate the new station loads. A new station grounding network, updated anti-climb tower, and updated instrumentation will be installed to meet current standards. A generator (installed 1999) and UPS system will be installed for backup power requirements in the event of a power outage. A new modem and firewall, improved station lighting, odourant tank instruments, and a weather station will be installed to meet current standards. Electrical upgrades are required.</p>	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Distribution Stations	Pass		7753	NOBLETON GATE	2024	\$ 75,744	<p>Issue/Concern: Nobleton Gate Station is located on a fenced, EGI-owned property of approximately 1,000 m2 in the City of Vaughan, Ontario, approximately 3 km from the Town of Nobleton, within a rural area. This station accepts natural gas from TC Energy and provides supply to an XHP network, with a Measurement system, Pressure Control system, Heating system, Odourant system, and a Telemetry and Controls system. This station supplies natural gas to approximately 1,800 customers in the Bolton and King City areas. The following issues have been identified at this station:</p> <p>Compliance: An engineering assessment of the site layout has identified a conflict with the location of the Telemetry and Boiler buildings with respect to the Electrical Safety Authority (ESA) area classification requirements, which have identified that an ignition source is in close proximity to a potential leak source, as defined within the Electrical Codes and Standards. Additional property will be required to remediate the area classification issue.</p> <p>Measurement: Gas measurement is completed using a turbine meter installed in 2004. This meter type has experienced failures causing potential downstream impacts and loss of service to customers. This meter has experienced six failures in the past two years, due to leaks and faulty measurement. A new mass flow meter will be installed to replace the turbine meter and a backup outlet Annubar meter will also be installed.</p> <p>Heating: The existing boilers at this site are 14 years old. They have had three trouble call/failures over the past year including failures of the motors and pumps, burner lock-outs and exchanger failures. The boilers, building, and glycol piping require replacement as they will be 20 years old by the target rebuild date. The heat exchanger is not expected to be replaced but inspection is to be included.</p> <p>Pressure Control: The regulators are the original regulators installed when the station was first commissioned. In 2001, a building was installed over them to improve maintenance and operation. The regulators have experienced 29 trouble calls/failures in the time period including leaks, boot failures, and pilot failures. Both monitor and operator runs are boot-style regulators, which poses an undesired higher risk and high associated ongoing maintenance costs.</p> <p>Odourization: The odourant system was installed in 2004 with the injection system installed in 2009. The current configuration of the odourant system does not ensure adequate containment of the odourant product in the event of a leak and does not meet the current engineering standards and approvals. The panel will have to be relocated into a new building with a larger new tank. Upgrade of odourant system (condition of containment and unsafe grating in the building for access) is to be included in refreshed scope – 500 GAL odourant system. A new Odourant building is required including new concrete foundation. Building is to be equipped with all electrical requirements. Building is to be equipped with new steel platform for Operations and Maintenance (O&M) activities including delivery. New sight, glass radar gauge equipment must be provided. Scope is to account for decommissioning and commissioning of the new odourant system.</p>	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	-	
GTA East	30 - Richmond Hill	Distribution Stations	Pass		7769	KEELE AND STEELES/CNR FEEDER	2023	\$	<p>Keele and Steeles/CNR Feeder Station is located on 3,000 m2 compound in the city of Vaughan, Ontario, approximately 1.5 km from York University, within an urban area in close proximity to CNR Railway Corridor. This station accepts natural gas from EGI XHP pipeline and provides supply to three separate XHP networks and an HP network, through components within the Pressure Control system, Heating system, Odourant system, and Telemetry system. This station supplies natural gas to approximately 20,000 customers in Vaughan and Toronto area. The following issues have been identified at this station:</p> <p>Valve & Piping: the existing valves at this site have experienced 10 failures and leak issues in performance and operation of the valves. Maintenance has been performed to attempt to remediate the valves; however, the valves have deteriorated to the point where the reliability is no longer acceptable.</p> <p>Pressure Control: The configuration of the existing regulators was installed in 1990 and is double boot, posing an undesired higher risk and high associated ongoing maintenance costs. The existing regulators have reached end of life.</p> <p>Telemetry & Electrical: The Telemetry and Electrical systems do not meet current EGI standards, do not contain backup power supply in the event of power loss, and are approaching end of useful life. The existing Remote Terminal Unit (RTU) is obsolete and is required to be upgraded to current standards along with new communications equipment in order to eliminate cybersecurity threats.</p>	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-		
GTA East	30 - Richmond Hill	Distribution Stations	Pass		7778	WOODBINE & CNR FEEDER	2026	\$	<p>Pipe, Valves & Others: Not required.</p> <p>Heating System: Not required.</p> <p>Pressure Control: Not required.</p> <p>Odourant System: A new Odourant system is required. This would include a new Odourant building including tank (assume 500 G – EGI standard). A new Odourant cabinet including two new pumps and associated tubing from the tank equipment to cabinet is required. A new sight glass for injection point is required. New Odourant building is to be outfitted with new electrical distribution and internal/external lighting. Galvanized building stairs are to be accounted for.</p> <p>Telemetry/Electrical: New Control Wave Micro unit and associated connections are required. One new pressure transmitter and one new temperature transmitter are to be accounted for. The Telemetry and Electrical systems do not meet current EGI standards, do not contain backup power supply in the event of power loss, and are approaching end of useful life. The existing Remote Terminal Unit (RTU) is obsolete and is required to be upgraded to current standards along with new communications equipment in order to eliminate cybersecurity threats.</p> <p>Measurement: Not required.</p> <p>Building: New Odourant building is required</p> <p>Compliance/Civil: Minor site grading, new crash bar access and two sides of site will be required.</p>	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-		
GTA East	30 - Richmond Hill	Distribution Stations	Pass		8567	St. John's Sideroad Feeder Station Relocation	2023	\$ 11,966,881	<p>Issue/Concern: The property on which St. John's Sideroad Feeder Station currently sits is insufficient for operation. It is located adjacent to a residential property and the area classification extends onto the adjacent private property. The Boiler building is located in a hazardous area classification and the non-compliance needs to be remedied. Road widening of St. John's Sideroad currently has the sidewalk encroaching on our station. A land sale agreement with York Region was completed in 2016 and requires movement of the electrical meter.</p> <p>As the area classification issue risks shutdown of the station by the Electrical Safety Authority, EGI is planning to resolve the movement of the electrical meter (on site) pending a new land purchase for relocation of the entire station. As a result of station relocation, a complete rebuild will be required. Maintenance on the Boiler system piping, pumps and gauges, which are old and obsolete, suggest that the Heating system needs to be replaced regardless of station relocation. The Heating system is already undersized for the current demand. The FL regulators are difficult to work on due to their weight and ergonomic restrictions in a cramped building. These are to be replaced and upgraded. The old Remote Terminal Unit (RTU) 3330 Telemetry system needs to be upgraded, including the backup power generator which is old and obsolete. The station was updated in 2006 and a new generator and boilers were installed in 2003. Source records do not indicate any regulator capacity issue.</p> <p>Asset: Stn ID: 2944180</p> <p>Related Programs: Not applicable.</p>	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-		

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
GTA East	30 - Richmond Hill	Customer Connections	Pass		3736	Area 30 - Industrial - New Construction*	2023	\$ 1,517,831	Industrial New Construction- A customer intending to run an industrial manufacturing business in a newly-built facility and intending to use natural gas. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/Industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long term plans EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. Enbridge reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers and - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Growth	Pass		2522	Rodinea Road	2020	\$ 6,524	Issue/Concern/Opportunity: The HP network system needs reinforcement through this proposed piping connection. This project is to address system capacity loss due to a previous transit-related main abandonment in Area 10. Assets: install 223m of 8" steel HP gas main to connect mains at the east and the west side. HDD under the railroad. Related Program: N/A	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-	
GTA East	30 - Richmond Hill	Customer Connections	Pass		3731	Area 30 - Apartment Ensuite - New Construction*	2023	\$ 4,006,629	Issue/Concern: Vertical Subdivision refers to a multiple unit residential building where each suite is individually metered. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/Industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	
GTA East	30 - Richmond Hill	Customer Connections	Pass		3735	Area 30 - Commercial - New Construction*	2023	\$ 39,121,762	Issue/Concern: Commercial New Construction refers to a customer intending to run a commercial business in a newly-constructed building and intending to using natural gas to meet energy needs. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/Industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	
GTA East	30 - Richmond Hill	Customer Connections	Pass		3738	Area 30 - Residential - New Construction*	2023	\$ 81,705,210	Issue/Concern: Residential New Construction refers to a new residential construction development of detached single homes constructed by the builder for domestic purposes. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/Industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	
GTA East	30 - Richmond Hill	Customer Connections	Pass		3739	Area 30 - Residential - Replacement*	2023	\$ 39,489,691	Issue/Concern: Residential Replacement refers to a residential replacement customer using a fuel other than natural gas for domestic purposes and is converting to natural gas. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/Industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032		Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)											
GTA East	30 - Richmond Hill	Growth	Pass		736389	A30: Interchange Way Reinf	2024	\$	654,056	Issue/Concern/Opportunity: There is future growth in the area from addition of condo towers and some commercial work. Justification: Existing NPS 4 Steel (ST) High Pressure (HP) gas main will need to be upsized to NPS 12 ST HP to support future load on system. Assets: N/A Related Investments: N/A	In Progress								
GTA East	30 - Richmond Hill	Growth	Pass		736532	NW 3723 Jane St. Reinforcement SRP	2025	\$	905,264	Issue/Concern/Opportunity: Install 1,280 m of NPS 4 PE Intermediate Pressure (IP) along Jane St. from King Rd., tying into NPS 2 main at Westgate Blvd. System pressures were projected to fall below minimum system pressures in 2022. Station 3577117 will need to be upsized due to station drooping and reaching capacity. Assets: Pipe and district station Related Program: Not applicable	In Progress								
GTA East	30 - Richmond Hill	Utilization	Pass		13545	MXGI Area 30*	2023	\$	44,977,409	Meters: Meters are used to determine the gas consumption input of customer billing. The replacement program for meters is mandated by Measurement Canada. The program includes: testing, repair, and replacement requirements of meters and instruments. All verified meters are approved by Measurement Canada with an issuance of a certificate which identifies that the meter complies with Electricity and Gas Specification S-EG-02. The Company must ensure all measurement devices remain in compliance for annual audits by Measurement Canada. Measurement Canada specifies tolerances under which the meter must operate in the field. The Company must demonstrate that all aspects of its meter sampling, maintenance, and replacement comply with these criteria in order to be accredited by Measurement Canada to be an "Authorized Service Provider" and adhere to Measurement Canada's accreditation standard S-A-01. Meters may also require exchange for issues such as: damages, leaks, customer billing issues. Regulation: Regulators are the last line of defense for over-pressure to the customer. The condition of regulation systems is determined by regulator performance, corrosion of piping and regulators, and adherence to installation specifications. Failure of the regulation system can cause pressured gas to enter the premise, resulting in failure of gas equipment, loss of containment, and potentially fire or explosion.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
GTA East	30 - Richmond Hill	Utilization	Pass		503324	LEG: AMI Pilot Project	2023	\$	3,229,028	AMI Pilot Project Purpose & Need The AMI initiative is a key piece required to successfully test AMI & AMR functionality The AMI pilot is a proof of concept that will ensure when a large scale program is launched the greatest benefits will be gained. The Markham piece of the pilot will include approximately 3500 customers, each customer will have a new ultrasonic meter installed The new meters increase efficiency, reduce costs, provide extra safety features, and give real time consumption data to help model the distribution network, provide DSM opportunities, and assist with maintenance scheduling Some of the benefits of the new advanced system: Two way communication , Real time consumption, Increased meter data – example: pressure sensors, methane detectors, and shut off capabilities Key components required for a successful pilot: Communications / Accuracy / Functionality / Reporting / Reliability / Safety / Cyber Security Timing The pilot project will be rolled out in 2022 The pilot project will operate in 2022 and 2023 Any barriers/issues will be solved during the operational period	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
GTA East	40 - Whitby	Distribution	Fail	Dollar threshold	4663	Replacement Blanket - Area 40	2023	\$	767,604										
GTA East	40 - Whitby	Distribution	Fail	Dollar threshold	13607	Service Relay Blanket - Area 40*	2023	\$	15,527,501										
GTA East	40 - Whitby	Distribution	Fail	Dollar threshold	14147	Copper Service Replacement - Area 40*	2023	\$	539,920										
GTA East	40 - Whitby	Distribution	Fail	Dollar threshold	30183	Howard Ave 1 - Kawartha Lakes - Area 40 - 1692	2028	\$	982,772										
GTA East	40 - Whitby	Distribution	Fail	Dollar threshold	30184	Howard Ave 2 - Kawartha Lakes - Area 40 - 1694	2031	\$	1,814,744										
GTA East	40 - Whitby	Distribution	Fail	Dollar threshold	30189	Prospect St-Bowmanville-1086	2030	\$	1,416,806										
GTA East	40 - Whitby	Distribution	Fail	Dollar threshold	30190	Regent St - Kawartha Lakes - Area 40 - 1697	2028	\$	882,542										
GTA East	40 - Whitby	Distribution	Fail	Dollar threshold	100470	Bannerman Crt. and Nordic Crt, Whitby	2026	\$	-										
GTA East	40 - Whitby	Distribution	Fail	Dollar threshold	102671	Campbellford Replacement Phase 3 Front St	2024	\$	655,431										
GTA East	40 - Whitby	Distribution	Fail	Dollar threshold	102672	Campbellford Replacement Phase 4 Kent St	2026	\$	128,056										
GTA East	40 - Whitby	Distribution	Fail	Dollar threshold	102673	Campbellford Replacement Phase 5 Pellissier St & Bridge St	2028	\$	-										
GTA East	40 - Whitby	Distribution	Pass		4669	Anode Blanket - Area 40*	2023	\$	2,352,563	General Description: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within the EGI system. These installations and replacements are based on the Corrosion Operating Standard established to maintain the appropriate level of cathodic protection on steel pipeline assets.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
GTA East	40 - Whitby	Distribution	Pass		4766	AMP Fitting Replacement - Area 40*	2023	\$	26,029,722	AMP Fittings are a below grade transition fittings. The inserted portion of copper tubing can fail due to internal corrosion. In these cases leaks develop immediately downstream of the AMP Fitting.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
GTA East	40 - Whitby	Distribution	Pass		30178	Caddy St - Peterborough-1179	2032	\$	4,130,536	Caddy St. - Peterborough - 1179 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. It is recommended to maintain pipe size for trunk mains or system resiliency. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
GTA East	40 - Whitby	Distribution	Pass		30179	Christena Cres 1 - Ajax - Area 40 - 1702	2030	\$	3,298,868	Christena Cres. 1 - Ajax - Area 40 - 1702 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Scope is to be broken up into two investments given the large scope and potential conservation concerns and close proximity to MTO right-of-way (ROW). Project will be adjusted based on regional comments (Christena Cres. 1 - 1702 and Christena Cres. 2 - 1704).	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032		Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered	
								Forecast (Includes Overhead)												
GTA East	40 - Whitby	Distribution Pipe	Pass		30181	Durham St W - Kawartha Lakes - Area 40 - 1687	2031	\$	5,199,316	Durham St. W. - Kawartha Lakes - Area 40 - 1687 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
GTA East	40 - Whitby	Distribution Pipe	Pass		30182	Euclid Ave-Peterborough-1106	2030	\$	4,140,683	Euclid Ave. - Peterborough - 1106 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. It is recommended to maintain pipe size for trunk mains or system resiliency. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.							
GTA East	40 - Whitby	Distribution Pipe	Pass		30186	Poplar Ave 1 - Ajax - Area 40 - 1680	2032	\$	4,921,807	Poplar Ave. 1 - Ajax - Area 40 - 1680 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: This scope could be broken up into two projects given the conservation authority impacts - project adjusted based on region's comments (Poplar Ave 1 - 1680 and Poplar Ave 2 - 1681).	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
GTA East	40 - Whitby	Distribution Pipe	Pass		30187	Poplar Ave 2 - Ajax - Area 40 - 1681	2029	\$	2,343,386	Poplar Ave. 2 - Ajax - Area 40 - 1681 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: This scope could be broken up into two projects given the conservation authority impacts; project was adjusted based on region's comments (Poplar Ave. 1 - 1680 and Poplar Ave. 2 - 1681)	Completed	Fail	NPS 2, cannot downsize or retire							
GTA East	40 - Whitby	Distribution Pipe	Pass		30188	Prince St-Bowmanville-1846	2026	\$	2,623,200	Prince St. - Bowmanville - 1450 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
GTA East	40 - Whitby	Distribution Pipe	Pass		30192	Simcoe Street-40-Kawartha Lakes-1060	2029	\$	3,007,409	Simcoe Street - 40 - Kawartha Lakes - 1060 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	NPS 2, cannot downsize or retire							
GTA East	40 - Whitby	Distribution Pipe	Pass		30193	Tulloch Dr-Ajax-1594	2031	\$	4,318,598	Tulloch Dr. - Ajax - 1594 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.							
GTA East	40 - Whitby	Distribution Pipe	Pass		30194	Wellington St - Kawartha Lakes - Area 40 - 1678	2032	\$	4,580,175	Wellington St. - Kawartha Lakes - Area 40 - 1678 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
GTA East	40 - Whitby	Distribution Pipe	Pass		30196	Windsor Dr-Ajax-1193	2028	\$	2,168,093	Windsor Dr. - Ajax - 1193 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered	
GTA East	40 - Whitby	Distribution Stations	Pass		7749	BOWMANVILLE GATE	2026	\$ -	<p>Issue/Concern: Bowmanville Gate Station is located on fenced EGI-owned property of approximately 700 m² in Clarington, Ontario. It is approximately 5 km north of Newcastle Ontario, within a rural area. This station accepts natural gas from TC Energy and provides supply to two separate XHP networks, through a measurement system, pressure control system, gas pre-heat system, odourant injection system, and telemetry and controls system. This station supplies natural gas to approximately 61,000 customers in an area that spans from Bowmanville to Lindsay. The following issues have been identified at this station:</p> <p>Valves and Piping: The existing valves at this site have experienced issues in performance and operation of the valves. Maintenance has been performed to attempt to remediate the valves; however, the valves have deteriorated to the point where the reliability is no longer acceptable. The inlet piping to the heat exchanger shows signs of deterioration and should be replaced. The station is located close to Hwy 35/115 and its proximity to traffic puts it at a higher risk. The piping is to be relocated away from the road, as far as practical.</p> <p>Measurement: The current system does not provide measurement of the individual outlet supplies. Visibility to each outlet supply provides redundancy to the existing measurement, odourant injection reliability, and improved response capabilities. The turbine meter is to be replaced with a Coriolis meter.</p> <p>Heating: The existing boilers at this site are 18 years old, they have had 42 trouble call/failures over the life of the heating system, including failures of the motors and pumps, burner lock-outs and exchanger failures. The system, including buildings, will require replacement as it approaches end of life.</p> <p>Odourization: The odourant system was installed in 1999. The current configuration of the odourant system does not ensure adequate containment of the odourant product in the event of a leak and does not meet the current engineering standards and approvals. The building is an old-style, rusted metallic odourant building without adequate containment and a new building, tank, and Odourant Injection system will be required.</p> <p>Telemetry and Electrical: The existing Electrical system does not meet current EGI electrical installation standards. This poses a potential electrical hazard and faulty wiring may result in lost communications.</p> <p>Other: Odourant deliveries - a third-party company is used for traffic control during deliveries. Additional land, not included in this business case, may be identified under a separate business case for station expansion to improve safety during odourant deliveries off of Hwy 35/115.</p> <p>Asset: Bowmanville gate station assets.</p>	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	-
GTA East	40 - Whitby	Distribution Stations	Pass		7754	OSHAWA GATE	2024	\$ 32,290	<p>Oshawa Gate Station is located on EGI-owned property of approximately 1000 m² fenced compound in Oshawa, Ontario, approximately 2 km from town, within a rural/urban area, in close proximity to Taunton. This station accepts natural gas from TC Energy and provides supply to 1 XHP network, through components within the Measurement system, Pressure Control system, Heating system, Odourant system, and Telemetry system. This station supplies natural gas to approximately 190,000 customers in the Oshawa Region. The following issues have been identified at this station:</p> <p>Heating System: The existing boilers are undersized for current capacity.</p> <p>Measurement: The current system does not provide measurement of the individual outlet supplies. Visibility to each outlet supply provides greater redundancy to the existing measurement and improved response capabilities.</p> <p>Odourization: The Odourant system was installed in 2011. The current configuration of the Odourant system does not ensure adequate containment of the odourant product in the event of a leak and does not meet the current engineering standards and approvals.</p> <p>Telemetry & Electrical: The existing Electrical system does not meet current EGI electrical installation standards. This poses a potential electrical hazard and faulty wiring may result in lost communications.</p>	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	
GTA East	40 - Whitby	Distribution Stations	Pass		7766	DURHAM 23 FEEDER	2024	\$ 1,168,346	<p>Durham Road 23 Feeder Station is located on EGI-owned property of approximately 150 m² fenced compound in the Township of Whitby, Ontario, approximately 3 km east of Ajax, Ontario, within a rural area in proximity to commercial establishments. This station accepts natural gas from EGI XHP and provides supply to an HP network, through components within the Pressure Control system, Heating system, and Telemetry system. This station supplies natural gas to approximately 35,000 customers in Ajax and Whitby areas. The following issues have been identified at this station:</p> <p>Heating: The existing controls on the Heating system have become obsolete, parts are no longer available, and the system is failing to maintain adequate heating requirements.</p> <p>Telemetry & Electrical: The Telemetry and Electrical systems do not meet current EGI standards and are approaching end of useful life. The existing Remoter Terminal Unit (RTU) is obsolete and is required to be upgraded to current standards along with new communications equipment in order to eliminate cybersecurity threats.</p>	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	
GTA East	40 - Whitby	Customer Connections	Pass		3740	Area 40 - Apartment Ensite - New Construction*	2023	\$ 844,539	<p>Vertical Subdivision - A multiple unit residential building where each suite is individually metered. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGD develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long term plans EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. Enbridge reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers; and, - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing Assets: Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth</p>	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-	
GTA East	40 - Whitby	Customer Connections	Pass		3744	Area 40 - Commercial - New Construction*	2023	\$ 41,281,185	<p>Issue/Concern: Commercial New Construction refers to a customer intending to run a commercial business in a newly-constructed building and intending to using natural gas to meet energy needs</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-	

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
GTA East	40-Whitby	Customer Connections	Pass		3747	Area 40 - Residential - New Construction*	2023	\$ 59,315,747	<p>Issue/Concern: Residential New Construction refers to a new residential construction development of detached single homes constructed by the builder for domestic purposes.</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-
GTA East	40-Whitby	Customer Connections	Pass		3748	Area 40 - Residential - Replacement*	2023	\$ 57,353,144	<p>Issue/Concern: Residential Replacement refers to a residential replacement customer using a fuel other than natural gas for domestic purposes and is converting to natural gas.</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	
GTA East	40-Whitby	Growth	Pass		736524	NW 4793 Carnwith Dr. Brooklin Reinforcement SRP	2024	\$ 369,854	<p>Issue/Concern/Opportunity: Pipe reinforcement of 520 m of NPS 4 PE along Carnwith Dr. W. is required due to system pressures below new minimum allowable system pressure.</p> <p>Assets: Pipe</p> <p>Related Investments: Not applicable</p>	Completed	Pass	CNG, ETEE - Potentially could defer project scope.	Planned					
Eastern	Div. 22 - Kingston	Growth	Pass		102520	King: 22-25-504 Tweed Reinforcement - McClellan and Pomeroy	2025	\$ -	<p>Issue/Concern/Opportunity: The southern end of the tweed system went below minimum pressure in 2020. Reinforcement is required to boost the pressures based on predicted growth as per Distribution Optimization Engineering.</p> <p>Assets : Connect 2-inch PE mains on McClellan ST and Pomeroy Ave. FID 517313684 ~150 m</p> <p>Related Program: N/A</p>	Completed	Pass	Low cost, low value	Planned					
GTA East	40-Whitby	Utilization	Pass		13546	MXGI Area 40*	2023	\$ 29,032,508	<p>Meters: Meters are used to determine the gas consumption input of customer billing. The replacement program for meters is mandated by Measurement Canada. The program includes: testing, repair, and replacement requirements of meters and instruments. All verified meters are approved by Measurement Canada with an issuance of a certificate which identifies that the meter complies with Electricity and Gas Specifications S-EG-02. The Company must ensure all measurement devices remain in compliance for annual audits by Measurement Canada. Measurement Canada specifies tolerances under which the meter must operate in the field. The Company must demonstrate that all aspects of its meter sampling, maintenance, and replacement comply with these criteria in order to be accredited by Measurement Canada to be an "Authorized Service Provider" and adhere to Measurement Canada's accreditation standard S-A-01. Meters may also require exchange for issues such as: damages, leaks, customer billing issues. Regulation: Regulators are the last line of defense for over-pressure to the customer. The condition of regulation systems is determined by regulator performance, corrosion of piping and regulators, and adherence to installation specifications. Failure of the regulation system can cause pressured gas to enter the premise, resulting in failure of gas equipment, loss of containment, and potentially fire or explosion.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
GTA West	20-Mississauga a	Distribution Pipe	Fail	Dollar threshold	1193	Erin Mills and Leanne Vital	2023	\$ 77,728										
GTA West	20-Mississauga a	Distribution Pipe	Fail	Dollar threshold	7655	VSM - Bromsgrove Header	2023	\$ -										
GTA West	20-Mississauga a	Distribution Pipe	Fail	Dollar threshold	7656	VSM - Bramalea and Balmoral Rd	2024	\$ 1,721,619										
GTA West	20-Mississauga a	Distribution Pipe	Fail	Dollar threshold	8236	1" ST - Archhill Crescent	2022	\$ 107,813										
GTA West	20-Mississauga a	Distribution Pipe	Fail	Dollar threshold	11127	Copper Service Replacement - Area 20*	2023	\$ 1,741,948										
GTA West	20-Mississauga a	Distribution Pipe	Fail	Dollar threshold	736516	3665 Flamework Replacement Copper Relay	2024	\$ 448,208										
GTA West	20-Mississauga a	Distribution Pipe	Fail	Emergent Safety	4661	Replacement Blanket - Area 20*	2023	\$ 4,671,867										
GTA West	20-Mississauga a	Distribution Pipe	Pass		4667	Anode Blanket - Area 20*	2023	\$ 3,310,740	<p>General Description: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within the EGI system. These installations and replacements are based on the Corrosion Operating Standard established to maintain the appropriate level of cathodic protection on steel pipeline assets.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
GTA West	20-Mississauga a	Distribution Pipe	Pass		4763	AMP Fitting Replacement - Area 20*	2023	\$ 80,010,610	<p>AMP Fittings are a below grade transition fittings. The inserted portion of copper tubing can fail due to internal corrosion. In these cases leaks develop immediately downstream of the AMP Fitting.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
GTA West	20-Mississauga a	Distribution Pipe	Pass		7660	VPM - Erin Township	2025	\$ 6,319,171	<p>Issue/Concern: There are site-specific concerns. It has been reported through a leak event that the vintage plastic pipe in Erin Township has experienced cracking due to the stony soil in this area. The Gas Technology Institute (GTI) study on Aldy A pipe has stated stress intensifier such as rock impingement could result in slow crack growth (SCG) in this type of plastic pipe.</p> <p>Assets: Vintage plastic pipe in Erin Township</p> <p>Related Programs: Pipe replacement vintage plastic</p>	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	-	-	-	-	-	

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032		Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)											
GTA West	20 - Mississauga	Distribution Pipe	Pass		13605	Service Relay Blanket - Area 20*	2023	\$	47,062,174	General: A distribution service refers to the pipe between the distribution main and the customer's meter set. Over the years, different materials have been used for this asset, including steel, copper, and varying resins of plastic, each with unique characteristics that contribute to their performance over time. Services can be repaired or replaced depending on asset condition and the nature of the issue exhibited. Generally, replacement is the preferred approach to mitigate unacceptable asset condition.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
GTA West	20 - Mississauga	Distribution Pipe	Pass		30114	Broadway_GTA West_Area 20_1249	2032	\$	3,902,959	Broadway - GTA West - Area 20 - 1249 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	-	-	-	-	-	-
GTA West	20 - Mississauga	Distribution Pipe	Pass		30115	Clarkson Rd 1 - GTA West - Area 20 - 1665	2029	\$	4,077,527	Clarkson Rd. 1 - GTA West - Area 20 - 1665 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Two projects were created based on regional comments (Clarkson Rd. 1 - 1665 and Clarkson Rd. 2 - 1666).	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	-	-	-	-	-	-
GTA West	20 - Mississauga	Distribution Pipe	Pass		30117	Elizabeth St 5 1 - GTA West - Area 20 - 1667	2028	\$	2,823,557	Elizabeth St. 5. 1 - GTA West - Area 20 -1667 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Two projects were created based on regional comments (Elizabeth St. 5. 1 – 1667 and Elizabeth St. 5. 2 - 1668).	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	-	-	-	-	-	-
GTA West	20 - Mississauga	Distribution Pipe	Pass		30118	Elizabeth St 5 2 - GTA West - Area 20 - 1668	2032	\$	3,803,861	Elizabeth St. 5. 2 - GTA West - Area 20 - 1668 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Two projects were created based on regional comments (Elizabeth St. 5. 1 – 1667 and Elizabeth St. 5. 2 - 1668)	Completed	Fail	Potential project scope could be replaced with NPS 2. It is recommended to maintain pipe size for trunk mains or system resiliency. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
GTA West	20 - Mississauga	Distribution Pipe	Pass		30120	Gordon St_GTA West_Area 20_1227	2028	\$	2,443,548	Gordon St_GTA West - Area 20 - 1227 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	NPS 2, cannot downsize or retire	-	-	-	-	-	-
GTA West	20 - Mississauga	Distribution Pipe	Pass		30121	Haggert Ave_GTA West_Area 20_1477	2028	\$	4,147,335	Haggert Ave. - GTA West - Area 20 - 1477 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. It is recommended to maintain pipe size for trunk mains or system resiliency. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
GTA West	20 - Mississauga	Distribution Pipe	Pass		30122	Joymar Dr 1 - GTA West - Area 20 - 1670	2029	\$	3,063,282	Joymar Dr. 1 (execute 2024 - road rehabilitation work planned for 2024) - GTA West - Area 20 - 1670 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Created two projects based on regional comments (Joyman Dr. 1 - 1670 and Joyman Dr. 2 - 1671).	Completed	Fail	NPS 2, cannot downsize or retire	-	-	-	-	-	-
GTA West	20 - Mississauga	Distribution Pipe	Pass		30123	Joymar Dr 2 - GTA West - Area 20 - 1671	2029	\$	3,328,233	Joymar Dr. 2 - GTA West - Area 20 - 1671 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Two projects were created based on regional comments (Joyman Dr. 1 - 1670 and Joyman Dr. 2 - 1671).	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032		Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)											
GTA West	50 - Barrie	Distribution Pipe	Fail	Emergent Safety	4664	Replacement Blanket - Area 50	2023	\$	910,953										
GTA West	50 - Barrie	Distribution Pipe	Pass		4765	AMP Fitting Replacement - Area 50*	2023	\$	12,403,082	AMP Fittings are a below grade transition fittings. The inserted portion of copper tubing can fail due to internal corrosion. In these cases leaks develop immediately downstream of the AMP Fitting.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
GTA West	50 - Barrie	Distribution Pipe	Pass		30085	Ferris Ln - Area 50 - 1201	2030	\$	2,840,031	Ferris Ln - Area 50 - 1201 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA West	50 - Barrie	Distribution Pipe	Pass		30086	Jeffrey St - Area 50 - 1199	2031	\$	2,263,571	Jeffrey St. - Area 50 - 1199 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA West	50 - Barrie	Distribution Pipe	Pass		30088	Market St - Area 50 - 1221	2032	\$	3,149,274	Market St - Area 50 - 1221 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA West	50 - Barrie	Distribution Pipe	Pass		30089	Oak St 1 - Area 50 - 1654	2030	\$	2,221,154	Oak St. 1 - Area 50 - 1654 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Two projects were created based on regional comments (Oak St. 1 - Area 50 - 1654 and Oak St. 2 - Area 50 - 1655).	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA West	50 - Barrie	Distribution Pipe	Pass		30091	Pine St - Area 50 - 1205	2031	\$	2,967,251	Pine St. - Area 50 - 1205 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA West	50 - Barrie	Distribution Pipe	Pass		30092	Ross St - Area 50 - 1210	2030	\$	2,853,507	Ross St. - Area 50 - 1210 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA West	50 - Barrie	Distribution Pipe	Pass		30093	Second St - Area 50 - 1194	2032	\$	3,779,983	Second St. - Area 50 - 1194 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA West	50 - Barrie	Distribution Pipe	Pass		30094	St Paul St - Area 50 - 1220	2031	\$	2,538,570	St. Paul St. - Area 50 - 1220 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA West	50 - Barrie	Distribution Pipe	Pass		30097	Yonge St - Area 50 - 1206	2032	\$	3,219,568	Yonge St - Area 50 - 1206 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)										
GTA West	50 - Barrie	Distribution Pipe	Pass		30101	000715, NRP - Wellington B - 1604	2032	\$ 2,874,869	000715, NRP - Wellington B - 2031 - 2033 - 1604 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA West	50 - Barrie	Distribution Pipe	Pass		30105	Pr#58, NRP - High Street - Collingwood - 1653	2030	\$ 2,218,222	Pr#58, NRP - 2023 - High Street - Collingwood - 1653 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA West	50 - Barrie	Distribution Pipe	Pass		30110	Z1193, NRP - HNS Brock Park B - 1613	2027	\$ 1,993,878	Z1193, NRP - HNS Brock Park B, 2024 - 2025 - 1613 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA West	50 - Barrie	Distribution Pipe	Pass		30111	Z74, NRP - HNS Queens Park B - 1652	2029	\$ 2,447,113	Z74, NRP - HNS Queens Park B, 2023 - 2025 - 1652 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA West	50 - Barrie	Distribution Pipe	Pass		102423	Relocation Program - Area 50*	2023	\$ 33,775,884	General: Projects in the relocation category are capital expenditures required to replace or relocate segments of pipeline in order to accommodate municipal infrastructure work. The cost sharing for this work is managed through the Franchise Agreements established with municipalities. A consultative approach is used between the municipality and EGI to avoid conflicts with municipal infrastructure early in the planning stage. If a conflict is unavoidable, pipeline assets are typically relocated or replaced.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
GTA West	50 - Barrie	Distribution Stations	Fail	Dollar threshold	21104	Repeater Sites	2019	\$ -										
GTA West	50 - Barrie	Distribution Stations	Pass		7756	RUGBY GATE	2025	\$ 32,290	Rugby Gate Station is located on EGI-owned property of approximately 1,350 m2 fenced compound in the Township of Oro-Medonte, Ontario, approximately 7 km from Orillia, within a rural area. This station accepts natural gas from TC Energy and provides supply to an XHP network, through components within the Measurement system, Pressure Control system, Heating system, Odourant system, and Telemetry system. This station supplies natural gas to approximately 20,000 customers in the Coldwater, Midland area. The following issues have been identified at this station: Measurement: The current system does not provide measurement of the individual outlet supplies. Visibility to each outlet supply provides greater redundancy to the existing measurement and improved response capabilities. Valve & Piping: The existing piping within this station have been assessed to be in poor corrosion condition with identified degradation of the piping. HEATING: the existing boilers at this site are 16 years old, they have had 5 trouble call/failures over the past year including failures of the motors and pumps, burner lock-outs and exchanger failures. Due to recent and upcoming customer growth in the Barrie area, the existing Heating system will not be capable of supplying the heating requirements to meet the demand. Odourization: The Odourant system was installed in 2003. The current configuration of the Odourant system does not ensure adequate containment of the odourant product in the event of a leak and does not meet the current engineering standards and approvals. Telemetry & Electrical: The existing Electrical system does not meet current EGI electrical installation standards. This poses a potential electrical hazard and faulty wiring may result in lost communications. Compliance: The existing Boiler building is located within a hazardous area and will have to be relocated.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
GTA West	50 - Barrie	Distribution Stations	Pass		7758	THORNTON GATE	2025	\$ -	Pipe, Valves & Others: Minor station piping is required for this project scope. The existing Piping and Valve system is in good shape. Due to the reconfiguration for the Heating system, minor station piping may be required to align the new equipment. Issue/Concern: Heating System: Updated heating is required at this station. A new heat exchanger is required including the associated piping for the glycol inlet and outlet to the heating element. New boilers can fit within the limits of the existing building. New modulating boilers are required. Pressure Control: New regulation is required to various flow ranges. New Becker regulators and two runs are required. One monitor and one operator is needed for two runs. This will involve new spools for both runs at a minimum. Odourant System: No changes are required. Telemetry/Electrical: New Control Wave Micro unit and associated connections are required. One new pressure transmitter and one new temperature transmitter are to be accounted for. Measurement: Annubar is sized correct. There is no requirement for replacement. Building: A new Remote Terminal Unit (RTU) building is required (concrete pre-cast building). The existing RTU building is to be removed. Compliance/Civil: Site grading will be required as well as new security fencing (galvanized) including new swing gate and crash bar access. Scope: Heating System: Updated heating is required at this station. New Heat Exchanger is required including the associated piping for the glycol inlet and outlet to heating element. New boilers can fit within the limits of the existing building. New modulating boilers are required. Pressure Control: New Regulation required to various flow ranges. New Becker regulators are 2 Run's are required. 1 Monitor and 1 operator is needed for 2 runs. This will involve new spools for both runs at a minimum. Odorant System: No changes required Telemetry/Electrical: New Control Wave Micro unit required and associated connections. Account for 1 new pressure transmitter and 1 new temperature transmitter. Measurement: Annubar is sized correct. No requirement for replacement. Building: New RTU Building Required, Concrete Pre-Cast Building. Existing RTU building to be removed. Compliance/Civil: Site Grading will be required and new security Fencing (Galvanized) including new swing gate and crash bar access.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered	
GTA West	50 - Barrie	Customer Connections	Pass		3753	Area 50 - Commercial - New Construction*	2023	\$ 10,570,053	Issue/Concern: Commercial New Construction refers to a customer intending to run a commercial business in a newly-constructed building and intending to using natural gas to meet energy needs Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-	-
GTA West	50 - Barrie	Customer Connections	Pass		3756	Area 50 - Residential - New Construction*	2023	\$ 97,471,402	Issue/Concern: Residential New Construction refers to a new residential construction development of detached single homes constructed by the builder for domestic purposes. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-	-
GTA West	50 - Barrie	Customer Connections	Pass		3757	Area 50 - Residential - Replacement*	2023	\$ 54,334,728	Issue/Concern: Residential Replacement refers to a residential replacement customer using a fuel other than natural gas for domestic purposes and is converting to natural gas. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-	-
GTA West	50 - Barrie	Growth	Pass		30503	NW 5346 Midhurst Reinforcement SRP	2024	\$ 1,333,716	NW 5346 Midhurst Reinforcement SRP Issue/Concern/Opportunity: Total of 1,300 m NPS 4 is required to increase security of supply for Midhurst, and maintain 140 kPa as Minimum System Pressure in this Maximum Operating Pressure (MOP) 345 kPa system. Assets: Pipe Related Program: Not applicable	Completed	Fail	Timing - Market based supply side alternatives not applicable	-	-	-	-	-	-	
GTA West	50 - Barrie	Growth	Pass		30504	NW 5446 Hwy 26 and Keith Reinforcement SRP	2024	\$ 896,390	NW 5446 Hwy 26 and Keith Reinforcement SRP Issue/Concern/Opportunity: A new station and total 420 m NPS 4 are required to increase security of supply for Intermediate Pressure (IP) NWS446/5372. Existing station #3362255 cannot maintain the system health and a damage occurred on November 1, 2021. Assets: Pipe and district station Related Program: Not applicable	Completed	Fail	N/A - Investment Cancelled	-	-	-	-	-	-	
GTA West	50 - Barrie	Growth	Pass		30505	NW 5422 Robins Point Rd. Reinforcement SRP	2025	\$ 197,021	NW 5422 Robins Point Rd. Reinforcement SRP Issue/Concern/Opportunity: A total of 800 m NPS 2 is required to increase security of supply for Victoria Harbour, and maintain 140 kPa as minimum system pressure in this Maximum Operating Pressure (MOP) 310 kPa system. In January 2022, 13 psig was recorded as low pressure in cold snap. Assets: Pipe Related Program: Not applicable	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
GTA West	50 - Barrie	Growth	Pass		500705	NW 5301 Barrie - Collingwood Pressure Increase SRP	2024	\$ 4,030,837	Issue/Concern/Opportunity: Pressure issue is at the west tail end of network 5301. The long-range planning forecast shows by 2024 that the pressure will drop below 100 psig. Recently, a few customer load addition requests have been denied based on a diminished pressure and capacity constraint. Currently, the Maximum Operating Pressure in Network 5301 is 400 psig and this pressure elevation is looking to increase it to 500 psig. <ul style="list-style-type: none"> •With this pressure elevation, current new customers can be accommodated quickly. •With this pressure elevation, County Rd. 9 reinforcement can be deferred to 10 years later. •Preparation for next steps can happen to harmonize Barrie to Collingwood line with Rugby XHP system, by pressure increase on Rugby Gate Station, from 480 psig to 500 psig and removing Rugby Kicker Station. •By harmonizing these two systems, Penetanguishine Reinforcement project (\$15.2M – BCR7723) can be deferred to 10 years later. Assets: All pipe and stations on Network 5301 will be assessed if any reinforcements need to be made. Related Program: Not applicable.	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-	-
GTA West	50 - Barrie	Utilization	Pass		13547	MXGI Area 50*	2023	\$ 15,500,144	Meters: Meters are used to determine the gas consumption input of customer billing. The replacement program for meters is mandated by Measurement Canada. The program includes: testing, repair, and replacement requirements of meters and instruments. All verified meters are approved by Measurement Canada with an issuance of a certificate which identifies that the meter complies with Electricity and Gas Specification S-EG-02. The Company must ensure all measurement devices remain in compliance for annual audits by Measurement Canada. Measurement Canada specifies tolerances under which the meter must operate in the field. The Company must demonstrate that all aspects of its meter sampling, maintenance, and replacement comply with these criteria in order to be accredited by Measurement Canada to be an "Authorized Service Provider" and adhere to Measurement Canada's accreditation standard S-A-01. Meters may also require exchange for issues such as: damages, leaks, customer billing issues. Regulation: Regulators are the last line of defense for over-pressure to the customer. The condition of regulation systems is determined by regulator performance, corrosion of piping and regulators, and adherence to installation specifications. Failure of the regulation system can cause pressured gas to enter the premise, resulting in failure of gas equipment, loss of containment, and potentially fire or explosion.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
GTA West	Div_17 - Halton	Distribution Pipe	Fail	Dollar threshold	48454	HALT: Dist-Repl-Contr-Mains Leakage*	2024	\$ 1,366,900										
GTA West	Div_17 - Halton	Distribution Pipe	Fail	Dollar threshold	48455	HALT: Dist-Repl-Contr-Services*	2023	\$ 12,792,064										
GTA West	Div_17 - Halton	Distribution Pipe	Fail	Dollar threshold	503061	HALT: Harrop drive, Milton, BU Replacement	2025	\$ -										
GTA West	Div_17 - Halton	Distribution Pipe	Pass		48453	HALT: Dist-Repl-Contr-Mains Municipal*	2023	\$ 38,326,013	General: Projects in the relocation category are capital expenditures required to replace or relocate segments of pipeline in order to accommodate municipal infrastructure work. The cost sharing for this work is managed through the Franchise Agreements established with municipalities. A consultative approach is used between the municipality and EGI to avoid conflicts with municipal infrastructure early in the planning stage. If a conflict is unavoidable, pipeline assets are typically relocated or replaced.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
GTA West	Div_17 - Halton	Distribution Pipe	Pass		503196	HALT: Anodes*	2023	\$ 5,046,213	General: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within EGI's system. These installations and replacements are based on the internal Standard Operating Practice established to maintain the appropriate level of cathodic protection on steel pipeline assets.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	101081	HALT-Winston Churchill & 10 Side Rd	2025	\$ -										
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	101085	HALT-Lynden Gate Stn	2027	\$ 666,564										
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	101088	HALT-Third Line and QEIV Vault Station	2025	\$ -										
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	101089	HALT-Milton TBS	2025	\$ -										
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	101096	HALT - York and Broadway	2025	\$ -										
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	101099	HALT - Dundas and Meadowridge	2026	\$ 531,969										
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	101125	HALT - Centennial and Guelph Line Vault Station	2025	\$ -										
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	735035	HALT: Ninth/Britannia, Rebuild	2024	\$ 747,048										
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	735039	HALT: Ford and Royal Windsor, Maintenance	2026	\$ 531,969										
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	735049	HALT: EC Drury School,Rebuild	2027	\$ -										
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	735052	HALT: Saputo, rebuild	2027	\$ -										
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	735055	HALT: Morgan Thermal Ceramics, Maintenance	2028	\$ 68,122										
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	735066	HALT: Affinia Canada Corp, Rebuild	2029	\$ 268,907										
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	735067	HALT: Milton Hydro Dist Inc, Rebuild	2029	\$ 268,907										
GTA West	Div_17 - Halton	Distribution Stations	Pass		735054	HALT: Burlington Gate, boiler	2028	\$ 2,724,880	Issue/Concern/Opportunity: VALVE & PIPING: Piping is experiencing corrosion and will be evaluated by FIMP closer to the proposed project date. FIMP will assess the existing valves for any issues in performance and operation. FILTRATION: N/A HEATING: the existing boilers at this site have reached end of life based on condition review and performance. The building is in disrepair and will be replaced in this investment. This investment aligns with the obsolete heating system strategy that targets stations with heating equipment that have reached end of life, with a focus on systems where there is a risk of a glycol spill. Natural gas heating equipment is used in many System and Customer Stations to help mitigate failure of equipment due to the freezing of liquids in the gas stream and moisture surrounding buried piping. Over many years of operation, a variety of heating systems have been used, resulting in varying equipment age and ultimately, equipment obsolescence. This work will maintain system reliability, ensure operating costs for heating systems are minimized and reduce the potential for glycol spills, including providing the appropriate containment systems to minimize the impacts of an event. Loss of the heating system function could result in two scenarios, (1) frost heave or (2) pressure control failure due to the freezing of station components. Frost heave occurs when the gas is cooled due to the pressure reduction and causes an upward swelling of soil around public or private property near the gas main. Freezing of station components such as creating large ice buildup around valves can prevent operation if gas isolation is required. This could result in the loss of pressure control and potentially lead to an overpressure or underpressure situation. The financial impact includes commodity loss, service disruptions, increased network leak surveys and system checks, repairs or replacement of company-owned property, or damages caused to public, commercial or industrial property. Inoperable systems will lead to a failure to maintain operational supply to customers. PRESSURE CONTROL: Obsolete design will be replaced in this investment. ODOURIZATION: Current system is in working order. TELEMETRY & ELECTRICAL: the telemetry and electrical systems do not meet current EGI standards, do not contain backup power supply in the event of powerloss, and are approaching end of useful life. MEASUREMENT - COMPLIANCE & OTHER Eng: will be assessed closer to project date. Signage and site assess (fencing/egress) to be upgraded during this project. Assets: 18X-601 Related Program: N/A	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-

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								Forecast (Includes Overhead)											
GTA West	Div_17 - Halton	Customer Connections	Pass		48452	HALT: Company Program - New Business - Scattered Mains - Contractor*	2020	\$ 43,533,256		Scattered Mains	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-
GTA West	Div_17 - Halton	Customer Connections	Pass		500422	HALT: Company Program - Customer Connections*	2023	\$ 44,621,220		Hamilton Customer Connections Program Items	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-
GTA West	Div_17 - Halton	Growth	Pass		503058	SRP_GTA West_Oakville_18Y-109RSTN_Rebuild	2024	\$ 1,466,444		Growth in the Old Bronte/Khalsa gate area of Oakville requires a new station to be built. This is a placeholder for the station, land and installation cost.	In Progress								
GTA West	Div_17 - Halton	Growth	Pass		735034	SRP_GTA West_Lowville_18X-101STN_Rebuild	2024	\$ 884,097		Issue/Concern/Opportunity: Single feed to Campbellville, no filter, requires operator monitor, heater undersized, and no filtration. The scope is to build a monitor-operator system, upgrade regulation, install Remote Terminal Unit (RTU) and replace heater.	In Progress								
GTA West	Div_17 - Halton	Utilization	Pass		48464	HALT: Meter & Regulator Inst Repl-Contractor	2023	\$ 31,478,681		Meter & Reg Install- Replacement	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Dollar threshold	1180	Integrity Capital Tools Program*	2025	\$ -											
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Dollar threshold	1905	2026 Integrity Program*	2025	\$ 379,758											
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Dollar threshold	49651	Mattawa Bridge - North Bay 18	2024	\$ 1,837,049											
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Dollar threshold	100091	Corrosion Program Rectifier Groundbed*	2030	\$ 6,961,512											
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	1278	2023 Integrity Dig Program*	2023	\$ -											
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	1287	2024 Integrity Dig Program*	2024	\$ 46,250,863											
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	1291	2025 Integrity Retrofit Program*	2026	\$ 4,255,753											
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	1294	2025 Integrity Dig Program*	2025	\$ 7,974,918											
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	102450	2023 Class Location Replacement Program*	2031	\$ -											
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	102451	2024 Class Location Replacement Program*	2032	\$ 915,671											
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	102452	2025 Class Location Replacement Program*	2033	\$ -											
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	736419	2023 DP Depth of Cover Mitigation Program*	2023	\$ -											
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		1276	2023 Integrity Retrofit Program*	2023	\$ -		Project Specific: Integrity Retrofit program, supporting refinement of pipeline risk profile. The purpose of this program is to gain a more complete level of pipeline risk by making additional pipelines accessible for inline inspection. Specific pipelines for retrofit will be identified 1-2 years prior to year of construction. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032		Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)											
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		1284	2024 Integrity Retrofit Program*	2025	\$	3,797,580	Project Specific: Integrity Retrofit program, supporting refinement of pipeline risk profile. The purpose of this program is to gain a more complete level of pipeline risk by making additional pipelines accessible for inline inspection. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGIs pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (LI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with LI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		49935	Depth of Cover Mitigation Program*	2028	\$	14,202,445	General: In compliance with the TSSA Code Adoption Document, EGI has an annual depth of cover survey program for all 30 per cent SMYS pipelines. These surveys may identify locations where remediation is required. The current cycle of depth of cover surveys will be completed in 2023 at which time a prioritized list of capital replacements will be created to plan for any identified required remediation.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		49938	MOP Verification Replacement Program*	2029	\$	50,195,483	Maximum Operating Pressure (MOP) verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of pipelines that are greater than 30 percent SMYS. While this is not currently mandated by code in Canada, it is required in the United States and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 percent SMYS, MOP verification will continue to be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey, while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102453	2026 Class Location Replacement Program*	2034	\$	6,649,613	General: Annual Class Location surveys are required as per the Canadian Standards Association 2662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102454	2027 Class Location Replacement Program*	2035	\$	6,665,640	General: Annual Class Location surveys are required as per the Canadian Standards Association 2662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102455	2028 Class Location Replacement Program*	2036	\$	6,812,199	General: Annual Class Location surveys are required as per the Canadian Standards Association 2662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102456	2029 Class Location Replacement Program*	2037	\$	6,722,680	General: Annual Class Location surveys are required as per the Canadian Standards Association 2662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102457	2030 Class Location Replacement Program*	2038	\$	6,843,477	General: Annual Class Location surveys are required as per the Canadian Standards Association 2662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102744	2026 Integrity Dig Program*	2026	\$	8,282,759	Forecast: not provided for 2026-2030 at this time, using average of 2020-2025 as placeholder General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (LI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with LI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102746	2027 Integrity Dig Program*	2027	\$	10,378,401	Forecast: not provided for 2026-2030 at this time, using average of 2020-2025 as placeholder General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (LI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with LI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102747	2028 Integrity Dig Program*	2028	\$	10,606,594	Forecast: not provided for 2026-2030 at this time, using average of 2020-2025 as placeholder General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (LI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with LI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102748	2029 Integrity Dig Program*	2029	\$	10,467,212	Forecast: not provided for 2026-2030 at this time, using average of 2020-2025 as placeholder General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (LI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with LI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102750	2030 Integrity Dig Program*	2030	\$	10,655,294	Forecast: not provided for 2026-2032 at this time, using average of 2020-2025 as placeholder General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (LI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with LI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102751	2026 Integrity Retrofit Program*	2026	\$	3,510,996	Project Specific: Forecast note provided for 2026-2030, using average of 2023-2025 as placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (LI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with LI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102752	2027 Integrity Retrofit Program*	2027	\$	4,399,322	Project Specific: Forecast note provided for 2026-2030, using average of 2023-2025 as placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (LI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with LI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102753	2028 Integrity Retrofit Program*	2028	\$	4,496,051	Project Specific: Forecast note provided for 2026-2030, using average of 2023-2025 as placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (LI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with LI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102754	2029 Integrity Retrofit Program*	2029	\$	4,436,969	Project Specific: Forecast note provided for 2026-2030, using average of 2023-2025 as placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (LI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with LI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered	
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Timing	501375	2025 Fire Suppression and Auto Transfer Generator*	2025	\$ -											
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Emergent Safety	48743	Distribution Operations Station Maintenance Blankets*	2029	\$ 15,992,737											
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		48667	CNG Stations - Project #4	2023	\$ 630,508	Traditionally, fleet operators fuel their vehicles with gasoline or diesel. EGI promotes the use of natural gas to these customers as an alternate fuel source to provide a lower-cost and lower-emission fueling solution for vehicles such as garbage trucks, light duty vehicles, and transit buses. Business Development is responsible for the installation, maintenance, and the safe and continued operation of NGT stations assets for these customers. NGT stations differ in operation from distribution system stations as NGT stations use and store compressed natural gas (CNG) on site at up to 4000psi. EGD has two general categories for NGT station types: Large, Mobile and Utility NGT stations and Small NGT stations (also referred to as VRAs). Large, Mobile and Utility NGT stations are similar in operation and will be evaluated for condition in the same manner.	Completed	Fail	See investment description, IRPAs not applicable for CNG	-	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		48744	Distribution Operations Station Painting*	2029	\$ 20,706,826	Issue/Concern: This is a centrally managed program in the Union rate zone to apply high performance paint to stations where existing paint has begun to fail or wear off of the facilities on which it has been applied. The Station Painting Program is a significant corrosion mitigation practice. The frequency and criteria for high performance painting at station sites is specifically prescribed in the Corrosion Control Standard Operating Practice (SOP) and is its documented and committed practice on its compliance with the applicable codes for corrosion control on above-grade station assets. This work will improve compliance and ensure the safety and reliability of EGI assets by reducing the risk of leaks and piping and/or equipment failure due to significant corrosion. Assets:	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		501127	FIMP Station Assessment Program*	2032	\$ 42,216,444	Related Programs (enter N/A if not applicable): FIMP assesses stations against threats that are listed in the EGI Hazard and Risk Common Register Risk Register to identify susceptibility to identified risks and determine mitigation strategies for individual sites, ensuring that risk is managed to the lowest practical levels. The strategy for the FIMP program is to perform inspections using with approved technologies used at EGI or other utilities for similar asset types. These inspections will assess the condition of existing station assets and will detect any concerns or issues to help determine the likelihood and consequence of failure of individual components and evaluate the risk. This strategy will allow for targeted replacement and will extend the useful life of assets by identifying condition issues prior to the occurrence of an incident. When analysis indicates that ongoing repair costs are likely to exceed capital requirements to replace the asset, the mitigation strategy is evaluated to ensure that risk is managed to the lowest practicable level. Assets: FIMP DS Stations Related Investments: N/A Issue/Concern/Opportunity:	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		501672	2026 Fire Suppression and Auto Transfer Generator*	2026	\$ -	Assets: FIMP DS Stations Related Investments: N/A Issue/Concern/Opportunity: 75 buildings that have Odourant inside need fire suppression and 59 need auto transfer generators - as of now 16 have auto transfer generators, this is due to code compliance with building code and the fire code. Justification: To install fire suppression systems inside 75 Odourant buildings in order to be compliant with the fire code and 59 auto transfer generators which need to be installed for the emergency lighting based on the building code, maintaining 30 minutes of light to meet code requirements. Additional compliance requirements to be accordance with the LEG Building Standard to install with methane and CO gas detectors in the boiler building as per page 26. The building standard is being integrated and the above requirement will still be considered requiring the boiler buildings to be equipped through this installation program. Buildings with Gas Burning assets require CO and CH4 Detectors, buildings with gas require CO detectors. This work is in accordance with Code Sections: Ontario Building Code Sections: 9.10.1.3, 3.2.2.7.1, 3.2.4.1, 3.2.9.1, 3.2.9.2 to 3.2.9.7, 3.3.1.5.(1) and 3.3.5.2 Ontario Fire Code Sections: 2.8, 4.1.5.6, 4.2.7.7**, 4.3.12, 4.3.13.1, 4.3.13.4, 6.2, 6.8.1.1** Assets: 75 LUG Stations Related Investments: Issue/Concern/Opportunity: GDS has performed a survey to identify inside regulation at Customer Stations where the risk assessment identified the hazard of leaks from higher operating pressure piping will have a larger leak rate than pipes operating at lower pressures (for same hole size). Indoor regulators cause higher operating pressure pipe indoors - potential leaks may be able to reach LFL faster. Depending on leak rate, building ventilation, and room size, it is possible for indoor gas leak to build up to LFL leading to possible ignition resulting in an explosion. GDS is executing a program to relocate indoor regulators into an external regulator room (ERR) or relocate outdoors if possible. Some locations may not be immediately possible to relocate due to external factors not under the company's control, however over the long-term relocation may be possible. Similar treatment plans were previously considered and initiated in both legacy parts of the business. Review of Inside Regulator Rooms (IRR) in the LUG system and remediation as required Justification: We no longer allow IRRs as part of our standard designs as they pose various operational risks. Assets: Assets span the entire LUG system, review was done for all areas	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		733885	Operations Services Central IRR Program	2022	\$ 2,770,340	Related Investments: Issue/Concern/Opportunity: GDS has performed a survey to identify inside regulation at Customer Stations where the risk assessment identified the hazard of leaks from higher operating pressure piping will have a larger leak rate than pipes operating at lower pressures (for same hole size). Indoor regulators cause higher operating pressure pipe indoors - potential leaks may be able to reach LFL faster. Depending on leak rate, building ventilation, and room size, it is possible for indoor gas leak to build up to LFL leading to possible ignition resulting in an explosion. GDS is executing a program to relocate indoor regulators into an external regulator room (ERR) or relocate outdoors if possible. Some locations may not be immediately possible to relocate due to external factors not under the company's control, however over the long-term relocation may be possible. Similar treatment plans were previously considered and initiated in both legacy parts of the business. Review of Inside Regulator Rooms (IRR) in the LUG system and remediation as required Justification: We no longer allow IRRs as part of our standard designs as they pose various operational risks. Assets: Assets span the entire LUG system, review was done for all areas	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735115	LUG DS - Gate, Feeder & A Stations Program*	2031	\$ 195,939,988	Related Investments: Issue/Concern: This Investment was created to hold program dollars for future projects that are not yet identified and/or developed for years later in the capital plan. Assets:	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735204	2026 RTU Upgrade Program*	2026	\$ 2,001,418	Related Programs (enter N/A if not applicable): Issue/Concern: The forecast in this category includes projects to replace all the existing remote terminal units and replace with current technology, the ControlWave Micro introduced in 2003. Many current Remote Telemetry Units (RTUs) are 3330/3310 which have been obsolete since 2009 and are no longer supported by the manufacturer. This is a standardized approach that ensures enhanced control and current communication protocols for SCADA Gas Control, odorization, measurement data collection and volume nominations. Starting in 2024, the SCADA RTU lifecycle project will take over as the current technology will be 21 years old. The benefit of these projects will be smooth migration of in-service RTU fleet to current technology using a standardized approach. Currently, these legacy RTUs are at end-of-life and deferring this work may increase failure rate drastically due to the "wear-out" effect. Asset: System Station Assets Related Program: N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735205	2027 RTU Upgrade Program*	2027	\$ -	Issue/Concern: The forecast in this category includes projects to replace all the existing remote terminal units and replace with current technology, the ControlWave Micro introduced in 2003. Many current Remote Telemetry Units (RTUs) are 3330/3310 which have been obsolete since 2009 and are no longer supported by the manufacturer. This is a standardized approach that ensures enhanced control and current communication protocols for SCADA Gas Control, odorization, measurement data collection and volume nominations. Starting in 2024, the SCADA RTU lifecycle project will take over as the current technology will be 21 years old. The benefit of these projects will be smooth migration of in-service RTU fleet to current technology using a standardized approach. Currently, these legacy RTUs are at end-of-life and deferring this work may increase failure rate drastically due to the "wear-out" effect. Asset: System Station Assets Related Program: N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735206	2028 RTU Upgrade Program*	2028	\$ 2,260,514	Issue/Concern: The forecast in this category includes projects to replace all the existing remote terminal units and replace with current technology, the ControlWave Micro introduced in 2003. Many current Remote Telemetry Units (RTUs) are 3330/3310 which have been obsolete since 2009 and are no longer supported by the manufacturer. This is a standardized approach that ensures enhanced control and current communication protocols for SCADA Gas Control, odorization, measurement data collection and volume nominations. Starting in 2024, the SCADA RTU lifecycle project will take over as the current technology will be 21 years old. The benefit of these projects will be smooth migration of in-service RTU fleet to current technology using a standardized approach. Currently, these legacy RTUs are at end-of-life and deferring this work may increase failure rate drastically due to the "wear-out" effect. Asset: System Station Assets Related Program: N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735207	2029 RTU Upgrade Program*	2029	\$ 2,342,348	Issue/Concern: The forecast in this category includes projects to replace all the existing remote terminal units and replace with current technology, the ControlWave Micro introduced in 2003. Many current Remote Telemetry Units (RTUs) are 3330/3310 which have been obsolete since 2009 and are no longer supported by the manufacturer. This is a standardized approach that ensures enhanced control and current communication protocols for SCADA Gas Control, odorization, measurement data collection and volume nominations. Starting in 2024, the SCADA RTU lifecycle project will take over as the current technology will be 21 years old. The benefit of these projects will be smooth migration of in-service RTU fleet to current technology using a standardized approach. Currently, these legacy RTUs are at end-of-life and deferring this work may increase failure rate drastically due to the "wear-out" effect. Asset: System Station Assets Related Program: N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735208	2030 RTU Upgrade Program*	2030	\$ 2,503,660	Issue/Concern: The forecast in this category includes projects to replace all the existing remote terminal units and replace with current technology, the ControlWave Micro introduced in 2003. Many current Remote Telemetry Units (RTUs) are 3330/3310 which have been obsolete since 2009 and are no longer supported by the manufacturer. This is a standardized approach that ensures enhanced control and current communication protocols for SCADA Gas Control, odorization, measurement data collection and volume nominations. Starting in 2024, the SCADA RTU lifecycle project will take over as the current technology will be 21 years old. The benefit of these projects will be smooth migration of in-service RTU fleet to current technology using a standardized approach. Currently, these legacy RTUs are at end-of-life and deferring this work may increase failure rate drastically due to the "wear-out" effect. Asset: System Station Assets Related Program: N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735209	2031 RTU Upgrade Program*	2031	\$ 2,647,993	Issue/Concern: The forecast in this category includes projects to replace all the existing remote terminal units and replace with current technology, the ControlWave Micro introduced in 2003. Many current Remote Telemetry Units (RTUs) are 3330/3310 which have been obsolete since 2009 and are no longer supported by the manufacturer. This is a standardized approach that ensures enhanced control and current communication protocols for SCADA Gas Control, odorization, measurement data collection and volume nominations. Starting in 2024, the SCADA RTU lifecycle project will take over as the current technology will be 21 years old. The benefit of these projects will be smooth migration of in-service RTU fleet to current technology using a standardized approach. Currently, these legacy RTUs are at end-of-life and deferring this work may increase failure rate drastically due to the "wear-out" effect. Asset: System Station Assets Related Program: N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735210	2032 RTU Upgrade Program*	2032	\$ 2,599,114	Issue/Concern: The forecast in this category includes projects to replace all the existing remote terminal units and replace with current technology, the ControlWave Micro introduced in 2003. Many current Remote Telemetry Units (RTUs) are 3330/3310 which have been obsolete since 2009 and are no longer supported by the manufacturer. This is a standardized approach that ensures enhanced control and current communication protocols for SCADA Gas Control, odorization, measurement data collection and volume nominations. Starting in 2024, the SCADA RTU lifecycle project will take over as the current technology will be 21 years old. The benefit of these projects will be smooth migration of in-service RTU fleet to current technology using a standardized approach. Currently, these legacy RTUs are at end-of-life and deferring this work may increase failure rate drastically due to the "wear-out" effect. Asset: System Station Assets Related Program: N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735211	2026 Odourant Upgrades - MOIS Upgrades*	2026	\$ 2,075,477	The expenditures in this portfolio include projects to upgrade odourant systems to ensure compliance to current codes, such as replacing old tanks and painting rusted containment pans and tank stands. Additionally, performance capability will be added by installing heat tracer lines, heated cabinets, improved tank valves and indoor regulator panels. This work will help to ensure safe, compliant and continuous odorization. This forecast will help mitigate the risk of tank rupture, frequent freeze off and nuisance odour calls.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735213	2027 Odourant Upgrades - MOIS Upgrades*	2027	\$ 2,080,480	The expenditures in this portfolio include projects to upgrade odourant systems to ensure compliance to current codes, such as replacing old tanks and painting rusted containment pans and tank stands. Additionally, performance capability will be added by installing heat tracer lines, heated cabinets, improved tank valves and indoor regulator panels. This work will help to ensure safe, compliant and continuous odorization. This forecast will help mitigate the risk of tank rupture, frequent freeze off and nuisance odour calls.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735214	2028 Odourant Upgrades - MOIS Upgrades*	2028	\$ 2,126,224	The expenditures in this portfolio include projects to upgrade odourant systems to ensure compliance to current codes, such as replacing old tanks and painting rusted containment pans and tank stands. Additionally, performance capability will be added by installing heat tracer lines, heated cabinets, improved tank valves and indoor regulator panels. This work will help to ensure safe, compliant and continuous odorization. This forecast will help mitigate the risk of tank rupture, frequent freeze off and nuisance odour calls.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735215	2029 Odourant Upgrades - MOIS Upgrades*	2029	\$ 2,098,283	The expenditures in this portfolio include projects to upgrade odourant systems to ensure compliance to current codes, such as replacing old tanks and painting rusted containment pans and tank stands. Additionally, performance capability will be added by installing heat tracer lines, heated cabinets, improved tank valves and indoor regulator panels. This work will help to ensure safe, compliant and continuous odorization. This forecast will help mitigate the risk of tank rupture, frequent freeze off and nuisance odour calls.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735216	2030 Odourant Upgrades - MOIS Upgrades*	2030	\$ 2,135,986	The expenditures in this portfolio include projects to upgrade odourant systems to ensure compliance to current codes, such as replacing old tanks and painting rusted containment pans and tank stands. Additionally, performance capability will be added by installing heat tracer lines, heated cabinets, improved tank valves and indoor regulator panels. This work will help to ensure safe, compliant and continuous odorization. This forecast will help mitigate the risk of tank rupture, frequent freeze off and nuisance odour calls.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735217	2031 Odourant Upgrades - MOIS Upgrades*	2031	\$ 2,151,547	The expenditures in this portfolio include projects to upgrade odourant systems to ensure compliance to current codes, such as replacing old tanks and painting rusted containment pans and tank stands. Additionally, performance capability will be added by installing heat tracer lines, heated cabinets, improved tank valves and indoor regulator panels. This work will help to ensure safe, compliant and continuous odorization. This forecast will help mitigate the risk of tank rupture, frequent freeze off and nuisance odour calls.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735218	2032 Odourant Upgrades - MOIS Upgrades*	2032	\$ 2,011,268	The expenditures in this portfolio include projects to upgrade odourant systems to ensure compliance to current codes, such as replacing old tanks and painting rusted containment pans and tank stands. Additionally, performance capability will be added by installing heat tracer lines, heated cabinets, improved tank valves and indoor regulator panels. This work will help to ensure safe, compliant and continuous odorization. This forecast will help mitigate the risk of tank rupture, frequent freeze off and nuisance odour calls.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Southeast	Div_06 - Brantford	Growth	Pass		49179	SRP_Southeast_Port Rowan_Lakeshore Rd_Reinforcement_NPS6_2000m_860kPa	2024	\$ 1,452,444	System Reinforcement - Replace existing 3-inch 860 Maximum Operating Pressure (MOP) line with 6-inch in Phase 1. Move forward from 2026 to 2024 per 2021 System Reinforcement Plan (SRP) refresh.	In Progress								
Head Office Support	Div_54 - Head Office Support	Utilization	Fail	Dollar threshold	102816	2023 - LAB FACILITIES UPGRADE	2023	\$ 102,866										
Head Office Support	Div_54 - Head Office Support	Utilization	Fail	Dollar threshold	102817	2024 - LAB FACILITIES UPGRADE	2024	\$ 101,040										
Head Office Support	Div_54 - Head Office Support	Utilization	Fail	Dollar threshold	102818	2025 - LAB FACILITIES UPGRADE	2025	\$ 101,269										
Head Office Support	Div_54 - Head Office Support	Utilization	Fail	Dollar threshold	736034	Commercial / Industrial LPDMS*	2021	\$ 885,701										
Head Office Support	Div_54 - Head Office Support	Utilization	Pass		48500	SMC-Meter & Regulator Additions South*	2020	\$ 43,955,278	Meter & Reg Install- New	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Utilization	Pass		48501	SMC_Meter & Regulator Replacements - South*	2020	\$ 214,914,516	Meter & Reg Install- Replacement	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Utilization	Pass		48679	SMC-Meter & Regulator Additions North*	2020	\$ 13,544,421	Meter & Reg Install- New	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Utilization	Pass		48680	SMC_Meter & Regulator Replacements - North*	2020	\$ 108,092,761	Meter & Reg Install- Replacement	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-

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Head Office Support	Div_54 - Head Office Support	Utilization	Pass		502199	Farm Tap Program (LUG)*	2021	\$ 2,844,601	The Farm Tap regulator purpose is to reduce pressure from XHP/PHP to meet the design criteria for the downstream 2nd cut regulator. A malfunctioning Farm Tap regulator has the potential to create downstream hazards. A failure of the regulator set could potentially cause a higher than acceptable pressure entering the customer's premise. This over-pressure can result in downstream customer appliances failing, loss of containment inside the premise, fire, and explosion. The Farm Tap consists of the inlet/outlet riser, a regulator, and a relief. The condition of the Farm Tap population is largely unknown. As they are installed away from the premise and near the property line, they are exposed to more elements originating from the roadway. Their placement can also make them susceptible to third party damage from maintenance equipment and vehicles. Farm Taps have not been part of pro-active inspection programs. They historically have not been included in MXGI regulator exchanges. 2021 DIMP survey for LUG - potential for some immediates	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	-
Head Office Support	Div_54 - Head Office Support	Utilization	Pass		738584	SMC_Meter & Regulator Replacements - North*	2020	\$ 3,823,627	Meter & Reg Install- Replacement	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office Support	Div_54 - Head Office Support	Utilization	Pass		738583	SMC_Meter & Regulator Replacements - South*	2020	\$ 3,823,627	Meter & Reg Install- Replacement	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Fail	Timing	102546	Class Location Replacement Program 2023 - S&T Assets*	2031	\$ -											
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Fail	Timing	102552	Class Location Replacement Program 2024 - S&T Assets*	2032	\$ -											
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Fail	Timing	102553	Class Location Replacement Program 2025 - S&T Assets*	2033	\$ -											
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Pass		102554	Class Location Replacement Program 2026 - S&T Assets*	2034	\$ 6,982,094	General: Annual Class Location surveys are required as per the Canadian Standards Association 2662 - Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Pass		102555	Class Location Replacement Program 2027 - S&T Assets*	2035	\$ 6,998,922	General: Annual Class Location surveys are required as per the Canadian Standards Association 2662 - Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Pass		102556	Class Location Replacement Program 2028 - S&T Assets*	2036	\$ 7,152,809	General: Annual Class Location surveys are required as per the Canadian Standards Association 2662 - Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Pass		102557	Class Location Replacement Program 2029 - S&T Assets*	2037	\$ 7,058,814	General: Annual Class Location surveys are required as per the Canadian Standards Association 2662 - Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Pass		102558	Class Location Replacement Program 2030 - S&T Assets*	2038	\$ 7,185,651	General: Annual Class Location surveys are required as per the Canadian Standards Association 2662 - Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Pass		733985	Class Location Replacement Program 2031 - S&T Assets*	2039	\$ 7,237,998	General: Annual Class Location surveys are required as per the Canadian Standards Association 2662 - Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Pass		733986	Class Location Replacement Program 2032 - S&T Assets*	2040	\$ 6,766,087	General: Annual Class Location surveys are required as per the Canadian Standards Association 2662 - Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office/All	00 - Head Office	Distribution Pipe	Pass		736833	TIMP Geohazard Mitigation (LUG)*	2025	\$ 21,698,794	General: The Geohazard Mitigation program has been designed to comply with all applicable codes and standards. The program consists of the assessment and maintenance of the integrity of EGI's pipeline systems which may be impacted by geohazards. The assessment ensures asset's continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office/All	00 - Head Office	Distribution Pipe	Pass		736835	TIMP Geohazard Mitigation (LEGD)*	2032	\$ 4,480,127	General: The Geohazard Mitigation Program has been designed to comply with all applicable codes and standards. The program consists of the assessment and maintenance of the integrity of EGI's pipeline systems which may be impacted by geohazards. The assessment ensures asset's continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% SMYS.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office/All	00 - Head Office	Distribution Pipe	Pass		736844	Independent Asset Integrity Review (IAIR) - (LUG)*	2025	\$ 54,565,471	Dynamic Risk completed an independent review of TIMP to establish uncertainty levels in the fitness-for-service conclusions for all TIMP assets. This first phase of the project was completed last year. TIMP is currently developing plans to mitigate high and moderate uncertainties in the fitness-for-service conclusions by leveraging existing integrity activities and potentially introducing new ones.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office/All	00 - Head Office	Distribution Pipe	Pass		736845	Independent Asset Integrity Review (IAIR) - (LEG)*	2027	\$ 3,295,342	Dynamic Risk completed an independent review of TIMP to establish uncertainty levels in the fitness-for-service conclusions for all TIMP assets. This first phase of the project was completed last year. TIMP is currently developing plans to mitigate high and moderate uncertainties in the fitness-for-service conclusions by leveraging existing integrity activities and potentially introducing new ones.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office/All	00 - Head Office	Distribution Stations	Fail	Dollar threshold	17404	NGV Rental VRA's - (2026-2032)	2028	\$ 1,340,226											
Head Office/All	00 - Head Office	Distribution Stations	Pass		2368	NGV Rental VRA's	2025	\$ 737,593	Issue/concern: Individual customers and arenas can achieve fuel cost savings, fuel handling savings, and reduced emission benefits by operating their cleaning machines, forklift trucks, and individual light-duty vehicles on natural gas versus propane or gasoline. This presents an opportunity to grow EGI's natural gas vehicle (NGV) rental refueling business and promotes the use of natural gas to customers as an alternate source for fueling cleaning machines, forklift trucks, and individual light-duty vehicles at a lower cost, reducing fuel handling cost with lower emissions. By providing NGV Vehicle Refueling Appliance (VRA) equipment to customers on a rental basis, EGI can achieve growth in the marketplace, while fully recovering costs. Assets: There are currently over 200 VRA customers that EGI is successfully servicing, including City of Toronto, City of Ottawa, other small city arenas and some private customers. Related Program (if applicable): Not applicable.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	-
Head Office/All	00 - Head Office	Distribution Stations	Pass		503415	Bellville Yard Station	2025	\$ -	The Enbridge fleet continues to achieve fuel cost savings and reduced emission benefits by operating their light-duty vehicles on natural gas versus gasoline.	Completed	Fail	See investment description, IRPAs not applicable for CNG	-	-	-	-	-	-	
Head Office/All	00 - Head Office	Transmission Pipe & Underground Storage	Pass		736880	Independent Asset Integrity Review (IAIR) - EGDT*	2027	\$ 5,553,417	Dynamic Risk completed an independent review of TIMP to establish uncertainty levels in the fitness-for-service conclusions for all TIMP assets. This first phase of the project was completed last year. TIMP is currently developing plans to mitigate high and moderate uncertainties in the fitness-for-service conclusions by leveraging existing integrity activities and potentially introducing new ones.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Head Office/All	00 - Head Office	Transmission Pipe & Underground Storage	Pass		736881	Independent Asset Integrity Review (IAIR) - UGTP*	2027	\$ 11,907,618	Dynamic Risk completed an independent review of TIMP to establish uncertainty levels in the fitness-for-service conclusions for all TIMP assets. This first phase of the project was completed last year. TIMP is currently developing plans to mitigate high and moderate uncertainties in the fitness-for-service conclusions by leveraging existing integrity activities and potentially introducing new ones.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
								Forecast (Includes overhead)										
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	10361	2026 Sales stations rebuilds*	2026	\$ 1,339,156										
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	10362	2027 Sales stations rebuilds*	2027	\$ -										
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	10541	2027 Header stations rebuilds*	2027	\$ -										
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	16432	2028 Header stations rebuilds*	2028	\$ 1,270,061										
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	16433	2028 Sales stations rebuilds*	2028	\$ 1,374,525										
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	101554	2029 Header stations rebuild*	2029	\$ 1,214,486										
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	101555	2030 Header stations rebuilds*	2030	\$ 1,281,429										
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	101558	2029 Sales stations rebuilds*	2029	\$ 1,314,379										
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	101559	2030 Sales stations rebuilds*	2030	\$ 1,386,828										
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	734297	2031 Sales stations rebuilds*	2031	\$ 1,401,328										
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	734298	2032 Sales stations rebuilds*	2032	\$ 1,388,856										
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	734299	2031 Header stations rebuilds*	2031	\$ 1,294,827										
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	734300	2032 Header stations rebuilds*	2032	\$ 1,283,303										
Head Office/All	01 - All	Distribution Stations	Fail	Timing	9845	2024 Telemetry*	2024	\$ -										
Head Office/All	01 - All	Distribution Stations	Fail	Timing	9846	2023 Telemetry*	2023	\$ -										
Head Office/All	01 - All	Distribution Stations	Fail	Timing	9964	2025 Telemetry*	2025	\$ -										
Head Office/All	01 - All	Distribution Stations	Fail	Timing	10296	2024 District Station Rebuilds Program*	2024	\$ -										
Head Office/All	01 - All	Distribution Stations	Fail	Timing	10297	2025 District Station Rebuilds Program*	2025	\$ -										
Head Office/All	01 - All	Distribution Stations	Pass		9552	NGT Existing customer Maintenance Capital - (Until 2026)*	2026	\$ 1,546,385	Maintenance capital for refueling stations for external customer stations only Issue/concern: EGI fleet operators can continue to achieve fuel cost savings and reduced emission benefits by investing in the wellbeing of the NGV station. This can be achieved by adopting and continuously upgrading their NGV equipment as part of the maintenance strategy. By upgrading major NGV equipment, EGI can extend the life cycle of the equipment, resulting in a more cost-effective way of operating the NGV stations. Assets: There are a number of current NGV stations EGI maintains	Completed	Fail	See investment description, IRPAs not applicable for CNG	-	-	-	-	-	
Head Office/All	01 - All	Distribution Stations	Pass		9553	NGT Maintenance Capital for company/fleet NG refueling stations (2021 to 2032)*	2028	\$ 4,095,274	Maintenance capital for refueling stations for EGD NGT Fueling stations only Issue/concern: The EGD Fleet department can achieve fuel cost savings and reduced emission benefits by operating the 800-plus fleet vehicles on natural gas versus diesel or gasoline. This presents an opportunity for the EGD Fleet Department to realize fuel savings and promotes the use of natural gas to other fleet operators as an alternate source for fueling vehicles at a lower cost with lower emissions. By demonstrating the use of natural gas, EGD can achieve growth in the marketplace, while realizing fuel savings. Assets: EGD currently operates 19 Natural Gas Vehicle (NGV) fueling stations on company yards. The stations includes; Armprior Yard, Barrie Yard, Beamsville Yard, Thorold Office, Brampton, Brockville yard, Ottawa Office, Kelfield yard, Kennedy Road Yard, Midland Gate Station, Oshawa Office, Port Colbourne Yard, Peterborough yard, Shelburne Gate Station, South Merivall, Station B, Stayner Gate Station, Enbridge Training Centre, and the VPC Office. In addition, EGD will installing two new NGT stations to fuel recently converted vehicles and dedicated light duty trucks. These two new stations (Tecumseh Storage facility and Tallman Truck Center (Kemptville)) will also, need to be maintained. Related Program: N/A	Completed	Fail	See investment description, IRPAs not applicable for CNG	-	-	-	-	-	
Head Office/All	01 - All	Distribution Stations	Pass		9965	2026 Telemetry*	2026	\$ -	Telemetry systems are required to monitor and control our pipeline system. Applicable Codes: 2662, Sec 11.26.4 provides code requirement for safe and reliable communication. The Telemetry system includes communication paths from the instrumentation at our stations to Gas Control and it allows them to monitor EGI Distribution conditions. Gas flow: For gas supply to meet nominations Leak detection: Indicated by large pressure drops Overpressure protection and Pressure Control: Condition monitoring equipment by gas control ensures gas delivery to the customers in a controlled and safe manner. Included in this program are upgrades to the Telemetry network that include: 1)Cyber Security - Ongoing upgrades to Scada system to ensure compliance with EI Cyber security standards and proposed CSA code 2)Legacy equipment - 3330 Bristol units(10/yr) must be replaced with Control Wave Micro units 3) RTU Programming Manual - Development of manual detailing programming standards for design, security and expansion 4)SCADA - Development of maintenance layer of Scada to allow site reporting of gas consumption for boiler gas, odourant pump strokes and usage tracking, boiler diagnostics, remote engineering and automation of gate/feeder stations 5)Broadband Communication - Development of broadband links between major stations to support security (i.e. intrusion detection)	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
Head Office/All	01 - All	Distribution Stations	Pass		9966	2027 Telemetry*	2027	\$ -	Telemetry systems are required to monitor and control our pipeline system. Applicable Codes: 2662, Sec 11.26.4 provides code requirement for safe and reliable communication. The Telemetry system includes communication paths from the instrumentation at our stations to Gas Control and it allows them to monitor EGI Distribution conditions. Gas flow: For gas supply to meet nominations Leak detection: Indicated by large pressure drops Overpressure protection and Pressure Control: Condition monitoring equipment by gas control ensures gas delivery to the customers in a controlled and safe manner. Included in this program are upgrades to the Telemetry network that include: 1)Cyber Security - Ongoing upgrades to Scada system to ensure compliance with EI Cyber security standards and proposed CSA code 2)Legacy equipment - 3330 Bristol units(10/yr) must be replaced with Control Wave Micro units 3) RTU Programming Manual - Development of manual detailing programming standards for design, security and expansion 4)SCADA - Development of maintenance layer of Scada to allow site reporting of gas consumption for boiler gas, odourant pump strokes and usage tracking, boiler diagnostics, remote engineering and automation of gate/feeder stations 5)Broadband Communication - Development of broadband links between major stations to support security (i.e. intrusion detection)	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
Head Office/All	01 - All	Distribution Stations	Pass		10298	2026 District Station Rebuilds Program*	2026	\$ -	Issue/Concern: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets. Related Program: N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
Head Office/All	01 - All	Distribution Stations	Pass		10299	2027 District Station Rebuilds Program*	2027	\$ -	Issue/Concern: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets. Related Program: N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
Head Office/All	01 - All	Distribution Stations	Pass		16430	2028 Telemetry*	2028	\$ 2,124,621	Telemetry systems are required to monitor and control our pipeline system. Applicable Codes: 2662, Sec 11.26.4 provides code requirement for safe and reliable communication. The Telemetry system includes communication paths from the instrumentation at our stations to Gas Control and it allows them to monitor EGI Distribution conditions. Gas flow: For gas supply to meet nominations Leak detection: Indicated by large pressure drops Overpressure protection and Pressure Control: Condition monitoring equipment by gas control ensures gas delivery to the customers in a controlled and safe manner. Included in this program are upgrades to the Telemetry network that include: 1)Cyber Security - Ongoing upgrades to Scada system to ensure compliance with EI Cyber security standards and proposed CSA code 2)Legacy equipment - 3330 Bristol units(10/yr) must be replaced with Control Wave Micro units 3) RTU Programming Manual - Development of manual detailing programming standards for design, security and expansion 4)SCADA - Development of maintenance layer of Scada to allow site reporting of gas consumption for boiler gas, odourant pump strokes and usage tracking, boiler diagnostics, remote engineering and automation of gate/feeder stations 5)Broadband Communication - Development of broadband links between major stations to support security (i.e. intrusion detection)	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
Head Office/All	01 - All	Distribution Stations	Pass		16434	2028 District Station Rebuilds Program*	2028	\$ 4,362,275	Issue/Concern: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets Related Program: N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office/All	01 - All	Distribution Stations	Pass		101552	2029 Telemetry*	2029	\$ 2,072,285	Telemetry systems are required to monitor and control our pipeline system. Applicable Codes: Z662, Sec 11.26.4 provides code requirement for safe and reliable communication. The Telemetry system includes communication paths from the instrumentation at our stations to Gas Control and it allows them to monitor EGI Distribution conditions. Gas flow: For gas supply to meet nominations Leak detection: Indicated by large pressure drops Overpressure protection and Pressure Control: Condition monitoring equipment by gas control ensures gas delivery to the customers in a controlled and safe manner. Included in this program are upgrades to the Telemetry network that include: 1)Cyber Security - Ongoing upgrades to Scada system to ensure compliance with EI Cyber security standards and proposed CSA code 2)Legacy equipment - 3330 Bristol units(101/yr) must be replaced with Control Wave Micro units 3) RTU Programming Manual - Development of manual detailing programming standards for design, security and expansion 4)SCADA - Development of maintenance layer of Scada to allow site reporting of gas consumption for boiler gas, odourant pump strokes and usage tracking, boiler diagnostics, remote engineering and automation of gate/feeder stations 5)Broadband Communication - Development of broadband links between major stations to support security (i.e. intrusion detection)	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office/All	01 - All	Distribution Stations	Pass		101553	2030 Telemetry*	2030	\$ 2,230,241	Telemetry systems are required to monitor and control our pipeline system. Applicable Codes: Z662, Sec 11.26.4 provides code requirement for safe and reliable communication. The Telemetry system includes communication paths from the instrumentation at our stations to Gas Control and it allows them to monitor EGI Distribution conditions. Gas flow: For gas supply to meet nominations Leak detection: Indicated by large pressure drops Overpressure protection and Pressure Control: Condition monitoring equipment by gas control ensures gas delivery to the customers in a controlled and safe manner. Included in this program are upgrades to the Telemetry network that include: 1)Cyber Security - Ongoing upgrades to Scada system to ensure compliance with EI Cyber security standards and proposed CSA code 2)Legacy equipment - 3330 Bristol units(101/yr) must be replaced with Control Wave Micro units 3) RTU Programming Manual - Development of manual detailing programming standards for design, security and expansion 4)SCADA - Development of maintenance layer of Scada to allow site reporting of gas consumption for boiler gas, odourant pump strokes and usage tracking, boiler diagnostics, remote engineering and automation of gate/feeder stations 5)Broadband Communication - Development of broadband links between major stations to support security (i.e. intrusion detection)	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office/All	01 - All	Distribution Stations	Pass		101556	2029 District Station Rebuilds Program*	2029	\$ 9,200,653	Issue/Concern: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets Related Program: N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office/All	01 - All	Distribution Stations	Pass		101557	2030 District Station Rebuilds Program*	2030	\$ 9,707,793	Issue/Concern: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets Related Program: N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office/All	01 - All	Distribution Stations	Pass		501126	FIMP Station Assessment Program*	2032	\$ 14,321,245	Issue/Concern/Opportunity: FIMP assesses stations against threats that are listed in the EGI Hazard and Risk Common Register Risk Register to identify susceptibility to identified risks and determine mitigation strategies for individual sites, ensuring that risk is managed to the lowest practicable levels. The strategy for the FIMP program is to perform inspections using with approved technologies used at EGI or other utilities for similar asset types. These inspections will assess the condition of existing station assets and will detect any concerns or issues to help determine the likelihood and consequence of failure of individual components and evaluate the risk. This strategy will allow for targeted replacement and will extend the useful life of assets by identifying condition issues prior to the occurrence of an incident. When analysis indicates that ongoing repair costs are likely to exceed capital requirements to replace the asset, the mitigation strategy is evaluated to ensure that risk is managed to the lowest practicable level. Assets: FIMP DS Stations Related Investments: N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office/All	01 - All	Distribution Stations	Pass		734294	2031 Telemetry*	2031	\$ 2,298,631	Telemetry systems are required to monitor and control our pipeline system. Applicable Codes: Z662, Sec 11.26.4 provides code requirement for safe and reliable communication. The Telemetry system includes communication paths from the instrumentation at our stations to Gas Control and it allows them to monitor EGI Distribution conditions. Gas flow: For gas supply to meet nominations Leak detection: Indicated by large pressure drops Overpressure protection and Pressure Control: Condition monitoring equipment by gas control ensures gas delivery to the customers in a controlled and safe manner. Included in this program are upgrades to the Telemetry network that include: 1)Cyber Security - Ongoing upgrades to Scada system to ensure compliance with EI Cyber security standards and proposed CSA code 2)Legacy equipment - 3330 Bristol units(101/yr) must be replaced with Control Wave Micro units 3) RTU Programming Manual - Development of manual detailing programming standards for design, security and expansion 4)SCADA - Development of maintenance layer of Scada to allow site reporting of gas consumption for boiler gas, odourant pump strokes and usage tracking, boiler diagnostics, remote engineering and automation of gate/feeder stations 5)Broadband Communication - Development of broadband links between major stations to support security (i.e. intrusion detection)	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office/All	01 - All	Distribution Stations	Pass		734296	2032 Telemetry*	2032	\$ 2,332,070	Telemetry systems are required to monitor and control our pipeline system. Applicable Codes: Z662, Sec 11.26.4 provides code requirement for safe and reliable communication. The Telemetry system includes communication paths from the instrumentation at our stations to Gas Control and it allows them to monitor EGI Distribution conditions. Gas flow: For gas supply to meet nominations Leak detection: Indicated by large pressure drops Overpressure protection and Pressure Control: Condition monitoring equipment by gas control ensures gas delivery to the customers in a controlled and safe manner. Included in this program are upgrades to the Telemetry network that include: 1)Cyber Security - Ongoing upgrades to Scada system to ensure compliance with EI Cyber security standards and proposed CSA code 2)Legacy equipment - 3330 Bristol units(101/yr) must be replaced with Control Wave Micro units 3) RTU Programming Manual - Development of manual detailing programming standards for design, security and expansion 4)SCADA - Development of maintenance layer of Scada to allow site reporting of gas consumption for boiler gas, odourant pump strokes and usage tracking, boiler diagnostics, remote engineering and automation of gate/feeder stations 5)Broadband Communication - Development of broadband links between major stations to support security (i.e. intrusion detection)	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office/All	01 - All	Distribution Stations	Pass		734307	2031 District Station Rebuilds Program*	2031	\$ 9,809,298	Issue/Concern: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets Related Program: N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office/All	01 - All	Distribution Stations	Pass		734308	2032 District Station Rebuilds Program*	2032	\$ 9,721,995	Issue/Concern: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets Related Program: N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)										
Head Office/All	01 - All	Distribution Stations	Pass		75117	Stations with Auxiliary Equipment Replacement Program*	2023	\$ 147,843,050	Issue/Concern: The replacement / renewal strategy for Stations with Auxiliary Equipment includes: ☐Stations with Auxiliary Equipment Replacement strategy ☐Compliance Remediation strategy ☐Obsolete Heating Equipment strategy ☐Odourization strategy ☐Telemetry strategy ☐Stations Retrofit strategy for Integrity pipe ☐Stations Capital Upgrade program ☐Facilities Integrity Management program	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8543	2023 Commercial / Industrial LPDMS Program*	2023	\$ -	Related Program: N/A									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8544	2024 Commercial / Industrial LPDMS Program*	2024	\$ 640,279										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8545	2025 Commercial / Industrial LPDMS Program*	2025	\$ 751,799										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8546	2026 Commercial / Industrial LPDMS Program*	2026	\$ 903,930										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8547	2027 Commercial / Industrial LPDMS Program*	2027	\$ 1,013,791										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8804	2023 Farm tap Program*	2023	\$ -										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8805	2024 Farm tap Program*	2024	\$ 224,098										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8806	2025 Farm tap Program*	2025	\$ 235,734										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8807	2026 Farm tap Program*	2026	\$ 281,223										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8808	2027 Farm tap Program*	2027	\$ 317,654										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	17966	2023 Assets Downstream of Bulk Meters*	2023	\$ -										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	17967	2025 Assets Downstream of Bulk Meters*	2025	\$ 509,695										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	17968	2024 Assets Downstream of Bulk Meters*	2024	\$ 260,478										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	17969	2026 Assets Downstream of Bulk Meters*	2026	\$ 535,662										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	17970	2027 Assets Downstream of Bulk Meters*	2027	\$ 540,688										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	17971	2028 Assets Downstream of Bulk Meters*	2028	\$ 549,810										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	101968	2029 Assets Downstream of Bulk Meters*	2029	\$ 525,752										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	101970	2028 Commercial / Industrial LPDMS Program*	2028	\$ 1,223,327										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	101971	2029 Commercial / Industrial LPDMS Program*	2028	\$ 1,169,797										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	101972	2028 Farm tap Program*	2028	\$ 377,994										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	101973	2029 Farm tap Program*	2029	\$ 361,454										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	101974	2030 Farm tap Program*	2030	\$ 1,148,678										
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	101976	2030 Assets Downstream of Bulk Meters*	2030	\$ 1,670,805										
Head Office/All	01 - All	Utilization	Pass		19983	Meter Purchases- MXGI's, MXG's, MXOT's*	2027	\$ 470,575,714	Meters are used to determine the gas consumption input of customer billing. The replacement program for meters is mandated by Measurement Canada. The program includes: testing, repair, and replacement requirements of meters and instruments. All verified meters are approved by Measurement Canada with an issuance of a certificate which identifies that the meter complies with Electricity and Gas Specification S-EG-02. EGI must ensure all measurement devices remain in compliance for annual audits by Measurement Canada. Measurement Canada specifies tolerances under which the meter must operate in the field. EGD must demonstrate that all aspects of its meter sampling, maintenance, and replacement comply with these criteria in order to be accredited by Measurement Canada to be an "Authorized Service Provider" and adhere to Measurement Canada's accreditation standard S-A-01. Meters may also require exchange for issues such as: damages, leaks, customer billing issues.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office/All	01 - All	Utilization	Pass		23228	Meter Purchases- New Customer Additions*	2027	\$ 88,749,948	New meters are required for customer expansion projects. Meters are used to determine the gas consumption input of customer billing.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office/All	01 - All	Utilization	Pass		101975	2030 Commercial / Industrial LPDMS Program*	2030	\$ 3,717,541	These meter sets primarily serve commercial, industrial, and high density residential customers, typically with a meter > 400 series. They require proper operation to ensure gas does not exceed supply pressure. These sets consist of regulator(s), relief(s), riser, and meter. Failure of the regulation system has the potential to cause an over pressure to the customer's supply line and appliances. Over-pressure can result in a loss of containment within the building making the event of ignition, fire, and explosion possible. The condition of these Commercial/Industrial LPDMS is largely unknown. They have not been part of pro-active inspection programs. A survey on a sample population indicated a number of potential issues including: - Old Regulators - Corrosion of piping and regulators - Non-Adherence to installation specifications	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office/All	01 - All	Utilization	Pass		738580	Meter Purchases- MXGI's, MXG's, MXOT's*	2027	\$ 63,215,784	Meter & Reg Install- Replacement	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Stations	Fail	Dollar threshold	736083	NE: 43201030 - Coniston Primary, Control Valve Modifications	2026	\$ 299,233										
Northern	Div_43 - Sudbury & S.S. Marie	Customer Connections	Pass		48539	SUDB: Company Program - New Business - Scattered Mains - Company*	2024	\$ 1,427,612	Scattered Mains	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-
Northern	Div_33 - Thunder Bay	Growth	Pass		734531	THUN: Rosslyn Rd at Sideroad 20 Reinforcement Project	2026	\$ 181,202	Issue/Concern/Opportunity: •Approximately 130 m 2-inch PE main extension is to tie together two existing 420 kPa systems. •The Goal is to abandon 30206036 STN (Rosslyn Rd. at 20th Side Rd.) and small customer station south of there. •Customers currently fed by this station will then be tied to the neighbouring 420 kPa system fed by 30206035 Station (Rosslyn Rd. at Almira Post Regulation Station [PRS]) and 30206034 Station (Rosslyn Rd. at R.S. Piper). Assets: Stations 30206036, 30206025, and 30206034 Related Program: None.	Completed	Pass	Low cost, low value	Planned					
Northern	Div_43 - Sudbury & S.S. Marie	Growth	Pass		30524	SRP_North_Sault Ste Marie_451030015TN_Reb uid	2025	\$ 2,277,975	Station is flowing over capacity.	In Progress								
Northern	Div_43 - Sudbury & S.S. Marie	Customer Connections	Pass		500425	SUDB: Company Program - Customer Connections*	2032	\$ 30,507,651	Sudbury & S.S. Marie Customer Connections Program Items	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-
Northern	Div_43 - Sudbury & S.S. Marie	Utilization	Pass		48546	SUDB: Meter & Regulator Inst Repl-Company*	2024	\$ 13,510,717	Meter & Reg Install- Replacement	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Northern	Div_45 - Timmins	Distribution Pipe	Fail	Dollar threshold	48568	TIMM: Land Rights- Replacements	2020	\$ 3,857										
Northern	Div_45 - Timmins	Distribution Pipe	Fail	Dollar threshold	48572	TIMM: Indirect Materials- Replacements	2024	\$ 147,013										
Northern	Div_45 - Timmins	Distribution Pipe	Fail	Dollar threshold	100951	TIMM: Xstrata (Kidd Creek) Smelter SMS Service Retirement	2023	\$ 1,801,267										
Northern	Div_45 - Timmins	Distribution Pipe	Fail	Dollar threshold	102490	TIMM: Anodes*	2024	\$ 80,718										
Northern	Div_45 - Timmins	Distribution Pipe	Pass		30137	Bay St-Timmins-1561	2032	\$ 4,934,596	Bay St. - Timmins - 1561	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Northern	Div_45 - Timmins	Distribution Pipe	Pass		30147	Hemlock St-Timmins-1569	2032	\$ 2,682,933	Hemlock St. - Timmins - 1569	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Northern	Div_45 - Timmins	Distribution Pipe	Pass		30150	Maple St N-Timmins-1535	2031	\$ 4,460,951	Maple St. N. - Timmins - 1535	Completed	Fail	NPS 2, cannot downsize or retire	-	-	-	-	-	-
Northern	Div_45 - Timmins	Distribution Pipe	Pass		30159	Sixth Ave-Timmins-1566	2032	\$ 3,967,541	Sixth Ave. - Timmins - 1566	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						

Region	Operating Area (EOI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
Northern	Div_45 - Timmins	Distribution Pipe	Pass		733717	NPS 6 Iroquois Falls Retrofit	2026	\$ 3,318,400	Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2027 Operations and Maintenance (O&M) spend for ILI. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Northern	Div_45 - Timmins	Distribution Pipe	Pass		733718	NPS 6 Kapuskasing Retrofit	2026	\$ 3,318,400	Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2027 Operations and Maintenance (O&M) spend for ILI. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Northern	Div_45 - Timmins	Distribution Pipe	Pass		733719	NPS 6 Cochrane Loop	2026	\$ 3,318,400	Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2026 Operations and Maintenance (O&M) spend for ILI. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	100922	TIMM: Swastika TBS, Station Rebuild	2024	\$ 793,694										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	502086	TIMM: 45-23-700 2881 Hwy 655 TBS Low-Piping Modifications	2030	\$ 684,348										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	502087	TIMM: 45-23-701 Porcupine Primary Low-Piping Modifications	2030	\$ 684,348										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	502088	TIMM: 45-22-702 Kirkland Lake (Northland) Power SMS Rebuild	2025	\$ 1,677,565										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	503742	TIMM: Glencore Concentrator SMS, Boiler Replacement	2026	\$ 230,917										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733768	TIMM: Glencore Mine SMS, Boiler Replacement	2026	\$ 184,443										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733769	TIMM: South Porcupine/Crawford TBS, Boiler Replacement	2029	\$ 336,134										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733770	TIMM: Porcupine PCS, Boiler Replacement	2026	\$ 246,036										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733771	TIMM: Kirkland Lake TBS, Boiler Replacement	2026	\$ 195,499										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733773	TIMM: Cochrane TBS, Boiler Replacement	2027	\$ 205,302										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733864	TIMM: Matheson TBS, Boiler Replacement	2028	\$ 144,419										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733868	TIMM: Schumacher TBS, Boiler Replacement	2029	\$ 149,243										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733871	TIMM: Dalton TBS (Mcbride St S.), Station Rebuild and Boiler Replacement	2030	\$ 1,026,522										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733873	TIMM: Kapuskasing TBS, Boiler Replacement	2031	\$ 689,333										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733874	TIMM: Moneta TBS, Boiler Replacement	2032	\$ 253,889										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733877	TIMM: Hwy 655 TBS, Boiler Replacement	2031	\$ 285,384										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734572	TIMM: Malette Kraft SMS Retirement	2024	\$ -										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734573	TIMM: Evergreen Greenhouse SMS Retirement	2023	\$ -										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734574	TIMM: Hallnor Mine PRS Retirement	2025	\$ 63,293										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734576	TIMM: Munoro Mine SMS Retirement	2025	\$ 44,305										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734623	TIMM: Opasatika TBS Rebuild	2030	\$ 821,217										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734624	TIMM: Mattice TBS Rebuild	2031	\$ 827,200										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734625	TIMM: Val Gagne TBS Rebuild	2026	\$ 797,954										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734626	TIMM: Fauquier TBS Rebuild	2029	\$ 806,722										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734943	TIMM: Kirkland Lake CMS (Kenogami) - Long-Term Odorant Solution	2025	\$ 529,130										
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	735730	TIMM: Monteith CMS	2025	\$ 1,265,860										
Northern	Div_45 - Timmins	Distribution Stations	Pass		100920	TIMM: Hearst TBS, Rebuild	2024	\$ 3,864,885	Issue/Concern/Opportunity: According to a geological investigation completed on this station in 2021 it was determined that the existing facilities have undergone movements (frost heave, sinking, erosion) which have caused structural damages between the existing buildings and interconnecting pipeline facilities. The operations department also confirmed that heaving/ movements have been an ongoing issue at this station since it was rebuilt in 2004. There is a need to replace the station or remediate existing soil, due to extensive ground movement and assets. This site was constructed new in 2005 and experienced significant movement by 2008. The site has been reworked once already and now requires additional work. A cost analysis should be considered to compare reworking the existing site versus relocating the station. Assets: Station ID 41301001 Related Program: There are no related C55 investments.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
								Forecast (Includes overhead)										
Southeast	80 - Niagara	Distribution Pipe	Fail	Dollar threshold	102425	Relocation Program - Area 80*	2023	\$ 13,084,164										
Southeast	80 - Niagara	Distribution Pipe	Fail	Dollar threshold	103520	Red Maple Dr Lincoln - 1-inch steel main replacement	2024	\$ 387,272										
Southeast	80 - Niagara	Distribution Pipe	Fail	Dollar threshold	502017	Ridge Rd North Fort Erie	2023	\$ 1,164,671										
Southeast	80 - Niagara	Distribution Pipe	Fail	Dollar threshold	502019	Regional Rd 65 West Lincoln	2023	\$ 208,729										
Southeast	80 - Niagara	Distribution Pipe	Fail	Dollar threshold	503325	Lundys Lane Reg. Road 20 Niagara Falls	2026	\$ 12,742										
Southeast	80 - Niagara	Distribution Pipe	Fail	Emergent Safety	4666	Replacement Blanket - Area 80*	2023	\$ 1,317,617										
Southeast	80 - Niagara	Distribution Pipe	Pass		1938	NPS 10 Glenridge Avenue, St. Catharines	2025	\$ 15,395,901	Issue/Concern:	In Progress	Technical Evaluation awaiting further integrity assessment to confirm project scope and timing.							
<p>General Concerns: Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.</p> <p>Site-Specific Concerns: This project looks to replace approximately 8.7 km of mostly 1954 to 1960s vintage NPS 10 intermediate pressure (IP) pipe with sections of NPS 12 and NPS 8 spliced in over the years as repairs.</p> <p>A 2019 Depth of Cover (DOC) survey found that 366 (33%) survey locations had less than 90 cm of cover, and 90 survey locations (8%) had DOC-60 cm, with one location found having exposed pipe due to creek erosion. Poor depth of cover leads to increased third-party damages (as has been seen with blow-off valves). Other risk factors include black coal tar pipe coatings used on 1959/1960 vintage NPS 10 pipe which show evidence of degradation, yielding to corrosion.</p> <p>There are many unusual fittings (Stop-and-Go) and unusual construction practices (such as using unrestrained compression couplings to tie in service connections) that can lead to difficult emergency responses. For example, a recent leak repair took 24 days to complete at a cost of almost \$500K due to complications from DOC, components, and construction practices. Unrestrained compression couplings (CC) have been the source of leaks due to ground settlement and increase the risk of pull-out. The river crossing at Twelve Mile Creek is very difficult to access due to steep creek banks and heavy vegetation, making it difficult to perform cathodic protection and leak surveys. It will pose as a significant concern for any required emergency response. The numerous transitions from NPS 8 to NPS 10 to NPS 12 also creates concern and difficulties for operational work to be completed.</p> <p>There are two main line valves that are suspected to be tied in with unrestrained CCs as per an Integrity Assessment for suspect CC locations. Cathodic protection for some of the NPS 10 segments has been historically poor, showing as much as 25% of historical readings over the last 20 years below minimum required levels.</p> <p>Assets: There is 8.7 km of mostly 1954 to 1960s vintage NPS 10 IP pipe with sections of NPS 12 and NPS 8 spliced in over the years as repairs that run along Glenridge Avenue from Russell Avenue south to Lockhart Drive, then along Lockhart Drive west to First Street South.</p> <p>Related Programs: Not applicable.</p>																		
Southeast	80 - Niagara	Distribution Pipe	Pass		4673	Anode Blanket - Area 80*	2023	\$ 3,550,399	General Description: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within the EGI system. These installations and replacements are based on the Corrosion Operating Standard established to maintain the appropriate level of cathodic protection on steel pipeline assets.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Southeast	80 - Niagara	Distribution Pipe	Pass		4768	AMP Fitting Replacement - Area 80*	2032	\$ 38,465,263	AMP Fittings are a below grade transition fittings. The inserted portion of copper tubing can fail due to internal corrosion. In these cases leaks develop immediately downstream of the AMP Fitting.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Southeast	80 - Niagara	Distribution Pipe	Pass		8258	A80: Woodington Rd, N Falls - VS Replacement	2025	\$ -	Issue/Concern: 1-inch Steel and Copper Risers Replace existing 3,302 m of existing steel main and 151 services in area defined.	Completed	Fail	NPS 2, cannot downsize or retire	-	-	-	-	-	-
Southeast	80 - Niagara	Distribution Pipe	Pass		13611	Service Relay Blanket - Area 80*	2023	\$ 23,850,528	General: A distribution service refers to the pipe between the distribution main and the customer's meter set. Over the years, different materials have been used for this asset, including steel, copper, and varying resins of plastic, each with unique characteristics that contribute to their performance over time. Services can be repaired or replaced depending on asset condition and the nature of the issue exhibited. Generally, replacement is the preferred approach to mitigate unacceptable asset condition.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Southeast	80 - Niagara	Distribution Pipe	Pass		23230	Black Creek Rd and River Trail, Fort Erie - VPM Aldyl-A MP lined in steel	2023	\$ 1,926,064	Issue/Concern: Proactive replacement program to renew aging vintage plastic pipe assets before reaching end-of-life. Vintage plastic Aldyl A mains are the earliest plastic mains used within the distribution system; the installation period of Aldyl A plastics started in the late 1960s on a field trial basis and was concluded by the end of 1976 for the EGD rate zone and 1984 for the Union rate zones. It is well known and studied in the North American gas industry that Aldyl A plastic mains have brittle-like cracking properties. The oxidation of the inner wall surface during manufacturing (also known as Low Ductile Inner Wall (LDIW)) and the large spherulites found in its microstructure causes pipe to be susceptible to cracking and premature failure in the presence of stress intensifiers such as a large number of connections, squeeze-off locations, and the presence of rock impingement points caused by rocky soil types.	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-	-
<p>Site specific: MP vintage plastic main lined within old steel mains. If pipe is damaged or leaks, the migration path could cause gas to travel long distances. Difficult to pinpoint leaks and increased risk of migration into other conduits/utilities.</p> <p>Assets: Black Creek Rd and River Trail, Fort Erie - VPM Aldyl-A MP lined in steel Black Creek - Phase One - Scope: consists of 1001M, NPS 4 PE Intermediate Pressure (IP), 13 Medium Pressure (MP) to IP Services and one water crossing (drainage ditch). A Header at 13693 Niagara River Parkway also will be replaced as part of this phase: 230M NPS 2 PE IP and 4 MP to PI Services.</p> <p>Status as of 1/21/2021: Survey has been completed for both the Main Replacement as well as the Header Replacement. Drawing completed for the Main Replacement portion of the project and class 3 estimate has been submitted and completed by Construction, CS5 numbers to be updated once Class 3 for Phase 2 is completed. Submitted to Land for preliminary Species at Risk (SAR) and permits review. Early consultation with Land shows existing valid easement at Header location. MTO permit will not be required. Follow up requested from Land 1/21/2021 and copy of DWG provided. Header DWG in progress - estimate was included with Phase 1 and is complete.</p> <p>Black Creek - Phase Two - Scope: consists of 3230M NPS 4 PE IP, 214M NPS 2 PE IP, the replacement of 17 IP to IP services and 34 MP to IP services. There are two Headers that will be replaced as part of this phase. 1) Private Laneway: 253M, NPS 2 PE IP and 2 MP to IP Services. 2) Switch Road: 363M NPS 2 PE IP and 3 MP to IP Services. Project also has one water crossing and 3 Concrete Culvert Crossings.</p> <p>Status as of 1/21/2021: Submitted to Land for preliminary SAR and permits review. MTO had confirmed no permit is required, SAR and other land permits are unknown at this time. Land has confirmed existing easement at one of two header locations. Letters have been prepared for delivery on site walk.</p> <p>Black Creek - Phase 3 - Scope: consists of 6619M NPS 2 PE IP, the replacement of 272 MP to IP services as well as the removal of MO STN 81160A and accompanying ERX recorder.</p>																		
Southeast	80 - Niagara	Distribution Pipe	Pass		30046	2nd Ave PTC - Area 80 - 1180	2032	\$ 4,610,997	2nd Ave. - Area 80 - 1180	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
<p>Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.</p> <p>Comments: Plan Year 1 and Execute Year 2 (1711990).</p>																		
Southeast	80 - Niagara	Distribution Pipe	Pass		30047	Briarsdale Dr STC - Area 80 - 1174	2032	\$ 3,119,724	Briarsdale Dr. - Area 80 - 1174	Completed	Fail	NPS 2, cannot downsize or retire	-	-	-	-	-	-
<p>Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.</p> <p>Comments: Plan Year 1 and execute Year 2.</p>																		

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								Forecast (Includes Overhead)											
Southeast	80 - Niagara	Distribution Pipe	Pass		30049	Cattell Dr NFalls- Area 80 - 1170	2032	\$ 2,733,948	Cattell Dr. - Area 80 - 1170 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
Southeast	80 - Niagara	Distribution Pipe	Pass		30050	Dexter Dr WELL - Area 80 - 1169	2030	\$ 3,678,470	Dexter Dr. - Area 80 - 1169 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Plan Year 1 and execute Year 2.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.							
Southeast	80 - Niagara	Distribution Pipe	Pass		30054	Forkes Rd E PTC - Area 80 - 1132	2031	\$ 3,351,952	Forkes Rd. E. - Area 80 - 1132 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Plan Year 1 and execute Year 2.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
Southeast	80 - Niagara	Distribution Pipe	Pass		30055	Geneva St STC - Area 80 - 1187	2031	\$ 7,934,385	Geneva Street - Area 80 - 1187 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Plan Year 1 and execute Year 2.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
Southeast	80 - Niagara	Distribution Pipe	Pass		30056	Flanders Ave STC - Area 80 - 1809	2029	\$ 2,746,179	Handers Ave. - Area 80 - 1156 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Plan Year 1 and execute Year 2.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
Southeast	80 - Niagara	Distribution Pipe	Pass		30057	Hillcrest Ave STC - Area 80 - 1176	2029	\$ 1,920,874	Hillcrest Ave. - Area 80 - 1176 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.							
Southeast	80 - Niagara	Distribution Pipe	Pass		30058	Hixon St LUNC - Area 80 - 1153	2032	\$ 2,120,196	Hixon St. - Area 80 - 1153 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
Southeast	80 - Niagara	Distribution Pipe	Pass		30062	Lavinia St FE - Area 80 - 1171	2030	\$ 2,909,398	Lavinia St. - Area 80 - 1171 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Plan Year 1 and execute Year 2.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.							
Southeast	80 - Niagara	Distribution Pipe	Pass		30064	McCain St PTC - Area 80 - 1136	2031	\$ 2,359,847	McCain St. - Area 80 - 1136 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Plan Year 1 and execute Year 2.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
Southeast	80 - Niagara	Distribution Pipe	Pass		30067	Niagara Wine Route 2 NOTL- Area 80 - 1191	2030	\$ 1,931,791	Niagara Wine Route 2 - Area 80 - 1191 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Plan Year 1 and execute Year 2	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered	
Southeast	80 - Niagara	Distribution Stations	Pass		16586	TALISMAN PRODUCTION	2027	\$ -	<p>Issue/Concern:</p> <p>Measurement: Currently, a Turbine meter is used with no problems.</p> <p>Assets: Odourant, Telemetry, Related Program (if applicable).</p> <p>Measurement: There is flanged obsolete Daniel Senior orifice meter on site on the outlet piping that needs to be removed; a simple flanged spool piece can be inserted.</p> <p>Odourant: Old odourant pumps and a separate odourant tank need to be put into a single building with containment.</p> <p>Telemetry and Electrical: Currently, old Remote Terminal Unit (RTU) 3330 is required to be upgraded. The Telemetry and Electrical systems do not meet current EGI standards, do not contain backup power supply in the event of power loss, and are approaching end of useful life. The existing RTU is obsolete and is required to be upgraded to current standards along with new communications equipment in order to eliminate cybersecurity threats. There should be an upgrade of RTU to Control Wave Micro. There should be an upgrade of electrical wiring to the new Odourant building. This site has no generator.</p> <p>Piping: There is a live riser in place that is flanged closed, so removing it may be a consideration. There is no distribution regulation; line pressure is taken from the compressors.</p>	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	-
Southeast	80 - Niagara	Customer Connections	Pass		3766	Area 80 - Apartment Ensuite - New Construction*	2023	\$ 632,618	<p>Vertical Subdivision - A multiple unit residential building where each suite is individually metered. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGD develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long term plans EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. Enbridge reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers; and, - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth</p>	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-	
Southeast	80 - Niagara	Customer Connections	Pass		3769	Area 80 - Commercial - New Construction*	2023	\$ 19,426,977	<p>Issue/Concern: Commercial New Construction refers to a customer intending to run a commercial business in a newly-constructed building and intending to using natural gas to meet energy needs</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-	
Southeast	80 - Niagara	Customer Connections	Pass		3770	Area 80 - Industrial - New Construction*	2032	\$ 7,323,216	<p>Issue/Concern: Industrial New Construction refers to a customer intending to run an industrial manufacturing business in a newly-built facility and intending to use natural gas.</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-	
Southeast	80 - Niagara	Customer Connections	Pass		3772	Area 80 - Residential - New Construction*	2023	\$ 60,721,061	<p>Issue/Concern: Residential New Construction refers to a new residential construction development of detached single homes constructed by the builder for domestic purposes.</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-	

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered
Southeast	80 - Niagara	Customer Connections	Pass		3773	Area 80 - Residential - Replacement*	2032	\$ 7,488,991	Issue/Concern: Residential Replacement refers to a residential replacement customer using a fuel other than natural gas for domestic purposes and is converting to natural gas. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPAs not applicable.	-	-	-	-	-	-
Southeast	80 - Niagara	Customer Connections	Pass		3822	Area 80 - Commercial - Replacement*	2023	\$ 6,785,348	Issue/Concern: Commercial Replacement refers to a commercial replacement customer using a fuel other than natural gas for commercial business and is converting to natural gas. EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPAs not applicable.	-	-	-	-	-	-
Southeast	80 - Niagara	Growth	Pass		736688	NW 8521 Feeder Rd E Station Reinforcement SRP	2023	\$ 366,386	Issue/Concern/Opportunity: A new station is required to increase security of supply for Intermediate Pressure (IP) NW8521, and maintain 140 kPa as minimum system pressure in this Maximum Operating Pressure (MOP) 276 kPa system. In January 2022, 17 psig was recorded as low pressure in cold snap. Assets: District station Related Program: Not applicable	Completed	Pass	Low cost, low value	Planned	-	-	-	-	
Southeast	80 - Niagara	Utilization	Pass		13549	MXGI Area 80*	2023	\$ 22,708,261	Meters: Meters are used to determine the gas consumption input of customer billing. The replacement program for meters is mandated by Measurement Canada. The program includes: testing, repair, and replacement requirements of meters and instruments. All verified meters are approved by Measurement Canada with an issuance of a certificate which identifies that the meter complies with Electricity and Gas Specification 5-EG-02. The Company must ensure all measurement devices remain in compliance for annual audits by Measurement Canada. Measurement Canada specifies tolerances under which the meter must operate in the field. The Company must demonstrate that all aspects of its meter sampling, maintenance, and replacement comply with the criteria in order to be accredited by Measurement Canada to be an "Authorized Service Provider" and adhere to Measurement Canada's accreditation standard SA-01. Meters may also require exchange for issues such as: damages, leaks, customer billing issues. Regulation: Regulators are the last line of defense for over-pressure to the customer. The condition of regulation systems is determined by regulator performance, corrosion of piping and regulators, and adherence to installation specifications. Failure of the regulation system can cause pressurized gas to enter the premise, resulting in failure of gas equipment, loss of containment, and potentially fire or explosion.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
Southwest	Div_03 - Sarnia	Distribution Pipe	Pass		733553	NPS 6 Retrofit	2024	\$ 2,531,720	Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2025 Operations and Maintenance (O&M) spend for ILI. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
Southeast	Div_06 - Brantford	Distribution Pipe	Fail	Dollar threshold	1272	Brantford North Retrofit	2023	\$ 183,906										
Southeast	Div_06 - Brantford	Distribution Pipe	Fail	Dollar threshold	48381	BRAN - Dist-Regl-Contr-Mains Leakage*	2023	\$ 3,580,507										
Southeast	Div_06 - Brantford	Distribution Pipe	Fail	Dollar threshold	48849	BRAN - Otterville Rd. (James to Middleton) Repl. BU - Otterville	2028	\$ 970,890										
Southeast	Div_06 - Brantford	Distribution Pipe	Fail	Dollar threshold	48929	BRAN - Lawrence Rd Repl. BU - Norfolk	2025	\$ -										
Southeast	Div_06 - Brantford	Distribution Pipe	Fail	Dollar threshold	48933	BRAN - Water St. Repl. BU - Vittoria	2025	\$ -										
Southeast	Div_06 - Brantford	Distribution Pipe	Fail	Dollar threshold	48934	BRAN - Rebecca St. Repl. BU - Vittoria	2023	\$ -										
Southeast	Div_06 - Brantford	Distribution Pipe	Fail	Dollar threshold	48935	BRAN - Colborne St. at Johnson Rd. Repl. BU - Brantford	2025	\$ -										
Southeast	Div_06 - Brantford	Distribution Pipe	Fail	Dollar threshold	48955	BRAN - Northern Ave. (Adams to Connaught) Repl. BU - Delhi	2026	\$ 804,804										
Southeast	Div_06 - Brantford	Distribution Pipe	Fail	Dollar threshold	48956	BRAN - Connaught Ave. (Hwy 3 to Delcrest) Repl. BU - Delhi	2026	\$ 433,468										
Southeast	Div_06 - Brantford	Distribution Pipe	Fail	Dollar threshold	48958	BRAN - Churchill (Connaught to Argyle) Repl. BU - Delhi	2026	\$ 134,006										
Southeast	Div_06 - Brantford	Distribution Pipe	Fail	Dollar threshold	48963	BRAN - Given Rd at Lyndoch Rd Repl. BU - Norfolk	2027	\$ 33,815										
Southeast	Div_06 - Brantford	Distribution Pipe	Fail	Dollar threshold	48964	BRAN - Clyde St. and North Court St. Repl. BU - Norwich	2027	\$ 82,243										
Southeast	Div_06 - Brantford	Distribution Pipe	Fail	Dollar threshold	48966	BRAN - Carmen St. Repl. BU - Norwich	2026	\$ 54,104										
Southeast	Div_06 - Brantford	Distribution Pipe	Fail	Dollar threshold	48967	BRAN - King St. (Fifth to Third) Repl. BU - Tilsonburg	2027	\$ 101,728										
Southeast	Div_06 - Brantford	Distribution Pipe	Pass		48928	BRAN - Schafer Side Rd. Repl. BU - Norfolk	2026	\$ 993,188	Project-Specific: S11907170 General: The Bare Unprotected Program is to replace all the bare and unprotected steel mains within EGI's franchise. These mains are more susceptible to leaks as they have not been cathodically protected since installation. Removing these mains from service will reduce potential for leaks due to corrosion. If this project spend is reduced or deferred, more maintenance dollars will have to be spent repairing leaks on pipe which is nearing end of life.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)										
Southwest	Div_07 - Waterloo	Distribution Pipe	Pass		30234	Div. 06 - Brant - Broadway St W - Southeast - Waterloo - 1378	2032	\$ 5,167,343	Div. 06 - Brant - Broadway St. W. - Southeast - Waterloo - 1378 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Brantford is currently doing a lot of road reconstruction around this area. Contact municipality to see which roads have been recently redone - project has been updated to reflect moratorium until 2026.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_07 - Waterloo	Distribution Pipe	Pass		30237	Div. 06 - Brantford - Abigail Ave - Southeast - Waterloo - 1309	2032	\$ 3,259,972	Div. 06 - Brantford - Abigail Ave - Southeast - Waterloo - 1309 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Every home will require a new farm tap.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_07 - Waterloo	Distribution Pipe	Pass		30238	Div. 06 - Brantford - Balmoral Dr - Southeast - Waterloo - 1291	2030	\$ 3,050,126	Div. 06 - Brantford - Balmoral Dr. - Southeast - Waterloo - 1291 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Station 11T-440 may need to be rebuilt as part of the project.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_07 - Waterloo	Distribution Pipe	Pass		30243	Div. 06 - Brantford - Dundas St E - Southeast - Waterloo - 1827	2028	\$ 2,074,789	Div. 06 - Brantford - Dundas St. E. - Southeast - Waterloo - 1303 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_07 - Waterloo	Distribution Pipe	Pass		30244	Div. 06 - Brantford - Elgin St - Southeast - Waterloo - 1296	2032	\$ 5,339,654	Div. 06 - Brantford - Elgin St. - Southeast - Waterloo - 1296 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Some of the piping is inside of Brantford Balmoral Gate Station (16U-602). Scope of project would require a bypass of station to install the new inlet and outlet. There is a history of mercury in the soil in and around the Brantford Balmoral Gate Station, so soil assessments will be required.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_07 - Waterloo	Distribution Pipe	Pass		30245	Div. 06 - Brantford - Ewing Dr - Southeast - Waterloo - 1316	2029	\$ 3,292,817	Div. 06 - Brantford - Ewing Dr. - Southeast - Waterloo - 1316 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: City of Brantford is restoring Wood St. and Charing Cross. Project was updated to reflect a moratorium until 2026.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_07 - Waterloo	Distribution Pipe	Pass		30246	Div. 06 - Brantford - Franklin St - Southeast - Waterloo - 1388	2031	\$ 4,924,781	Div. 06 - Brantford - Franklin St. - Southeast - Waterloo - 1388 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_07 - Waterloo	Distribution Pipe	Pass		30248	Div. 06 - Brantford - Greenwich St - Southeast - Waterloo - 1332	2030	\$ 3,526,304	Div. 06 - Brantford - Greenwich St. - Southeast - Waterloo - 1332 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_07 - Waterloo	Distribution Pipe	Pass		30252	Div. 06 - Brantford - St George St - Southeast - Waterloo - 1312	2031	\$ 5,761,745	Div. 06 - Brantford - St. George St. - Southeast - Waterloo - 1312 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_07 - Waterloo	Distribution Pipe	Pass		30253	Div. 06 - Brantford - St George St 2 - Southeast - Waterloo - 1386	2031	\$ 5,899,057	Div. 06 - Brantford - St. George St. 2 - Southeast - Waterloo - 1386 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: MTO permit may be required and it is a lengthy process.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)										
Southeast	Div_07 - Waterloo	Distribution Stations	Pass		503275	Waterloo/Brantford PFM Compliance Program*	2023	\$ 538,025	Issue/Concern/Opportunity: -PFMs that require a bypass will be rebuilt w/bypass to the new standard: oWhen they are due for a meter exchange and in the meter seal expiry year, provided that year is between 2022 and 2026. This will fall under the meter exchange budget and costs are not covered in this program. oIf the meter seal year is not between 2022 and 2026, the set will be rebuilt with a bypass the year after it is inspected. This will allow the technicians to identify which will require rebuilt at the time of inspection, and Sohan and I will be developing a process to get work orders generated for these rebuilds after the inspection. Also ensures that we focus our efforts on rebuilding active PFMs requiring rebuild. While I originally mentioned a proactive strategy to rebuild prior to the inspection year, we decided against that. -Assumption is that 50% of PFMs will need to be rebuilt. -Calculations are based on an estimate of \$5500 per rebuild. As you know there is a significant swing depending on the pipe size, volume, existing set up (first stage cut, etc) that may influence this including the release of the new SEADs designs, that I have not seen yet.	Completed	Fail	See investment description, IRPAs not applicable	-	-	Considered	-	-	-
Southeast	Div_07 - Waterloo	Growth	Pass		30527	SRP_Southeast_Baden_18 S-501STN_Rebuild	2029	\$ 941,175	Increase capacity.	In Progress								
Southeast	Div_07 - Waterloo	Growth	Pass		30528	SRP_Southeast_Baden_Pe el St_Reinforcement_NPS6_400m_420kPa	2028	\$ 638,526	New reinforcement main along Bleams Rd. E. is required.	Completed	Pass	CNG, ETEE - Potentially could reduce or defer project scope.	Planned					
Southeast	Div_07 - Waterloo	Growth	Pass		30529	SRP_Southeast_Brantford_Maple Grove Rd_Reinforcement_NPS6_830m_420kPa	2027	\$ 1,271,016	Pipe reinforcement required to maintain system pressures due to growth	Completed	Pass	CNG, ETEE - CNG potentially could defer the project scope, ETEE potentially could reduce or defer the project scope.	Planned					
Southeast	Div_07 - Waterloo	Growth	Pass		30530	SRP_Southeast_Breslau_19T-601RSTN_Rebuild	2028	\$ 1,336,732	Increase capacity.	In Progress								
Southeast	Div_07 - Waterloo	Growth	Pass		30532	SRP_Southeast_Breslau_S awmill Rd_Reinforcement_NPS4_500m_3450kPa	2027	\$ 765,673	High Pressure (HP) reinforcement along Sawmill Rd. is required.	Completed	Pass	CNG, ETEE - Potentially could reduce or defer project scope.	Planned					
Southeast	Div_07 - Waterloo	Growth	Pass		30533	SRP_Southeast_Breslau_S awmill Rd_Reinforcement_NPS4_900m_3450kPa	2032	\$ 1,471,034	High Pressure (HP) reinforcement is required along Sawmill Rd. This is a continuation of project SRPR OSGW 2027_005.	In Progress								
Southeast	Div_07 - Waterloo	Growth	Pass		30536	SRP_Southeast_Cambridge_Guelph Ave_Reinforcement_NPS6_1000m_420kPa	2026	\$ 1,497,708	Reinforce existing main along Guelph Ave. in Cambridge with 1,000 m NPS 6 PE.	Completed	Pass	CNG, ETEE - Potentially could reduce or defer project scope.	Planned					
Southeast	Div_07 - Waterloo	Growth	Pass		30537	SRP_Southeast_Cambridge_Pinebush Rd_Reinforcement_NPS6_470m_420kPa	2023	\$ -	Reinforce existing NPS 2 PE along Pinbush Rd. with approximately 470 m NPS 6 PE. Project has been pushed to 2023.	Completed	Fail	N/A - Investment Cancelled	-	-	-	-	-	-
Southeast	Div_07 - Waterloo	Growth	Pass		30540	SRP_Southeast_Kitchener_Bleams_Reinforcement_NPS12_10m_6160kPa	2024	\$ 853,092	Install an above-grade valve site with 12-inch crossover and scraper bar tees.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Southeast	Div_07 - Waterloo	Growth	Pass		30541	SRP_Southeast_Listowel_21Q-103RSTN_Rebuild	2024	\$ 727,934	Increase capacity and maximum sustainable.	In Progress								
Southeast	Div_07 - Waterloo	Growth	Pass		30542	SRP_Southeast_Owen Sound_County Rd 40_Reinforcement_NPS12_11800m_4670kPa	2025	\$ 5,101,857	Risk/Concern/Opportunity: The Owen Sound system north of St. Jacob's historically adds about 1300 customers per year and growth has been strong along the lakeshore (Port Elgin, Southampton, Owen Sound & towards Collingwood). Assets: Loop existing 10-inch Steel 4,670 kPa main from existing PH4 reinforcement to Squire, Ontario with 12-inch steel main. Install valve site and 12-inch receiver facilities.	Completed	Pass	CNG, ETEE - CNG potentially could reduce or defer project scope, ETEE potentially could reduce or defer project scope.	In Progress					
Southeast	Div_07 - Waterloo	Growth	Pass		30545	SRP_Southeast_Port Elgin_29N-101STN_Rebuild	2023	\$ 275,178	Increase capacity.	Completed	Fail	N/A - Investment Cancelled	-	-	-	-	-	-
Southeast	Div_07 - Waterloo	Growth	Pass		30547	SRP_Southeast_Southampton_30N-501STN_Rebuild	2030	\$ 1,291,775	Increase capacity.	Completed	Pass	CNG, ETEE - Potentially could reduce or defer project scope.	Planned					
Southeast	Div_07 - Waterloo	Growth	Pass		30548	SRP_Southeast_Southampton_South St_Reinforcement_NPS6_600m_550kPa	2028	\$ 957,790	A new main from Railway Rd. running along South St. is required.	Completed	Pass	CNG, ETEE - Potentially could reduce or defer project scope.	Planned					
Southeast	Div_07 - Waterloo	Customer Connections	Pass		48396	WATE: Company Program - New Business - Scattered Mains - Contractor*	2023	\$ 30,956,684	Scattered Mains	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-
Southeast	Div_07 - Waterloo	Growth	Pass		48998	WATE - Breslau System Reinforcement	2022	\$ -	Issue/Concern/Opportunity: System Reinforcement - Loop existing 2-inch PE with 1,300 m 6-inch PE along Victoria Rd. S. from Clair Rd. E. southerly to #1953 Victoria Ave. S. tying into NPS 4 PE main. (WAT FBPR 2022_1) Per Distribution Optimization Engineering (DOE) 2021 System Reinforcement Plan (SRP). Asset: 2-inch PE with 1,300 m 6-inch PE along Victoria Rd. S. from Clair Rd. E. southerly to #1953 Victoria Ave. S. tying into NPS 4 PE main. (WAT FBPR 2022_1) Related Program: N/A	Completed	Fail	N/A - Investment Cancelled	-	-	-	-	-	-
Southeast	Div_07 - Waterloo	Growth	Pass		49079	SRP_Southeast_Guelph_Victoria Rd S_Reinforcement_NPS6_1500m_420kPa	2026	\$ 1,228,795	Issue/Concern/Opportunity: System Reinforcement - Loop existing 2-inch PE with 1,300 m 6-inch PE along Victoria Rd. S. from Clair Rd. E. southerly to #1953 Victoria Ave. S. tying into NPS 4 PE main. (WAT FBPR 2022_1) Per Distribution Optimization Engineering (DOE) 2021 System Reinforcement Plan (SRP) review, project was deferred from 2022 to 2026. Asset: 2-inch PE with 1,300 m 6-inch PE along Victoria Rd. S. from Clair Rd. E. southerly to #1953 Victoria Ave. S. tying into NPS 4 PE main. (WAT FBPR 2022_1) Related Program: N/A	Completed	Pass	CNG, ETEE - CNG potentially could reduce or defer project scope, ETEE potentially could eliminate, reduce or defer project scope.	Planned					

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered		
								Forecast (Includes Overhead)												
Southeast	Div_16 - Hamilton	Distribution Pipe	Pass		30396	Div. 16 - Haldimand - Caledonia - Argyle St S - Hamilton - 1486	2031	\$ 5,339,023	Div. 16 - Haldimand - Caledonia - Argyle St. S. - Hamilton - 1486 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There is significant overlap with the Bare and Unprotected (BU) Program. There is a reduction due to amount of main that will be replaced in 2022. The significant overlap is with the BU main project that was to be complete in 2021 and the proposed BU project on Peebles St. in 2022.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed								
Southeast	Div_16 - Hamilton	Distribution Pipe	Pass		30397	Div. 16 - Haldimand - Canborough - Smithville Rd - Hamilton - 1488	2031	\$ 3,790,625	Div. 16 - Haldimand - Canborough - Smithville Rd. - Hamilton - 1488 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Conservation authority permits are required.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed								
Southeast	Div_16 - Hamilton	Distribution Pipe	Pass		30398	Div. 16 - Haldimand - Dunville - Central Lane - Hamilton - 1361	2030	\$ 4,289,892	Div. 16 - Haldimand - Dunville - Central Lane - Hamilton - 1361 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There is significant overlap with the Bare and Unprotected (BU) Program. There is reduction due to amount of main that will be replaced in 2022. The significant overlap between three BU steel mains are to be replaced in 2022.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed								
Southeast	Div_16 - Hamilton	Distribution Pipe	Pass		30399	Div. 16 - Haldimand - Fisherville - Erie Ave N 1 - Hamilton - 1728	2029	\$ 3,288,689	Div. 16 - Haldimand - Fisherville - Erie Ave N 1 - Hamilton - 1728 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: This project is best divided into two projects (Ph1 - Concession 5 Rd. and Ph2 - Erie Ave. N.). The estimate is to be adjusted after additional project is created. Conservation authority permits are required.	Completed	Fail	NPS 2, cannot downsize or retire								
Southeast	Div_16 - Hamilton	Distribution Pipe	Pass		30404	Div. 16 - Hamilton - Centennial Pkwy N - Hamilton - 1747	2030	\$ 3,393,146	Div. 16 - Hamilton - Centennial Pkwy. N. - Hamilton - 1747 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Include steel main at southeast of Limeridge Mall and the strip malls just south of Violet as it will be isolated steel.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed								
Southeast	Div_16 - Hamilton	Distribution Pipe	Pass		30405	Div. 16 - Hamilton - Crooks St 1 - Hamilton - 1745	2028	\$ 2,963,297	Div. 16 - Hamilton - Crooks St. 1 - Hamilton - 1745 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. It is recommended to maintain pipe size for trunk mains or system resiliency. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.								
Southeast	Div_16 - Hamilton	Distribution Pipe	Pass		30406	Div. 16 - Hamilton - Crooks St 2 - Hamilton - 1746	2027	\$ 2,589,073	Div. 16 - Hamilton - Crooks St. 2 - Hamilton - 1746 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed								
Southeast	Div_16 - Hamilton	Distribution Pipe	Pass		30413	Div. 16 - Hamilton - Wentworth St S 2 - Hamilton - 1743	2032	\$ 1,717,699	Div. 16 - Hamilton - Wentworth St. S. 2 - Hamilton - 1743 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Project will be split into two or three smaller projects with division at Main or King St. The estimate is low. The City is repaving the south portion of Wentworth Ave. S. near Cumberland.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed								
Southeast	Div_16 - Hamilton	Distribution Pipe	Pass		30414	Div. 17 - Halton - Burlington - Guelph Line - Hamilton - 1429	2032	\$ 19,332	Div. 17 - Halton - Burlington - Guelph Line - Hamilton - 1429 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed								

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032		Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered	
								Forecast (Includes Overhead)												
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30036	Rourke Line Rd - Southwest - Windsor - 1373	2031	\$	3,191,758	Rourke Line Rd. - Southwest - Windsor - 1373	Completed	Fail	Potential project scope could be replaced with NPS 2. It is recommended to maintain pipe size for trunk mains or system resiliency. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-	
										Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.										
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30037	Spring Garden Rd - Southwest - Windsor - 1658	2028	\$	2,240,196	Spring Garden Rd. - Southwest - Windsor - 1658	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-	
										Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.										
										Comments: Project is split into smaller projects based on feedback from region (Spring Garden Rd. and included in Malden Rd.).										
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30038	St Anne Blvd - Southwest - Windsor - 1319	2024	\$	-	St. Anne Blvd. - Southwest - Windsor - 1319	Completed	Fail	N/A - Investment Cancelled	-	-	-	-	-	-	
										Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.										
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30039	Talbot Rd - Southwest - Windsor - 1369	2031	\$	3,143,448	Talbot Rd. - Southwest - Windsor - 1369	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-	
										Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.										
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30042	Tecumseh Rd W 2 - Southwest - Windsor - 1492	2031	\$	3,785,419	Tecumseh Rd. W. 2 - Southwest - Windsor - 1492	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
										Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.										
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30044	Walker Rd - Southwest - Windsor - 1333	2029	\$	3,720,388	Walker Rd. - Southwest - Windsor - 1333	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
										Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.										
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		48288	WIND: Dist-Repl-Contr-Mains Municipal*	2020	\$	77,133,584	General: Projects in the relocation category are capital expenditures required to replace or relocate segments of pipeline in order to accommodate municipal infrastructure work. The cost sharing for this work is managed through the Franchise Agreements established with municipalities. A consultative approach is used between the municipality and EGI to avoid conflicts with municipal infrastructure early in the planning stage. If a conflict is unavoidable, pipeline assets are typically relocated or replaced.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		48302	WIND: Anodes*	2023	\$	8,208,779	General: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within EGI's system. These installations and replacements are based on the internal Standard Operating Practice established to maintain the appropriate level of cathodic protection on steel pipeline assets.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		48994	WIND: Laird & Centre MIP, Essex, Replacement	2028	\$	2,050,179	Replace 2,400 m of 2-inch/4-inch S DL protected main (35 kPa) with 250 m of 4-inch plastic main (420 kPa) and 3,850 m of 2-inch plastic main (420 kPa) on Laird Ave. and Centre St. in the Town of Essex. Abandon existing station and replace with new Lakeside pre-fab station. There are 150 services that will either need to be replaced or tied over.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		49743	WIND: Riverside Aldyl A - Ph 1, Windsor, Replacement	2027	\$	2,079,648	This project will replace the approximately 1.1km of 1978 vintage Aldyl-A PE main along Riverside Drive in Windsor, from Bertha Street to Clover Drive. This main is known to be very brittle, has a total of 4 known C leaks, and many lined services. A portion of this 4" PE main is lined in the former 6" S CT main installed in 1968 that continues on either side of Riverside Drive, making maintenance and new service connections extremely difficult. There are approximately 18 services renewals required. Main to be replaced with 1100 m of 4" PE IP.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		49747	WIND: Tecumseh Rd W, Windsor, Replacement	2028	\$	2,670,089	This job will replace 1,025 m of NPS 8 steel (S) (Prior to Records (PTR) main on Tecumseh Rd. W. from Everts Ave. to Betts Ave. with 1,025 m of 8-inch S Yellow Jacket (YJ). This main is either too poor condition or laminated, and as a result cannot be welded on. In addition to weldability issues, several leaks have occurred over the last several years, which have all resulted in high capital expenditures to repair them. This main also requires many anodes try and maintain cathodic protection levels, all of which must be installed in wall-to-wall concrete. The most recent anodes were installed in the last two to three years meaning by 2025, new ones will need to be installed to replace them. This project will also include the renewal of 16 services.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	735378	WIND- 068-105R 540 Ouellette Dist	2023	\$ -										
Southwest	Div_01 - Windsor	Distribution Stations	Pass		101626	WIND - 05A-203 LaSalle Boismier Ave - Heater replacement	2025	\$ 3,038,064	Issue/Concern/Opportunity: Heater controls are located within the hazardous area and are not rated to be within this zone. There is obsolete heating equipment; BS&B style heater that is on the risk register is to be replaced. Justification: Station needs to be rebuilt with new CWT 770. Potential requirement for additional land. Assets: 05A-203 LaSalle Boismier Ave. Related Investments: Not applicable.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
Southwest	Div_01 - Windsor	Distribution Stations	Pass		502697	WIND - 05B-201 Windsor McGregor Line - rebuild	2026	\$ 1,784,861	Issue/Concern/Opportunity: Known corrosion issues are on risers. Justification: Rebuild station to eliminate potential for leak. Assets: 05B-201 Related Investments: Not applicable.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
Southwest	Div_01 - Windsor	Distribution Stations	Pass		502699	WIND - 05A-601 Front & Malden full rebuild	2025	\$ 1,664,072	Issue/Concern/Opportunity: Station freezes in winter so heater is required. Corrosion is significant on outlet riser. Land will be required to rebuild this station. Justification: Eliminate station freeze risk and remediate corrosion on riser. Assets: 05A-601 Related Investments: Not applicable.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
Southwest	Div_01 - Windsor	Distribution Stations	Pass		503276	Windsor/Chatham PFM Compliance Program*	2022	\$ 146,624	Issue/Concern/Opportunity: -PFMs that require a bypass will be rebuilt w/bypass to the new standard: oWhen they are due for a meter exchange and in the meter seal expiry year, provided that year is between 2022 and 2026. This will fall under the meter exchange budget and costs are not covered in this program. of the meter seal year is not between 2022 and 2026, the set will be rebuilt with a bypass the year after it is inspected. This will allow the technicians to identify which will require rebuilt at the time of inspection, and Sohan and I will be developing a process to get work orders generated for these rebuilds after the inspection. Also ensures that we focus our efforts on rebuilding active PFMs requiring rebuild. While I originally mentioned a proactive strategy to rebuild prior to the inspection year, we decided against that. -Assumption is that 50% of PFMs will need to be rebuilt. -Calculations are based on an estimate of \$5500 per rebuild. As you know there is a significant swing depending on the pipe size, volume, existing set up (first stage cut, etc) that may influence this including the release of the new SEADs designs, that I have not seen yet.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Southwest	Div_01 - Windsor	Distribution Stations	Pass		503332	WIND - 068-403 California Ave station rebuild	2024	\$ 9,306,067	Issue/Concern/Opportunity: There are asbestos concerns. The converted NATCO heating system is out of date. There are hazardous area concerns. The maintenance of station is an ergonomics concern. The residential neighbourhood location not ideal. There is no containment for glycol. Justification: Station rebuild. Assets: 068-403 Related Investments: Not applicable.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
Southwest	Div_01 - Windsor	Growth	Pass		30549	SRP_Southwest_Amherstb urg_County Rd 20_Reinforcement_NPS4_1500m_420kPa	2032	\$ 386,634	Main extension connecting two 420 kPa pipes together in rural Amherstburg is required.	Completed	Pass	Low cost, low value	Planned					
Southwest	Div_01 - Windsor	Growth	Pass		30550	SRP_Southwest_Blenheim_Industrial Ave_Reinforcement_NPS6_500m_420kPa	2032	\$ 675,320	Main reinforcement to tie larger mains together at the low point in Blenheim is required. Replace the existing 2-inch on the north side of Industrial Ave.	In Progress								
Southwest	Div_01 - Windsor	Growth	Pass		30552	SRP_Southwest_Essex_05 B-401RSTN_Rebuild	2024	\$ 75,780	Increase station maximum sustainable from 275 kPa to 380 kPa.	Completed	Pass	Low cost, low value	Planned					
Southwest	Div_01 - Windsor	Growth	Pass		30561	SRP_Southwest_Amherstb urg_New STN & Reinforcement_NPS4_220 0m_3450kPa	2032	\$ 4,384,057	Main extension to the west of the 3,450 kPa pipe and a new distribution station to feed into the 420 kPa network in rural Amherstburg is required.	In Progress								
Southwest	Div_01 - Windsor	Growth	Pass		30574	SRP_Southwest_Tecumseh_Manning_Reinforcement_NPS6_250m_420kPa	2022	\$ -	Main extension to the south of Manning Rd. Station is required.	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-	-
Southwest	Div_01 - Windsor	Growth	Pass		30576	SRP_Southwest_Windsor_05B-205RSTN_Rebuild	2026	\$ 24,178	Station is flowing over capacity.	Completed	Pass	Low cost, low value	Planned					
Southwest	Div_01 - Windsor	Growth	Pass		30577	SRP_Southwest_Windsor_County Rd 42_Reinforcement_NPS6_3800m_420kPa	2032	\$ 644,389	Main extension to connect two existing 420 kPa pipes together south of the airport is required.	In Progress								
Southwest	Div_01 - Windsor	Growth	Pass		30578	SRP_Southwest_Windsor_Howard_Reinforcement_NPS6_1800m_420kPa	2026	\$ 864,450	Main extension and reinforcement to the south of Howard and Outer Station is required.	In Progress								
Southwest	Div_01 - Windsor	Customer Connections	Pass		48287	WIND: Company Program - New Business - Scattered Mains - Contractor*	2023	\$ 13,812,423	Scattered Mains	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-
Southwest	Div_01 - Windsor	Customer Connections	Pass		48306	WIND: Generic Greenhouse Windsor*	2023	\$ 73,155,270	Customer Growth	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032		Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered	
								Forecast (Includes Overhead)												
Southwest	Div_02 - Chatham	Distribution Pipe	Fail	Dollar threshold	101164	CHAT: Ridge St, West Lorne, Replacement	2025	\$	-											
Southwest	Div_02 - Chatham	Distribution Pipe	Fail	Dollar threshold	102251	CHAT: Gordon St & Elm St, Chatham-Kent, Replacement	2025	\$	79,795											
Southwest	Div_02 - Chatham	Distribution Pipe	Pass		49742	CHAT: Ridgetown LP, Ridgetown, Replacement	2027	\$	1,846,350	Replace approximately 1.9 km of NPS 4 low-pressure (LP) steel main in downtown Ridgetown with approximately 1.0 km of NPS 4 intermediate-pressure (IP) plastic main and 760 m of 2-inch IP plastic main. This IP system contains several leaks and is located mostly in wall-to-wall concrete (from Market Lane to Victoria Ave.). There are approximately 75 homes and businesses fed off of this system.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
Southwest	Div_02 - Chatham	Distribution Pipe	Pass		49749	Tilbury South Line Replacement	2031	\$	2,835,196	General: The capital expenditure included in this category covers a variety of planned maintenance projects. The projects covered under this expenditure include low-pressure system replacements, distribution pipeline replacements due to historical leakage and integrity concerns, pipeline casing replacements, bridge and water-crossing replacements and repairs, etc. These projects are often identified through planned inspections and pipeline surveys and would then be assessed and planned based on risk and resource availability.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
Southwest	Div_02 - Chatham	Distribution Pipe	Pass		49859	CHAT: Tweedsmuir LP, Chatham, Replacement	2027	\$	2,939,515	Replace 2,300 m of 4-inch steel, bare, protected gas main (2.5 kPa) with 4,300 m of 2-inch plastic gas main (420 kPa) in the Tweedsmuir subdivision in the Municipality of Chatham-Kent. There are 167 services that will need to be replaced.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-	
Southwest	Div_02 - Chatham	Distribution Pipe	Pass		733723	NPS 8 Dover Centre Retrofit	2025	\$	2,066,975	Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2026 Operations and Maintenance (O&M) spend for ILI. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	-
Southwest	Div_02 - Chatham	Distribution Pipe	Pass		733733	NPS 10 Essex	2024	\$	5,466,011	Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2025 Operations and Maintenance (O&M) spend for ILI. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Southwest	Div_02 - Chatham	Distribution Stations	Fail	Dollar threshold	101354	CHAT - 07H-601 Burke Line - Heater Replacement	2022	\$	(11,436)											
Southwest	Div_02 - Chatham	Distribution Stations	Fail	Dollar threshold	101610	CHAT - 07J-301 Ridgetown North Transmission - Replace heater	2025	\$	515,205											
Southwest	Div_02 - Chatham	Distribution Stations	Fail	Dollar threshold	502775	CHAT - 08H-302C Greenhill Produce - rebuild and heater addition	2023	\$	450,860											
Southwest	Div_02 - Chatham	Distribution Stations	Fail	Dollar threshold	502778	CHAT - 09G-502 Tupperville Trans - heater replacement	2026	\$	1,048,671											
Southwest	Div_02 - Chatham	Distribution Stations	Fail	Dollar threshold	734661	CHAT: 06I-103 Blenheim North Gate	2026	\$	291,177											
Southwest	Div_02 - Chatham	Distribution Stations	Fail	Dollar threshold	734669	CHAT: 07H-501 MAYNARD LINE	2030	\$	678,252											
Southwest	Div_02 - Chatham	Distribution Stations	Fail	Dollar threshold	734671	CHAT: 07K-409 MCKINLAY RD STATION	2031	\$	1,578,654											
Southwest	Div_02 - Chatham	Distribution Stations	Pass		101627	CHAT - 07G-201 Baldoon Transmission - Station Rebuild	2024	\$	2,084,259	Issue/Concern/Opportunity: Obsolete regulators cannot be serviced nor parts obtained to repair them; obsolete heating equipment contains 20,000 L of glycol and is on the risk register. Justification: Replace regulators and heaters. Assets: 07G-201 Baldoon Transmission Related Investments: Not applicable.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	
Southwest	Div_02 - Chatham	Distribution Stations	Pass		503334	CHAT - 07G-601 Chatham North Gate	2026	\$	2,888,027	Issue/Concern/Opportunity: Converted B5&B and heat exchanger replacement is required. There have already been several environmental spills (glycol) as a result of condition failures from these converted heaters and is known on the risk register. Also, the condition of the heaters is creating risks around reliability and the ability to adequately provide heat. Justification: Potential for reliability issues with the safe and reliable delivery of natural gas. In addition, Possible glycol leaks from heating system equipment or piping inside building (indoor equipment typically includes boilers, pressure relief, glycol recirculation pumps, air extractors, instruments/controls, gauges, expansion tanks). Possible leaks from heating system equipment or piping located outside on station property (outdoor equipment typically includes the heat exchanger, overpressure burst disk, air extractors, instruments/controls, gauges, and atmospheric glycol expansion tank) Assets: 07G-601 Related Investments: Not applicable.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	
Southwest	Div_02 - Chatham	Distribution Stations	Pass		734660	CHAT: 09F-501 Wallaceburg Baseline	2025	\$	2,007,084	Issue/Concern/Opportunity: There are concerns from Station Operations around the condition of the existing filter. If the filter cannot operate as per its intended use there is a potential to It is recommended to replace the complete station as there are reliability and integrity concerns. Justification: Replace filter (like for like). Assets: 09F-501 Related Investments: Not applicable.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	

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Southwest	Div_03 - Sarnia	Distribution Pipe	Pass		1267	Cogen Retrofit	2024	\$ 2,772,475	Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2024 Operations and Maintenance (O&M) spend for ILI. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGIs pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Southwest	Div_03 - Sarnia	Distribution Pipe	Pass		733720	NPS 6 Retrofit	2025	\$ 2,314,986	Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2025 Operations and Maintenance (O&M) spend for ILI. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Southwest	Div_03 - Sarnia	Distribution Pipe	Pass		733734	NPS 6 Sarnia	2024	\$ 2,401,241	Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2025 Operations and Maintenance (O&M) spend for ILI. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
Southwest	Div_03 - Sarnia	Distribution Stations	Fail	Dollar threshold	734679	SARN: 12F-201i Suncor Ethanol	2031	\$ 399,813											
Southwest	Div_03 - Sarnia	Distribution Stations	Fail	Dollar threshold	734680	SARN: 13F-323R McPlank	2029	\$ 631,932											
Southwest	Div_03 - Sarnia	Distribution Stations	Fail	Dollar threshold	734685	SARN: 13F-402 Shell Canada	2030	\$ 513,261											
Southwest	Div_03 - Sarnia	Distribution Stations	Fail	Dollar threshold	734693	SARN: 11H-201R Oil Spring Reg Stn	2026	\$ 226,087											
Southwest	Div_03 - Sarnia	Distribution Stations	Fail	Dollar threshold	734696	SARN: 14F-503R Point Edward Victoria and St. Clair Reg Stn	2027	\$ 233,297											
Southwest	Div_03 - Sarnia	Distribution Stations	Pass		48664	CNG Stations - Project #1 - Dawn CNG	2020	\$ -	Traditionally, fleet operators fuel their vehicles with gasoline or diesel. EGI promotes the use of natural gas to these customers as an alternate fuel source to provide a lower-cost and lower-emission fuelling solution for vehicles such as garbage trucks, light duty vehicles, and transit buses. Business Development is responsible for the installation, maintenance, and the safe and continued operation of NGT stations assets for these customers. NGT stations differ in operation from distribution system stations as NGT stations use and store compressed natural gas (CNG) on site at up to 400psi. EGD has two general categories for NGT station types: Large, Mobile and Utility NGT stations and Small NGT stations (also referred to as VRAs). Large, Mobile and Utility NGT stations are similar in operation and will be evaluated for condition in the same manner. Issue/Concern/Opportunity: Heater age (per integrity) is a concern.	Completed	Fail	See investment description, IRPAs not applicable for CNG	-	-	-	-	-	-	-
Southwest	Div_03 - Sarnia	Distribution Stations	Pass		734662	SARN: 12F-106i Suncor Hydrogen/Air Products	2032	\$ 2,281,138	Justification: Replace heater. Assets: 12F-106i Related Investments: Not applicable.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	
Southwest	Div_03 - Sarnia	Distribution Stations	Pass		734670	SARN: 13F-501 Sarnia Industrial	2027	\$ 12,797,067	Issue/Concern/Opportunity: The station is located on leased property that is limited in size and makes it difficult to install a required filter. In addition, the heater is past its average lifespan and there are other ergonomic concerns. There is an opportunity to merge the station with 13F-503 Churchill Rd Station and will be assessed during this project. Justification: Entire rebuild, potentially relocate. Assets: 13F-501 Related Investments: 13F-503 may potentially be merged with this station in a relocation.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	
Southwest	Div_03 - Sarnia	Distribution Stations	Pass		734676	SARN: 13F-220R Vidal St	2031	\$ 17,192,992	Issue/Concern/Opportunity: 13F-220R is experiencing flooding due to its current location. The heater age is of concern and the control valves require an upgrade. Potential relocation is necessary due to building floods. Justification: Full rebuild is required. Assets:13F-220R	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	
Southwest	Div_03 - Sarnia	Distribution Stations	Pass		734683	SARN: 12F-205 Novacor Moore Trans	2025	\$ 3,165,216	Related Investments: Not applicable. Issue/Concern/Opportunity: The heater short cycles and there are visible condition issues. The regulators' design is insufficient causing operational concerns and will be redesigned in this project to meet current standards. Justification: Complete rebuild is required. Assets: 12F-205	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	
Southwest	Div_03 - Sarnia	Distribution Stations	Pass		734684	SARN: 130-402 Westmount Gate	2029	\$ -	Related Investments: Not applicable. Issue/Concern/Opportunity: Heater age (per integrity) is a concern. Loss of Heating System Function: Loss of the heating system function could result in two scenarios, (1) frost heave or (2) pressure control failure due to the freezing of station components. Frost heave occurs when the gas is cooled due to the pressure reduction and causes an upward swelling of soil around public or private property near the gas main. Freezing of station components such as creating large ice buildup around valves can prevent operation if gas isolation is required. This could result in the loss of pressure control and potentially lead to an over-pressure or under-pressure situation. The financial impact includes commodity loss, service disruptions, increased network leak surveys and system checks, repairs or replacement of company-owned property, or damages caused to public, commercial or industrial property. Inoperable systems will lead to a failure to maintain operational supply to customers. Justification: Replace heater. Assets: 130-402 Related Investments: Not applicable.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	

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								Forecast (Includes Overhead)										
Southwest	Div_04 - London	Distribution Pipe	Pass		30279	Briscoe St W 2 - Southwest - London - 1736	2028	\$ 3,382,334	Briscoe St. W. 2 - Southwest - London - 1736 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
Southwest	Div_04 - London	Distribution Pipe	Pass		30282	Cheapside St - Southwest - London - 1453	2030	\$ 2,897,686	Cheapside St. - Southwest - London - 1453 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Majority will be replaced with bare and unprotected (BU) in 2023.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
Southwest	Div_04 - London	Distribution Pipe	Pass		30283	Cheapside St 2 - Southwest - London -1534	2032	\$ 4,981,425	Cheapside St. 2 - Southwest - London -1534 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Some bare and unprotected – low-pressure (LP) was already replaced in 2021.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	-	-	-	-	-	-
Southwest	Div_04 - London	Distribution Pipe	Pass		30284	Clarke Rd - Southwest - London - 1483	2029	\$ 3,497,926	Clarke Rd. - Southwest - London - 1483 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	-	-	-	-	-	-
Southwest	Div_04 - London	Distribution Pipe	Pass		30290	E Centre St - Southwest - London - 1412	2032	\$ 2,493,289	E. Centre St. - Southwest - London - 1412 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	NPS 2, cannot downsize or retire	-	-	-	-	-	-
Southwest	Div_04 - London	Distribution Pipe	Pass		30291	Elworthy Ave - Southwest - London - 1446	2031	\$ 5,476,254	Elworthy Ave. (moratorium until 2026) - Southwest - London - 1446 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Majority of this project is scheduled for 2024. Lambeth had city work in 2021 and moratorium is until 2026. This project was updated to reflect moratorium until 2026.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
Southwest	Div_04 - London	Distribution Pipe	Pass		30292	Emery St E - Southwest - London - 1472	2032	\$ 4,788,769	Emery St. E. (moratorium until 2026) - Southwest - London - 1472 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: City did reconstruction in 2020 and moratorium is until 2026. This project was updated to reflect moratorium until 2026.	Completed	Fail	Potential project scope could be replaced with NPS 2. It is recommended to maintain pipe size for trunk mains or system resiliency. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
Southwest	Div_04 - London	Distribution Pipe	Pass		30294	Front St - Southwest - London - 1393	2031	\$ 2,360,599	Front St. - Southwest - London - 1393 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	NPS 2, cannot downsize or retire	-	-	-	-	-	-
Southwest	Div_04 - London	Distribution Pipe	Pass		30298	Glenora Dr - Southwest - London - 1517	2030	\$ 3,068,951	Glenora Dr. - Southwest - London - 1517 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-
Southwest	Div_04 - London	Distribution Pipe	Pass		30300	Greenwood Ave - Southwest - London - 1428	2027	\$ 3,164,891	Greenwood Ave. - Southwest - London - 1428 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered
Southwest	Div_04 - London	Distribution Pipe	Pass		30301	Hamilton Rd - Southwest - London - 1408	2036	\$ 3,652,333	Hamilton Rd. - Southwest - London - 1408 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30312	Mornington Ave - Southwest - London - 1531	2031	\$ 8,586,648	Mornington Ave. - Southwest - London - 1531 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Some bare and unprotected (BU) and the 24-inch is on Strand s/b a separate project.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30313	Old Lakeshore Rd - Southwest - London - 1572	2032	\$ 1,910,275	Old Lakeshore Rd. - Southwest - London - 1572 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Completed	Fail	Potential project scope could be replaced with NPS 2. IRPAs not applicable and scope to be confirmed when project enters the detailed design phase.						
Southwest	Div_04 - London	Distribution Pipe	Pass		30316	Ridout St S - Southwest - London - 1470	2032	\$ 2,694,588	Ridout St. S. - Southwest - London - 1470 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30319	Southdale Rd E - Southwest - London - 1434	2029	\$ 8,221,076	Southdale Rd. E. - Southwest - London - 1434 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30325	Wellington Rd - Southwest - London - 1449	2028	\$ 4,764,818	Wellington Rd. - Southwest - London - 1449 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30327	Wilton Grove Rd - Southwest - London - 1395	2032	\$ 4,839,069	Wilton Grove Rd. - Southwest - London - 1395 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30328	Windsor Ave - Southwest - London - 1515	2029	\$ 3,217,141	Windsor Ave. - Southwest - London - 1515 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30441	Stratford-Huron St - Matilda to Douglas Phase 2 - 1758	2030	\$ 3,061,716	Stratford - Huron St. - Matilda to Douglas Phase 2 - 1758 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30461	Courthouse Sq - Southwest - London - 1802	2032	\$ 1,785,894	Courthouse Sq. - Southwest - London - 1802 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered	
Southwest London	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734664	LOND: 10M-503R Main and Shackleton	2025	\$ -											
Southwest London	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734668	LOND: 13O-210R Hale and Burslem	2025	\$ -											
Southwest London	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734678	LOND: 13O-212R Highbury and Brydges	2025	\$ -											
Southwest London	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734681	LOND: 14O-510R Curry and Oxford	2024	\$ -											
Southwest London	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734687	LOND: 19O-601 Mitchell Gate	2028	\$ 510,915											
Southwest London	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734688	LOND: 13O-206R London Baseline Reg Station	2025	\$ -											
Southwest London	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734690	LOND: 17M-601 Centralia Stn	2025	\$ -											
Southwest London	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734691	LOND: 15R-608R Walter and Fyle Reg Stn	2025	\$ -											
Southwest London	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734692	LOND: 13O-123R Napier and Blackfriars Reg Stn	2025	\$ -											
Southwest London	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734694	LOND: 11O-306R Wellington and Fifth Reg Stn	2026	\$ 226,087											
Southwest London	Div_04 - London	Distribution Stations	Fail	Dollar threshold	735272	LOND: 13O-401 White Oaks	2028	\$ 640,347											
Southwest London	Div_04 - London	Distribution Stations	Fail	Dollar threshold	735275	LOND: 16O-301 St. Mary's Gate	2028	\$ 640,347											
Southwest London	Div_04 - London	Distribution Stations	Fail	Dollar threshold	735276	LOND: 15J-401 Forest Gate Transmission Station	2032	\$ 373,746											
Southwest London	Div_04 - London	Distribution Stations	Fail	Timing	500438	10O-501 Port Stanley Gate Reg Corrosion Repair	2020	\$ -											
Southwest London	Div_04 - London	Distribution Stations	Pass		100996	13P-101R Sovereign & Gore	2025	\$ -	Issue/Concern/Opportunity: There is frost heave impacting the road outside of station. Stations where a highpressure reduction occurs can be subject to freezing of station components, which may cause a loss of pressure control if there is moisture in the gas, heaving of the station piping if there is moisture in the ground surrounding the station, or the temperature reduction of the gas could cool the downstream piping and impact the surrounding grounds including the potential to damage roads. The effects of the Joule-Thomson Effect. Ice buildup is visible on the downstream components and the station assembly is misaligned due to heaving. Consequence on a 35DD ION: The southeast corner of London will have low pressures and areas dropping below minimums. Approximate number of customers Lost: 3,600+ Assets: Tembec Spruce Falls SMS (41402004) Related Investments: N/A	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	-
Southwest London	Div_04 - London	Distribution Stations	Pass		503272	London/Sarnia PFM Compliance Program*	2022	\$ 331,804	Issue/Concern/Opportunity: -PFMs that require a bypass will be rebuilt w/bypass to the new standard: oWhen they are due for a meter exchange and in the meter seal expiry year, provided that year is between 2022 and 2026. This will fall under the meter exchange budget and costs are not covered in this program. oIf the meter seal year is not between 2022 and 2026, the set will be rebuilt with a bypass the year after it is inspected. This will allow the technicians to identify which will require rebuilt at the time of inspection, and Sohan and I will be developing a process to get work orders generated for these rebuilds after the inspection. Also ensures that we focus our efforts on rebuilding active PFMs requiring rebuild. While I originally mentioned a proactive strategy to rebuild prior to the inspection year, we decided against that. -Assumption is that 50% of PFMs will need to be rebuilt. -Calculations are based on an estimate of \$500 per rebuild. As you know there is a significant swing depending on the pipe size, volume, existing set up (first stage cut, etc) that may influence this including the release of the new SEADs designs, that I have not seen yet.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	-
Southwest London	Div_04 - London	Distribution Stations	Pass		734674	LOND: 14O-503R Highbury and Cheapside Dist Stn	2025	\$ 8,532,695	Issue/Concern/Opportunity: The station has obsolete regulators (Grove regulators) where replacement parts are no longer available. In the event of a failure, no replacement parts are available. In addition, the station is receiving liquids and only has a dry gas filter installed. There are concerns with the potential of liquids entering the pressure control equipment and potentially impacting the performance of these assets. There is a single bypass valve that does not meet the current design standards and could impact manual bypass operations. The site has a large pressure drop and heat is required to prevent heaving. Justification: Complete station rebuild is required. Assets: 14O-503R Related Investments: Not applicable.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	-
Southwest London	Div_04 - London	Distribution Stations	Pass		734689	LOND: 14R-104 Beachville Dornat Trans Stn	2024	\$ 5,694,891	Issue/Concern/Opportunity: The station is equipped with a dry gas filter and is currently receiving liquids at the inlet of the station without the ability to remove the liquids. There are concerns that if liquid gets to the pressure control equipment, there may not be reliable pressure control and may lead to other operational issues. The heating system is obsolete and has the potential to leak glycol to the ground. There is a significant volume of glycol in the heating system (i.e., ~5,000 L) that could lead to environmental concerns if released from the existing aging heating system. This investment is to replace the heating system, the filter and remove underground insulation. Justification: Complete rebuild is required. Assets: 14R-104 Related Program: Not applicable	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	-
Southwest London	Div_04 - London	Distribution Stations	Pass		734695	LOND: 15Q-603 C C Trans Stn	2027	\$ 4,478,284	Issue/Concern/Opportunity: Heater age (per integrity) is a concern. Loss of Heating System Function: Loss of the heating system function could result in two scenarios, (1) frost heave or (2) pressure control failure due to the freezing of station components. Frost heave occurs when the gas is cooled due to the pressure reduction and causes an upward swelling of soil around public or private property near the gas main. Freezing of station components such as creating large ice buildup around valves can prevent operation if gas isolation is required. This could result in the loss of pressure control and potentially lead to an overpressure or underpressure situation. The financial impact includes commodity loss, service disruptions, increased network leak surveys and system checks, repairs or replacement of company-owned property, or damages caused to public, commercial or industrial property. Inoperable systems will lead to a failure to maintain operational supply to customers. FIMP will assess the site closer to execution to determine if additional components require replacement. Assets: 15Q-603 Related Investments: Not applicable.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	-
Southwest London	Div_04 - London	Distribution Stations	Pass		735155	LOND: 21L-201 Goderich Gate	2026	\$ 1,937,697	Issue/Concern/Opportunity: Heater age (per integrity) is a concern. Justification: Replace heater. Assets: 21L-201 Related Investments: Not applicable.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-	
Southwest London	Div_04 - London	Growth	Pass		30551	SRP_Southwest_Embro_1 SQ-301STN_Rebuild	2023	\$ 6,429	Station flows over capacity in Winter 2023.	Completed	Pass	Low cost, low value	Planned						

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								Forecast (Includes Overhead)										
Southwest	Div_04 - London	Growth	Pass		30553	SRP_Southwest_Forest_T ownsend Line_Reinforcement_NPS6_4500m_3450kPa	2031	\$ 6,066,132	Maintain system minimum inlets to downstream constraints.	In Progress								
Southwest	Div_04 - London	Growth	Pass		30554	SRP_Southwest_Innerkip_165-503STN_Rebuild	2029	\$ 1,351,665	Rebuild Innerkip Transmission Station to a capacity of 2,470 m3/hr and set pressure to 1,860 kPa so downstream stations meet their inlet pressures.	In Progress								
Southwest	Div_04 - London	Growth	Pass		30555	SRP_Southwest_Kettle Point_Reverswood Line_Reinforcement_NPS4_2000m_3450kPa	2027	\$ 2,266,318	Maintain system minimum inlets to downstream constraints.	Completed	Pass	CNG, ETEE - CNG potentially could reduce or defer project scope, ETEE potentially could eliminate, reduce or defer project scope.	Planned					
Southwest	Div_04 - London	Growth	Pass		30556	SRP_Southwest_London_130-402STN_Rebuild	2024	\$ 4,711,823	Westmount station is flowing over capacity, currently without System Reinforcement Plan (SRP) growth.	In Progress								
Southwest	Div_04 - London	Growth	Pass		30557	SRP_Southwest_London_Bradley Ave_Reinforcement_NPS6_500m_420kPa	2031	\$ 317,581	A 6-inch reinforcement to maintain system minimum pressures is required.	Completed	Pass	Low cost, low value	Planned					
Southwest	Div_04 - London	Growth	Pass		30558	SRP_Southwest_London_Byron Baseline_Reinforcement_NPS_700m_420kPa	2023	\$ 861,500	There is 8-inch main out of Byron station required to increase pressures north.	Completed	Pass	CNG, ETEE - Potentially could reduce or defer project scope.	Planned					
Southwest	Div_04 - London	Growth	Pass		30559	SRP_Southwest_Mt. Brydges_12M-303RSTN_Rebuild	2025	\$ 967,094	Station is flowing over capacity. Minimum inlet can increase.	In Progress								
Southwest	Div_04 - London	Growth	Pass		30564	SRP_Southwest_Oil Springs_11H-201RSTN_Rebuild	2025	\$ 215,196	Station is flowing over capacity at Oil Springs.	Completed	Pass	Low cost, low value	Planned					
Southwest	Div_04 - London	Growth	Pass		30563	SRP_Southwest_Bluewater_New STN & Reinforcement_NPS4_720m_3450kPa	2025	\$ 8,656,067	Transmission pipe from Bluewater to a new station in Saint Joseph is required (verify Maximum Operating Pressure (MOP) of 550 kPa).	Completed	Pass	CNG, ETEE - Potentially could reduce or defer project scope.	Planned					
Southwest	Div_04 - London	Growth	Pass		30565	SRP_Southwest_Port Stanley_George Street_Reinforcement_NPS4_300m_420kPa	2029	\$ 146,866	A 4-inch looping is required to increase pressures downstream.	Completed	Pass	Low cost, low value	Planned					
Southwest	Div_04 - London	Growth	Pass		30569	SRP_Southwest_St. Marys_Church Street_Reinforcement_NPS6_100m_420kPa	2032	\$ 56,894	Trout Creek River Crossing	Completed	Pass	Low cost, low value	Planned					
Southwest	Div_04 - London	Growth	Pass		30566	SRP_Southwest_Woodstock_Reinforcement & Reinforcement_NPS6_820m_1900kPa	2029	\$ 12,235,277	New 6-inch ST (1,900 kPa) line from Beachville Lateral to existing 6-inch main. New station is to be constructed on ether end of new main.	In Progress								
Southwest	Div_04 - London	Growth	Pass		30568	SRP_Southwest_Sarnia_13F-324RSTN_Rebuild	2024	\$ -	Station is flowing over capacity.	Completed	Fail	N/A - Investment Cancelled	-	-	-	-	-	-
Southwest	Div_04 - London	Growth	Pass		30570	SRP_Southwest_St. Marys_Glass Street_Reinforcement_NPS4_650m_420kPa	2030	\$ 105,028	New business reinforcement on new street in St Mary's is required.	Completed	Pass	Low cost, low value	Planned					
Southwest	Div_04 - London	Growth	Pass		30572	SRP_Southwest_Talbotville_110-173STN_Rebuild	2023	\$ 77,149	Talbotville South Station will be flowing over capacity in Winter 2023. Station upgrades are required. New station should have an outlet of 380 kPa instead of the existing 275 kPa.	Completed	Pass	Low cost, low value	Planned					
Southwest	Div_04 - London	Growth	Pass		30571	SRP_Southwest_Stratford_18Q-501RSTN_Rebuild	2030	\$ 1,375,952	Increase maximum sustainable and increase capacity.	In Progress								
Southwest	Div_04 - London	Growth	Pass		30573	SRP_Southwest_Talbotville_Talbotville Gore Rd_Reinforcement_NPS4_500m_420kPa	2030	\$ 215,671	A 4-inch main reinforcement is required to maintain system minimum pressures.	Completed	Pass	Low cost, low value	Planned					
Southwest	Div_04 - London	Growth	Pass		30575	SRP_Southwest_Thamesford_Thornedale Road_Reinforcement_NPS4_570m_420kPa	2031	\$ 243,361	Reinforcement is needed to maintain system minimum pressures in Thamesford.	Completed	Pass	Low cost, low value	Planned					
Southwest	Div_04 - London	Growth	Pass		30560	SRP_Southwest_Sarnia_New STN & Reinforcement_NPS6_160m_420kPa	2023	\$ 360,030	A new distribution station off of the existing 1,210 kPa system and a main extension to tie into the 420 kPa system north of Sarnia along the water is required.	Completed	Pass	CNG, ETEE - Potentially could defer project scope.	N/A - Pilot Project	N/A - Pilot Project	N/A - Pilot Project	Pilot Project Application filed to OEB		CNG, ETEE DR
Southwest	Div_04 - London	Growth	Pass		30579	SRP_Southwest_Wonderland_New STN & MOP Upgrade	2025	\$ 20,506,933	A Maximum Operating Pressure (MOP) upgrade of the 6,160 listed pipe out of Hensall Transmission, upgrade to the inlets of existing stations along this line to 6,160 kPa inlet MOP, and installation of new station near Lucan to regulate from 6,160 to 3,450 is required.	In Progress								
Southwest	Div_04 - London	Growth	Pass		30580	SRP_Southwest_Woodstock_Oxford Road 17_Reinforcement_NPS6_1100m_420kPa	2023	\$ 469,324	A 6-inch loop is required to bump up pressures in north Woodstock.	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-	-
Southwest	Div_04 - London	Customer Connections	Pass		48347	LOND: Company Program - New Business - Scattered Mains - Contractor*	2023	\$ 36,902,711	Scattered Mains	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-
Southwest	Div_04 - London	Growth	Pass		49805	SRP_Southwest_Hensall Trans_14N-302STN_Rebuild	2024	\$ 7,633,706	A rebuild of the Hensall Transmission Station (14N-302) is required to increase capacity and maximum sustainable outlet pressure to defer reinforcement of the Hensall Transmission System by three years. This project was assumed to be completed in 2023 for the community expansion projects on this system. This could affect its ability to be optimized or deferred. Grain dryer customer inquiries on this system are the driver for this project.	Completed	Fail	Timing - Market based supply side alternatives not applicable	-	-	-	-	-	-

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								Forecast (Includes Overhead)											
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734320	Methane Leak Remediation : Valve Replacement 2024*	2024	\$	64,028										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734321	Methane Leak Remediation : Valve Replacement 2025*	2025	\$	-										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734322	Methane Leak Remediation : Valve Replacement 2026*	2026	\$	66,958										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734323	Methane Leak Remediation : Valve Replacement 2027*	2027	\$	67,586										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734324	Methane Leak Remediation : Valve Replacement 2028*	2028	\$	68,726										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734325	Methane Leak Remediation : Valve Replacement 2029*	2029	\$	65,719										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734326	Methane Leak Remediation : Valve Replacement 2030*	2030	\$	69,341										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734327	Methane Leak Remediation : Valve Replacement 2031*	2031	\$	70,066										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734328	Methane Leak Remediation : Valve Replacement 2032*	2032	\$	69,443										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734330	SCOR:S25 UPS-Replace*	2032	\$	183,329										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734331	SCOR:HMI PCs-Replace*	2031	\$	91,086										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734332	SCOR:Obsolete Mech-Replace 2031*	2031	\$	133,126										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734333	SCOR:Obsolete Mech-Replace 2032*	2032	\$	131,941										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734334	SM:Obsolete Elec-Replace 2031*	2031	\$	77,073										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734335	SM:Obsolete Elec-Replace 2032*	2032	\$	76,387										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734336	SM:Obsolete Instr-Replace 2031*	2031	\$	77,073										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734337	SM:Obsolete Instr-Replace 2032*	2032	\$	76,387										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734338	SM:SCADA-Annual Upgrade 2029*	2029	\$	72,291										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734339	SM:SCADA-Annual Upgrade 2030*	2030	\$	76,276										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734340	SM:SCADA-Annual Upgrade 2031*	2031	\$	77,073										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734341	SM:SCADA-Annual Upgrade 2032*	2032	\$	76,387										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734342	SM:FIMP Recommend'ns-Implement 2031*	2031	\$	70,066										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734343	SM:FIMP Recommend'ns-Implement 2029*	2029	\$	65,719										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734344	SM:FIMP Recommend'ns-Implement 2030*	2030	\$	69,341										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734345	SM:FIMP Recommend'ns-Implement 2032*	2032	\$	69,443										
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	736505	SCOR: K711 MOD Hdr Valves-Replace	2024	\$	1,186,561										
STO - EGD	70 - Storage	Compression Stations	Fail	Timing	12959	SM:100MOD Hdr Valves-Replace*	2023	\$	-										
STO - EGD	70 - Storage	Compression Stations	Fail	Timing	12960	SM:100MOD Hdr Valves-Replace*	2025	\$	-										
STO - EGD	70 - Storage	Compression Stations	Pass		5624	SCOR:60004-Fdn Blik-Replace	2023	\$	3,164,448	Issue/Concern: Due to the age of the compressor infrastructure, hours operating, and oil contamination, engine block foundations are deteriorating. Industry benchmarks suggest that reciprocating engine block foundations degrade in 25 years or less for engines that run 24/7. Excessive bearing deflections place cyclic stresses on the crankshaft of the unit, leading to increased frequency of bearing failure and increased potential for a crankshaft fatigue failure. Unit reliability will be diminished dramatically if repairs are not performed. Worst case consequence is unit unavailability during a design day. Compressor foundations have been considered in the Asset Health Review. Condition assessment is largely visual. The telltale sign of poor foundation condition is the existence of cracks on the surface of the foundation, with oil seeping out of the crack. Cracks typically extend to a depth that is consistent with the bottom of the unit's anchor bolts. Without remediation, failing foundations will allow unit settlement, creating a misalignment of bearings. Frequency of bearing failures increases reducing operation reliability. Collateral damage to the crankshaft is also common.	Completed	Fail	Compression Station related projects are required to maintain existing deliverability and throughput. This is necessary to maintain security of supply and stable natural gas pricing during supply disruptions.						
STO - EGD	70 - Storage	Compression Stations	Pass		12884	SCOR:60011-Fdn Blik-Replace	2032	\$	3,068,712	Issue/Concern: Due to the age of the compressor infrastructure, hours operating and oil contamination, engine block foundations are deteriorating. Industry benchmarks suggest that reciprocating engine block foundations degrade in 25 years or less for engines that run 24/7. Excessive bearing deflections place cyclic stresses on the crankshaft of the unit leading to increased frequency of bearing failure and increased potential for a crankshaft fatigue failure. Unit reliability will diminish dramatically if repairs are not performed. Worst case consequence is unit unavailability during a design day. Compressor foundations have been considered in the Asset Health Review. Condition assessment is largely visual. The telltale sign of poor foundation condition is the existence of cracks on the surface of the foundation, with oil seeping out of the crack. Cracks typically extend to a depth that is consistent with the bottom of the unit's anchor bolts. Without remediation, failing foundations will allow unit settlement, creating a misalignment of bearings. Frequency of bearing failures increases reducing operation reliability. Collateral damage to the crankshaft is also common.	Completed	Fail	Compression Station related projects are required to maintain existing deliverability and throughput. This is necessary to maintain security of supply and stable natural gas pricing during supply disruptions.						

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered			
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		13044	PSEC:TS22H Well-Install	2024	\$	<p>- Issue/Concern: Micro-annulus leaks have been occurring on wells that have been relined. Relining a well may be performed when the integrity of an existing casing is inadequate, and a smaller diameter casing is installed inside the original casing (concentrically). A recent rash of these relined wells has experienced leakage between the two casings.</p> <p>Concerns:</p> <p>1.Localized leakage can be prevented by sealing the flow path at the wellhead (casing vent). This action causes pressure in the space between the two casings to achieve full reservoir pressure.</p> <p>2.If the annulus space is allowed to be pressurized, there is the potential for a breach of the original casing; the original casings are known to have inadequate integrity.</p> <p>3.A breach of the original casing could occur anywhere along the well string which is 2,000 ft long/deep. Leaking, unodorized gas could come to surface at unpredictable locations. About half of the relined wells operated by EGI are those which have not yet started to leak. Of the 20+ relined wells currently in-service at EGD Storage, 11 were recently found to be actively leaking and are being or have been abandoned. The mechanism by which a relined well becomes a leaking well has not been conclusively determined. The remaining (non-leaking) wells are expected to develop a leak in the short term. Once the wells are actively leaking, the problem becomes a compliance issue as follows:</p> <p>•CSA 2341.1-14 - 5.3.1 (a) The design of a well casing program shall provide control of pressures and fluids encountered by the well.</p> <p>•CSA 2341.1-14 - 5.3.6 (c) Well casings shall be set and cemented at sufficient depth to ensure isolation of storage zones.</p> <p>•OGSRA (O/Reg 245.97) - 17 (1) An operator of a well...shall provide casing and blowout prevention equipment and maintain it in such a condition that any oil, gas or water encountered can be effectively controlled.</p> <p>•OGSRA (O/Reg 245.97) - 17 (3) The operator shall ensure that the well does not flow uncontrolled.</p> <p>•O. Reg. 22/00, s. 6 (2) Well abandonments resulting from the Leaking and Relined Well replacement programs will diminish the flow capacity of the associated reservoir. This performance degradation negatively impacts peak day deliverability. Reservoir performance deterioration, due to abandonment of relined wells, is currently unknown.</p> <p>Assets: Seckerton reservoir (Wells and Well Equipment asset program) and gathering system (Field Lines asset program).</p> <p>Related Programs: Installation of wells is performed by the reservoir group (Wells and Well Equipment asset program), installation of laterals is performed by the project execution group (Field Lines asset program). This separation is based on skill set and qualifications. There is a programmatic time dependence between the two asset programs.</p>	Completed	Fail	Storage Pools & Well related projects are required to maintain existing deliverability and throughput. This is necessary to maintain security of supply and stable natural gas pricing during supply disruptions.	-	-	-	-	-	-	-	-	-
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		13047	PSEC:TS23H Well-Install	2024	\$	<p>- Issue/Concern: Well abandonments resulting from abandoned wells since 2007 have already diminished the flow capacity of Seckerton. The proposed relined well replacement program will diminish the flow capacity of the Seckerton Reservoir even further. In addition, wells on the northern saddle of Seckerton (referred to as Seckerton North) are being shut in during low-end withdrawal in order to mitigate crude oil carryover. The North and South saddles have limited interconnected permeability, meaning that gas migrates very slowly between the two saddles. Shutting in wells has the effect of stranding an estimated 1.5 BCF for three weeks at the end of the withdrawal cycle. This performance problem negatively impacts peak day deliverability.</p> <p>Assets: Seckerton reservoir (Wells and Well Equipment asset program) and gathering system (Field Lines asset program).</p> <p>Related Programs: Installation of wells is performed by the Reservoir group (Wells and Well Equipment asset program), installation of laterals is performed by the project execution group (Field Lines asset program). This separation is based on skill set and qualifications. There is a programmatic time dependence between the two asset programs.</p>	Completed	Fail	Storage Pools & Well related projects are required to maintain existing deliverability and throughput. This is necessary to maintain security of supply and stable natural gas pricing during supply disruptions.	-	-	-	-	-	-	-	-	
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		102767	2026 Dig Program S&T*	2026	\$ 2,089,083	<p>2026 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	-		
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		102768	2027 Dig Program S&T*	2027	\$ 2,108,685	<p>2027 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-			
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		102769	2028 Dig Program S&T*	2028	\$ 2,144,259	<p>2028 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-			
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		102770	2029 Dig Program S&T*	2029	\$ 2,050,431	<p>2029 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-			
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		102771	2030 Dig Program S&T*	2030	\$ 2,163,451	<p>2030 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-			
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		102788	2026 S&T Pipelines Integrity Program*	2026	\$ 4,111,209	<p>2026 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2024</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-			
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		102789	2027 S&T Pipelines Integrity Program*	2027	\$ 4,149,784	<p>2027 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2024</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-			
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		102790	2028 S&T Pipelines Integrity Program*	2028	\$ 4,219,791	<p>2028 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2024</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-			
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		102792	2029 S&T Pipelines Integrity Program*	2029	\$ 4,035,144	<p>2029 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2024</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-			
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		102793	2030 S&T Pipelines Integrity Program*	2030	\$ 4,257,560	<p>2030 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2024</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-			

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032		Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered	
								Forecast (Includes overhead)												
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734352	STO - UPS Battery replacements 2031	2031	\$	165,440											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734353	STO - UPS Battery replacements 2032	2032	\$	154,653											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	735627	Bright A1 Scrubber Replacement	2025	\$	1,253,201											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	735656	Parkway East Generator Control Upgrade	2024	\$	404,158											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	735978	STO Moisture Analyzer Upgrade 2023*	2023	\$	-											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736014	STO Moisture Analyzer Upgrade 2024*	2026	\$	79,795											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736015	STO Moisture Analyzer Upgrade 2025*	2025	\$	-											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736016	STO Moisture Analyzer Upgrade 2026*	2026	\$	79,795											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736017	STO Moisture Analyzer Upgrade 2027*	2027	\$	79,988											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736018	STO Moisture Analyzer Upgrade 2028*	2028	\$	81,746											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736019	STO Moisture Analyzer Upgrade 2029*	2029	\$	80,672											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736021	STO Moisture Analyzer Upgrade 2030*	2030	\$	82,122											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736022	STO Moisture Analyzer Upgrade 2031*	2031	\$	82,720											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736023	STO Moisture Analyzer Upgrade 2032*	2032	\$	77,327											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736182	Lobo C Siemens Valve Controllers Replacement	2023	\$	236,019											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736274	Dawn Fire Pump 1	2023	\$	269,431											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736276	Large Diameter - Valve Replacement 2026*	2026	\$	997,442											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736277	Large Diameter - Valve Replacement 2028*	2028	\$	1,021,830											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736325	Parkway C Siemens Valve Controllers Replacement	2023	\$	238,590											
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736922	Dawn Fire Pond Weir	2023	\$	19,287											
STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		48231	Parkway A Gas Generator(38148) End-of-Life Overhaul	2027	\$	2,772,906	Issue/Concern/Opportunity: The consequence of compressor failure is dominated by gas cost impacts to customers. The compressor package is comprised of a gas turbine engine driver, compressor, power turbine and ancillary equipment such as lube oil, fuel supply, and electronic control systems, which are required for the compressor to operate. The gas turbine engine is very complex and carries the greatest failure risk of all of the compressor package components. By continuing to comply with original equipment manufacturer (OEM) recommended Preventive Maintenance (PM) schedules and overhauls, compressor reliability risks are controlled to moderate levels. In the case of performing regular OEM prescribed overhauls, the risk of unit failure is proposed as a sawtooth function, whereby risk increases gradually over the recommended interval between overhauls and then drops suddenly after an overhaul. Critical internal wear components are on a path to failure and generally in sync with operating hours. If the operating hours are extended too far, the resulting additional operational stress on internal components, such as high temperature coatings and bearings, will increase the component scrap rate when performing the overhaul. This will add significant (10 to 20% or more) cost to the base overhaul and increases the risk of a random failure leading to system unreliability and further cost increases.	Completed	Fail	Compression Station related projects are required to maintain existing deliverability and throughput. This is necessary to maintain security of supply and stable natural gas pricing during supply disruptions.							
										Justification: Potential for unexpected or catastrophic failure if timing is extended.										
										Assets: Avon serial 38148										
										Related Investments: Not applicable.										

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered		
								Forecast (Includes Overhead)												
STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		48240	Lobo A1 Gas Generator (38425) End-of-Life Overhaul	2025	\$ 2,632,989	<p>Issue/Concern/Opportunity: The consequence of compressor failure is dominated by gas cost impacts to customers. The compressor package is comprised of a gas turbine engine driver, compressor, power turbine and ancillary equipment such as lube oil, fuel supply, and electronic control systems, which are required for the compressor to operate. The gas turbine engine is very complex and carries the greatest failure risk of all of the compressor package components. By continuing to comply with original equipment manufacturer (OEM) recommended Preventive Maintenance (PM) schedules and overhauls, compressor reliability risks are controlled to moderate levels. In the case of performing regular OEM prescribed overhauls, the risk of unit failure is proposed as a sawtooth function, whereby risk increases gradually over the recommended interval between overhauls and then drops suddenly after an overhaul. Critical internal wear components are on a path to failure and generally in sync with operating hours. If the operating hours are extended too far, the resulting additional operational stress on internal components, such as high temperature coatings and bearings, will increase the component scrap rate when performing the overhaul. This will add significant (10 to 20% or more) cost to the base overhaul and increases the risk of a random failure leading to system unreliability and further cost increases.</p> <p>Justification: Potential for unexpected or catastrophic failure if timing is extended.</p> <p>Asset: Avon serial 38425</p> <p>Related Investments: Not applicable.</p>	Completed	Fail	Compression Station related projects are required to maintain existing deliverability and throughput. This is necessary to maintain security of supply and stable natural gas pricing during supply disruptions.	-	-	Considered	-	-	-	-	-
STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		48715	Dawn C Compression Lifecycle	2028	\$ 166,337,490	<p>Issue/Concern:</p> <p>**** An Asset Health Review is underway and will inform a third-party Reliability, Availability and Maintainability Study to quantify risks associated with asset failures. These activities will support additional detailed alternatives analysis and final scoping which will in turn inform the project cost estimate, timing and business case.</p> <p>Dawn C Plant is one of the nine centrifugal compressors located at the Dawn Compressor Station. It is primarily used to lift from lower storage pressure levels, experienced later in the operations season, to intermediate pressure levels. The intermediate pressure level is typically elevated further in pressure by another compressor to reach the desired Dawn outlet pressure. Dawn Plant C and Plant D have a suction pressure rating of 195 psig, the lowest rating of the compressor fleet at Dawn. Considering the other compressors at Dawn have a 225 psig minimum inlet rating, Dawn Plants C and D become very critical when pool storage levels fall below 225 psig, as they typically do late in the operational season. Overall, compression can pose a very large consequence of failure as compressors are integral assets required to achieve the Dawn to Parkway Transmission System deliverability requirements throughout the year.</p> <p>The consequence of compressor failure is dominated by gas cost impacts to customers. Transmission system consequences associated with failure of a single compressor are heavily influenced by the time of year, weather severity and time to mitigate the failure. Siemens, the original equipment manufacturer (OEM) of the Dawn C compressor, has indicated that 40 years is the typical timeframe for supporting the supply of engine parts required to recover from a critical engine failure or to complete recommended overhauls. Dawn Plant C was installed in 1984, which indicates that the RB211-24A engine in Plant C is reaching end of life.</p> <p>Justification: By continuing to comply with OEM-recommended Preventive Maintenance (PM) schedules and overhauls, compressor reliability risk is controlled to moderate levels but risk increases gradually over the 25,000-hour recommended interval between overhauls. Availability of parts is essential to repair internal engine failures and complete overhauls. Notably, the RB211-24A in Plant C has non-standard dimensions and cannot be retrofitted with more modern editions of the RB211 without significant plant retrofits. Similar to the 40-year old Dawn Plant B, which was replaced and retired in 2017 due to the risks associated with discontinued OEM support of critical engine parts, it is expected that Dawn Plant C will be exposed to a similar level of risk as the global inventory of spare components diminishes.</p> <p>Assets: Dawn Plant C</p> <p>Related Programs: Not applicable.</p>	Completed	Fail	Compression Station related projects are required to maintain existing deliverability and throughput. This is necessary to maintain security of supply and stable natural gas pricing during supply disruptions.	-	-	-	-	-	-	-	-
STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		48732	Waubuno Compression Lifecycle	2025	\$ 29,022,342	<p>Issue/Concern/Opportunity:</p> <p>**** An Asset Health Review is underway and will inform a third-party Reliability, Availability and Maintainability Study to quantify risks associated with asset failures. These activities will support additional detailed alternatives analysis and final scoping which will in turn inform the project cost estimate, timing and business case.</p> <p>The Waubuno compressor elevates available pipeline pressure to the Waubuno Pool Maximum Operating Pressure (MOP). Compression increases the working inventory value of the pool by approximately 3.5 PJ on top of what the pipeline alone can achieve. The compressor is operated approximately 45 days per year in late summer to early fall to top off the pool. The consequence of compressor failure is dominated by customer impact. Risk associated with failure of the Waubuno compressor is heavily influenced by the level of the pool at which the failure occurs and time to mitigate the failure.</p> <p>The Joy Compressor (manufactured in 1985) was a used compressor package and installed at Waubuno in 1988. The Joy Compressor Company changed ownership approximately 20 years ago whereupon original equipment manufacturer (OEM) support for the compressor was discontinued. Although normal wear components are still available in the marketplace, replacement major compressor items such as cylinders, crankshafts, and rods, etc., required to support a critical failure are no longer available. In the event of a critical failure, sourcing used parts (which are rare) or aftermarket custom machining services would be the only options for repair. This was the case in 2007 when a discharge valve seat failed, resulting in catastrophic damage to cylinder 611. An extensive search across the used parts dealers was required to secure a viable used cylinder head. Other internal damage was repaired through custom machining services.</p> <p>Justification: In the event of a future failure, if usable parts or custom machining are not available, the two options would be custom-designed aftermarket castings (if possible) or replacement of the entire compressor. However, both options would render the compressor out of service for at least one operational season.</p> <p>Assets: Waubuno Compressor</p> <p>Related Programs: N/A</p>	Completed	Fail	Compression Station related projects are required to maintain existing deliverability and throughput. This is necessary to maintain security of supply and stable natural gas pricing during supply disruptions.	-	-	-	-	-	-	-	-
STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		48753	Parkway C Gas Generator Midlife Overhaul	2022	\$ -	<p>Issue/Concern/Opportunity: The consequence of compressor failure is dominated by gas cost impacts to customers. The compressor package is comprised of a gas turbine engine driver, compressor, power turbine and ancillary equipment such as lube oil, fuel supply, and electronic control systems, which are required for the compressor to operate. The gas turbine engine is very complex and carries the greatest failure risk of all of the compressor package components. By continuing to comply with original equipment manufacturer (OEM) recommended Preventive Maintenance (PM) schedules and overhauls, compressor reliability risks are controlled to moderate levels. In the case of performing regular OEM prescribed overhauls, the risk of unit failure is proposed as a sawtooth function, whereby risk increases gradually over the recommended interval between overhauls and then drops suddenly after an overhaul. Critical internal wear components are on a path to failure and generally in sync with operating hours. If the operating hours are extended too far, the resulting additional operational stress on internal components, such as high temperature coatings and bearings, will increase the component scrap rate when performing the overhaul. This will add significant (10 to 20% or more) cost to the base overhaul and increases the risk of a random failure leading to system unreliability and further cost increases.</p> <p>Assets:</p> <p>Related Investments:</p>	Completed	Fail	Compression Station related projects are required to maintain existing deliverability and throughput. This is necessary to maintain security of supply and stable natural gas pricing during supply disruptions.	-	-	-	-	-	-	-	
STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		49954	Avon 1534 Gas Generator (37433)End-of-Life Overhaul	2026	\$ 2,766,239	<p>Issue/Concern/Opportunity: The consequence of compressor failure is dominated by gas cost impacts to customers. The compressor package is comprised of a gas turbine engine driver, compressor, power turbine and ancillary equipment such as lube oil, fuel supply, and electronic control systems, which are required for the compressor to operate. The gas turbine engine is very complex and carries the greatest failure risk of all of the compressor package components. By continuing to comply with original equipment manufacturer (OEM) recommended Preventive Maintenance (PM) schedules and overhauls, compressor reliability risks are controlled to moderate levels. In the case of performing regular OEM prescribed overhauls, the risk of unit failure is proposed as a sawtooth function, whereby risk increases gradually over the recommended interval between overhauls and then drops suddenly after an overhaul. Critical internal wear components are on a path to failure and generally in sync with operating hours. If the operating hours are extended too far, the resulting additional operational stress on internal components, such as high temperature coatings and bearings, will increase the component scrap rate when performing the overhaul. This will add significant (10 to 20% or more) cost to the base overhaul and increases the risk of a random failure leading to system unreliability and further cost increases.</p> <p>Justification: Extension of interval can result in unexpected or catastrophic failure</p> <p>Asset: 37433</p> <p>Related Investments: Not applicable.</p>	Completed	Fail	Compression Station related projects are required to maintain existing deliverability and throughput. This is necessary to maintain security of supply and stable natural gas pricing during supply disruptions.	-	-	-	-	-	-	-	

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032		Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
								Forecast (Includes overhead)											
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	735994	Oil City A1 Observation Well	2026	\$	-										
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	736098	New Well Lateral/Crossover (Well Lifecycle Replacement)*	2020	\$	790,984										
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	736408	156 Storage Pool Gathering System Retrofits	2027	\$	419,935										
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	736651	Mandaumin A1 observation well	2021	\$	1,845,296										
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1277	2023 Well Lateral Integrity Program*	2023	\$	-										
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1279	2023 Integrity Dig Program S&T*	2023	\$	-										
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1283	2024 Well Lateral Integrity Program*	2024	\$	1,262,995										
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1286	2024 Depth of Cover Mitigation Program*	2024	\$	315,749										
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1288	2024 Integrity Dig Program S&T*	2024	\$	21,534,067										
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1293	2025 Depth of Cover Mitigation Program*	2025	\$	3,480,399										
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1295	2025 Integrity Dig Program S&T*	2025	\$	3,544,408										
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1296	2025 Well Lateral Integrity Program*	2025	\$	4,341,900										
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	736365	A1 Observation Well Program*	2022	\$	4,931,571										
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		48257	INTE: Dawn - Cuthbert - NPS 42 replacement	2022	\$	867,929	<p>General Concern: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% SMYS. It includes installation costs for a permanent in-line inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and repair and replacement of pipeline segments with integrity issues that are identified through the inspections.</p> <p>Project-Specific Concern: The NPS 42, NPS 34, and NPS 26 pipelines between Dawn Compressor Station and Cuthbert Road receiver site have been inspected using external corrosion direct assessment (ECDA). Although it meets the intent of the Transmission Integrity Management Program (TIMP), there are specific features that ECDA could not detect comparing to the ILI. ILI of these transmission lines is required to ensure continued safety and reliability of EGI's assets.</p> <p>Assets: Transmission Pipeline (NPS 42, NPS 34, and NPS 26 pipelines between Dawn Compressor Station and Cuthbert Road receiver site)</p> <p>Related Programs: TIMP</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		48258	INTE: Dawn - Cuthbert - ECDA to ILI Retrofit NPS 34*	2022	\$	251,073	<p>Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) retrofit of NPS 34 pipeline between Dawn Compressor station and Cuthbert Road receiver site.</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		48259	INTE: Dawn - Cuthbert - ECDA to ILI Retrofit NPS 26	2022	\$	192,739	<p>Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) retrofit of NPS 26 pipeline between Dawn Compressor station and Cuthbert Road receiver site.</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		48735	Well Lifecycle Replacement	2028	\$	8,866,740	<p>Issue/Concern: This project is intended to recover lost design day deliverability due to well relines and abandonments. The deliverability of the new well is not intended to increase but maintain the deliverability. This project will drill one new vertical injection/withdrawal well and connect it to the existing gathering system of the desired pool.</p> <p>Asset: Wells</p> <p>Related Program: N/A</p>	Completed	Fail	Storage Pools & Well related projects are required to maintain existing deliverability and throughput. This is necessary to maintain security of supply and stable natural gas pricing during supply disruptions.	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102573	MOP Verification Replacement Program 2025 -S&T Assets*	2030	\$ -	General: MOP verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of existing greater than 30 per cent SMYS pipeline systems based upon these records. While this is not currently mandated by code in Canada, it is required in the U.S. and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 per cent SMYS, MOP Verification will be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey; while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102772	2026 Integrity Dig Program S&T*	2026	\$ 4,435,292	2026 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102773	2027 Integrity Dig Program S&T*	2027	\$ 4,445,982	2027 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102774	2028 Integrity Dig Program S&T*	2028	\$ 4,543,737	2028 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102775	2029 Integrity Dig Program S&T*	2029	\$ 4,484,027	2029 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102776	2030 Integrity Dig Program S&T*	2030	\$ 4,564,599	2030 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102777	2026 Depth of Cover Mitigation Program*	2026	\$ 4,377,663	2026 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 Mitigation of depth of cover sites that are out of compliance with CSA 2662 & TSSA requirements. Some of the known sites are discovered during annual Depth of Cover Surveying, while others are reported by company crews when performing maintenance work or by 3rd party. At this time the specific work scope of each year is not defined and this is a blanket program as a placeholder in the budget. The mitigation work will include the construction costs from sites identified and planned for the current year, as well as work on sites that are newly identified. Scope of work can vary from small remediation projects to add fill, concrete or bank stabilization, to short replacement of pipe.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	-
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102778	2027 Depth of Cover Mitigation Program*	2027	\$ 4,388,213	2027 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 Mitigation of depth of cover sites that are out of compliance with CSA 2662 & TSSA requirements. Some of the known sites are discovered during annual Depth of Cover Surveying, while others are reported by company crews when performing maintenance work or by 3rd party. At this time the specific work scope of each year is not defined and this is a blanket program as a placeholder in the budget. The mitigation work will include the construction costs from sites identified and planned for the current year, as well as work on sites that are newly identified. Scope of work can vary from small remediation projects to add fill, concrete or bank stabilization, to short replacement of pipe.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102779	2028 Depth of Cover Mitigation Program*	2028	\$ 4,484,698	2028 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 Mitigation of depth of cover sites that are out of compliance with CSA 2662 & TSSA requirements. Some of the known sites are discovered during annual Depth of Cover Surveying, while others are reported by company crews when performing maintenance work or by 3rd party. At this time the specific work scope of each year is not defined and this is a blanket program as a placeholder in the budget. The mitigation work will include the construction costs from sites identified and planned for the current year, as well as work on sites that are newly identified. Scope of work can vary from small remediation projects to add fill, concrete or bank stabilization, to short replacement of pipe.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102781	2029 Depth of Cover Mitigation Program*	2029	\$ 4,425,765	2029 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 Mitigation of depth of cover sites that are out of compliance with CSA 2662 & TSSA requirements. Some of the known sites are discovered during annual Depth of Cover Surveying, while others are reported by company crews when performing maintenance work or by 3rd party. At this time the specific work scope of each year is not defined and this is a blanket program as a placeholder in the budget. The mitigation work will include the construction costs from sites identified and planned for the current year, as well as work on sites that are newly identified. Scope of work can vary from small remediation projects to add fill, concrete or bank stabilization, to short replacement of pipe.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102782	2030 Depth of Cover Mitigation Program*	2030	\$ 4,505,290	2030 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 Mitigation of depth of cover sites that are out of compliance with CSA 2662 & TSSA requirements. Some of the known sites are discovered during annual Depth of Cover Surveying, while others are reported by company crews when performing maintenance work or by 3rd party. At this time the specific work scope of each year is not defined and this is a blanket program as a placeholder in the budget. The mitigation work will include the construction costs from sites identified and planned for the current year, as well as work on sites that are newly identified. Scope of work can vary from small remediation projects to add fill, concrete or bank stabilization, to short replacement of pipe.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102783	2026 Well Lateral Integrity Program*	2026	\$ 3,985,335	2026 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2023-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools or subject to other integrity verification.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102784	2027 Well Lateral Integrity Program*	2027	\$ 4,468,201	2027 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2023-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools or subject to other integrity verification.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102785	2028 Well Lateral Integrity Program*	2028	\$ 4,995,613	2028 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2023-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools or subject to other integrity verification.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102786	2029 Well Lateral Integrity Program*	2029	\$ 4,929,966	2029 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2023-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools or subject to other integrity verification.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102787	2030 Well Lateral Integrity Program*	2030	\$ 3,950,968	2030 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2023-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools or subject to other integrity verification.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	
STO -UG	Div_53 - Union n Pipe & South Undergroun d Storage	Transmissio n Pipe & Undergroun d Storage	Pass		102801	MOP Verification Replacement Program 2026 -S&T Assets*	2031	\$ 2,659,845	General: MOP verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of existing greater than 30 per cent SMYS pipeline systems based upon these records. While this is not currently mandated by code in Canada, it is required in the U.S. and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 per cent SMYS, MOP Verification will be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey; while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
STO-UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		503024	2024 Waubuno 2 replacement wells	2024	\$ 5,919,032	Issue: The deliverability of the Waubuno pool has declined due to the relines of the injection withdrawal wells UI20, UAM20, UI22 and UI25 as well as the abandonment of the well UI30. The well UI20 is in a flood plain which is inaccessible during the spring months. Any response to a well incident would be severely impacted by the condition of the well and access to the well. The proposed abandonment of this will reduce deliverability. This project drills abandoned one well UI20 and drills two 8 5/8-inch wells. The two new wells will offset the reduction of deliverability due to the relines and abandonments. Assets: Waubuno pool and Gathering lines Related Program: Not applicable.	Completed	Fail	Storage Pools & Well related projects are required to maintain existing deliverability and throughput. This is necessary to maintain security of supply and stable natural gas pricing during supply disruptions.	-	-	-	-	-	-
STO-UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		503069	Dow A McPlank Connection	2025	\$ 2,947,237	Issue/Concern/Opportunity: The Dow A pool is currently used to supply gas to the Sarnia market. Current Sarnia design day models assume that the Dow A pool is being completely drained. However, the Dow A pool can only be utilized until the pool reaches 700 psig without running the compressor. The purpose of this project is to tie Dow A into a lower pressure distribution line so that the inventory below 700 psi can be utilized without requiring compression. Assets: A new pipeline from Dow A Compression Station to McPlank distribution Related Program: Not applicable	Completed	Fail	Storage Pools & Well related projects are required to maintain existing deliverability and throughput. This is necessary to maintain security of supply and stable natural gas pricing during supply disruptions.	-	-	-	-	-	-
STO-UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		503195	NPS 24 Trafalgar Bypass Retrofit	2027	\$ 2,399,168	Issue/Concern/Opportunity: The NPS 24 Trafalgar Bypass pipeline connects the NPS 26 Trafalgar pipeline to Kirkwall Custody Transfer Station. The length is approximately 1.1 km. This pipeline's condition is currently monitored via External Corrosion Direct Assessment (ECDA), which does not provide as complete a data set as In-Line Inspection (ILI) for Integrity Management purposes. By inspecting the pipeline via ILI, the condition of the asset will be more fully understood and the asset risk profile defined and managed in accordance with company standard. Justification: Move pipeline Condition Monitoring from ECDA to ILI in order to provide more complete data for Integrity Management purposes. Assets: NPS 24 Trafalgar Bypass Pipeline; Kirkwall Custody Transfer Station.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
STO-UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		734057	2031 Integrity Dig Program S&T*	2031	\$ 4,597,852	2030 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
STO-UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		734058	2032 Integrity Dig Program S&T*	2032	\$ 4,298,076	2030 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
STO-UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		735413	2031 Depth of Cover Mitigation Program*	2031	\$ 4,538,110	2031 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025. Mitigation of depth of cover sites that are out of compliance with CSA Z662 & TSSA requirements. Some of the known sites are discovered during annual Depth of Cover Surveying, while others are reported by company crews when performing maintenance work or by 3rd party. At this time the specific work scope of each year is not defined and this is a blanket program as a placeholder in the budget. The mitigation work will include the construction costs from sites identified and planned for the current year, as well as work on sites that are newly identified. Scope of work can vary from small remediation projects to add fill, concrete or bank stabilization, to short replacement of pipe.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
STO-UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		735414	2032 Depth of Cover Mitigation Program*	2032	\$ 4,242,229	2032 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025. Mitigation of depth of cover sites that are out of compliance with CSA Z662 & TSSA requirements. Some of the known sites are discovered during annual Depth of Cover Surveying, while others are reported by company crews when performing maintenance work or by 3rd party. At this time the specific work scope of each year is not defined and this is a blanket program as a placeholder in the budget. The mitigation work will include the construction costs from sites identified and planned for the current year, as well as work on sites that are newly identified. Scope of work can vary from small remediation projects to add fill, concrete or bank stabilization, to short replacement of pipe.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
STO-UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		735415	2031 Well Lateral Integrity Program*	2031	\$ 5,055,110	2031 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2023-2025. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools or subject to other integrity verification.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
STO-UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		735416	2032 Well Lateral Integrity Program*	2032	\$ 4,725,521	2032 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2023-2025. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools or subject to other integrity verification.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
STO-UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		735427	MOP Verification Replacement Program 2027 - S&T Assets*	2032	\$ 2,666,256	General: MOP verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of existing greater than 30 per cent SMYS pipeline systems based upon these records. While this is not currently mandated by code in Canada, it is required in the U.S. and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 per cent SMYS, MOP Verification will be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey; while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
STO-UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		735428	MOP Verification Replacement Program 2028 - S&T Assets*	2033	\$ 2,724,880	General: MOP verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of existing greater than 30 per cent SMYS pipeline systems based upon these records. While this is not currently mandated by code in Canada, it is required in the U.S. and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 per cent SMYS, MOP Verification will be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey; while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
STO-UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		735429	MOP Verification Replacement Program 2029 - S&T Assets*	2034	\$ 2,689,072	General: MOP verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of existing greater than 30 per cent SMYS pipeline systems based upon these records. While this is not currently mandated by code in Canada, it is required in the U.S. and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 per cent SMYS, MOP Verification will be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey; while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032		Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)											
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733664	TOR10YR - Silvercrest to Aldercrest Replacement - Network # 123_368_373	2031	\$	854,583										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733665	TOR10YR - Evans Industrial Replacement - Network # 123_368_373	2032	\$	1,181,605										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733667	TOR10YR - Browns Evans Gair Replacement - Network # 123_368_373	2030	\$	1,678,628										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733672	TOR10YR - Horner and Orianna Replacement - Network # 123_368_373	2030	\$	1,345,675										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733677	TOR10YR - Browns and Owen Replacement - Network # 123_368_373	2031	\$	1,361,270										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733799	TOR10YR - Belleglade and Palms Replacement Standardization - Network # 152_154	2028	\$	1,049,738										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733801	TOR10YR - Bradstock to Verobeach Replacement Standardization - Network # 152_154	2029	\$	405,712										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733802	TOR10YR - Lilac and Griffith Replacement Standardization - Network # 152_154	2029	\$	1,616,572										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733803	TOR10YR - Westin and Jasmine Replacement Standardization - Network # 152_154	2030	\$	1,429,058										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735491	TOR10YR - Treverton & Stratton Replacement - Network # 455	2030	\$	1,825,015										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735492	TOR10YR - Mooregate and Treverton Replacement - Network # 455	2030	\$	1,441,747										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735495	TOR10YR - Moorecroft and Sedgewick Replacement - Network # 455	2030	\$	1,815,802										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735498	TOR10YR - Bertrand and Birchmount Replacement - Network # 455	2030	\$	1,591,817										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735817	TOR10YR - Bay Mills and Birchmount Replacement - Network # 455	2030	\$	627,915										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735848	TOR10YR - Laurentide and Silverdale Replacement - Network # 455	2031	\$	1,726,027										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735851	TOR10YR - Groveland and Lacewood Replacement - Network # 455	2031	\$	1,809,271										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735853	TOR10YR - Fenelon and Graydon Hall Replacement - Network # 455	2030	\$	1,674,624										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735864	TOR10YR - Tiffany and Woodthorpe Replacement - Network # 455	2032	\$	1,193,661										
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735865	TOR10YR - Anewen and Kenewen Replacement - Network # 455	2032	\$	1,632,428										
Toronto	10 - Toronto	Distribution Pipe	Fail	Emergent Safety	4660	Replacement Blanket - Area 10*	2023	\$	17,152,336										
Toronto	10 - Toronto	Distribution Pipe	Pass		3430	Anode Blanket - Area 10*	2023	\$	8,905,305	General: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within EGI's system. These installations and replacements are based on the internal Standard Operating Practice established to maintain the appropriate level of cathodic protection on steel pipeline assets.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-

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Toronto	10 - Toronto	Distribution Pipe	Pass		4160	Vintage Steel: NPS 12 SC HP on Parliament St, Carlton St to Front St	2025	\$ 2,826,373	<p>Issue/Concern:</p> <p>General Concerns: Vintage steel mains have shown signs of declining health due to the cumulative effect of poorly manufactured coating performance, construction practices, latent third-party damages to pipe coating, and the effect of stray currents from transit infrastructure such as subway and streetcars. The current failure projection model is forecasting an exponential increase in the number of corrosion-related failures, while the quantitative risk assessment and the 40-year risk projection are showing an increase in the safety risk associated with steel main failures. In addition to its age, vintage steel mains are also susceptible to accelerated degradation and/or higher risk of third-party damage in the following ways:</p> <ol style="list-style-type: none"> 1) Compression couplings (e.g., mechanical fittings which are not welded onto the main) on steel mains that are not properly restrained or unrestrained could cause a loss of containment due to exposed points of thrust. In this case, the weight of the soil is required to hold the fittings in place. When the soil is disturbed, the pipe pulls out of the fitting, resulting in blowing gas through the open pipe end with the potential of full bore release of gas. 2) Compression couplings on steel mains that are unknowingly isolated from the corrosion protection system could result in inadequate cathodic protection, leading to the assets' accelerated corrosion and potentially loss of containment. 3) The existence of shallow blow-off valve assemblies could be damaged during excavation activities. 4) Reduction in the original depth of cover due to urban development could increase the potential of damages due to excavation activities and increased external loading. According to the codes and standards, a minimum depth of cover is needed to ensure the appropriate distribution of weight of transportation vehicles across pipelines is not exceeded. If the depth of cover is not appropriate, excessive stresses are introduced into the pipe and failures could result. 5) The continuous exposure of road salt and seasonal ground movement on bridge-crossing assets could result in accelerated corrosion and external loading/stresses. 6) Lack of cathodic protection with pipe casings could result in corrosion causing excessive stress or shorts on the carrier pipe that is in contact with the casing, which could lead to the loss of containment. 7) Manufacturing defects associated with seam welds and fittings that are weak points in the distribution system could result in a loss of containment due to prolonged exposure to stress and corrosion. 8) Latent damages to pipe coatings that were never reported to EGI for repair and became active corrosion sites could hamper the effect of the corrosion protection system and result in accelerated corrosion and potentially loss of containment. <p>Site-Specific Concerns: Early 1960s NPS 12 SC High Pressure (HP) subject to corrosion issues should be replaced. Coating damages and corrosion leaks were previously reported on the northern section of this NPS 12 gas main, which was replaced in 2015. Replacement pipe size is to be finalized by Planning during design phase.</p> <p>Assets: Network 180 KOL system.</p>	Completed	Fail	Timing - Market based supply side alternatives not applicable	-	-	-	-	-	-
Toronto	10 - Toronto	Distribution Pipe	Pass		4760	AMP Fitting Replacement - Area 10*	2023	\$ 113,334,452	<p>AMP Fittings are a below grade transition fittings. The inserted portion of copper tubing can fail due to internal corrosion. In these cases leaks develop immediately downstream of the AMP Fitting.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
Toronto	10 - Toronto	Distribution Pipe	Pass		10088	NPS 20 Lake Shore Replacement (Cherry to Bathurst)	2022	\$ 21,355,816	<p>Vintage steel mains have shown signs of declining health due to the cumulative effects of poorly manufactured coatings, construction practices, latent third-party damages to pipe coatings and the effect of stray currents from transit infrastructure (such as the subway and streetcars). The current failure projection model forecasts an exponential increase in the number of corrosion-related failures. In addition to age, vintage steel mains are also susceptible to accelerated degradation and/or higher risk of third-party damage in the following ways:</p> <ul style="list-style-type: none"> - Compression couplings, Shallow blow-off valve assemblies that could be damaged during excavation activities, Reduction in the original depth of cover, Continuous exposure to road salt and seasonal ground movement on bridge crossing assets, Lack of cathodic protection on pipe casings that could result in corrosion and lead to the loss of containment, Manufacturing defects on seam welds and fittings that could result in leaks due to prolonged stress and corrosion and Latent damages to pipe coatings that were never reported to EGI for repair and became active corrosion sites, resulting in accelerated corrosion and potentially loss of containment <p>Site-specific Concerns: The NPS 20 Lake Shore Replacement project from Cherry Street to Bathurst Street addresses vintage steel mains installed in 1954. This project was assessed using Asset Health Review methodology, the CS5 value framework, tacit knowledge from internal stakeholders and in-line inspection (ILI)/Integrity dig results. In addition to the declining health demonstrated by vintage steel mains, this pipeline is part of the KOL system in the Toronto area, known to have a number of features that make it more susceptible to accelerated degradation and/or higher risk of third-party damage. These features include but are not limited to:</p> <ul style="list-style-type: none"> - Compression couplings on mains and services, Reduced depth of cover, Shallow blow-off valves, Lack of cathodic protection, Live stubs, Stray current from hydro infrastructure, Possibly contaminated soils <p>In 2016 and 2018, inline inspections (ILI) using a robotic crawler were performed on approximately 1.9 kilometres of the 4.5 kilometres of pipe selected for Phase 1. The 2016 ILI survey found 2 areas that required immediate rehabilitation activities via 2 Integrity digs. There are an additional six integrity digs recommended over the next 10 years. The 2018 inspection identified 24 further dig locations that would require integrity remediation over the next 10 years as per the guidance from CSA Z662. These digs are required to mitigate the corrosion and dent features that could exhibit more than 80% wall loss or have a high probability of failure, representing significant degradation of the pipe. Costs for such integrity digs, based on the integrity digs in 2017 and 2018, range from \$350,000 to \$450,000 per integrity dig. This implies that over the next 10 years EGI could be expected to spend \$10,500,000 to \$13,500,000 to rehabilitate these 30 locations, leaving the remaining pipe as bad as old. These Integrity digs would also require multiple construction zone impacts to the local traffic and businesses in a highly congested area of downtown Toronto. The multiple interruptions would have a negative impact to the reputation of safe and reliable service for EGI. Furthermore, the ILI survey also indicated another 10 features that may require mitigation activity within 15 years (\$3.5M-\$4.5M additional spend), which is an indication that the pipe is reaching the end of its safe and reliable service life and that a repair approach is not a sustainable approach.</p>	Completed	Fail	N/A - In construction phase	-	-	-	-	-	
Toronto	10 - Toronto	Distribution Pipe	Pass		11443	NPS 12 Martin Grove Rd Main Replacement: Lavington to St. Albans Rd.	2026	\$ 4,537,312	<p>Issue/Concern:</p> <p>General Concerns: Vintage steel mains have shown signs of declining health due to the cumulative effects of poorly manufactured coatings, construction practices, latent third-party damages to pipe coatings, and the effect of stray currents from transit infrastructure (such as the subway and streetcars). The current failure projection model forecasts an exponential increase in the number of corrosion-related failures. The CS5 value framework and the 40-year risk projection show an aggressive increase in the safety risk associated with steel main failures. In addition to age, vintage steel mains are also susceptible to accelerated degradation and/or higher risk of third-party damage in the following ways:</p> <ul style="list-style-type: none"> • Compression couplings • Shallow blow-off valve assemblies that could be damaged during excavation activities • Reduction in the original depth of cover • Continuous exposure to road salt and seasonal ground movement on bridge-crossing assets • Lack of cathodic protection on pipe casings that could result in corrosion and could lead to the loss of containment • Manufacturing defects associated with seam welds and fittings that could result in a loss of containment due to prolonged stress and corrosion • Latent damages to pipe coatings that were never reported to EGI for repair and became active corrosion sites, resulting in accelerated corrosion and potential loss of containment. <p>Site-Specific Concerns: Martin Grove to St. Albans Road: Address NPS 12 pipe from Lavington Drive South to Burnhamthorpe Road, then west to Ashbourne Drive, then following Auckland Road south to St. Albans Road.</p> <p>There are over 360 service connections that will be removed from the high-pressure (HP) steel main and an intermediate pressure (IP) polyethylene (PE) subsystem installed to reconnect these customers. Depth of cover (DOC) has been identified as a significant concern for these main segments as identified by 2018 and 2019 DOC surveys that found over 52% of the survey locations had DOC less than 90 cm, with 77 survey locations measuring less than 60 cm of cover. Poor DOC can lead to increased third-party damages. Additional risk factors include two unrestrained compression couplings (CCs), nine restrained CCs, and three suspect valves where, due to their installation dates, may have been tied in using unrestrained CCs (as discovered by an Integrity Assessment showing significant correlation between valves of this vintage with unrestrained CC tie-ins).</p> <p>Cathodic protection history for the past 20 years shows that over 15% of the readings taken each year were below the minimum requirements. Poor cathodic protection levels can lead to corrosion.</p>	In Progress		Technical Evaluation awaiting further integrity assessment to confirm project scope and timing.	-	-	-	-	-	
Toronto	10 - Toronto	Distribution Pipe	Pass		13612	Service Relay Blanket - Area 10*	2023	\$ 114,922,014	<p>Assets: NPS 12 pipe from Lavington Drive south to Burnhamthorpe Road, then west to Ashbourne Drive, then following Auckland Rd. South to St. Albans Road.</p> <p>General: A distribution service refers to the pipe between the distribution main and the customer's meter set. Over the years, different materials have been used for this asset, including steel, copper, and varying resins of plastic, each with unique characteristics that contribute to their performance over time. Services can be repaired or replaced depending on asset condition and the nature of the issue exhibited. Generally, replacement is the preferred approach to mitigate unacceptable asset condition.</p>	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	
Toronto	10 - Toronto	Distribution Pipe	Pass		23147	Toronto Island NPS 2 Feed Relocation	2025	\$ 3,848,320	<p>Issue/Concern: Currently, a 2-inch SC HP gas line (asset 61054) is sole feed to Toronto Island and is running through Western Gap Utility Tunnel. The utility tunnel is now considered a mine shaft, preventing necessary inspections of the line and the hangers that are supporting the line. This 2-inch SC HP main was installed in 1963 and the last known inspection of this line and hangers was in 1992. Should the line fail, the only recourse would be shutting the feed to Toronto Island, losing approximately 300 customers and undertaking an emergency replacement to resume service.</p> <p>Assets: NPS 2 SC HP Main (asset ID 61054)</p> <p>Related Program: Steel Mains Replacement Program</p>	Completed	Fail	NPS 2, cannot downsize or retire	-	-	-	-	-	

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								Forecast (Includes Overhead)										
Toronto	10 - Toronto	Distribution Pipe	Pass		100339	A10: Wilson Avenue, Toronto, VSM Replacement	2030	\$ 106,992,932	Issue/Concern/Opportunity: Phased replacement of NPS 12 gas main from Bathurst Ave. to Walsh Ave. Main is currently protected by Rectifier. - The main on Wilson Ave. has numerous Pumpkins that have been installed on it. Starting from Wendell Ave. and going east towards Bathurst St. - Corrosion on main has been an issue on Wilson Ave. due to stray current from Toronto Transit Commission (TTC) which continues to be an ongoing concern. - The service connections have field-applied coatings which leaves a concern for future corrosion issues on this main. - Regarding the main in the middle of the road on Wilson Ave., Curbside Valve Tee (CVT) repairs are problematic due to the location of the main. Assets: There is 8.5 km of NPS 12 HP Vintage Steel Main (VSM) installed between 1955 and 1964 on Wilson Ave. between Walsh Ave. and Bathurst St., Toronto. Related Program: N/A	In Progress		Technical Evaluation awaiting further integrity assessment to confirm project scope and timing.						
Toronto	10 - Toronto	Distribution Pipe	Pass		100497	VSM - Firestone Road - 2" ST - PH1	2025	\$ 8,439	Issue/Concern/Opportunity: General Concerns: Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Assets: Approximately 1623.3 m 2-inch SC Intermediate Pressure (IP) to be replaced by 2-inch PE IP. Related Investments: Investment code #735792.	Completed	Fail	NPS 2, cannot downsize or retire						
Toronto	10 - Toronto	Distribution Pipe	Pass		102204	NPS 42 GTA Transmission - Integrity Retrofit > 30% SMYS	2025	\$ -	Funds to install launcher (station rebuild occurred in 2016; no provisions for launcher were included) on pipeline to allow for inline inspection are required. This will allow in-line inspection of the pipeline which is required as per the Pipeline Integrity Management Program. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	See investment description, IRPAs not applicable						
Toronto	10 - Toronto	Distribution Pipe	Pass		502929	TOR10YR - Keelesgate and Cuffley Replacement Standardization - Network # 161_169_172	2031	\$ 1,998,237	TOR10YR - Keelesgate and Cuffley Replacement Standardization - Network #161_169_172 The 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services. Scope: Replace gas mains with 300 m of NPS 4 PE and 1,040 m of NPS 2 PE, relay 90 services and reconnect 28 services. Resources: NPL to execute. Solution Impact: General Main (GM) upgrades will elevate pressure to reinforce system to meet growth requirements. Project Timing: To be determined.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Toronto	10 - Toronto	Distribution Pipe	Pass		502935	TOR10YR - Bayford to Dubray Replacement Standardization - Network # 161_169_172	2031	\$ 1,901,807	TOR10YR - Bayford to Dubray Replacement Standardization - Network #161_169_172 The 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires main extension to 55 PSI network and upgrades to services. Scope: Upgrade gas mains and add main extension with 320 m of NPS 4 PE and 1,010 m of NPS 2 PE, relay 72 services, reconnect 27 services, and remove district station. Resources: NPL to execute. Solution Impact: General Main (GM) replacement and extension will elevate pressure and reinforce system to meet growth requirements. Project Timing: To be determined.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Toronto	10 - Toronto	Distribution Pipe	Pass		503158	TOR10YR - Horner from Browns Line Replacement - Network # 123_368_373	2028	\$ 1,828,438	TOR10YR - Horner from Browns Line Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 575 m NPS 8 PE, 13 service relays and 8 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Toronto	10 - Toronto	Distribution Pipe	Pass		503161	TOR10YR - Beta and Aldercrest Replacement - Network # 123_368_373	2027	\$ 1,881,314	TOR10YR - Beta and Aldercrest Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 575 m NPS 4 PE, 430 NPS 2 PE, 81 service relays and 44 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Toronto	10 - Toronto	Distribution Pipe	Pass		503165	TOR10YR - Hallmark to Lunness Replacement - Network # 123_368_373	2028	\$ 1,894,468	TOR10YR - Hallmark to Lunness Replacement - Network # 123_368_373 MP system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services Scope: Replace and Upgrade gas mains and services with 1100 NPS 2 PE 88 Service Relays, 33 Service Reconnects. Resources: NPL to execute Solution Impact: GM replacements to meet pressure elevation requirements in system to meet growth requirements Project Timing: TBD.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Toronto	10 - Toronto	Distribution Pipe	Pass		503167	TOR10YR - Lanor and Valermo Replacement - Network # 123_368_373	2028	\$ 2,080,354	TOR10YR - Lanor and Valermo Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 1,300 NPS 2 PE, 79 service relays and 42 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)										
Toronto	10 - Toronto	Distribution Pipe	Pass		503168	TOR10YR - Beta and Gamma North Replacement - Network # 123_368_373	2028	\$ 1,856,180	TOR10YR - Beta and Gamma North Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 1,000 NPS 2 PE, 105 service relays and 27 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		733447	TOR10YR - Aldercrest to Lunness North Replacement - Network # 123_368_373	2028	\$ 2,274,546	TOR10YR - Aldercrest to Lunness North Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 540 NPS 4 PE, 950 NPS 2 PE, 91 service relays and 52 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		733448	TOR10YR - Evans Ave Replacement- Network # 123_368_373	2029	\$ 2,650,532	TOR10YR - Evans Ave. Replacement - Network # 123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains (like for like) and services with 1,200m NPS 8 PE, 400 m NPS 4 PE, 70 service relays, 26 service reconnects, and upgrade station to 55 PSI. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		733666	TOR10YR - Bellman to N Carson Replacement- Network # 123_368_373	2029	\$ 2,257,757	TOR10YR - Bellman to N. Carson Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 1,400 NPS 2 PE, 119 service relays and 42 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		733668	TOR10YR - Savona and Bisset Replacement- Network # 123_368_373	2031	\$ 2,281,925	TOR10YR - Savona and Bisset Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 1,600 NPS 2 PE, 112 service relays, and 50 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		733669	TOR10YR - Delma and Ecker Replacement- Network # 123_368_373	2031	\$ 2,420,262	TOR10YR - Delma and Ecker Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 320 NPS 4 PE, 1,170 NPS 2 PE, 100 service relays and 32 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed

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										On Hold	On Hold	On Hold	On Hold	On Hold	On Hold	On Hold	On Hold	
Toronto	10 - Toronto	Distribution Pipe	Pass		733670	TOR10YR - Westhead Replacement- Network # 123_368_373	2029	\$ 1,917,840	<p>Victoria St - Eastern - Area 60 - 1138</p> <p>Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.</p> <p>Comments: There is potential for road restrictions due to congested area.</p> <p>TOR10YR - Westhead Replacement - Network #123_368_373</p> <p>Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services.</p> <p>Scope: Replace and upgrade gas mains and services with 1,250 m NPS 2 PE, 91 service relays and 34 service reconnects.</p> <p>Resources: NPL to execute.</p> <p>Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements.</p> <p>Project Timing: To be determined.</p>	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		733671	TOR10YR - Browns and Finsbury Replacement- Network # 123_368_373	2030	\$ 2,230,706	<p>TOR10YR - Browns and Finsbury Replacement - Network #123_368_373</p> <p>Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services.</p> <p>Scope: Replace and upgrade gas mains and services with 180 m NPS 8 PE, 650 m NPS 4 PE, and 580 NPS 2 PE; 66 service relays and 14 service reconnects.</p> <p>Resources: NPL to execute.</p> <p>Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements.</p> <p>Project Timing: To be determined.</p>	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		733673	TOR10YR - Mitcham and Fulham Replacement - Network # 123_368_373	2030	\$ 2,312,049	<p>TOR10YR - Mitcham and Fulham Replacement - Network #123_368_373</p> <p>Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services.</p> <p>Scope: Replace and upgrade gas mains and services with 1,400 NPS 2 PE, 85 service relays and 70 service reconnects.</p> <p>Resources: NPL to execute.</p> <p>Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements.</p> <p>Project Timing: To be determined.</p>	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		733674	TOR10YR - Eltham and Delma Replacement - Network # 123_368_373	2030	\$ 2,337,707	<p>TOR10YR - Eltham and Delma Replacement - Network #123_368_373</p> <p>Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services.</p> <p>Scope: Replace and upgrade gas mains and services with 1,550 NPS 2 PE, 76 service relays and 58 service reconnects.</p> <p>Resources: NPL to execute.</p> <p>Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements.</p> <p>Project Timing: To be determined.</p>	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		733675	TOR10YR - Browns Line at Horner Replacement- Network # 123_368_373	2030	\$ 1,875,459	<p>TOR10YR - Browns Line at Horner Replacement - Network #123_368_373</p> <p>Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services.</p> <p>Scope: Replace and upgrade gas mains and services with 400 NPS 8 PE, 14 service relays and 9 service reconnects. There is approximately 400 m of NPS 4 PE required on 3 services and there is 1 garage header reconnect.</p> <p>Resources: NPL to execute.</p> <p>Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements.</p> <p>Project Timing: To be determined.</p>	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		733678	TOR10YR - Sunset and Burlington Replacement- Network # 123_368_373	2030	\$ 2,167,773	<p>TOR10YR - Sunset and Burlington Replacement- Network #123_368_373</p> <p>Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services.</p> <p>Scope: Replace and upgrade gas mains and services with 920 NPS 2 PE and 400 NPS 4 PE, 73 service relays and 44 service reconnects.</p> <p>Resources: NPL to execute.</p> <p>Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements.</p> <p>Project Timing: To be determined.</p>	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed

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								Forecast (Includes Overhead)												
Toronto	10 - Toronto	Distribution Pipe	Pass		733679	TOR10YR - Albright and Roseland Replacement - Network # 123_368_373	2030	\$ 2,415,550	TOR10YR - Albright and Roseland Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 900 NPS 2 PE, 500 NPS 4 PE, 81 service relays and 98 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed		
Toronto	10 - Toronto	Distribution Pipe	Pass		733680	TOR10YR - Foch and Woodbury Replacement - Network #123_368_373	2031	\$ 2,402,044	TOR10YR - Foch and Woodbury Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 1,220 NPS 2 PE, 220 NPS 4 PE, 98 service relays and 51 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold									Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	
Toronto	10 - Toronto	Distribution Pipe	Pass		733681	TOR10YR - St Lucie Replacement Standardization - Network # 152_154	2025	\$ -	TOR10YR - St. Lucie Replacement Standardization - Network #152_154 The 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services. Scope: Replace gas mains with 500 m of NPS 4 PE and 760 m of NPS 2 PE, relay 120 services and reconnect 58 services. Resources: NPL to execute. Solution Impact: General Main (GM) replacement will elevate pressure to reinforce system to meet growth requirements. Project Timing: To be determined.	On Hold									Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	
Toronto	10 - Toronto	Distribution Pipe	Pass		733682	TOR10YR - Gulfstream and Franson Replacement Standardization - Network # 152_154	2027	\$ -	TOR10YR - Gulfstream and Franson Replacement Standardization - Network # 152_154 25 PSI IP Pipe system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services Scope: Replace gas mains with 400m of NPS 4 PE and 630m of NPS 2 PE Relay 95 services; Reconnect 37 Services Resources: NPL to execute Solution Impact: GM Replacement in order to elevate pressure to reinforce system to meet growth requirements Project Timing: TBD	On Hold									Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	
Toronto	10 - Toronto	Distribution Pipe	Pass		733683	TOR10YR - Verobeach Replacement Standardization - Network # 152_154	2028	\$ 2,489,772	TOR10YR - Verobeach Replacement Standardization - Network #152_154 The 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services. Scope: Replace gas mains with 690 m of NPS 4 PE and 900 m of NPS 2 PE, relay 135 services, and reconnect 48 services. Resources: NPL to execute. Solution Impact: General Main (GM) replacement will elevate pressure to reinforce system to meet growth requirements. Project Timing: To be determined.	On Hold										Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		733800	TOR10YR - Coral Gable Replacement Standardization - Network # 152_154	2029	\$ 2,188,587	TOR10YR - Coral Gable Replacement Standardization - Network #152_154 The 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services. Scope: Replace gas mains with 570 m of NPS 4 PE, 1,170 m of NPS 2 PE (like for like), relay 79 services, reconnect 52 services and remove 25 PSI station. Resources: NPL to execute. Solution Impact: General Main (GM) replacement will elevate pressure to reinforce system to meet growth requirements. Project Timing: To be determined.	On Hold										Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		733804	TOR10YR - Yorkdale and Wallasey Replacement Standardization - Network # 152_154	2030	\$ 2,326,938	TOR10YR - Yorkdale and Wallasey Replacement Standardization - Network #152_154 The 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services. Scope: Replace gas mains with 1,160 m of NPS 2 PE, relay 129 services and reconnect 60 services. Resources: NPL to execute. Solution Impact: General Main (GM) replacement will elevate pressure to reinforce system to meet growth requirements. Project Timing: To be determined.	On Hold										Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		733805	TOR10YR - Starview and Weston Replacement Standardization - Network # 152_154	2030	\$ 2,371,131	TOR10YR - Starview and Weston Replacement Standardization - Network #152_154 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services. Scope: Replace gas mains with 1,330 m of NPS 2 PE, relay 146 services and reconnect 12 services. Resources: NPL to execute. Solution Impact: General Main (GM) replacement will elevate pressure to reinforce system to meet growth requirements. Project Timing: To be determined.	On Hold										Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed

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								Forecast (Includes Overhead)											
Toronto	10 - Toronto	Distribution Pipe	Pass		733806	TOR10YR - Gaydon and Highbury Replacement Standardization - Network #152_154	2029	\$ 2,256,213	TOR10YR - Gaydon and Highbury Replacement Standardization - Network #152_154 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services. Scope: Install 350 m of NPS 4 PE and replace gas mains with 1,330 m of NPS 2 PE, relay 117 services, reconnect 55 services and upgrade station to 55 PSI. Resources: NPL to execute. Solution Impact: General Main (GM) replacement will elevate pressure to reinforce system to meet growth requirements. Project Timing: To be determined.	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	
Toronto	10 - Toronto	Distribution Pipe	Pass		733910	TOR10YR - Browns Line and Jellicoe Replacement- Network #123_368_373	2032	\$ 5,372,399	TOR10YR - Browns Line and Jellicoe Replacement- Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains (like for like) and services with 80 m NPS 8 PE, 950 m NPS 4 PE, 2,275 m NPS 2 PE, 196 service relays, and 145 service reconnects; abandon station and outlet piping. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold									Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		734406	Vintage Steel Replacement Program - 10 Toronto*	2023	\$ 26,196,642	Issue/Concern: The VS Steel Main Replacement Program is both a reactive and proactive asset renewal program. Over the next ten years, the program will focus on reactively replacing steel mains that have experienced failure and integrity issues. The planned replacement will replace gas mains that exhibit signs of approaching end-of-life found in recent leak survey results and through field discovery of integrity issues (such as poor coating condition, severe corrosion, insufficient depth of cover or exposure, and leaks), as supported by the DIMP risk model.	Completed	Fail	See investment description, IRPAs not applicable							
Toronto	10 - Toronto	Distribution Pipe	Pass		735485	TOR10YR - Foxbridge-Roeback Replacement - Network # 277	2031	\$ 2,407,341	TOR10YR - Foxbridge-Roeback Replacement - Network #277 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires replacement of some mains and services. Scope: Replace and upgrade gas mains with 450 m NPS 2 PE, 192 service relays, and 12 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	
Toronto	10 - Toronto	Distribution Pipe	Pass		735487	TOR10YR - Birchmount & Foxbridge Replacement - Network # 277	2029	\$ 2,667,556	TOR10YR - Birchmount & Foxbridge Replacement - Network # 277 IP system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires replacement of some mains and services Scope: Install Replace and Upgrade gas mains with 1500m NPS 2 PE, 1000m NPS 4 PE 32 Service Relays, CC removals Resources: NPL to execute Solution Impact: Gas Plant replacements and install to meet pressure elevation requirements in system to meet growth requirements Project Timing: TBD	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	
Toronto	10 - Toronto	Distribution Pipe	Pass		735489	TOR10YR - Willowmount & Birchmount Replacement - Network # 277	2031	\$ 2,406,377	TOR10YR - Willowmount and Birchmount Replacement - Network #277 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires replacement of some mains and services. Scope: There are 181 service relays, 73 service reconnects, station removal/abandonment, and compression couplings (CCs) removal. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	
Toronto	10 - Toronto	Distribution Pipe	Pass		735497	TOR10YR - Kingsdown and Ranstone Replacement - Network # 455	2029	\$ 2,651,924	TOR10YR - Kingsdown and Ranstone Replacement - Network # 455 IP system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires replacement of some mains and services Scope: Replace and Upgrade gas mains with 1100m NPS 2 PE, 100m NPS 4 (Like for Like) 120 Service Relays, 91 Service Reconnects Resources: NPL to execute Solution Impact: Gas Plant replacements to meet pressure elevation requirements in system to meet growth requirements Project Timing: TBD	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	
Toronto	10 - Toronto	Distribution Pipe	Pass		735501	TOR10YR - Ionview South Replacement - Network # 455	2029	\$ 2,169,586	TOR10YR - Ionview South Replacement - Network # 455 IP system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires replacement of some mains and services Scope: Replace and Upgrade gas mains with 1300m NPS 2 PE (Like for Like) Install tie-in 30m NPS 4 109 Service Relays, 32 Service Reconnects Remove Station, tie-in to network 262 Resources: NPL to execute Solution Impact: Gas Plant replacements to meet pressure elevation requirements in system to meet growth requirements Project Timing: TBD	On Hold									Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		735819	TOR10YR - Bay Mills and Birchmount Services Replacement - Network # 455	2029	\$ 2,552,264	TOR10YR - Bay Mills and Birchmount Services Replacement - Network #455 Intermediate pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas services including 274 service relays and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined. Permit: Some services may encroach in regulated area.	On Hold									Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered			
								Forecast (Includes Overhead)													
Toronto	10 - Toronto	Distribution Pipe	Pass		735820	TOR10YR - Amethyst and Cass Replacement - Network # 455	2029	\$ 4,236,793	TOR10YR - Amethyst and Cass Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services Scope: Replace and upgrade gas mains and services with 2,350 m NPS 2 PE, 1,000 m NPS 4 PE (like for like), 98 service relays, 27 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold									Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed		
Toronto	10 - Toronto	Distribution Pipe	Pass		735821	TOR10YR - Aragon and Malamute Replacement - Network # 455	2030	\$ 2,455,941	TOR10YR - Aragon and Malamute Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 1,600 m NPS 2 PE, 121 service relays and 17 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold										Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	
Toronto	10 - Toronto	Distribution Pipe	Pass		735822	TOR10YR - Scarden and Tourmaline Replacement - Network # 455	2030	\$ 2,541,833	TOR10YR - Scarden and Tourmaline Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 1,600 m NPS 2 PE, 250 m NPS 4, 96 service relays, and 18 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold										Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	
Toronto	10 - Toronto	Distribution Pipe	Pass		735824	TOR10YR - Moraine Hill and Sunmount Replacement - Network # 455	2031	\$ 3,859,239	TOR10YR - Moraine Hill and Sunmount Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 2,800 m NPS 2 PE, 450 m NPS 4 (like for like), 154 service relays and 34 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold											Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		735830	TOR10YR - Birchmount South Sheppard Replacement - Network # 455	2029	\$ 3,621,995	TOR10YR - Birchmount South Sheppard Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 900 m NPS 8 PE (like for like), 17 service relays, 3 service reconnects, 100 m NPS 1.25 header, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold											Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		735835	TOR10YR - Allanford and Pender Replacement - Network # 455	2031	\$ 3,732,111	TOR10YR - Allanford and Pender Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 500 m NPS 6 PE, 600 m NPS 4 PE, 1,700 m NPS 2 PE (like for like), 140 service relays and 20 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold											Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		735836	TOR10YR - Araman and Earlton Replacement - Network # 455	2031	\$ 3,732,111	TOR10YR - Araman and Earlton Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 2,800 m NPS 6 PE (like for like), 176 service relays, and 19 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold											Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed

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								Forecast (Includes Overhead)												
Toronto	10 - Toronto	Distribution Pipe	Pass		735839	TOR10YR - Colingwood and Dempster Replacement - Network # 455	2030	\$ 2,491,410	TOR10YR - Colingwood and Dempster Replacement - Network #455 Intermediate Pressure (IP) is system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 50 m NPS 4 PE, 650 NPS 8 PE, 137 service relays and 29 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold								Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed		
Toronto	10 - Toronto	Distribution Pipe	Pass		735847	TOR10YR - Birchmount North Ellesmere Replacement - Network # 455	2030	\$ 2,314,342	TOR10YR - Birchmount North Ellesmere Replacement - Network #455 Intermediate Pressure (IP) system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 650 m NPS 8 PE, 50 NPS 2 PE (like for like) 36 service relays, 7 service reconnects (commercial services), and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined. Toronto and Region Conservation Authority (TRCA) Permit - Some services and mains may encroach into regulated area.	On Hold										Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		735849	TOR10YR - Larabee and Tetbury Replacement - Network # 455	2031	\$ 2,061,063	TOR10YR - Larabee and Tetbury Replacement - Network #455 Intermediate Pressure (IP) is system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 1,700m NPS 2 PE (like for like) 72 service relays and 45 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined. Permit: Some services and mains may encroach into regulated area.	On Hold									Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	
Toronto	10 - Toronto	Distribution Pipe	Pass		735850	TOR10YR - Three Valley Dr Replacement - Network # 455	2031	\$ 2,935,045	TOR10YR - Three Valley Dr. Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 60 m NPS 6 PE, 900 m NPS 4 PE, 500 m NPS 2 PE (like for like), 148 service relays, and 39 service reconnects. Resources: NPL to execute. Solution Impact: Gas Plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined. Permit: Some services and mains may encroach into regulated area.	On Hold									Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	
Toronto	10 - Toronto	Distribution Pipe	Pass		735852	TOR10YR - Valentine and York Mills Replacement - Network # 455	2030	\$ 2,253,665	TOR10YR - Valentine and York Mills Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 200 m NPS 4 PE, 650 m NPS 2 PE, 168 service relays, 20 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Permit: Some services and mains may encroach into regulated area.	On Hold									Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	
Toronto	10 - Toronto	Distribution Pipe	Pass		735854	TOR10YR - Fenside and Lynedock Replacement - Network # 455	2030	\$ 5,235,036	TOR10YR - Fenside and Lynedock Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 150 m NPS 6 PE, 400 m NPS 4 PE, 2,700 m NPS 2 PE (like for like), 301 service relays, 46 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Permit - Creek Crossing	On Hold									Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	

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								Forecast (Includes Overhead)											
Toronto	10 - Toronto	Distribution Pipe	Pass		735855	TOR10YR - Roywood and York Mills Replacement - Network # 455	2032	\$	5,178,681	TOR10YR - Roywood and York Mills Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 200 m NPS 2 PE (like for like), 569 service relays, 1 service reconnect, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Permit: Some services and mains may encroach into regulated area.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Toronto	10 - Toronto	Distribution Pipe	Pass		735856	TOR10YR - Sloane and Rusica Replacement - Network # 455	2032	\$	3,090,806	TOR10YR - Sloane and Rusica Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 30 m NPS 6 PE, 1,100 m NPS 4 PE, 1,000 m NPS 2 PE (like for like), 71 service relays, 34 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Permit: Some services and mains may encroach into regulated area.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Toronto	10 - Toronto	Distribution Pipe	Pass		735857	TOR10YR - Wigmore and Draycott Replacement - Network # 455	2031	\$	3,025,090	TOR10YR - Wigmore and Draycott Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 1,900 m NPS 2 PE, 104 service relays, and 54 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Permit: Some services and mains may encroach into regulated area.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Toronto	10 - Toronto	Distribution Pipe	Pass		735858	TOR10YR - Elvaston Replacement - Network # 455	2031	\$	2,569,668	TOR10YR - Elvaston Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 1,600 m NPS 2 PE, 102 service relays and 30 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Toronto and Region Conservation Authority (TRCA) Permit - Some services and mains may encroach into regulated area.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Toronto	10 - Toronto	Distribution Pipe	Pass		735859	TOR10YR - Eccleston and Tinder Replacement - Network # 455	2031	\$	2,195,701	TOR10YR - Eccleston and Tinder Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 1,200 m NPS 2 PE, 104 service relays, 24 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Toronto and Region Conservation Authority (TRCA) Permit: Some services and mains may encroach into regulated area.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Toronto	10 - Toronto	Distribution Pipe	Pass		735860	TOR10YR - North Sloane Replacement - Network # 455	2031	\$	3,616,369	TOR10YR - North Sloane Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 100 m NPS 6 PE, 900 m NPS 4 PE, 1,350 m NPS 2 PE (like for like), 62 service relays, 20 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Toronto	10 - Toronto	Distribution Pipe	Pass		735861	TOR10YR - Sweeney Replacement - Network # 455	2031	\$	5,189,222	TOR10YR - Sweeney Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 750 m NPS 6 PE, 200 m NPS 4 PE, and 2,000 m NPS 2 PE (like for like), 124 service relays, 65 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined. Permit: Some services and mains may encroach into regulated area.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						

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								Forecast (Includes Overhead)													
Toronto	10 - Toronto	Distribution Pipe	Pass		735862	TOR10YR - Knighton and Prestbury Replacement - Network # 455	2031	\$ 3,567,198	TOR10YR - Knighton and Prestbury Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 200 m NPS 4 PE, 2,100 m NPS 2 PE (like for like) 89 service relays, and 82 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold									Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed		
Toronto	10 - Toronto	Distribution Pipe	Pass		735863	TOR10YR - Carnforth and Wyndcliff Replacement - Network # 455	2032	\$ 4,208,292	TOR10YR - Carnforth and Wyndcliff Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 700 m NPS 4 PE, 2,200 m NPS 2 PE (like for like), 100 service relays, 104 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold										Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	
Toronto	10 - Toronto	Distribution Pipe	Pass		735866	TOR10YR - Pharmacy and Dewey Replacement - Network # 455	2032	\$ 1,896,160	TOR10YR - Pharmacy and Dewey Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 350 m NPS 2, 219 service relays, 7 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold										Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed	
Toronto	10 - Toronto	Distribution Pipe	Pass		735867	TOR10YR - Victoria Park Ivordale Replacement - Network # 455	2032	\$ 2,664,110	TOR10YR - Victoria Park Ivordale Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 760 m NPS 4 PE, 50 m NPS 2 PE (like for like), 214 service relays, 18 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold											Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		735868	TOR10YR - Combermere Replacement - Network # 455	2032	\$ 4,440,752	TOR10YR - Combermere Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 550 m NPS 4 PE, 2,700 m NPS 2 PE (like for like), 181 service relays and 45 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold											Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		735869	TOR10YR - Parkwoods Village Replacement - Network # 455	2032	\$ 3,487,744	TOR10YR - Parkwoods Village Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services Scope: Replace and upgrade gas mains and services with 650 m NPS 4 PE, 2,200 m NPS 2 PE (like for like) 145 service relays, and 33 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	On Hold											Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed
Toronto	10 - Toronto	Distribution Pipe	Pass		735870	TOR10YR - Brookbanks and Valley Woods Replacement - Network # 455	2032	\$ 3,668,096	TOR10YR - Brookbanks and Valley Woods Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 1,000 m NPS 4 PE, 1,850 m NPS 2 PE (like for like), compression couplings (CCs), 65 service relays, and 26 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined. Permit: Some services and mains may encroach into regulated area.	On Hold											Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed

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								Forecast (Includes Overhead)										
Toronto	10 - Toronto	Distribution Stations	Fail	Dollar threshold	735182	2936953 MEADOWVALE & GENERATION DISTRICT	2024	\$ 280,155										
Toronto	10 - Toronto	Distribution Stations	Fail	Dollar threshold	735183	2936745 MARKHAM & VERNE DISTRICT	2025	\$ 10,604										
Toronto	10 - Toronto	Distribution Stations	Fail	Dollar threshold	735187	14887A GLAMORGAN & KENNEDY DISTRICT	2025	\$ 19,645										
Toronto	10 - Toronto	Distribution Stations	Fail	Dollar threshold	735188	17463A CAVERLY & MARTINGROVE DISTRICT	2025	\$ 10,604										
Toronto	10 - Toronto	Distribution Stations	Fail	Emergent Safety	10295	Station Emergency Replacement Blanket - All Areas*	2023	\$ 1,934,480										
Toronto	10 - Toronto	Distribution Stations	Pass		1147	KEELE AND FINCH FEEDER	2025	\$ 240,147	Issue/Concern: The Keele and Finch Feeder station is adjacent to a transit station (subway) and there are electric transmission towers nearby. Due to transit upgrades, this project was deferred for many years. The subsystem issues are described below. Pipe, Valves & Others: Updated Mechanical Piping is required for this station. The isolation valves for the pressure control are hard to turn. The pressure control stations inlet/outlet valves are seized. Heating System: The Heating system is aging and an update is required at this station. Pressure Control: This station has four boot-style regulators that are undersized and require replacement. Odourant System: Not required. Telemetry/Electrical: Telemetry assets have been deemed within the hazardous classified area. Relocation of assets is required. New Control Wave Micro unit and associated connections are required. New generator is required to support backup power requirements. New Annubar on outlet of station is required for redundant measurement. Measurement: Not required. Building: One building needs to be considered to house all assets due to the surrounding environment (i.e., subway station, etc.) if additional land cannot be obtained. Assets: Station# 16997A Related Programs: Not applicable.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
Toronto	10 - Toronto	Distribution Stations	Pass		3605	BAYVIEW FEEDER	2024	\$ 7,705,923	Pipe, Valves & Others: Updated piping is required for this station to connect the new valve's and fittings and other associated materials. New inlet (NPS 12) and outlet (NPS 16) piping configurations are required to separate Maximum Operating Pressures (MOPs). Bayview Station will need to be shut in to execute piping installation. Station inlet filtration (gas separator) will be considered during the rebuild. Heating System: Updated heating is required at this station. Due to the area, this would more than likely be a conventional boiler system with two boilers minimum for heating load and redundancy. New building (concrete is required) with Glycol piping and new Glycol substance is required. The building is to be outfitted with all electrical elements (5°C outlet temps during winter). A new heat exchanger will be required. Pressure Control: New regulation is required to support pressure cuts to separate MOPs. Three new runs (Operator and Monitor) will be required. These will be Becker Control Regulators and six are required. Odourant System: Not required. Telemetry/Electrical: Telemetry assets have been deemed within the hazardous classified area. Relocation of assets is required. New Control Wave Micro unit and associated connections are required. A new generator is required to support backup power requirements. Pressure and temperature transmitters (two each) are required. Measurement: The orifice plate is improperly sized and not accessible (below grade) and is to be replaced with above grade including piping. New Annubar on outlet of station is required for redundant measurement. Building: A new, large building format is required. The boiler, regulator and Remoter Terminal Unit (RTU) are all to be under one building (similar to Station A approach). Compliance/Civil: Site grading and new security fencing (galvanized) including new swing gate and crash bar access will be required. Existing lands will need to be confirmed if property is owned or leased. Tree trimming/removal may be required. The station is located on the Don Valley Trail.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
Toronto	10 - Toronto	Distribution Stations	Pass		17403	NGT Existing customer Maintenance Capital - (+2027)*	2028	\$ 2,771,364	Issue/Concern: EGI Fleet operators can continue to achieve fuel cost savings and reduced emission benefits by investing in the wellbeing of the NGV station. This can be achieved by adopting continuously upgrading the major NGV equipment as part of the maintenance strategy. By upgrading the major NGV equipment, EGD can extend the life cycle of the equipment, resulting in a more cost effective way of operating the NGV stations. Assets: There is a number of current NGV Station EGI maintains.	Completed	Fail	See investment description, IRPAs not applicable for CNG	-	-	-	-	-	-
Toronto	10 - Toronto	Distribution Stations	Pass		18962	(O)-ELLESMEIRE / BUDEA	2025	\$ 7,574	Issue/Concern: BOOT ABOVE GROUND BOX AGE: 31.9 Customer Count: 554 Utilization: 0.01858793 Can't short Sense # of Regs/Avg Size: 4 / 0in Assets: Related Program (if applicable): N/A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Toronto	10 - Toronto	Distribution Stations	Pass		503183	Albion Feeder Station Control Valve Upgrade	2024	\$ 644,855	At Albion Gate, valve F54201D controls the flow rate from the EGT line to the TC Energy Kings North outlet. All gas flowing to TC Energy must pass through the valve; there is no bypass, isolation, or redundancy included in the existing design. If this valve (F54201D) failed (and required maintenance), the inlet to both the EGI system and TC Energy's outlets would be affected. The original purpose of the valve was to control flow to TC Energy to their contractual limit when flows on the EGT line were at their peaks. This control would guarantee the inlet pressure to the station feeding the EGI XHP systems which would be sufficient during peak operations. It was expected that this valve would be primarily 100% open and only be in service on the coldest of high-market demand days. Utilization was expected to be less than 10% of the winter days. In the winter period November 1, 2020 to February 25, 2021, the valve had been less than 100% open, 50% of the time (1407 hours / 2788 hours – source SCADA). Gas Control has utilized this valve more often for two purposes: (1) to carry higher pressure to Albion Gate for the distribution station; and (2) to maintain the operation of Parkway West compression within tolerances. Parkway West compressors are each 40,000 HP unit pumps. For the units to operate in their limited emission mode, both the volume pumped by the compressor and the lift across the compressor must be maintained within specific ranges. Using F54201D at Albion to limit flow to TC Energy allows the EGT line to act as a buffer for the compression. Compression volumes and lift can be maintained by operating the EGT line at higher pressure on warmer days. Risks: With no bypass and a single valve, a failure of the valve to open when needed will not allow EGI to deliver contracted quantities to TC Energy. Although this station rarely operates in summer months, summer would be the only time to work on the valve controls. Recommendation: Identify the appropriate design for the control valve feeding TC Energy Kings North that will meet EGI's control, bypass, and maintenance requirements.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
Toronto	10 - Toronto	Distribution Stations	Pass		733809	Parliament & Winchester Station Replacement - Execution Phase	2024	\$ 1,172,387	Phase 2 (Execution Phase) of the Parliament and Winchester Station Replacement Phase 2 project was created because original investment 1217 exceeded 5-years. The first station purchased in 2017 will not be used for this station rebuild and will be repurposed for future projects.	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
Toronto	10 - Toronto	Distribution Stations	Pass		735180	12377A PURPLE DUSK TRAIL & NEILSON DISTRICT	2023	\$ 12,916	Issue/Concern/Opportunity: (from Field) • Below ground box Assets: District Station 12377A	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
Toronto	10 - Toronto	Customer Connections	Pass		3405	Area 10 - Apartment Traditional - New Construction*	2032	\$ 27,702	Apartment - An apartment customer is a multi-residential dwelling containing more than six units that is bulk-metered Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGD develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long term plans EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. Enbridge reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers; and - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing Assets: Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-
Toronto	10 - Toronto	Customer Connections	Pass		3720	Area 10 - Industrial - New Construction*	2032	\$ 380,590	Industrial New Construction- A customer intending to run an industrial manufacturing business in a newly-built facility and intending to use natural gas. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGD develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long term plans EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. Enbridge reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers; and - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing Assets: Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-
Toronto	10 - Toronto	Customer Connections	Pass		3402	Area 10 - Apartment Ensuite - New Construction*	2032	\$ 29,719,199	Issue/Concern: Vertical Subdivision refers to a multiple unit residential building where each suite is individually metered. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-
Toronto	10 - Toronto	Customer Connections	Pass		3406	Area 10 - Commercial - New Construction*	2032	\$ 75,950,466	Commercial New Construction- A commercial customer in a newly-built facility intending to use natural gas for a commercial business. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-
Toronto	10 - Toronto	Customer Connections	Pass		3407	Area 10 - Commercial - Replacement*	2032	\$ 18,862,784	Commercial Replacement - A commercial replacement customer using a fuel other than natural gas for commercial business and is converting to natural gas. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPA's not applicable.	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
Toronto	10 - Toronto	Customer Connections	Pass		3408	Area 10 - Residential - Replacement*	2032	\$ 92,265,161	<p>Issue/Concern: Residential Replacement refers to a residential replacement customer using a fuel other than natural gas for domestic purposes and is converting to natural gas.</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPAs not applicable.	-	-	-	-	-	-
Toronto	10 - Toronto	Customer Connections	Pass		3700	Area 10 - Residential - New Construction*	2032	\$ 118,422,443	<p>Issue/Concern: Residential New Construction refers to a new residential construction development of detached single homes constructed by the builder for domestic purposes.</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPAs not applicable.	-	-	-	-	-	
Toronto	10 - Toronto	Growth	Pass		7710	McCowan Ave HP Reinforcement	2022	\$ 19,374	<p>Issue/Concern: Reinforcement projects broadly involve the installation of new or modification of existing gas distribution assets to maintain minimum required system pressure to maintain the capacity to meet customer demand. These projects are primarily driven by customer growth and system reliability considerations. Failure to implement reinforcement projects in a timely manner could lead to a potential inability to support increasing demands of existing customers and the addition of future customers.</p> <p>• Project Purpose/Need: This reinforcement is meant to support upstream and downstream load growth, bring back the flexibility EGI previously had in the system and to reduce dependency of other stations feeding the Intermediate Pressure (IP) network. Both McCowan and Southdale and South Unionville districts have been set to 40 psi and 50 psi respectively in 2016 to increase the tail-end pressures in the High Pressure (HP) network. Operations has posed concerns with leaving these stations set at their current outlet pressures for an extended period of time. If the reinforcement is completed, the set pressures can be increased to 25 psi, the downstream networks' intended pressure setting. Monitor points have been set up near the tail end of the HP network to determine if a reinforcement would be required in the near future. Mostly large volume customers and HP-IP district stations are fed off of the HP network and maintaining an inlet above 100 psi has always been an EGI standard (according to the PDR). As indicated, there are many alternate sources available, but the pressure tends to diminish as it approaches the tail end of the network. This constraint will become apparent in the event of a damage or repairs need to be performed on one of the alternate feeds. If the reinforcement is performed at the date indicated, key decisions can be made in the field with high levels of confidence.</p> <p>• Pressure Issue/Concern: McCowan and Southdale District is approaching the minimum inlet pressure of 100 psi. There is a need to shift the flow to other sources in order to boost pressures near the tail end of the HP network.</p> <p>• Risk If Not Completed: If the inlet to STN 36013A - McCowan and Southdale District or STN 32758A - South Unionville and McCowan District (Markham) fall below 100 psi during design conditions in 2021, approximately 5,000 customers downstream will be lost. Scheduled maintenance for both stations beyond 2017 will need to occur in summer months due to the instability of the HP feed. If this reinforcement is completed by the in-service date, either station could be taken offline for servicing without customer losses.</p> <p>Updates from 2021 review</p> <p>Assets (preferred option):</p> <p>• Deferred to 2022 from 2021: Install XHP to HP station at Steeles Ave. and IBM. The station will have a designed inlet of 485 psi with an outlet of 175 psi. The primary feed for this station will come from Victoria Gate. The tie-in for the inlet will be off of the NPS 30 Steel Coated (SC) and the outlet will feed into the NPS 12 Steel (ST) HP on Steeles Ave. Approximately 25 m for the inlet and 25 m for the outlet will be required.</p> <p>• Deferred to 2023 from 2022: Raise STN 36013A - McCowan and Southdale District from 40 psi to 50 psi.</p>	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-	
Toronto	10 - Toronto	Customer Connections	Pass		11850	Area 10 - Sales Stations - Replacements*	2032	\$ 6,204,549	<p>Area 10 - Sales Station - Replacements</p>	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPAs not applicable.	-	-	-	-	-	
Toronto	10 - Toronto	Customer Connections	Pass		736616	Area 10 Sales Station - New*	2032	\$ 18,215,138	<p>Area 10 - Sales Station - New</p>	Completed	Fail	Customer Connection-related projects are required to serve new customers connected in accordance with guidelines of EBO 188. Due to the the inability to offer non-gas IRPAs within the first-generation IRP Framework, IRPAs not applicable.	-	-	-	-	-	

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032		Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)											
Southeast	Div_06 - Brantford	Growth	Pass		740081	BRAN- 8th Concession Road, Burford, Reinforcement	2024	\$	376,373	Issue/Concern/Opportunity: Due to the increase in customer connections in West Brantford and because of a load addition at 4 Bowery Rd, we are required to install ~740m of NPS 2" PE 420 kPa main to connect our main on 8th Concession Rd to the main on Bishopsgate Rd, creating a back feed that will reinforce the Burford and Brantford Systems. Asset: FID# 804550412 and S11124059 Related Program: Customer related reinforcement. PI- 1.92	Planned								
Southeast	Div_06 - Brantford	Growth	Pass		738981	WATE- Pinebush Road System Reinforcement- Cambridge	2025	\$	497,340	Issue/Concern/Opportunity: Pipe reinforcement required to maintain system pressures due to growth in Cambridge. DOE has requested that we install 470m of NPS 6" PE 420 kPa looping the existing NPS 2" PE 420 kPa. Asset: NPS 2" PE 420 kPa main (FID# 513078501) Related Program: SRPR BC 2022_002- DOE Initiated System Reinforcement Project	Planned								
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Pass		48242	Kelly Lake Inco Line	2029	\$	3,078,269	Issue/Concern/Opportunity Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. This program replaces segments of pipelines with identified Class Location Change. Asset - Kelly Lake Inco Line	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Northern	Div_46 - North Bay & Orillia	Distribution Pipe	Pass		30204	Eyre St - Northeast - 1286	2027	\$	2,105,650	Issue/Concern/Opportunity: Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30287	Dundas St (MORATORIUM UNTIL 2030) - Southwest - London - 1411	2032	\$	2,966,813	Issue/Concern/Opportunity - Dundas St (MORATORIUM UNTIL 2030) - Southwest - London - 1411Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization This area is part of the London BRT and would need to be replaced before 2024 - UPDATED TO REFLECT MORATORIUM UNTIL 2030	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30045	Woods St - Southwest - Windsor - 1337	2032	\$	3,647,929	Issue/Concern/Opportunity : Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30439	Lambeth - Southwest - London - 1776	2032	\$	5,538,628	Issue/Concern/Opportunity : Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30440	Taylor St Shallow Main - Huron St to Cheapside St - Southwest - London - 1793	2032	\$	2,436,923	Issue/Concern/Opportunity : Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30281	Centre St - Southwest - London - 1479	2032	\$	2,547,896	Issue/Concern/Opportunity : Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30318	Sarnia Rd (MORATORIUM UNTIL 2029) - Southwest - London - 1464	2032	\$	2,350,799	Issue/Concern/Opportunity - Sarnia Rd (MORATORIUM UNTIL 2029) - Southwest - London - 1464Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. City planned work for 2023, moratorium until 2029 - UPDATED TO REFLECT MORATORIUM UNTIL 2029.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Eastern	60 - Ottawa	Distribution Pipe	Pass		30344	Daniel St S - Eastern - Area 60 - 1213	2033	\$	20,833	Issue/Concern/Opportunity: Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered
								Forecast (Includes Overhead)										
Southwest	Div_04 - London	Distribution Pipe	Pass		30315	Ridout St N (MORATORIUM UNTIL 2028) - Southwest - London - 1533	2032	\$ 5,116,685	Issue/Concern/Opportunity - Ridout St N (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30314	Pinewood Dr - Southwest - London - 1523	2032	\$ 3,115,128	Issue/Concern/Opportunity - Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization Asset-	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30311	Moore Line 2 - Southwest - London - 1564	2032	\$ 3,572,552	Issue/Concern/Opportunity - Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30310	Moore Line - Southwest - London - 1516	2032	\$ 5,288,947	Issue/Concern/Opportunity - Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization Asset -	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30309	Lorne Ave (MORATORIUM UNTIL 2027) - Southwest - London - 1526	2032	\$ 3,595,725	Issue/Concern/Opportunity - Lorne Ave (MORATORIUM UNTIL 2027) - Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Lorne and English construction 2021, moratorium until 2027 - UPDATED TO REFLECT MORATORIUM UNTIL 2027	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30308	Kains St (MORATORIUM UNTIL 2028) - Southwest - London - 1476	2032	\$ 2,428,283	Issue/Concern/Opportunity - Kains St (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30306	Jacqueline St - Southwest - London - 1426	2032	\$ 5,894,178	Issue/Concern/Opportunity - Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30305	Iroquois Ave (MORATORIUM UNTIL 2026) - Southwest - London - 1519	2032	\$ 2,457,553	Issue/Concern/Opportunity - Iroquois Ave (MORATORIUM UNTIL 2026) - Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization City work in 2020, moratorium until 2026 - UPDATED TO REFLECT MORATORIUM UNTIL 2026	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30304	Huron St - Southwest - London - 1525	2032	\$ 4,803,761	Issue/Concern/Opportunity - Kains St (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30303	Hughes St - Southwest - London - 1394	2032	\$ 2,012,656	Issue/Concern/Opportunity - Kains St (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30011	Dubois Ave - Southwest - Windsor - 1385	2032	\$ 2,565,617	Issue/Concern/Opportunity - Kains St (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30302	Hill St - Southwest - London - 1567	2032	\$ 4,963,541	Issue/Concern/Opportunity - Kains St (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30299	Gordon Ave - Southwest - London - 1482	2028	\$ 3,532,409	Issue/Concern/Opportunity - Kains St (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30297	Glendon Dr - Southwest - London - 1465	2032	\$ 5,349,823	Issue/Concern/Opportunity - Kains St (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30019	Homedale Blvd - Southwest - Windsor - 1287	2032	\$ 3,715,342	Issue/Concern/Opportunity - Kains St (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30020	Karl Pl - Southwest - Windsor - 1360	2032	\$ 3,211,399	Issue/Concern/Opportunity - Kains St (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30296	Front St W 2 - Southwest - London - 1547	2032	\$ 3,420,747	Issue/Concern/Opportunity - Kains St (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA West	50 - Barrie	Distribution Pipe	Pass		30098	000046, NRP - HNS Grove A1, 2025 - 2027 - 1612	2027	\$ 3,876,928	Issue/Concern/Opportunity: Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30295	Front St W - Southwest - London - 1544	2032	\$ 4,212,615	Issue/Concern/Opportunity - Kains St (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30023	Lauzon Rd - Southwest - Windsor - 2025	2032	\$ 3,422,458	Issue/Concern/Opportunity - Kains St (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30025	Malden Rd 1 - Southwest - Windsor - 1659	2032	\$ 2,291,033	Issue/Concern/Opportunity - Kains St (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30027	Malden Rd 3 - Southwest - Windsor - 1661	2032	\$ 2,408,840	Issue/Concern/Opportunity - Kains St (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA West	Div_17 - Halton	Distribution Pipe	Pass		30416	Div. 17 - Halton - Oakville - Kerr St (MORATORIUM UNTIL 2028) - Hamilton - 1480	2033	\$ 19,332	Issue/Concern/Opportunity : Kerr St (MORATORIUM UNTIL 2028) - Hamilton - 1480Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization Asset - All VSM between Cowan and 100m south of Speers on Kerr.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30293	Fanshawe Park Rd E - Southwest - London - 1478	2032	\$ 5,187,479	Issue/Concern/Opportunity - Kains St (MORATORIUM UNTIL 2028) Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30288	Dundas St 2 (MORATORIUM UNTIL 2030) - Southwest - London - 1518	2032	\$ 2,900,835	Issue/Concern/Opportunity - Dundas St 2 (MORATORIUM UNTIL 2030) - Southwest - London - 1518Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization City completed Recon in 2021, moratorium until 2031 - UPDATED TO REFLECT MORATORIUM UNTIL 2031	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Northern	Div_45 - Timmins	Distribution Pipe	Pass		30138	Birch St N (MORATORIUM UNTIL 2028) -Timmins- 1550	2032	\$ 4,215,278	Issue/Concern/Opportunity: Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_04 - London	Distribution Pipe	Pass		30276	Ann St (MORATORIUM UNTIL 2028) - Southwest - London - 1402	2032	\$ 5,033,804	Issue/Concern/Opportunity - Ann St (MORATORIUM UNTIL 2028) - Southwest - London - 1402Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization Municipal work planned for 2022, moratorium until 2028, Planning to replace most of it through Municipal - UPDATED TO REFLECT MORATORIUM UNTIL 2028	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30028	Morand St - Southwest - Windsor - 1656	2030	\$ 2,340,213	Issue/Concern/Opportunity - Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30030	Partington Ave - Southwest - Windsor - 1293	2032	\$ 2,090,899	Issue/Concern/Opportunity - Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735022	Sarnia Industrial Station 2029 Rebuild	2029	\$ 14,849,863	Issue/Concern/Opportunity: - The station is located on leased property that is limited in size and makes it difficult to install a required filter. In addition, the heater is past its average lifespan and there are other ergonomic concerns. There is an opportunity to merge the station with 13F-503 Churchill Rd Station There is a System Reinforcement project being considered if this is not proceeding the station condition concerns noted above will have to be addressed through a future scoping initiative in the next iteration of the 10V AMP. Asset - Sarnia Industrial Station	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
Southeast	Div_06 - Brantford	Distribution Pipe	Pass		30250	WATE: Ontario St, Brantford, VSM Replacement	2028	\$ 1,956,152	Issue/Concern/Opportunity: Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Eastern	60 - Ottawa	Distribution Pipe	Pass		30337	Bartholomew St - Eastern - Area 60 - 1116	2028	\$ 3,852,389	Issue/Concern/Opportunity: Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Eastern	60 - Ottawa	Distribution Pipe	Pass		30355	Hamilton St - Eastern - Area 60 - 1056	2028	\$ 2,538,897	Issue/Concern/Opportunity: Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Northern	Div_46 - North Bay & Orillia	Distribution Pipe	Pass		30223	Mary St 2 - Northeast - 1709	2032	\$ 1,893,861	Issue/Concern/Opportunity: Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		502190	VSM - Yonge and Davis Dr West - Phase2	2032	\$ 3,361,499	Issue/Concern/Opportunity: The vintage steel mains have shown signs of declining health due to the cumulative effective of poor manufactured coating performance, construction practices, latent third party damages to pipe coating, and the effect of stray currents from transit infrastructure such as subway and streetcars. The current failure projection model is forecasting an exponential increase in the number of corrosion related failures, while the quantitative risk assessment and the 40-year risk projection are showing an aggressive increase in the safety risk associated with steel main failures. In addition to it age, vintage steel mains are also susceptible to accelerated degradation and/or higher risk of third party damage in the following ways: a. Compression couplings (mechanical fittings which are not welded onto the main) on steel mains that are not properly restrained and/or unrestrained could cause a loss of containment due to exposed points of thrust. In this case, the weight of the soil is required to hold the fittings in place. When the soil is disturbed, the pipe pulls out of the fitting, resulting in blowing gas through the open pipe end with the potential of full bore release of gas. b. Compression couplings on steel mains that are unknowingly isolated from the corrosion protection system could result in inadequate cathodic protection, leading to the assets' accelerated corrosion and potentially loss of containment. c. The existence of shallow blow-off valve assemblies that could be damaged during excavation activities. d. Reduction in the original depth of cover due to urban development could increase the potential of damages due to excavation activities and increased external loading. According to the codes and standards, a minimum depth of cover is needed to ensure the appropriate distribution of weight of transportation vehicles across pipelines is not exceeded. If the depth of cover is not appropriate, excessive stresses are introduced into the pipe, and failures could result. e. The continuous exposure of road salt and seasonal ground movement on bridge crossing assets that could result in accelerated corrosion and external loading/stresses. f. Lack of cathodic protection with pipe casings that could result in corrosion causing excessive stress or shorts on the carrier pipe that is in contact with the casing, which could lead to the loss of containment. g. Manufacturing defects associated with seam welds and fittings that are weak points in the distribution system and could result in a loss of containment due to prolonged exposure to stress and corrosion. h. Latent damages to pipe coatings that were never reported to EGD for repair and became active corrosion sites, which could hamper the effect of the corrosion protection system and result in accelerated corrosion and potentially loss of containment. SITE SPECIFIC CONCERNS: 1958 vintage IP steel main that is susceptible to the issues outlined above. Operations field personnel reported poor condition steel main in this area that was observed during previous maintenance activities. The vintage IP gas mains are in a highly populated residential area in Richmond Hill, which could drive up the consequence in the event of a failure. The compression outlet service tees on all the services in this area are highly susceptible to pull-out due to natural or external forces.	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southeast	80 - Niagara	Distribution Pipe	Pass		30068	Oakwood St PTC - Area 80 - 2030	2028	\$ 2,658,306	Issue/Concern/Opportunity: Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
GTA West	Div_17 - Halton	Distribution Pipe	Pass		737559	Halton - Oakville - 6th Line-Phase 2- VSM Replacement	2032	\$ 2,965,801	Issue/Concern/Opportunity: Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southeast	Div_16 - Hamilton	Distribution Pipe	Pass		738059	Haldimand - Selkirk - Erie St S-Phase 2 - Hamilton - VSM Replacement	2028	\$ 2,619,536	Issue/Concern/Opportunity: Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						
Southeast	Div_16 - Hamilton	Distribution Pipe	Pass		30402	Haldimand - Selkirk - Erie St S-Phase 1 - Hamilton - VSM Replacement	2028	\$ 2,623,030	Issue/Concern/Opportunity: Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed						

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered	
								Forecast (Includes Overhead)											
Northern	Div_33 - Thunder Bay	Distribution Pipe	Pass		30139	Byng Ave 1-Kapuskasine-1850	2030	\$ 1,772,216	Issue/Concern/Opportunity: Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
Toronto	10 - Toronto	Distribution Pipe	Pass		4109	VSM on College from Huron to Elizabeth	2031	\$ 2,935,255	Issue/Concern/Opportunity: The vintage steel mains have shown signs of declining health due to the cumulative effective of poor manufactured coating performance, construction practices, latent third party damages to pipe coating, and the effect of stray currents from transit infrastructure such as subway and streetcars. The current failure projection model is forecasting an exponential increase in the number of corrosion related failures, while the quantitative risk assessment and the 40-year risk projection are showing an aggressive increase in the safety risk associated with steel main failures. In addition to it age, vintage steel mains are also susceptible to accelerated degradation and/or higher risk of third party damage. operations field personnel reported poor condition steel main in this area that was observed during previous maintenance activities. The NPS 8 gas main traverses in a highly populated area in downtown Toronto, which could drive up the consequence in the event of a failure	On Hold		Future year replacement projects are in the queue for IRP Evaluation and will be assessed annually when the scope is confirmed							
						Asset - Early 1960's vintage NPS 8 IP steel main on College St													
GTA West	20 - Mississauga	Growth	Pass		738887	MONO REINFORCEMENT	2023	\$ 2,478,076	Issue/Concern/Opportunity: The system is expected to fall below minimum pressure based on forecast models. Justification: MONO XHP REINFORCEMENT SRP Assets: NW 2103 Related Investments: To extend approx. 1.5km NPS8 XHP downstream of STN 3730322 along HWY 10 to reinforce the existing network 2103 due to the new added/upcoming loads from customers.	In Progress		Project awaiting permitting approval							
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		740055	Panhandle Regional Expansion Project - Dawn Facilities	2025	\$ 89,985,920	Issue/Concern: To provide reliable, secure, and affordable natural gas supply to meet the growth in Design Day demand of the Panhandle System: Assets: i. Dawn Yard (Moved to INV740055) : 700 m of 8960 kPa MOP NPS42 station header is required to maintain the maximum sustainable pressure on design day. This header will also provide operational flexibility and security of supply to the Panhandle system. Related Program: Panhandle Regional Expansion Project	Completed	Fail	LTC regulatory process in progress							
Southeast	80 - Niagara	Growth	Pass		7727	Welland IP NW8925 Reinforcement	2027	\$ 3,360,297	Issue/Concern/Opportunity: - Pressure at the east tail end will be low with the customer growth in this IP network. - Customer growth in this IP network in the east section need more feeds to support. Pressure issue/concern: The minimum system pressure is forecasted to be infeasible by 2020. Customer growth issue/ concern: As of 2017, there are 568 customers on this network. Without reinforcement, forecasted 105 customers may not be able to be added. Risk if not completed: System Risk without this Reinforcement: - Low pressure at the tail end of the network. Specifically, there are two nodes being fed from station 891740 and 89040 which are single fed. - Reinforcement in 2020 will allow tail end pressure to be above minimum of 10psi - Without reinforcement, unable to add more customers to the network - there will be approximately 595 customers connected to this network by 2020 Assets - 1.3km of 4" PE IP on Lyons Creek Rd/Mathews Rd, from node 8925011 to 8925015 - 800m of 4" PE IP on Lyons Creek Rd, from node 89250309 to 89250301 - Station#89174A upgrade - 1.7km of 4" PE IP on Ridge Rd, from Doans Ridge Rd to McKenney Rd, from node 89250378 to 89250400. Related Programs/BCs: N/A	Completed	Fail	N/A - Investment Cancelled							
Eastern	Div_22 - Kingston	Growth	Pass		49769	KING: Loyalist Pkwy Reinforcement, Wellington	2025	\$ 126,586	Issue/Concern/Opportunity: System reinforcement required to support forecasted growth. Asset: Looping existing 3" ST (FID 518847342) with 4" PE from 43.956405, -77.325051 to 43.955115, -77.328731. Install 340m of NPS 4 on Main Street, Wellington from the outlet of Wellington DRS(28105026) west along Loyalist Pkwy (Main St Wellington)	Completed	Fail	N/A - Investment Cancelled							
Eastern	60 - Ottawa	Growth	Pass		23189	Almonte Reinforcement - Phase 2	2023	\$ 7,750	*NOTE: This reinforcement project is cancelled due to reduced growth requirements in the area. The only outstanding item is to complete the remaining archaeological assessments for uncovered artifacts on the landowner's property where the pipe had been proposed to be placed. Issue/Concern: Reinforcement projects broadly involve the installation of new or modification of existing gas distribution assets to maintain minimum required system pressure, maintain capacity, and meet customer demand. These projects are primarily driven by customer growth and system reliability considerations. Failure to implement reinforcement projects in a timely manner could lead to a potential inability to support increasing demands of existing customers and the addition of future customers. Project Purpose/Need: This reinforcement addresses issues with the IP network, fed by ALMONTE DISTRICT (6A143A) and SCOTT ST. DISTRICT (6A206A). The interior subdivision piping are undersized, based on the growth predictions of customers' demands. Evidence of densification has become apparent through load sheets. Without the reinforcement, growth cannot be supported in the downstream system. Pressure issue/concern: The minimum system pressure is forecasted to be infeasible by 2021. Customer growth issue/ concern: The Phase 1 reinforcement will enable the current system to continue adding new customers after the 10 customers from 2017-2019 as of the proposed in-service date, as per current known 11 customer growth projects equaling 870 m3/hr of load. However, Phase 1 only provides an additional 300m ³ /hr capacity for any additional growth outside of this and a Phase 2 reinforcement will be required for further system growth. Assets: 3 options include 1.2 to 1.3 km of 4" XHP ST, or pressure increase of the system from 30 psi to 55 psi (involves 2.21 km PE IP, 10-15 km ST IP, 350 service replacements, 970 relights, 30 valve replacements). Related Programs: 21353 (Almonte Reinforcement Phase 1)	Completed	Fail	N/A - Project Completed							
GTA West	20 - Mississauga	Distribution Pipe	Pass		502423	A20: Homark Dr., Mississauga - 1" ST Replacement	2027	\$ 1,828,158	Issue/Concern/Opportunity: Recent service abandonments for residential demolitions have necessitated cut outs on the main due to corrosion concerns. 45 services are Copper and therefore require replacement. Assets: Replace 1" VSM with PE and associated service upgrades.	Completed	Fail	NPS 2, cannot downsize or retire							
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Pass		2143	NPS 10 Sudbury Lateral - Yellek	2025	\$ 2,537,290	Project Specific Concerns: Sudbury Section 1 - Yellek - 2500m of NPS 10. 3 road crossings. Class 1 to 2. General Concerns: Annual Class Location surveys are required as per the Canadian Standards Association 2662 - Oil and Gas Pipeline Systems for pipelines greater than 30% SMYS. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development occurs in close proximity to EGI's pipelines which triggers annual class location changes; this work ensures EGI is compliant and fosters the safety of the public and the pipeline system. Assets: Sudbury Section 1 - Yellek - 2500m of NPS 10 pipe. Related Programs: N/A	Completed	Fail	See investment description, IRPAs not applicable							
GTA West	20 - Mississauga	Growth	Pass		741646	CNG Injection - Area 20 - Shelburne to Dundak	2023	\$ 258,322	Issue/Concern/Opportunity: Low pressure in Network 2103 Area requiring pipe reinforcements to allow Growth projects to connect to the system Assets: Network 2103 in Area 20 - CNG will be injected into the system defer pipe reinforcement	Completed	Fail	See investment description, IRPAs not applicable for CNG							
Southeast	Div_07 - Waterloo	Utilization	Pass		48405	WATE: Meter & Regulator Inst Repl-Company	2023	\$ 7,947,219	Meter & Reg Install- Replacement	Completed	Fail	See investment description, IRPAs not applicable							
Southeast	Div_16 - Hamilton	Utilization	Pass		48438	HAMI: Meter & Regulator Inst Repl-Company	2023	\$ 6,549,406	Meter & Reg Install- Replacement	Completed	Fail	See investment description, IRPAs not applicable							
Northern	Div_46 - North Bay & Orillia	Growth	Pass		101565	NBAY: Upgrade Callander TBS (43005001)	2023	\$ 8,358	Issue/Concern/Opportunity: Station unable to provide high enough outlet pressure Justification: Growth will cause downstream pressure to go below minimum requirements Assets: Stn 43005001 Related Investments: N/A	Completed	Fail	N/A - Project in construction phase							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan - Results	IRP Plan - IRPAs Considered
Eastern	Div_22 - Kingston	Growth	Pass		736677	King: 22-22-714 Purdy Mills PRS Rebuild 28403230	2023	\$ 20,481	Rebuild of existing Purdy Mills PRS due to general system growth. Risk/Opportunity/Justification: System reinforcement required due to general system growth. Station rebuild required to flow more gas into the system. Assets: Existing post regulation station (PRS) STN# 28403230 to be rebuilt to a 9.5 150 F.R Related Investments: N/A	Completed	Fail	N/A - Project Completed	-	-	-	-	-	-
Eastern	Div_22 - Kingston	Growth	Pass		503140	SRP_LUG East Tweed River St_Reinforcement_NPS4_300m_420kPa 22-22-505	2023	\$ 156,176	Issue/Concern/Opportunity: Tweed system pressure was observed to go below system minimum pressures due to recent growth Justification: Pipe reinforcement required to maintain healthy system pressures.	Completed	Fail	N/A - Project Completed	-	-	-	-	-	-
Eastern	Div_22 - Kingston	Growth	Pass		738842	22-22-719 King: Colborne TBS Line heater (27401001) replacement	2023	\$ 160,958	Assets: Install Approx. 300m of NPS 4, PE 420kPa pipe Risk/Opportunity/Justification: Replacement of existing heater with CWT-385 to meet reinforcement needs on Colborne TBS Site 27401001. Heater replacement also would entail a new fuel train for the upsized heater, updated electrical connections and addition of a bypass valve. Assets: CWT-385 heater, bypass valve, PFM meter set.	Completed	Fail	N/A - Project Completed	-	-	-	-	-	-
Eastern	Div_22 - Kingston	Growth	Pass		737885	22-22-502 Kingston Reinforcement CNG Backfeed	2023	\$ 61,195	Issue/Concern/Opportunity: - back feed the Kingston system with CNG until the Kingston Reinforcement (57-22-500 - 100573) project is completed. Clean up costs remain in 2023. Asset - Install ~50m of NPS4 1210kPa main to interconnect existing main to existing CNG transfer & filling station	Completed	Fail	N/A - Project Completed	-	-	-	-	-	-
Eastern	Div_22 - Kingston	Growth	Pass		502443	KING: 22-21-713 Customer SRP	2023	\$ 318,883	Issue/Concern/Opportunity: Customer is adding load which will require a full station rebuild and upgrades at Prescott TBS Justification: Contract Customer has received Government funding to produce their product Assets: 18700008 and 28705001 Prescott TBS	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-	-
Southwest	Div_01 - Windsor	Growth	Pass		738328	57-22-311 Windsor Customer SRP	2023	\$ 8,564,611	Issue/Concern/Opportunity: New Customer Assets: 900 m NPS 6 ST 4140 kPa (MOP) main extension from Lauzon Lateral to customer station, cut to sustain 345 kPa delivery pressure to customer.	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-	-
Southeast	Div_06 - Brantford	Growth	Pass		739483	BRAN- Shellard Lane, Brantford, Reinforcement	2023	\$ 507,506	Issue/Concern/Opportunity: Pipe reinforcement required to maintain system pressures due to growth Assets: DOE has requested that we install 500m of NPS 6" PE 420 kPa because of the growth in the Shellard Lane area. Required to support investments 101260, 736163, 736284, 736199, 502134.	Completed	Fail	N/A - Project Completed	-	-	-	-	-	-
Southeast	Div_07 - Waterloo	Growth	Pass		49083	SRP_Southeast_Guelph_1 9V-401STN_Painting and Insulation	2023	\$ 524,774	Issue/Concern/Opportunity: Station modification required to support growth downstream Asset 19V-401	Completed	Fail	N/A - Project Completed	-	-	-	-	-	-
Southwest	Div_01 - Windsor	Growth	Pass		30562	SRP_Southwest_Blenheim_New STN & Reinforcement_NPS4_700 m_1900kPa	2023	\$ 482,183	Issue/Concern/Opportunity: Low pressure observed at system low point in Charing Cross Asset : New main extension on Burke Line off of the 1900 kPa main to the south and add a new distribution station at Communication Rd. Install approximately 578 meters of 4" S Y1 1900 kPa gas main, 150 meters of 6" PE 420 kPa gas main and a Class 7 distribution station along Burke Line in the Municipality of Chatham-Kent.	Completed	Fail	N/A - Project Completed	-	-	-	-	-	-
Southeast	Div_07 - Waterloo	Growth	Pass		736150	WATE_Toronto St S Markdale System Reinforcement	2023	\$ 378,822	Issue/Concern/Opportunity: Reinforcement Customer Driven Required per DOE for Customer load addition requests at new Grey County Hospital site CAR5 903968 & 904162 Asset - Installation of 1224.0m NPS 6 PE main through Grey County easement. Related - Reinforcement Main Project 07-22-505.	Completed	Fail	N/A - Project Completed	-	-	-	-	-	-
Eastern	Div_22 - Kingston	Growth	Pass		739857	28106010 York St and Pitt St PRS Rebuild- Picton	2023	\$ 176,105	Issue: Existing station is near capacity; we are unable to attach a new apartment building with a load of 250M3/hr Justification: Rebuilding this PRS will enable us attach the customer and future customers Assets: Station 28106010 Related Investments:	Completed	Fail	N/A - Project Completed	-	-	-	-	-	-
Southeast	Div_06 - Brantford	Growth	Pass		30543	BRAN- St. Johns Rd E, Nanticoke, Port Dover East System Reinforcement	2023	\$ 2,525,087	Issue/Concern/Opportunity: Due to the growth in both Port Dover and as part of the Hamilton Airport Project, this 3000 m reinforcement is required to allow for more customers and more load to be added to the system. Asset: Installation of 3000.0m of NPS 6 ST 1900kPa main looping existing NPS 2 1900 kPa MOP along Hwy 3, from Haldimand Rd 70 westerly along Highway 3 to Highway 6. Project Coordinates: 42.826786, -80.116527 to 42.821297, -80.149389	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-	-
Eastern	Div_22 - Kingston	Growth	Pass		736858	King: 22-22-115 Elgin and Ontario DRS Upgrade - SRP	2023	\$ 537,473	Issue/Concern/Opportunity: This rebuild was specified by DOE via an SRP Asset: Rebuild of the Elgin & Ontario Streets (Cobourg) DRS due to growth, triggered by the Golden Plough long term care facility at 555 Courthouse Road.	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-	-
Eastern	Div_22 - Kingston	Growth	Pass		736619	King: 22-22-720 Customer PRS Rebuild SRP_LUG East_Sydenham_2840804 25TN_Rebuild	2023	\$ 19,287	Issue/Concern/Opportunity: - Station modification required to support growth downstream Asset - 2840804	Completed	Fail	N/A - Project Completed	-	-	-	-	-	-
Southeast	Div_06 - Brantford	Growth	Pass		738492	WATE- Kennedy Road, Breslau, Reinforcement	2023	\$ 46,539	Issue/Concern/Opportunity - Mitigate low pressure by joining systems and creating a back feed. Asset - Install 40m of NPS 2" PE from Kennedy Road across Menno.	Completed	Fail	N/A - Project Completed	-	-	-	-	-	-
Southeast	Div_16 - Hamilton	Growth	Pass		48757	HAMI: Dunnville Line Reinforcement	2023	\$ 325,171	Issue/Concern: Reinforcement projects broadly involve the installation of new or modification of existing gas distribution assets to maintain minimum required system pressure, maintain capacity, and meet customer demand. These projects are primarily driven by customer growth and system reliability considerations. Failure to implement reinforcement projects in a timely manner could lead to a potential inability to support increasing demands of existing customers and the addition of future customers. Attached is a presentation outlining 5 different reinforcement options for the Dunnville Line (Options A to E). Option E was used as the preferred solution from a cost and growth perspective. This option included a new NPS 6 ST back feed from the LEGD NPS 6 XHP main to the 1900kPa Dunnville system on Feeder Canal Rd. A new distribution and custody transfer station was required as part of this project to feed into the Dunnville system at a pressure below the 1900 kPa MOP in the Dunville NPS 8 main. Approximately 3036m of 6" Steel main was installed.	Completed	Fail	N/A - Project Completed	-	-	-	-	-	-
Eastern	Div_22 - Kingston	Growth	Pass		736617	SRP_LUG East_Strathcona_2810200 55TN_Rebuild	2023	\$ 90,007	Issue/Concern/Opportunity - Station modification required to support growth downstream Asset - 28102005	Completed	Fail	N/A - Project Completed	-	-	-	-	-	-
Northern	Div_46 - North Bay & Orillia	Growth	Pass		49333	NBay: Old Barrie Rd & University Ave Station (Orillia)	2023	\$ 1,506,995	Issue/Concern/Opportunity: Asset: New station to support maintain minimum inlet pressure to stations feeding growing subdivisions along Wainman Line in Orillia. - Will also support maintain pressures in 420 kPa system fed by existing 43801111 STN. - Eliminates need for NE 10 R9PR 2032_3 project, which is 1 km of NPS 4 looping along Wainman Line. - Pipeline reinforcement options investigated. This includes looping near West St N and Skyline Drive. Another alternative would include looping along Murphy Rd. - The new station build is the preferred option."	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-	-
Northern	Div_33 - Thunder Bay	Growth	Pass		736588	TBAY - Customer SRP - 165 Darrell Ave	2023	\$ 64,291	Assets: FID # 807979578 and 806680784	Completed	Fail	N/A - Project Completed	-	-	-	-	-	-
Southeast	Div_16 - Hamilton	Growth	Pass		739262	HAMI: Ancaster Gate Modifications	2023	\$ 148,457	Issue/Concern/Opportunity: Existing station is limited to 7556 m3/h by the filter. Filter is undersized for the future flow of 11,000 m3/h and needs to be replaced. Asset: Proposed modifications include a new filter, atmospheric tank and associated piping.	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-	-
Southeast	Div_07 - Waterloo	Growth	Pass		739652	WATE_375 Sligo Rd Mount Forest Reinforcement	2023	\$ 263,252	Issue/Concern/Opportunity: System Reinforcement required to meet recent and forecasted growth. Installation of 250m of NPS 4 PE main along Main St N (Hwy 6) from Mount Forest Dr northerly to 535 Main St N, Mount Forest. Required per	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes Overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered	
GTA East	30 - Richmond Hill	Growth	Pass		503436	Hydrogen Powered CHP TOC	2023	\$ 1,352,937	Issue/Concern/Opportunity - currently have a consultant estimating installation of mCHP fueled by Hydrogen Assets: New hydrogen blending facility 100 kW hydrogen-fueled Combined Heat and Power (CHP) system is feasible through demonstration where the power and heat generated by the CHP would be used at the existing on-site commercial building owned by ENBRIDGE. CEM project proposal is to define a flexible CHP system able to operate on various fuel combinations including pure Hydrogen, mixes of Hydrogen and Natural Gas, and also pure natural gas. This scenario is proposed to provide Enbridge with a possible contingency plan should unforeseen issues with the Hydrogen-fueled CHP system requested arise. The design will include the fueling interconnect between the on-site hydrogen storage and the CHP, the CHP itself, the interconnects between CHP and building and all civil, electrical and mechanical assets required for a complete and fully operational CHP system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-	-
Toronto	10 - Toronto	Growth	Pass		739488	Finch Kennedy Birchmount Reinforcement	2023	\$ 499,303	Related Programs: N/A Issue/Concern/Opportunity: Abandonment of NPS 12 gas main along Finch Ave under the Metrolinx Rail requires a reinforcement of NPS 4 PE IP gas main along Birchmount to back feed the hospital Assets: Scope of work involves the installation of approximately 250m of NPS 4 PE IP gas main on Birchmount Road in Toronto (between Silver Springs Rd & Brookmill Blvd). This reinforcement is required by DOE to provide a back feed to the Birchmount Hospital because of the abandonment of the NPS 12 gas main under the Finch Ave tracks (completed under the Transit project Finch Kennedy - investment# 17684).	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-	-	
Eastern	60 - Ottawa	Growth	Pass		1942	NW 6581 Greely Reinforcement SRP	2023	\$ 1,873,651	Issue/Concern: Potential for customer loss in winter 2022/23 without reinforcement. Customers shouldn't be added on system if reinforcement can't be completed (at least in part). Assets: Pipe ~2km of NPS 4 XHP Steel Related Program: Not applicable	Completed	Fail	N/A - Project Completed	-	-	-	-	-		
Eastern	60 - Ottawa	Growth	Pass		736582	NW 6421 Richmond Reinforcement SRP	2023	\$ 277,922	Issue/Concern/Opportunity: Current model shows pressures just over 10 psi. Growth in area could easily bring network below 10 psi in 2022. Assets: Installation of approximately 835m of NPS 4 PE IP and 60m of NPS 1.25 PE IP. Related Investments: Not applicable	Completed	Fail	N/A - Project Completed	-	-	-	-	-		
Eastern	60 - Ottawa	Growth	Pass		503523	Manotick Reinforcement	2023	\$ 12,155	Issue/Concern/Opportunity: Reinforcement will limit the risk of customer loss up to forecast temperatures under normal operating conditions. Customer additions might be limited if this reinforcement isn't completed Asset - Rebuild District Station 61397A (8m of 2" ST XHP, 5m of 2" ST IP) & New gas main 850m of 4" PE IP	Completed	Fail	N/A - Project Completed	-	-	-	-	-		
GTA East	40 - Whitby	Growth	Pass		736669	New Station Bayly and Mackenzie Ave SRP	2023	\$ 659,271	Issue/Concern/Opportunity: Due to customer growth, the main leg on the outlet side of Dowdy & Thompson District Station 3476392 and inlet to Westney & Hwy 2 District Station 3111727 experience high velocity >30 m/s, causing the downstream IP system to drop in pressure. Additionally, the inlet pressure to Westney & Hwy 2 District Station approaches the minimum allowable inlet pressure for this station. The proposed station at Bayly & Mackenzie District Station will restore system pressures on both IP and HP systems and help support future growth. Assets: New District station Related Investments: Not applicable	Completed	Fail	N/A - Project Completed	-	-	-	-	-		
GTA East	30 - Richmond Hill	Growth	Pass		738860	NW3834 Glenbourne Park Dr Reinforcement	2023	\$ 82,026	Issue/Concern/Opportunity: Correction to pipe lengths in SynerGI resulted in modelling data indicating system pressures of Network 3834 to fall below system minimums. Not customer-driven. Justification: System reinforcement Assets: approximately 143m of 2" plastic IP gas main, Two of Elbow 90 (1.25"), Reducer 2x1.25, punch Tee 2", 25m of 1.25 PE IP pipes	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-		
Eastern	60 - Ottawa	Growth	Pass		736583	NW 6511 Beaverbrook Reinforcement SRP	2023	\$ 27,532	Issue/Concern/Opportunity: Reinforcement SRP - Existing ERX data shows pressures <10psi Assets: New District station at Beaverbrook & Varley Dr	Completed	Fail	N/A - Project Completed	-	-	-	-	-		
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		741485	NPS 4 Tupperville MOP Downgrade	2024	\$ 267,451	Issue/Concern/Opportunity: Dynamic Risk completed an independent review of TIMP to establish uncertainty levels in the fitness-for-service conclusions for all TIMP assets. This first phase of the project was completed last year. TIMP is currently developing plans to mitigate high and moderate uncertainties in the fitness-for-service conclusions by leveraging existing integrity activities and potentially introducing new ones. Justification: No other cost effective means to inspect pipeline and address uncertainty with the identified threat. Asset - New distribution station off the Dresden South Line to replace the Tupperville Trans Station. Adding new Launcher to the new station Project Specific: ECDA to IUI program, supporting refinement of pipeline risk profile. Associated 2022 O&M spend for IUI General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of Union's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	IRPAs unable to defer, reduce or eliminate project scope	-	-	-	-	-		
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Pass		102212	INTE: Sault Ste Marie/Baseline: Retrofit ECDA to IUI	2024	\$ 1,783,453	Issue/Concern/Opportunity: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of Union's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections. Asset - This work/estimate includes the following assumptions: •Total of 11 digs •Norwich South dig 1 and 4 are likely cut-outs and have been estimated as such •9 Digs will require a clock spring repair	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-		
Southwest	Div_04 - London	Distribution Pipe	Pass		739467	Norwich South & Delhi 6 Phase 2 Int. Digs	2023	\$ 5,167,130	Issue/Concern/Opportunity - The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections. Asset - This work/estimate includes the following assumptions: •Total of 11 digs •Norwich South dig 1 and 4 are likely cut-outs and have been estimated as such •9 Digs will require a clock spring repair	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-		
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		733440	Bridge Crossing Old Garden River Rd Sudbury-5	2024	\$ 301,979	Issue/Concern/Opportunity: Bridge crossing inspection results in different levels of action which can include replacement, recoating, or hanger repair/replacement work. This program is for recoating work and hanger repair. The integrated Corrosion Operating Standard ST-17-813A-DDA9 was released 2020-11-25 and requires the following surveys: Annual visual, 5 year detailed. The standard outlines the following time frames: Bridge crossing – replace Per Engineering assessment per project plan; Bridge crossing – replace expansion joint / Ins flange within 24 months; Bridge crossing / paint pipe / repair hangers / replace casing end seal within 12 months. Assets: High performance re-coating and hanger replacement and repair of bridge crossing.	Completed	Fail	N/A - Investment Cancelled	-	-	-	-	-		
GTA West	Div_17 - Halton	Distribution Stations	Pass		739155	HALT: Georgetown TBS Rebuild, 21X-401R	2026	\$ 1,994,884	Issue/Concern/Opportunity: Frost Heaving of outlet piping is resulting in damage to municipal roads. The station needs a heating system upgrade. In addition, a growth project had been scheduled in 2029 which would drive a station rebuild. Justification: Frost heave issue needs to be resolved so as not to damage municipal infrastructure. Because a full rebuild is forecasted for 2029 it is recommended that the rebuild be advanced to reduce the total expenditure in this asset over time. Asset - Georgetown TBS 21X-401R station rebuild was set for 2029 (HALT FBSTN 2029_21X-401R).	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-		
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		503412	CNG Station Project - #5	2024	\$ 2,378,925	Issue/Concern/Opportunity: Demand for CNG to support fleet operators in Owen Sound Traditionally, fleet operators fuel their vehicles with gasoline or diesel. EGD promotes the use of natural gas to these customers as an alternate fuel source to provide a lower-cost and lower-emission fueling solution for vehicles such as garbage trucks, light duty vehicles, and transit buses. Business Development is responsible for the installation, maintenance, and the safe and continued operation of NGT stations assets for these customers. NGT stations differ in operation from distribution system stations as NGT stations use and store compressed natural gas (CNG) on site at up to 4000psi. EGD has two general categories for NGT station types: Large, Mobile and Utility NGT stations and Small NGT stations (also referred to as VRAs). Large, Mobile and Utility NGT stations are similar in operation and will be evaluated for condition in the same manner.	Completed	Fail	See investment description, IRPAs not applicable for CNG	-	-	-	-	-		

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STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		1914	NPS 16 Wilkesport Transmission Retrofit	2023	\$ 4,487,179	Issue/Concern/Opportunity: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of Union's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections. Asset - Install permanent launcher and receiver facilities prior to next scheduled inspection in 2023. Permanent launcher/receiver facilities also provide a high degree of flexibility with respect to the timing of inspections which leads to system optimization and reduces disruption to normal pipeline operations.	Completed	Fail	N/A - Project in construction phase	-	-	-	-	-	-
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		2148	Kingston Lateral - Class Location	2028	\$ 2,452,392	Issue/Concern/Opportunity: Annual Class Location surveys are required as per the Canadian Standards Association 2662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development occurs in close proximity to EGI's pipelines which triggers annual class location changes; this work ensures EGI is compliant and fosters the safety of the public and the pipeline system. Asset - Kingston Lateral - 1100m of NPS 6 in 2024. Class 2 to 3	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Head Office/All	01 - All	Utilization	Pass		738579	Meter Purchases- New Customer Additions - Ultra Sonic	2027	\$ 31,869,442	New meters are required for customer expansion projects. Meters are used to determine the gas consumption input of customer billing.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		738722	Parkway Plant C Power Turbine Replacement	2024	\$ 2,362,808	Issue/Concern/Opportunity: . The existing power turbine has sustained serious damage and must be taken out of service. Justification: Plant C is critical infrastructure that must be in service by mid-October, and this purchase is required in order to achieve this operational timeline. The existing power turbine will be shipped out and repaired, however the repair is not able to be started until October, and therefore will not be ready for the required service deadline. The repaired unit will be placed into inventory as a spare; it is compatible with a number of the units in our fleet of compression assets. This investment is required to purchase a new (refurbished) power turbine for Parkway Plant C. Assets: Parkway Plant C	Completed	Fail	Compression Station related projects are required to maintain existing deliverability and throughput. This is necessary to maintain security of supply and stable natural gas pricing during supply disruptions.	-	-	-	-	-	-
GTA West	20 - Mississauga	Distribution Stations	Pass		737062	Cons 1- MSL Pressure Increase	2025	\$ 64,581	Issue/Concern/Opportunity: There is an opportunity to leverage the Mississauga South Loop to provide additional feed into the GTA system, increasing supply through assets which are to be modernized within the AMP forecast. This will ensure better security of supply and will also provide flexibility to use more Dawn to Parkway gas when there is economic benefit. Justification: Through completion of more detailed cost estimates and benefits analysis, we expect to understand if there is a business case to support further capital investment in the system to realize expected benefits. Assets: Multiple Assets in GTA West will be impacted by the project if it proceeds.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		735470	2028 Well Lateral Retrofits	2028	\$ 5,449,759	General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of Union's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections. Project Specific: Well Lateral Integrity Program supporting refinement of pipeline risk profile. Associated 2029 O&M spend for ILI or other integrity verification.	Completed	Fail	Storage Pools & Well related projects are required to maintain existing deliverability and throughput. This is necessary to maintain security of supply and stable natural gas pricing during supply disruptions.	-	-	-	-	-	-
Southeast	80 - Niagara	Distribution Stations	Pass		13034	SCRW-Station-Renewal In-Place	2025	\$ 28,220,148	Issue/Concern: Due to the age of the facility, the compressor station experiences process safety concerns (lack of automation, unit valves, electrostatic discharge (ESD), dehydration and incinerator systems), obsolescence issues (compressor, building, electrical), code concerns (location of recycle valve/line), lack of auxiliary power, inability to support site security devices such as cameras, and setback concerns related to neighboring occupied buildings and the nearby rail line. Assets: Crowland Compressor Station Justification: Modernize the facility to comply with current code and design standards. Related Program: This project is under consideration in conjunction with an overall Crowland upgrade. Issues related to the wells and gathering system should be considered together with the compressor station's issues/concerns.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Eastern	Div_22 - Kingston	Growth	Pass		734744	King: Brighton Reinforcement	2028	\$ 2,431,955	Issue/Concern/Opportunity: System reinforcement required to support forecasted growth. Asset	Completed	Fail	N/A - Investment Cancelled	-	-	-	-	-	-
Eastern	Div_22 - Kingston	Growth	Pass		49768	KING: Main St, Wellington Reinforcement	2025	\$ 348,112	Issue/Concern/Opportunity: System reinforcement required to support forecasted growth. Asset: - Connect existing 2" PE (FID 518792595) to existing 4" PE (FID 518792810) Install 130m of NPS 4 on Main Street, Wellington. Connect existing main, between Wharf and West streets on north side of Main Street	Completed	Fail	N/A - Investment Cancelled	-	-	-	-	-	-
Northern	Div_33 - Thunder Bay	Growth	Pass		503234	TBAY :33-25-503 Riverdale Rd to Hwy 61 via 20th	2026	\$ 1,159,693	Issue/Concern/Opportunity: System reinforcement required to support forecasted growth. Justification: To support growth in the south portion of City of Thunder Bay Assets: approximately 3450m of NPS6 ST main to allow for growth Related Investments: None	Completed	Fail	N/A - Investment Cancelled	-	-	-	-	-	-
Southwest	Div_03 - Sarnia	Distribution Pipe	Pass		740586	LOND- Camlachie Unlocatable Plastic Mains- Camlachie	2026	\$ 2,925,830	Issue/Concern/Opportunity: The town of Camlachie was serviced in 1973 with the first generation of plastic mains/services which is nearing the end of its life. Instead of tracerwire they installed some type of metallic tape. This has resulted in the mains and services being unlocatable Asset - 9.6km of vintage plastic and steel	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Northern	Div_46 - North Bay & Orillia	Distribution Stations	Pass		734305	Station Rebuild A&B Program NORTHERN	2023	\$ 18,365,681	Issue/Concern/Opportunity: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation Comments	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Status	IRP Plan Results	IRP Plan - IRPAs Considered
Southeast	Div_16 - Hamilton	Distribution Stations	Pass		734306	Station Rebuild A&B Program SE	2023	\$ 19,336,892	Issue/Concern/Opportunity: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Southwest	Div_04 - London	Distribution Stations	Pass		734310	Station Rebuild A&B Program SW	2024	\$ 19,336,892	Issue/Concern/Opportunity: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: Multiple	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Eastern	Div_22 - Kingston	Distribution Stations	Pass		734775	King: Augusta CMS Rebuild	2029	\$ 2,977,405	Issue/Concern/Opportunity: Aging station asset with antiquated measurement systems and is delivering unodorized gas into the downstream pipeline. In addition, a permanent make piggable investment is required at this site and could be combined into a full rebuild for cost efficiency. Asset: Augusta CMS	Completed	Fail	Distribution station condition related, IRPA not applicable	-	-	-	-	-	-
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		1290	Millhaven Retrofit	2025	\$ 2,375,223	Project Specific: ECDA to ILI program, supporting refinement of pipeline risk profile. Associated 2026 O&M spend for ILI General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of Union's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections. Link to scope in ProjectWise: pw://pwintegration.gtna.gt.ds:TRIM_PROD/Documents/D(9187fae1-c1f5-49bc-990d-f753f776aaf)	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		1183	INTE: Destec Retrofit	2026	\$ 2,604,749	Issue/Concern: Project Specific Concern: External Corrosion Direct Assessment (ECDA) to ILI program, supporting refinement of pipeline risk profile. Associated 2023 O&M spend for ILI. General Concerns: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of pipeline systems in the Union rate zone to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 3% SMYS. It includes installation costs for permanent in-line inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections. Assets: NPS 8 Destec Lateral Related Programs: Integrity Management Program Link to scope in ProjectWise: pw://pwintegration.gtna.gt.ds:TRIM_PROD/Documents/D(9187fae1-c1f5-49bc-990d-f753f776aaf)	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
Southwest	Div_03 - Sarnia	Transmission Pipe & Underground Storage	Pass		1778	Trafalgar NPS 34 Hamilton-Milton-Centre Rd. Class Location Replacement (Centre Road)	2026	\$ 6,107,499	Issue/Concern/Opportunity: Change in Area Classification from Class 2 to 3. Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development occurs in close proximity to EGI's pipelines which triggers annual class location changes; this work ensures EGI is compliant and fosters the safety of the public and the pipeline system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
STO - UG	Div_53 - Union South	Transmission Pipe & Underground Storage	Pass		1779	Trafalgar NPS 34 Hamilton-Milton-Oldenburg Rd Class Location Replacement (Oldenburg Road)	2026	\$ 3,401,867	Asset - Trafalgar NPS 34 Hamilton-Milton-Centre Road - 350m of NPS 34. Issue/Concern/Opportunity: Issue/Concern/Opportunity: Change in Area Classification from Class 2 to 3. Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development occurs in close proximity to EGI's pipelines which triggers annual class location changes; this work ensures EGI is compliant and fosters the safety of the public and the pipeline system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
STO - UG	Div_07 - Waterloo	Transmission Pipe & Underground Storage	Pass		738677	Trafalgar 42 Saxton Rd	2026	\$ 2,659,845	Project Specific: Trafalgar NPS 34 Hamilton-Milton-Oldenburg Road – 70m of NPS 34. Class 2 to 3. General: Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development occurs in close proximity to EGI's pipelines which triggers annual class location changes; this work ensures EGI is compliant and fosters the safety of the public and the pipeline system.	Completed	Fail	See investment description, IRPAs not applicable	-	-	-	-	-	-
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		740587	2024 Dig Program S&T Cloned	2024	\$ 7,683,347	Asset : Trafalgar NPS 42 - Saxton Road - Replace 235m NPS 42. Issue/Concern/Opportunity : The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of Union's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Completed	Fail	N/A - Investment Cancelled	-	-	-	-	-	-

7.3 Appendix C – EGI Asset Management Plan 2023 – 2032

EGI Asset Management Plan 2023 – 2032

October 31, 2022

Report

Company: Enbridge Gas Inc.

Owned by: Asset Management Department

Controlled Location: Asset Management TeamSite



EGI Asset Management Plan 2023 – 2032

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EGI Asset Management Plan 2023 – 2032

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1 Executive Summary

1.1 Document Purpose

On January 1, 2019, Enbridge Gas Distribution (EGD) and Union Gas Limited (Union) amalgamated to form Enbridge Gas Inc. (EGI). EGI is comprised primarily of natural gas utility assets and operations that serve over 12 million consumers with 3.8 million residential, commercial and industrial connections in Ontario, serving over 313 municipalities and 23 First Nation communities. EGI's 180 billion cubic feet (approximately five billion cubic metres) of regulated storage assets are tied to large and growing demand centres in Canada and the U.S. and provide a critical link to low-cost natural gas supplies. The management of assets is important for the secure, safe and reliable delivery of energy to customers. Asset management at EGI ensures that value is realized through its assets while managing risk and opportunity.

The purpose of this Asset Management Plan (AMP) is to outline:

- Policy and strategies for establishing effective asset management for all utility assets within EGI's regulated operations
- How Enbridge strategies and stakeholder commitments (**Section 2.4**) are linked to asset class strategies
- Process and governance for asset management planning including linkages to EGI's processes for managing risk
- The approach to Integrated Resource Planning (IRP) and provide EGI's IRP Binary Screening and associated IRP alternative (IRPA) evaluation by project (Appendix B)
- Asset class objectives and life cycle management strategies
- Asset inventory, condition methodology, condition findings, risks, opportunities and renewal strategies
- Optimized 10-year capital plan required to manage assets from 2023 to 2032

This Asset Management Plan aligns with the ISO5500X industry standard, the Institute of Asset Management (IAM) and the Global Forum on Maintenance and Asset Management (GFMAM). This document is intended to meet the expectations of the Ontario Energy Board (OEB) as set out in the *Handbook for Utility Rate Applications, October 13, 2016* and the *Filing Requirements for Natural Gas Rate Applications, February 16, 2017* and EB-2020-0091 Enbridge Gas Inc. *Integrated Resource Planning Proposal, July 22, 2021*.

1.2 Overview of the Asset Management Plan

EGI's AMP includes all regulated assets inclusive of commodity-carrying assets directly related to the task of transporting natural gas and hydrogen from the source to the end-use customer, as well as assets that support business operations. The asset classes used to organize and define EGI's assets are Distribution Pipe, Distribution Stations, Utilization, Growth, Compression Stations, Liquefied Natural Gas, Transmission Pipe and Underground Storage, Fleet and Equipment, Real Estate and Workplace Services, and Technology and Information Services.

Investment decisions are categorized and managed on an asset class basis, where each asset class has a unique set of objectives and life cycle management policies that guide decision-making. With an understanding of the asset inventory and the evaluation of condition and risk, resultant strategies are identified and implemented.

Figure 1.2-1 is an illustration of EGI's Asset Management Plan structure.

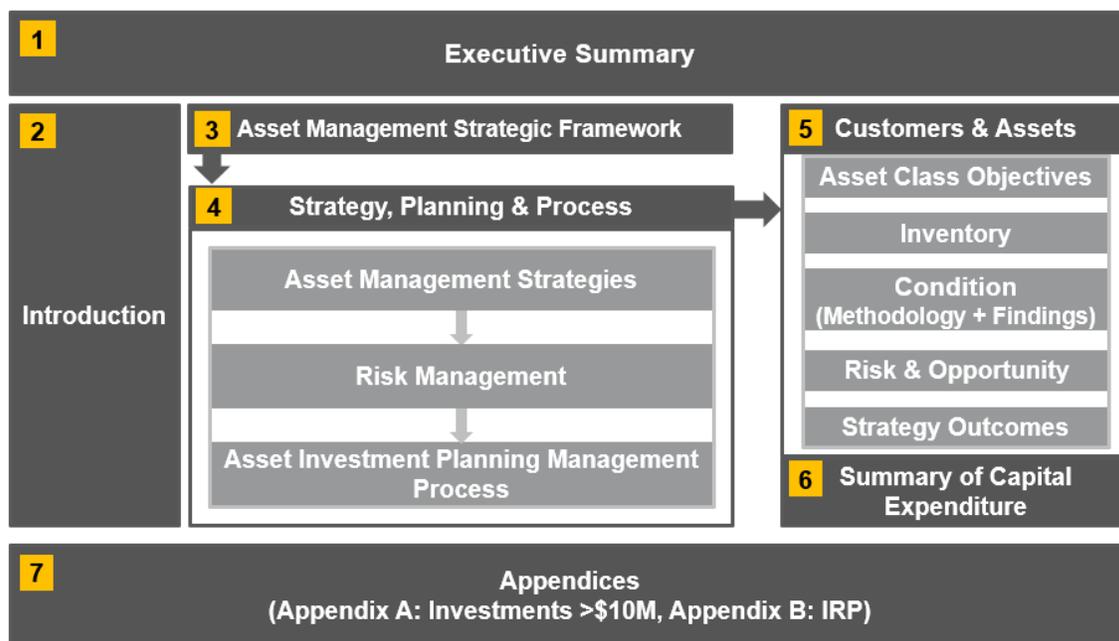


Figure 1.2-1: EGI's Asset Management Plan Structure

Executive Summary (Section 1): This section provides a summary of the Asset Management Plan.

Introduction (Section 2) and Asset Management Strategic Framework (Section 3): This plan starts with an introduction to EGI. It also highlights EGI’s stakeholder commitment, the asset management framework and policy, updates and improvements from previous Asset Management Plans, Energy Transition, IRP, and the structure of the document.

Strategy, Planning and Process (Section 4): This section details the alignment of asset management at EGI with the Enbridge strategic priorities and includes EGI’s asset management strategies, risk management and the Asset Investment Planning and Management (AIPM) process.

Customers and Assets (Section 5): This section details the following:

- EGI’s customers and the customer growth projections
- Asset class objectives
- Asset class strategies
- Asset inventory
- Asset condition
- Risks and opportunities
- Strategy outcomes
- Capital investments to meet life cycle strategies

Summary of Capital Expenditure (Section 6): This section summarizes the 10-year capital investment plan for EGI by rate zone, outlines the optimization process and highlights key assumptions used for Sections 5 and 6. Note that projects where solution scopes are still under development are not currently included in EGI’s 10-year portfolio of spend.

Appendices (Section 7): The appendices present supporting information for the Asset Management Plan. Appendix A includes descriptions of discrete investments with a Net Base Capex greater than \$10M in 2023 to 2032. Appendix B contains the IRP Binary Screening and associated IRPA evaluation statuses by project.

1.3 Advancing Asset Management

This document reflects the integrated utility’s Asset Management Plan for the next 10 years, with assets for the rate zones (the EGD and Union North and South rate zones) being maintained separately for capital planning purposes in 2023 and as EGI from 2024 through to the end of 2032.

EGI continues to evolve its asset management practices to produce a comprehensive Asset Management Plan. As a result, the following changes were implemented:

- **Energy Transition**

This AMP incorporates assumptions for customer additions, peak hour demand and peak day demand, each of which have been adjusted to reflect EGI's current view of the impacts of the Energy Transition (Exhibit 1, Tab 10, Schedule 4). EGI acknowledges that energy transition is evolving and that investment decisions will be based on the best information at the time, including consideration of IESO's forecast electricity demand. EGI maintains its obligation to serve and is committed to implementing IRP with the intent of evaluating and comparing both supply-side and demand-side options to meet an energy system need in the immediate, medium and longer term.

- **Integrated Resource Planning (IRP)**

IRP represents a significant change to the facility planning that EGI has performed in the past and, as such, EGI is taking steps to develop processes, resources and capabilities to integrate new IRP requirements into its existing asset management process and other processes. EGI's AIPM process now incorporates the IRP assessment process. The IRP assessment step of the AIPM process (see **Section 4.3.4.1**), determines if an IRPA evaluation is required for each system need, and, if so, a cost-effective IRPA exists. Further details on the IRP assessment process can be found in EGI's IRP Annual Report.

Through the IRP assessment process, EGI has performed IRP Binary Screenings on eligible projects, consistent with the guidance provided by the OEB in its Decision. The IRP Binary Screening results and the associated IRPA evaluation statuses, by project, can be found in the **Appendix B – IRP**.

- **Alignment with Enbridge Inc.'s 2022 Enbridge Strategic Priorities**

Enbridge Inc. published a revised Strategic Plan in 2022. The alignment of EGI's Asset Management Policy, Asset Management Strategies and dimensions of risk have been reviewed to confirm alignment and are found in **Section 4**.

- **Organizational structure changes to align roles and responsibilities within the integrated utility**

The phase two Boundary and Real Estate initiative has been completed. EGI's regional boundaries and real estate assets across the province were reviewed to align current boundaries and strategically locate EGI's operating depots. The second phase of the initiative evaluated the area between the GTA West and Southeast regions. In January 2022, the regional borders were realigned to optimize the facilities within each new region.

- **Consolidation of asset data**

The systems of record for asset data in the Union rate zones include Maximo for meter, work, damage and condition data; SAP-PM for station work and asset data; GIS for pipe data; and CORR for corrosion data. Some data that supports the Asset Management Plan is now being migrated to a datamart as part of the integration of work and asset management systems. Ongoing documentation and consolidation of these datasets will enable EGI to analyze inventories more efficiently for the combined utility and better support the Integrity and Asset Management functions.

- **Evolution of asset condition and strategies**

Section 5, which addresses asset inventory, condition, risk/opportunity and strategy outcomes, has been updated to reflect the current understanding of assets. Specific project and program information is provided in **Section 6** to support each asset class's strategic plans. Key changes are:

- Review, comparison and integration where feasible of asset strategies, asset classes, asset condition, inventories, programs and processes between the two legacy companies
- Mapping the capital expenditures presented in **Section 5** to the asset class strategy
- Identification of outstanding items that remain in legacy programs until they can be integrated

- **Integration items to highlight**

Standards for installation, inspection, operation, maintenance, and asset decommissioning continue to be integrated. This work is ongoing; some legacy practices continue to be followed for each rate zone as analysis deemed it as appropriate for the assets at this time. Other design changes may be implemented on a go-forward basis. These new standards are reflected in this Asset Management Plan and will continue to evolve throughout the integration process. Specific integration efforts include:

- **Integrity Management Program**

EGI continues to evolve its Integrity Management Program based upon industry best practices and incident learnings. EGI has developed a quantitative risk model to assess the primary risk for pipeline assets within the distribution system which is being leveraged to identify and prioritize assets that are approaching end of life and

need to be replaced. Transmission pipeline assets already have a quantitative risk model; however, that model has also been enhanced with additional hazards and consequences, as well as the development of Safety Targets to further assess the risk of Transmission Integrity Management Program (TIMP) assets.

Detailed documented assessments (i.e., Integrity Plans) for assets or assets groups are being created to ensure the following:

- All potential hazards are considered.
- Appropriate inspection methods and timing are determined.
- Inspections are completed.
- Results are assessed.
- Any required repairs are made.
- The fitness for continued service is confirmed.

EGI has introduced the use of Safety Cases as an independent check that all hazards have been effectively considered and addressed. Safety Cases will initially be developed for a subset of the TIMP assets and expanded to other assets over time.

- **Fleet and Equipment**

EGI continues to standardize processes and procedures related to the assignment of vehicles for the appropriate roles, types of vehicles required to support employees in performing their roles, and vehicle maintenance and repair model.

- **Technology and Information Services**

TIS continues to support process and system integration while in parallel reducing EGI operational and cybersecurity risks. EGI continues to align systems, processes and procedures, prioritized based on business value (efficiency, safety/reliability, compliance) while adopting industry best practices regarding cloud computing where feasible.

- **Modelling enhancements from Distribution Optimization Engineering**

EGI has harmonized its approach to degree day forecasting and system modelling for growth; the resultant facility requirements form the basis for reinforcement forecast in this Asset Management Plan.

- **Operationalizing the Asset Plan**

As EGI develops the maturity of its Asset Management practice, greater focus is placed on measuring delivered work relative to planned work, highlighting the need for multi-year planning and the identification of resources required to execute the plan, including the resources required to scope, plan and obtain required approvals. Accomplishments of this initiative include:

- Documented and communicated Asset Investment Planning and Management (AIPM) processes, procedures, and accountabilities.
- Improved communication and training to promote consistency.
- Identification of incremental resources to support delivery of the asset investment plan.

- **10-Year Asset Management Plan**

This version of EGI's AMP considers a ten-year horizon with the understanding that the scope of investments in the earlier years of the plan are more refined than those in later years. Considering a 10-year window allows time to consider and develop feasible IRPAs to meet the identified system needs.

- **Value Assessment Quality Assurance Approach**

As the application of the Copperleaf value framework evolves, EGI has developed a continual improvement approach to validate and calibrate investment data, capture best practices, and to maximize value in the AMP. Emphasis was placed on applying data analytics practices and sense-checking investment data to better understand how EGI's value assessment processes are working and how they can be improved. Implementing this approach led to:

- Increased support for Asset Management optimization and calibration activities to ensure consistency and alignment of investment data.
- Greater stakeholder engagement and transparency of value across EGI's portfolio of opportunities.
- Identification and documentation of improvements to the Copperleaf value framework.

- **Greenhouse gas emission reductions**

Enbridge continues to evaluate and implement facility emission reduction opportunities by ensuring initiatives effectively balance security, safety, operational reliability, customer preferences, compliance obligations and anticipated future regulations. In the evaluation of system expansion alternatives, the cost of fuel and carbon are considered along with operational requirements. These opportunities are tracked through the GHG Scope 1 & 2 Working Group. The GHG Scope 1 & 2 Working Group will identify and review potential opportunities and strategies to achieve cost-effective GHG reductions, which are incorporated into asset class life cycle strategies, as well as operating practices, equipment modernization and innovation, and emerging policies and regulations. EGI's efforts in reducing its environmental footprint are closely tied to the work outlined in this Asset Management Plan.

1.4 Capital Expenditure

The EGI capital plan was optimized from 2023 to 2032 using the Asset Investment Planning and Management (AIPM) process (outlined in **Section 4.3**). EGI's AIPM process uses Copperleaf as the asset investment planning tool. The result addresses the organization's asset needs and includes known risks and opportunities requiring action over the next ten years.

In total, 1,500 EGD RZ investments and 1,1901 Union rate zone (RZ) investments were included in the optimization of the 10-year plan. In preparation for optimization, comprehensive governance reviews were completed on proposed investments using the following criteria:

- Investment scope met EGI's capitalization policy.
- Investments presented a well-articulated purpose, need and timing aligned with asset class objectives and life cycle management strategies.
- Investment scope definition and alternatives adequately addressed project risks and/or opportunities.
- Investments supported the asset management principles of balancing risk, cost and performance.
- Execution risks were reasonable (resource capacity).
- Initiatives identified as mandatory were justified, based on:
 - Exceeding an established risk threshold
 - Third-party relocation
 - Program work with sufficient history and risk to warrant continuation
 - Projects that meet the economic feasibility tests in EBO 188 and EBO 134
 - Compliance requirements
 - Investments that were already executing with costs continuing into 2023 to 2032 and the remaining work could not be shifted.

1.4.1 Capital Considerations

The optimization process is based on EGI management setting a capital constraint or threshold from which a portfolio of work driven by asset needs is defined. The capital constraint is determined based on the asset needs and financial considerations. Determining the capital constraint involves EGI's Asset Management, Finance and Regulatory departments. To complete EGI's latest portfolio optimization, EGI considered optimization constraints for 2023 and for the remainder of the 10-year plan separately.

For 2023, the assets for EGD RZ and Union North and South RZs, were maintained separately for capital planning purposes as 2023 is the final year of the approved five-year (2019 to 2023) deferred rebasing term from the MAADS Decision (*EB-2017-0306/EB-2017-0307*). For the 2024 to 2032 optimization constraint, EGI considered historical spend levels, inflation, smoothing the impact to ratepayers and the capital to meet asset class strategy needs.

EGI's optimization constraints were determined through the following efforts:

- For 2023, EGI recognized that two significant projects are expected to go into service in that year - Dawn to Corunna Project (see **Appendix A, Pg. 1**) and the Panhandle Regional Expansion Project (see **Appendix A, Pg. 55**). EGI first attempted to leverage the materiality threshold as the constraint for 2023 but was unable to accommodate the significant volume of compliance, must-do, and in-flight work. In the end, the 2023 Budget was constrained to \$1.5B, the amount that had previously been included in the long-range plan created in 2022.
- To set a constraint for the remainder of the 10-year plan, EGI looked at scenarios between the 2023 Materiality Threshold of ~1.4B and the historical average spend of ~\$1.17B¹. In each case an escalation of 2% for inflation was

¹ Historical average spend was calculated using the average of the 2019-2021 actuals and 2022 forecast.

applied (see **Table 1.5-1** for inflation assumptions). Through the process of moving the optimization constraint line downwards from \$1.4B to \$1.1B, EGI examined:

- Implications to asset class strategies
- Implications to in-service capital (as a proxy for impact to ratepayers)
- Implications for the management of identified risk
- Ability to complete mandatory work
- Ability to complete work that supports the energy transition
- Ability to complete work that is in keeping with customers' stated preferences
- Organizational capacity to complete work

Through consultation with a wide range of internal stakeholders, EGI determined that the 2024-2032 optimization constraint of \$1.2B with an annual escalation of 2% for inflation allowed for safe and reliable outcomes through execution of EGI's asset class strategies. EGI had to treat specific significant investments (Dawn C Compression Lifecycle in 2026 [see **Appendix A, Pg. 3**] and Dawn-Parkway Expansion [Dawn-Enniskillen NPS 48] in 2029 [see **Appendix A, Pg. 53**]) as exceptions to the optimization constraint in order to obtain the optimized result in those years.

The increase in capital for 2024 relative to the historical average is attributed to the following:

- +\$129M in market driven growth with several large growth investments identified with spend in 2024 including: Panhandle Regional Expansion Project (PREP), PREP: Leamington Interconnect, Wheatley 1B PREP Reinforcement, East Kingston Creekford Road Reinforcement and the Dawn Parkway Expansion Project (Kirkwall-Hamilton NPS 48). The timing for these investments is based on the market requirements, EGI will evaluate the market driven investments for technically and economically feasible IRPAs.
- +\$107M in planned replacements have shifted into 2024 to provide additional time for EGI to assess and adequately demonstrate the condition of the pipelines as an outcome of the St. Laurent LTC Decision.
- +\$95M in compliance related investments including increases to meter and regulator exchanges due to increased costs for meters and large numbers of meters reaching expected end of seal life. In addition, updated hazard assessments completed under EGI's Transmission Integrity Management Program have identified the need to review and mitigate high and moderate uncertainties in the fitness-for-service conclusions of the review.

Optimization constraints lower than \$1.2B (i.e., \$1.1B) caused the optimization to fail as they do not accommodate all investments with fixed timing. Examples of investments with fixed timing that must be executed in a given year include:

- Compliance work must be completed in accordance with rules and regulations, deferring this work could result in EGI being out of compliance.
- Relocations must be completed in a given year order to ensure that the work triggering the relocation is completed. Relocation projects are subject to the timing of the work triggering the relocation and as such timing of these projects is fixed.
- Reinforcements have fixed timing because absent the reinforcement, EGI would not be able to attach customers to its system after the reinforcement is required.
- Executing work has fixed timing as these projects have already commenced and therefore cannot be deferred.

Lowering the capital constraint would require EGI to reduce programs that directly maintain EGI's safe and reliable operations, for example:

- Compliance driven work, including integrity management work and meter exchanges.
- Program work with sufficient history and risk to warrant continuation, including AMP fitting replacements, inside regulator and ERR programs, distribution station replacement work, vehicle replacements and TIS infrastructure.
- Investments prioritized through EGI's Risk Management Process (**Section 4.2**).
- Copperleaf was used to optimize the 1,500 EGD RZ investments and 1,901 Union RZ investments in the initial pre-optimized ask. Using the optimization constraint values, the optimal capital timing was determined for proposed investments, as described in **Section 4.3.3**.
- The Decision with Reasons in the St. Laurent Ottawa North Replacement Project (EB 2020-0293) led to two subsequent changes to this AMP to ensure that there was adequate time to collect condition information and consider risk implications – St. Laurent Phases 3 and 4 (see **Appendix A, Pg. 13 & 14**), and Wilson Avenue Vintage Steel Replacement (see **Appendix A, Pg. 10**). Investments in the 10-year plan that had sufficient timing for further, cost effective and prudent evaluation will continue to be assessed without prejudice to support the resultant investments. The LTC decision for St. Laurent is not expected to impact the Vintage Steel Replacement Program as this program and the associated selection of pipe replacements are based off of predictive analytics (condition and risk from the DIMP Risk Model as described in **Section 5.2.3.6.3.2**).

1.4.2 Optimization Results

Figure 1.4-1 presents the 10-year capital requirements by asset class with four years of historical spend for EGI. The final 10-year portfolio of spend was reviewed and approved by the Vice President of Engineering and the Asset Management Steering Committee.

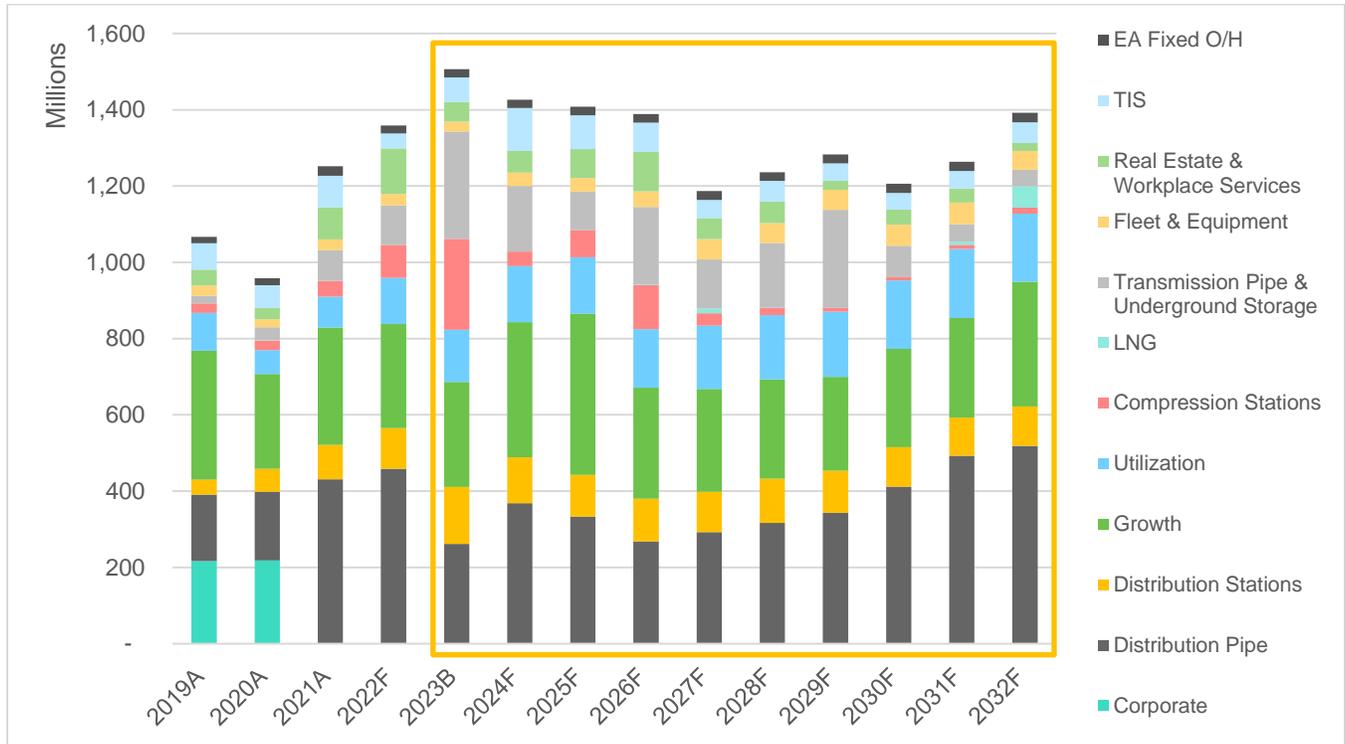


Figure 1.4-1: Final Ten Year Plan by Asset Class - EGI (Capital Expenditure)

Note: Historical actuals include both Capital Pass Through (CPT) Mechanism, ICM projects and integration capital. The total forecasted capital expenditure categorized by asset class depicted in Figure 1.4-1 is comprised of each investment’s direct costs and the associated overheads. Asset class historical spend profiles in 2019 and 2020 do not include associated overheads; for this reason, overheads are identified as a separate category historically. Due to the timing of the 2022 Forecast data, the 2023 Budget and 2024 Forecast include investments that have shifted out of 2022 that are also captured in the 2022 Forecast, for example St. Laurent Ph 3/4.

1.5 Assumptions

The 10-year capital plan is based on the best available information at the time of completion. Key assumptions detailed in the tables below provide a basis for interpretations.

Table 1.5-1: Assumptions for All Categories

Assumption	Basis for Assumption
Optimization results are based on available information as of March 2022.*	Based on EGI’s Optimize Portfolio of Solutions process, the portfolio of spend is determined through the completion of Copperleaf leveling and subsequent reviews. Results are based on best available information. *The timing of St. Laurent Ph 3/4 and Wilson Avenue Vintage Steel Replacement project (see Appendix A, Pg. 10, 13 and 14) was updated in May 2022 following LTC Decision (EB-2020-0293).

Assumption	Basis for Assumption
Future costs are valued at 2022 Present Value.	Current practice forecasts projects based on 2022 rates.
Future costs do not include inflationary measures.	Normal inflationary measures and impacts such as rising material costs, foreign exchange and labour are expected to be covered within investment contingency. Incremental shifts in inflation caused by global supply chain shortages, pandemics or other unusual circumstances have not been considered. A small number of programs with defined scope/unit rates have included a factor where information was available to inform the assumption (such as meter purchases and vehicle purchases).
All cost estimates are based on available information as of March 2022.	Using EGI's AIPM process, these requirements will be reviewed and revised as required.
All Risk Assessments are based on risk models and methodology as of March 2022.	Using EGI's Risk Management process, EGI's significant operational risks are reviewed quarterly and revised as required.
Projects in flight that span over multiple years must continue until complete.	Once a project is in progress it is inefficient and costly to terminate.
Historical actual costs are valued at years' actual value.	Historical values are not adjusted to be expressed in present value.
The proposed capital expenditures represent facility alternatives.	As this is the first year that EGI has applied the IRP Framework to the AMP, EGI's IRP assessment process (see Section 4.3.4.1). This IRP assessment process took place concurrent to the identification of the facility-based investments that underpin the AMP's 2023-2032 Capital Expenditures. Future iterations of the AMP will have proposed capital requirements that incorporate the comparison of viable facility and IRP alternatives to the extent possible prior to the next iteration of the AMP.

Table 1.5-2: Renewal Assumptions

Assumption	Basis for Assumption
Asset health provides a reasonable representation for asset condition and remaining asset life for forecasting purposes.	Reliability engineering is used to understand asset health. Based on projected life cycles, consequences of failure, tacit knowledge and asset data, risk. Renewal projects are planned to reduce this risk to the lowest practicable level.

Table 1.5-3: Customer Growth Assumptions

Assumption	Basis for Assumption
Customer growth is forecast using historical trends, and economic projections for the planning period.	The customer growth forecast considers projected housing starts, municipal growth forecasts, general economic indicators and projections, localized trends and macro-economic factors. EGI is cognizant that there may be impacts to customer growth forecasts based on climate/carbon policies.
Load forecasting is based on current understanding of temperature inputs described in Exhibit 3, Tab 2, Schedule 3 and estimated customer consumptions.	EGI has proposed a harmonized forecast methodology as part of this rebasing application. The estimated customer consumptions have historical Demand Side Management (DSM) built into the load forecast based on past results.

Table 1.5-4: Solution Planning Assumptions

Assumption	Basis for Assumption
Budgeting and forecast are determined through the Solution Planning & Value Assessment process.	Estimates are determined considering region and work type to accurately forecast. Appropriate project planning processes are followed.

2 Introduction

2.1 Purpose of the Asset Management Plan

On January 1, 2019, Enbridge Gas Distribution (EGD) and Union Gas Limited (Union) amalgamated to form Enbridge Gas Inc. (EGI). EGI is comprised primarily of natural gas utility assets and operations that serve over 12 million consumers with 3.8 million residential, commercial and industrial connections in Ontario, serving over 313 municipalities and 23 First Nation communities. EGI's 180 billion cubic feet (approximately five billion cubic metres) of regulated storage assets are tied to large and growing demand centres in Canada and the U.S. and provide a critical link to low-cost natural gas supplies. The management of assets is important for the secure, safe and reliable delivery of energy to customers. Asset management at EGI ensures that value is realized through its assets while managing risk and opportunity.

The purpose of this Asset Management Plan (AMP) is to outline:

- Policy and strategies for establishing effective asset management for all utility assets within EGI's regulated operations
- How Enbridge strategies and stakeholder commitments are linked to asset class strategies
- The integration of IRP and provide EGI's IRP Binary Screening and associated IRPA evaluation statuses by project (**Appendix B - IRP**)
- Process and governance for asset management planning including linkages to EGI's processes for managing risk
- Asset class objectives and life cycle management strategies
- Asset inventory, condition methodology, condition findings, risks, opportunities and renewal strategies
- Optimized 10-year capital plan required to manage assets from 2023 to 2032

This Asset Management Plan aligns with the *ISO5500X* industry standard, the Institute of Asset Management (IAM) and the Global Forum on Maintenance and Asset Management (GFMAM). This document is intended to meet the expectations of the Ontario Energy Board (OEB) as set out in the *Handbook for Utility Rate Applications, October 13, 2016* and the *Filing Requirements for Natural Gas Rate Applications, February 16, 2017* and EB-2020-0091 Enbridge Gas Inc. *Integrated Resource Planning Proposal, July 22, 2021*.

2.2 Company Purpose, Vision, Values and Strategic Priorities

2.2.1 Purpose, Vision and Values

Asset management supports Enbridge's Purpose, Vision and Values (see **Figure 2.2-1**) by improving the Company's ability to operate safely and reliably, ultimately maintaining the satisfaction of customers and other stakeholders. Asset management provides the necessary structure to make informed asset decisions and execute the resultant actions. In this regard, it is imperative that the framework of asset management at EGI is aligned with Enbridge strategic priorities.

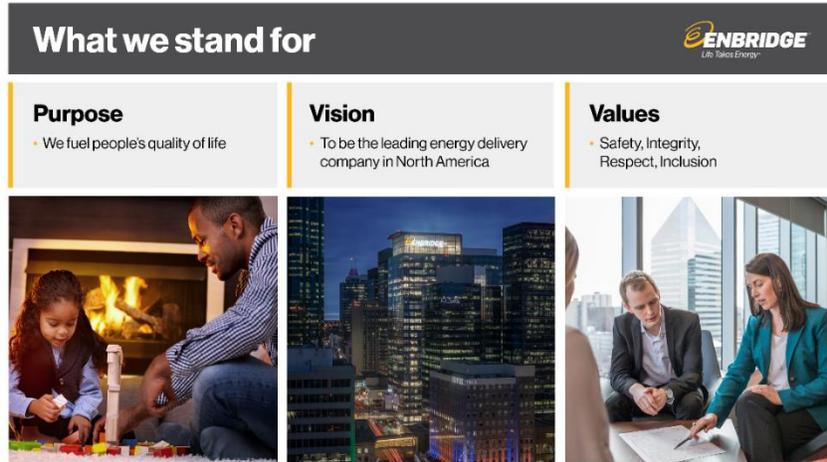


Figure 2.2-1: Enbridge Purpose, Vision and Values

Purpose: *We fuel people's quality of life.*

Enbridge delivers energy where and when it is needed and does so reliably, efficiently and always with the safety of employees, the public and the environment in mind. Asset management at EGI ensures these elements of quality are embedded within EGI’s decision-making framework.

Vision: *To be the leading energy delivery company in North America.*

Enbridge demonstrates leadership in safety, environmental stewardship, customer service, its people, community investment, and shareholder value. Asset management ensures asset value is realized by making optimal, transparent and defensible decisions that ultimately provide value to customers and shareholders and exemplify leadership among North American energy delivery companies.

Values: *Safety, Integrity, Respect, Inclusion.*

Enbridge continues to build on its foundation of operating excellence by adhering to a strong set of core values—*Safety, Integrity, Respect and Inclusion*—in support of its communities, the environment and its people. Asset management helps maintain the integrity of assets to ensure Enbridge operates safely and reliably, respecting customers and stakeholders.

2.2.2 Strategic Priorities

Enbridge’s 2022 Enterprise Strategic Priorities (see **Figure 2.2-2**) are defined to enable the organization to achieve its vision to be the leading energy delivery company in North America. Asset management actions and decisions align with these strategic priorities, contribute to Enbridge’s success, and support the company purpose of fueling people’s quality of life, while maintaining the foundation of the business, supporting the energy transition and positioning the company for future growth.



Figure 2.2-2: Enbridge Enterprise Strategic Priorities

2.3 Organization and Structure

Enbridge carries out its activities through four core business units: Liquids Pipelines; Gas Transmission and Midstream; Power, Business Development & Operations; and Gas Distribution & Storage (GDS) (see **Figure 2.3-1**). The GDS business includes EGI and other affiliate companies.

In addition, Enbridge’s Central Functions teams (i.e., Finance, Corporate Development, Legal Services, Corporate Services, and Projects) enable business units to achieve their strategic goals.

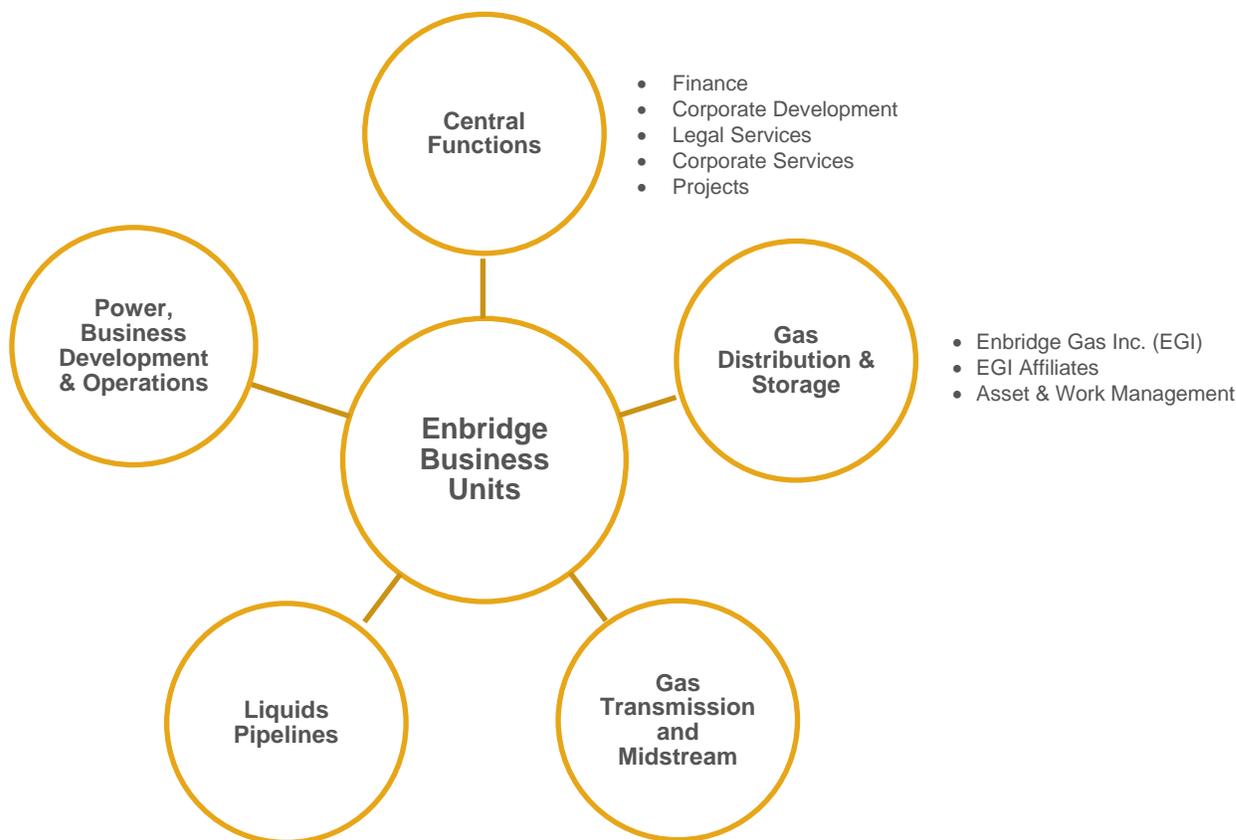


Figure 2.3-1: Enbridge Business Units

EGI within Ontario is regulated by the Ontario Energy Board (OEB). This Asset Management Plan outlines the management of EGI’s regulated assets in Ontario.

2.3.1 Enbridge Gas Inc.

EGI serves over 3.8 million residential, commercial, and industrial customers in Ontario delivering 30% of Ontario’s energy needs and heating 75% of homes in the province. EGI’s distribution system supplies gas to commercial, agricultural, industrial and power generation applications that contribute to the economic health of Ontario. EGI is North America’s third largest gas utility by customer count. EGI’s franchise area is divided into seven operating regions as shown in **Figure 2.3-2**:

- Northern Region covers the legacy Union Northwest and Northeast districts.
- Southwest Region covers the legacy Union Windsor/Chatham and Sarnia/London districts.
- Greater Toronto Area (GTA) West and Halton covers the Western Greater Toronto (legacy EGD Area 20, 50) and legacy Union Halton districts.
- Toronto Region covers the city of Toronto (legacy EGD Area 10).
- GTA East Region covers the eastern Greater Toronto Area (legacy EGD Areas 30 and 40).
- Eastern Region covers legacy EGD Area 60, 90 (Gazifère²) and the legacy Union Eastern district.
- Southeast Region covers legacy Union Waterloo/Brantford and Hamilton districts, and Niagara (legacy EGD Area 80).

EGI has storage and transmission assets which receive, store and transport natural gas for markets in Ontario, Quebec, the Maritimes, and major U.S. natural gas-consuming areas. EGI’s Dawn Hub in southwestern Ontario is connected to most of North America’s major natural gas basins, including gas supplies in the Western Canadian Sedimentary Basin and the Utica and Marcellus producing regions in the U.S. It is similarly connected to the major demand markets in those areas, more than half a dozen major pipelines connect at Dawn.

EGI transports gas from the Dawn Hub to the GTA through its West, Central, and East transmission operations areas.

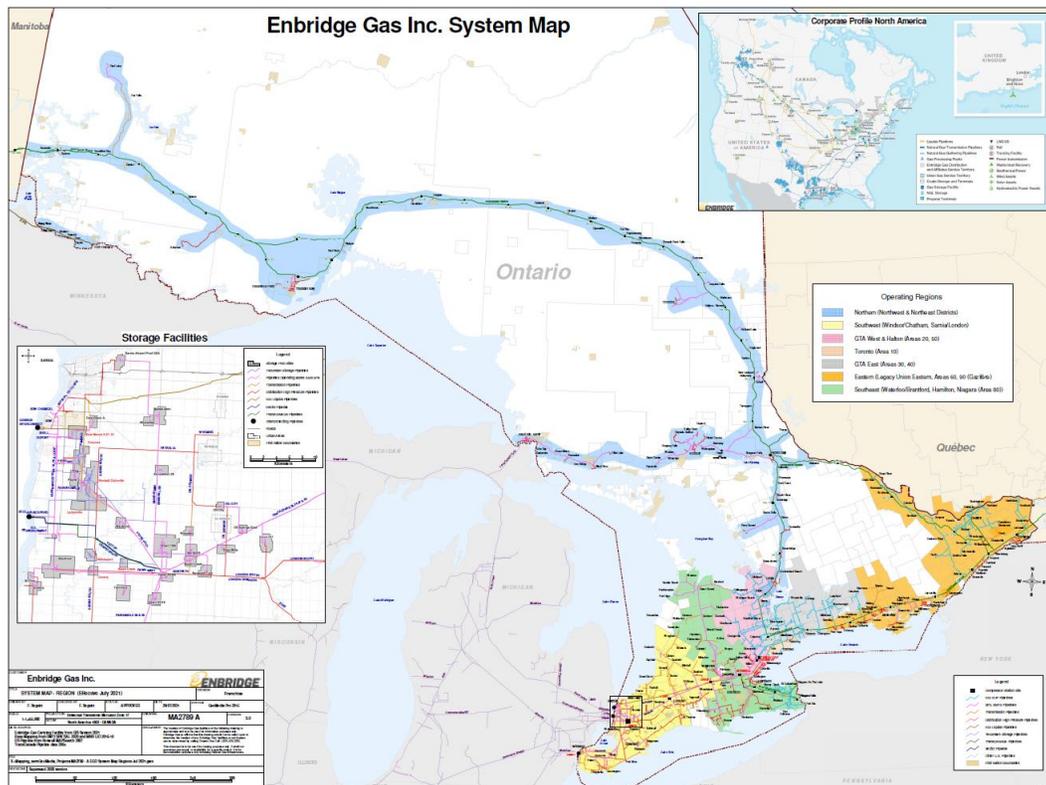


Figure 2.3-2: EGI Operating Regions

² Gazifère assets are not in scope of this Asset Management Plan.

2.4 Stakeholder Commitment

EGI is committed to its customers, regulatory bodies and other stakeholders to identify, build and maintain mutually beneficial relationships. EGI engages its stakeholders to maintain awareness and drive involvement at the inception of new projects and throughout regular operations. Understanding stakeholders and their concerns is critical to making good business decisions and mitigating risk. There is a direct link between EGI's ability to listen and respond to public concerns, and the ability to manage costs and regulatory approval timelines. Asset management at EGI and this Asset Management Plan are a direct demonstration of the Company's commitment to its stakeholders to ensure asset value is realized and optimal decisions are made based on risk and opportunity. See Exhibit 1, Tab 10, Schedule 5, Section 2 for detail on how stakeholder commitment is incorporated into energy transition.

2.4.1 Customer Engagement Results

As per the Rate Handbook released by the OEB on October 13, 2016, utilities are expected to develop an understanding of their customers' needs and preferences and to incorporate the findings into their Utility System Plan (USP). EGI's Asset Management Plan is a component of the USP (refer to Exhibit 2, Tab 6, Schedule 1).

To this end, EGI conducted an extensive customer engagement process throughout 2021 and early 2022 (refer to Exhibit 1, Tab 6, Schedule 1).

Further to the results described in the **Overall Results** of Exhibit 1, Tab 6, Schedule 1, additional results referenced in this AMP are summarized here:

- **The majority of residential customers agree that EGI should actively invest in low-carbon solutions** including energy efficiency technologies, hydrogen gas, renewable natural gas and carbon capture, utilization and sequestration (CCUS). These solutions would help reduce impacts on the environment and that EGI is well positioned to support the development of low-carbon options and solutions.
- **Compression Stations:** The majority of residential customers and business customers would prefer to replace aging compressor stations to minimize the risk of failure, knowing that the compressor replacements would translate into an increase in their natural gas bill during the 2024 to 2028 period.
- **Vintage Steel Replacement Program:** Over half of residential customers and business customers prefer to increase spending on the Vintage Steel Replacement Program in order to help prepare the system for the future by proactively ramping up spend, which would increase their bills.
- **Hydrogen Gas:** Over half of customers prefer that EGI implements plans to increase the use of clean hydrogen as a tool for reducing GHG emissions in Ontario, which would increase their bills.
- **Advanced Meter Infrastructure:** The majority of customers support the installation of Advanced Meter Infrastructure in order to achieve the enhanced benefits outlined in Exhibit 2, Tab 7, Schedule 2.

These results demonstrate that customers are aligned with EGI's commitment to the safe, reliable, cost-effective and environmentally responsible provision of energy. It also informs and reinforces EGI's asset management decision-making framework. EGI's values and guiding policy statements, outlined in **Section 3.1.2** align with the preferences of customers in the following ways:

- Asset management goals include employee and public safety, compliance, financial performance, value-based decision-making that incorporates environmental sustainability and the transition of customers' needs to low-carbon energy solutions and value to stakeholders.
- EGI is committed to prudent value-based decision-making for all asset-related investments on a holistic evaluation of risk, cost and performance.
- EGI is committed to understanding and delivering value to its customers.

2.4.2 Indigenous Consultation and Engagement

EGI is committed to building respectful and foundational relationships with Indigenous groups. In Ontario, the Community and Indigenous Engagement (CIE) team supports all utility engagement, and regularly interfaces with approximately 50 Indigenous communities both currently being served by natural gas and prospective service communities, and communities in proximity to EGI operations. EGI's life-cycle approach to engagement includes standards of practice for formal consultation on proposed projects, but also engagement for building respectful, constructive and enduring relationships that foster trust with and generate benefits for Indigenous groups over the life-cycle of EGI assets.

For new asset initiatives, EGI aims to enhance its existing relationships built through ongoing engagement and open a dialogue that will inform decision-making from the project proposals and design phase through to construction, operations, and maintenance to safely remove a pipeline from service at the end of its useful life. EGI engages in forthright and sincere consultation and engagement with Indigenous Peoples about EGI's projects and operations through processes that seek to achieve early and meaningful engagement so communities' input can help define projects and plans that may traverse Treaty lands and traditional territories of Indigenous Nations.

3 Asset Management Strategic Framework

This Asset Management Plan incorporates the Enbridge Management System Framework and EGI’s Integrated Management System (IMS) requirements. It demonstrates alignment (see **Figure 3.0-1**) with the *ISO 5500X* standard and the Institute of Asset Management (IAM) Conceptual Asset Management Model (see **Figure 3.1-1**).

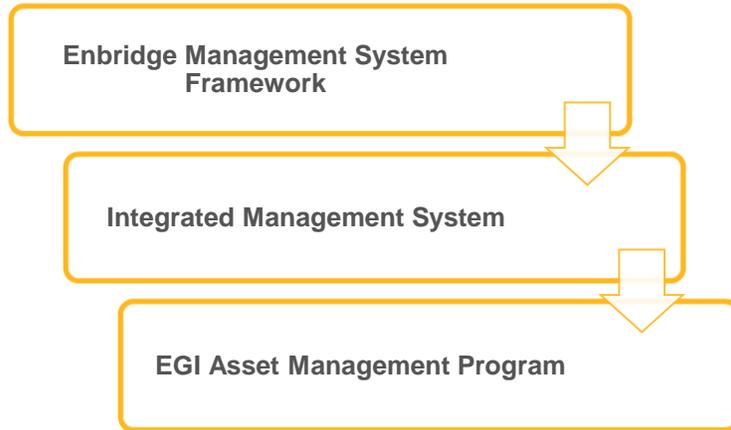


Figure 3.0-1: Alignment of Standards and Requirements

The IMS describes how EGI manages its business to be safe and reliable. Specifically, the IMS outlines high-level management expectations common across the organization and considers over 300 management system requirements from several regulatory, corporate and business unit sources, as well as industry standards. The Asset Management Program, one of eight management programs that comprises the IMS, provides more detail on how the program meets its regulatory and corporate obligations related to safety and operational reliability and aligns with the Enbridge Asset Management Program.

The IMS is predicated on the underlying principle of striving for continual improvement through the implementation of the Plan-Do-Check-Act (PDCA) quality cycle. As a model for continual improvement, EGI applies the PDCA cycle (see **Figure 3.0-2**) to macro- and micro-level activities of the organization. The cycle outlines the activities required to ensure that changes are executed effectively and that continual improvement opportunities are identified.

PDCA principles are:

- **Plan:** Establish objectives and processes necessary to deliver results in accordance with expected outcomes and performance targets.
- **Do:** Implement the plan and execute the process.
- **Check:** Monitor the actual results using assessments, internal reviews and audits to compare against the expected outcomes and to ascertain any differences.
- **Act:** Apply corrective and preventive actions on significant differences between actual and planned results. Analyze differences between actual and expected outcomes to determine root causes and how to improve the process.



Figure 3.0-2: Plan-Do-Check-Act Cycle

3.1 Asset Management Framework

The IAM Conceptual Asset Management Model (see **Figure 3.1-1**) has been used to build and implement an asset management framework at EGI to balance risk, cost and performance through the entire asset life cycle. The IAM model guides EGI in the development of an asset management framework aligned to *ISO 5500X* and demonstrates the connections between the subjects of asset management and the elements of the IMS. This model also provides a visual representation of how the asset management discipline connects the various elements and functions across the organization. It further defines asset management planning as the detailed activities, resources and responsibilities for the achievement of asset management goals. This guidance has been used to develop the content and strategy of this Asset Management Plan.

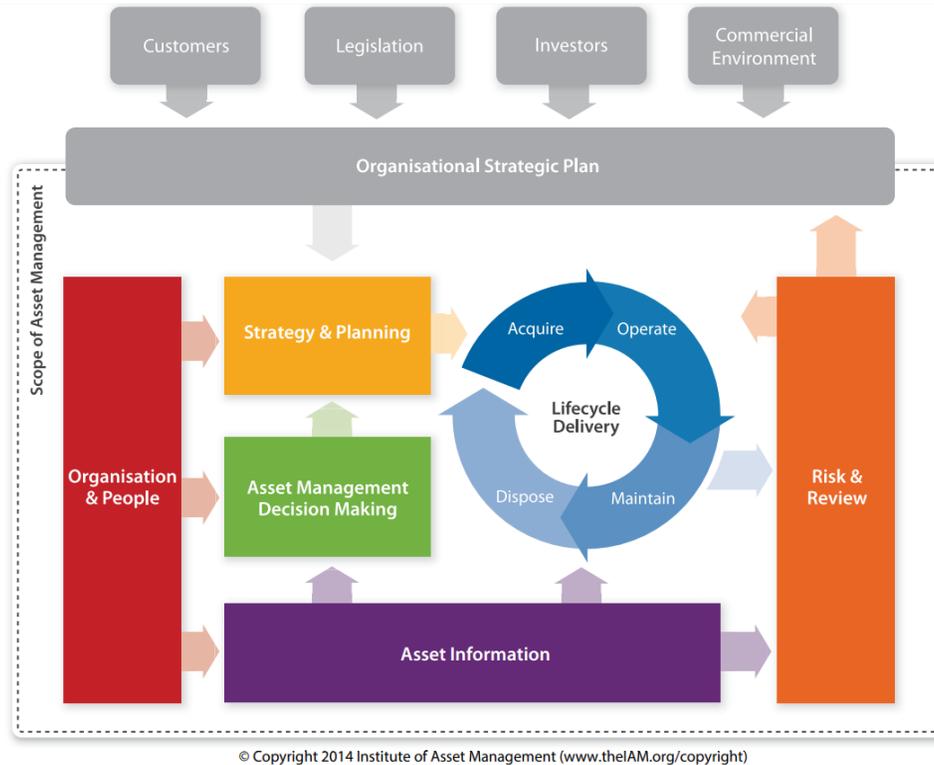


Figure 3.1-1: IAM Conceptual Asset Management Model

Asset Management - An Anatomy Version 3 interprets the *ISO 5500X* standard and provides a practical way to implement its requirements by breaking them down into 39 subjects grouped into 6 subject groups in alignment with the 6 major asset management components:

Strategy and Planning: The adoption and maintenance of a governance framework used to align Asset Management Plans and decision-making within the Enbridge’s overall strategic objectives.

Organization and People: The development and maintenance of an adequate supply of competent and motivated people, in key asset management roles across all levels, to support the organization in delivering asset management objectives.

Life Cycle Delivery: The establishment of clear ownership, accountabilities, policies and processes to manage all physical assets throughout their entire life cycle.

Risk and Review: The identification, assessment, evaluation, treatment and monitoring of risks, resulting in prudent resource allocation and balancing risk, cost and performance.

Asset Management Decision-Making: The organization’s approach to making decisions on design, maintenance, operation and disposition in a structured, defensible and repeatable process. This framework allows for the balancing of risk, opportunity, cost and performance in making asset investment decisions over the whole life cycle of the asset.

Asset Information: The availability of the right systems, processes and data to support asset management. This is foundational to all other asset management capabilities.

3.1.1 Enbridge Strategic Priorities

The Enbridge Strategic Priorities (see **Section 2.2.2**) enable the Company to achieve its vision to be the leading energy delivery company in North America. Asset management actions and decisions align with these strategic priorities and contribute to Enbridge's success. They support Enbridge's purpose of fueling people's quality of life, while maintaining the foundation of the business, positioning the organization for the future and supporting EGI's ambition to be the utility and sustainable energy provider of choice.

The Asset Management Policy translates Enbridge's strategic priorities into a series of policy statements that guide all aspects of the asset management system.

3.1.2 Asset Management Policy

Vision and Mandate

Enbridge exists to fuel people's quality of life with a long-term vision to be the leading energy delivery company in North America. Enbridge Gas Inc. (EGI) is committed to the safe, reliable, cost-effective and environmentally responsible provision of energy to its customers. At the core of this commitment is the effective stewardship of EGI's assets through governance, policy, and practices. EGI will apply leading asset management practices to effectively manage the life cycle of assets as EGI supports the transition to a low-carbon future. Optimal value will be delivered to customers and stakeholders through a sustainable investment plan that balances cost, risk and performance.

Scope

The Asset Management Program considers all EGI assets, inclusive of commodity-carrying assets directly related to the task of transporting natural gas and low-carbon energies from the source to the end-use customer, as well as assets that support business operations. The asset classes are Distribution Pipe, Distribution Stations, Utilization, Growth, Compression Stations, Liquefied Natural Gas, Transmission Pipe and Underground Storage, Fleet and Equipment, Real Estate and Workplace Services, and Technology and Information Services. At this time, the Asset Management Program does not consider EGI's affiliates. The Asset Management Program is a component of EGI's Integrated Management System which provides a systematic approach to managing safety and reliability across the organization.

Asset Management Program

Asset Management goals include employee and public safety, compliance, value to stakeholders and financial performance. EGI's value-based decision-making incorporates environmental sustainability, and the transition of customers' needs to low-carbon energy solutions. EGI employees must consider these goals when evaluating costs, risks, and performance related to asset investment decisions over the whole asset life cycle. Decisions are made through documented and transparent evaluation processes including recent additions related to the IRP Framework (EB-2020-0091).

EGI leverages an Asset Management Program based on the industry standard, Global Forum on Maintenance & Asset Management (GFAMM), to demonstrate a systematic and coordinated approach to asset management activities. Consistent practices, processes and tools are used to manage assets optimally and sustainably. This is achieved by balancing cost, risk, and performance throughout the asset's life cycle while providing value to customers and stakeholders.

Policy Statements

1. EGI continuously improves and aligns its asset management approach across all asset classes within EGI, by driving innovation in the development of people, tools, processes, and solutions.
2. EGI is committed to prudent value-based decision-making that incorporates energy transition for all asset-related investments on a holistic evaluation of cost, risk, and performance.
3. EGI is committed to sustainable/lower-carbon initiatives, including IRP, and new energy solutions, as well as the incorporation of these strategies within Asset Management planning and investment decisions.
4. EGI is committed to a continual, comprehensive condition assessment and risk review. EGI acknowledges that the understanding of the asset's life cycle is critical for decision-making and the safe and reliable delivery of energy.
5. EGI acknowledges that asset information is critical to transparent knowledge-based decision-making. EGI ensures that its processes, systems and controls collectively strive to deliver verifiable, traceable, complete, timely, accurate and accessible asset information.
6. EGI is committed to meeting or exceeding compliance with all applicable laws and regulations, industry codes, standards and internal policies.
7. EGI is committed to understanding and delivering value to its customers and stakeholders.
8. EGI uses this policy and EGI's Asset Management Program to guide asset investments, as endorsed by Senior

Leadership, over the life cycle of each asset class.

3.2 EGI Integration and Continual Improvement

This document reflects the integrated utility's Asset Management Plan for the next 10 years, with assets for the rate zones (the EGD and the Union North and South rate zones) being maintained separately for capital planning purposes in 2023 and as EGI from 2024 through to the end of 2032.

EGI continues to evolve its asset management practices to produce a comprehensive Asset Management Plan. As a result, the following changes were implemented:

- **Energy Transition**
This AMP incorporates assumptions for customer additions, peak hour demand and peak day demand, each of which have been adjusted to reflect EGI's current view of the impacts of the Energy Transition (see Exhibit 1, Tab 10, Schedule 4). EGI acknowledges that energy transition is evolving and that investment decisions will be based on the best information at the time, including consideration of IESO's forecast electricity demand. EGI maintains its obligation to serve and is committed to implementing IRP with the intent of evaluating and comparing both supply-side and demand-side options to meet an energy system need in the immediate, medium and longer term.
- **Integrated Resource Planning (IRP)**
IRP represents a significant change to the facility planning that EGI has performed in the past and, as such, EGI is taking steps to develop processes, resources and capabilities to integrate new IRP requirements into its existing asset management process and other processes. EGI's AIPM process now incorporates the IRP assessment process. The IRP assessment step of the AIPM process (see **Section 4.3.4.1**), determines if an IRPA evaluation is required for each system need, and, if so, a cost-effective IRPA exists. Further details on the IRP assessment process can be found in EGI's IRP Annual Report.
Through the IRP assessment process, EGI has performed IRP Binary Screenings on eligible projects, consistent with the guidance provided by the OEB in its Decision. The IRP Binary Screening results and the associated IRPA evaluation statuses, by project, can be found in **Appendix B – IRP**.
- **Alignment with Enbridge Inc.'s 2022 Enbridge Strategic Priorities**
Enbridge Inc. published a revised Strategic Plan in 2022. The alignment of EGI's Asset Management Policy, Asset Management Strategies and dimensions of risk have been reviewed to confirm alignment and are found in **Section 4**.
- **Organizational structure changes to align roles and responsibilities within the integrated utility**
The phase two Boundary and Real Estate initiative has been completed. EGI's regional boundaries and real estate assets across the province were reviewed to align current boundaries and strategically locate EGI's operating depots. The second phase of the initiative evaluated the area between the GTA West and Southeast regions. In January 2022, the regional borders were realigned to optimize the facilities within each new region.
- **Consolidation of asset data**
The systems of record for asset data in the Union rate zones include Maximo for meter, work, damage and condition data; SAP-PM for station work and asset data; GIS for pipe data; and CORR for corrosion data. Some data that supports the Asset Management Plan is now being migrated to a datamart as part of the integration of work and asset management systems. Ongoing documentation and consolidation of these datasets will enable EGI to analyze inventories more efficiently for the combined utility and better support the Integrity and Asset Management functions.
- **Evolution of asset condition and strategies**
Section 5, which addresses asset inventory, condition, risk/opportunity and strategy outcomes, has been updated to reflect the current understanding of assets. Specific project and program information is provided in **Section 6** to support each asset class's strategic plans. Key changes are:

 - Review, comparison and integration where feasible of asset strategies, asset classes, asset condition, inventories, programs and processes between the two legacy companies
 - Mapping the capital expenditures presented in **Section 5** to the asset class strategy
 - Identification of outstanding items that remain in legacy programs until they can be integrated
- **Integration items to highlight**
Standards for installation, inspection, operation, maintenance, and asset decommissioning continue to be integrated. This work is ongoing; some legacy practices continue to be followed for each rate zone as analysis deemed it as appropriate for the assets at this time. Other design changes may be implemented on a go-forward basis. These new

standards are reflected in this Asset Management Plan and will continue to evolve throughout the integration process. Specific integration efforts include:

- **Integrity Management Program**

EGI continues to evolve its Integrity Management Program based upon industry best practices and incident learnings. EGI has developed a quantitative risk model to assess the primary risk for pipeline assets within the distribution system which is being leveraged to identify and prioritize assets that are approaching end of life and need to be replaced. Transmission pipeline assets already have a quantitative risk model; however, that model has also been enhanced with additional hazards and consequences, as well as the development of Safety Targets to further assess the risk of Transmission Integrity Management Program (TIMP) assets.

Detailed documented assessments (i.e., Integrity Plans) for assets or assets groups are being created to ensure the following:

- All potential hazards are considered.
- Appropriate inspection methods and timing are determined.
- Inspections are completed.
- Results are assessed.
- Any required repairs are made.
- The fitness for continued service is confirmed.

EGI has introduced the use of Safety Cases as an independent check that all hazards have been effectively considered and addressed. Safety Cases will initially be developed for a subset of the TIMP assets and expanded to other assets over time.

- **Fleet and Equipment**

EGI continues to standardize processes and procedures related to the assignment of vehicles for the appropriate roles, types of vehicles required to support employees in performing their roles, and vehicle maintenance and repair model.

- **Technology and Information Services**

TIS continues to support process and system integration while in parallel reducing EGI operational and cybersecurity risks. EGI continues to align systems, processes and procedures, prioritized based on business value (efficiency, safety/reliability, security, compliance) while adopting industry best practices regarding cloud computing where feasible.

- **Modelling enhancements from Distribution Optimization Engineering**

EGI has harmonized its approach to degree day forecasting and system modelling for growth; the resultant facility requirements form the basis for reinforcement forecast in this Asset Management Plan.

- **Operationalizing the Asset Plan**

As EGI develops the maturity of its Asset Management practice, greater focus is placed on measuring delivered work relative to planned work, highlighting the need for multi-year planning and the identification of resources required to execute the plan, including the resources required to scope, plan and obtain required approvals. Accomplishments of this initiative include:

- Documented and communicated Asset Investment Planning and Management (AIPM) processes, procedures, and accountabilities.
- Improved communication and training to promote consistency.
- Identification of incremental resources to support delivery of the asset investment plan.

- **10-Year Asset Management Plan**

This version of EGI's AMP considers a ten-year horizon with the understanding that the scope of investments in the earlier years of the plan are more refined than those in later years. Considering a 10-year window allows time to consider and develop feasible IRPAs to meet the identified system needs.

- **Value Assessment Quality Assurance Approach**

As the application of the Copperleaf value framework evolves, EGI has developed a continual improvement approach to validate and calibrate investment data, capture best practices, and to maximize value in the AMP. Emphasis was placed on applying data analytics practices and sense-checking investment data to better understand how EGI's value assessment processes are working and how they can be improved. Implementing this approach led to:

- Increased support for Asset Management optimization and calibration activities to ensure consistency and alignment of investment data.
 - Greater stakeholder engagement and transparency of value across EGI's portfolio of opportunities.
 - Identification and documentation of improvements to the Copperleaf value framework.
- **Greenhouse gas emission reductions**

Enbridge continues to evaluate and implement facility emission reduction opportunities by ensuring initiatives effectively balance customer preferences, compliance obligations, anticipated future regulations and other benefits such as safety and operational reliability. In the evaluation of system expansion alternatives, the cost of fuel and carbon are considered along with operational requirements. These opportunities are tracked through the GHG Scope 1 & 2 Working Group. The GHG Scope 1 & 2 Working Group will identify and review potential opportunities and strategies to achieve cost-effective GHG reductions, which are incorporated into asset class life cycle strategies, as well as operating practices, equipment modernization and innovation, and emerging policies and regulations. EGI's efforts in reducing its environmental footprint are closely tied to the work outlined in this Asset Management Plan.

3.3 Energy Transition

All three levels of government (federal, provincial and municipal) as well as Indigenous groups are focused on addressing climate change by reducing GHG emissions through setting targets and implementing policies. At the same time, access to energy and energy affordability are key issues that must be addressed in Ontario and EGI remains obligated as the supplier of last resort to meet the peak design day demands of its existing customers safely and reliably.

EGI is committed to partnering with the province, as well as municipalities and Indigenous groups across the province, to achieve the various GHG emission reduction targets set out within their respective energy transition and sustainability plans, including increasing energy efficiency and reliance on renewable energy sources.

This Asset Management Plan outlines the needs and resultant investments of EGI's assets to ensure that EGI can safely and reliably meet the peak design day demands of new and existing customers and how EGI is beginning to transition assets to meet future energy needs. EGI has conservatively included some assumptions related to energy transition in the forecasts EGI uses for planning purposes. This AMP incorporates assumptions for customer additions (see **Section 5.1.4**), peak hour demand and peak day demand, each of which have been adjusted to reflect EGI's current view of the impacts of the Energy Transition. For more detail, refer to Exhibit 1, Tab 10, Schedule 4.

EGI acknowledges that energy transition is evolving and that investment decisions will be based on the best information at the time. As practical, verifiable and prudent alternatives are available and energy transition assumptions are understood, EGI will adjust and adapt its planning processes to continue to securely, safely and reliably serve customers giving due consideration to the evolving nature of the use of natural gas. EGI is anticipating developments in the following areas:

- Increased adoption of low-carbon technologies
- Implementation of economically and technically feasible IRPA's
- Refinement of energy transition assumptions as information is confirmed, impacting the following:
 - EGI's forecasting methodologies for customer connections and growth
 - Adjustments to asset life cycle considerations and strategies
 - Updates in timing and scope of reinforcement investments

EGI has engaged two external consultants, (1) Posterity Group and (2) Guidehouse, to analyze the impact of climate policies and energy transition. The Guidehouse study showed that a diversified pathway, one that continues to leverage the existing gas infrastructure, is a more affordable, reliable and resilient pathway for Ontario. In a diversified pathway, the current gas system transitions over time to deliver low-carbon fuels, including hydrogen and RNG. A discussion of this work can be found in Exhibit 1, Tab 10, Schedule 5. In addition, based on the feedback EGI received in the 2024 Rate Rebasing Customer Engagement, the majority of customers agree that EGI should actively invest in low-carbon options and solutions that will help reduce environmental impacts.

EGI's Hydrogen Strategy is described in **Section 5.1.8**, which includes the expansion of EGI's existing Low Carbon Energy Project in Markham and evaluating the extent that hydrogen can be used in the distribution system and other company assets. These proposals will allow EGI to increase the amount of hydrogen the Company is delivering and inform the future state of Hydrogen as a low carbon energy source at EGI.

EGI's RNG Station Strategy is described in **Section 5.2.4.6.1.7**, where EGI is pursuing opportunities to inject this into the distribution system as RNG becomes more available.

In addition to hydrogen and RNG, EGI outlines the energy transition-related initiatives it is exploring and pursuing in Exhibit 1, Tab 10, Schedule 6.

3.3.1 Integrated Resource Planning (IRP)

In 2021, the OEB released its Decision and Order in the Enbridge Gas Inc., Integrated Resource Planning Proposal (EB-2020-0091) which indicated that EGI's AMP should include the status of consideration of IRP Plans in regard to meeting system needs, the result of binary screening and details on the evaluation. **Appendix B** has been included in the AMP to meet that commitment; **Sections 3.3.1** and **6.3** of this AMP provide a high-level background and context for this Appendix. The **Appendix B** tables provide the review status of each investment in the AMP that went through binary screening.

EGI has been focused on advancing IRP as directed in the OEB's IRP Decision (EB-2020-0091). At the time the Decision was issued, EGI staff were in the process of identifying system needs to support the 2023-2032 Asset Management Plan. These needs are traditionally addressed through facility alternatives which take several weeks and sometimes months to develop and evaluate, and to determine if they warrant capital investment. In parallel to this process, EGI developed an approach to screen and evaluate IRPAs in alignment with the high-level IRP process laid out by the OEB in its Decision. In the development and initial implementation of this approach, EGI has directed a significant effort towards the following activities:

- 1) **Review of Identified Investments in the 2023-2032 Capital Plan and Binary Screening:** The 2023-2032 capital plan was finalized in June 2022. Although the 2023-2032 capital plan contains investments that were also in the 2021-2025 AMP, Enbridge Gas felt it was most prudent to finalize the 2023-2032 capital plan prior to the initiation of its IRP assessments, as investment scope, cost and timing were expected to change within the first harmonized, combined, utility asset management plan. The review of projects and application of the IRP binary screening criteria was then completed for all 3087 projects within the 2023-2032 capital plan.
- 2) **IRP Pilot Project Selection:** The IRP Decision (EB-2020-0091) indicated that two IRP pilots should be selected and implemented by December of 2022. This IRP Pilot assessment and selection process was resource and time intensive, as it involved several steps and discussions, including meetings with the IRP Technical Working Group (TWG) for feedback. Efforts were focused on the following aspects.
 - a. Definition of the pilot objectives, key considerations, and criteria for selection, such as system configuration, customer mix and potential for peak hourly flow data collection.
 - b. Review of projects in the 2023-2032 capital plan and short-listing projects and associated systems as potential pilot options; factoring in the objectives and pilot section criteria.
 - c. Detailed review of potential pilot project options including the identified system needs (multiple for the portfolio pilot), system growth and peak hour demand reductions required.
 - d. High-level IRPA feasibility evaluation; this included reviewing supply-side bridging solutions and understanding the system and market characteristics to help gauge the potential of implementing a geo-targeted solution.
- 3) **Technical Evaluation:** A technical evaluation is the first step of the IRP two stage evaluation process. Investments in the 2023-2032 capital plan cover a wide range of assets, that are managed by numerous teams throughout EGI. The IRP team engaged investment owners, SMEs and Asset Managers to together determine how IRP principles would apply to their projects. The IRP team is now working with the same group of investment owners, SMEs and Asset Managers to complete a detailed review of the projects, as outlined in **Section 6.3.4 Technical Evaluation Project Review**.
- 4) **Economic Evaluation:** An economic evaluation is the second step of the IRP two stage evaluation process. This step relies on the DCF+ Test. As directed in the IRP Decision, the IRP team is engaged in enhancing the DCF+ economic evaluation test that will be utilized to determine the optimal IRP or facility solution. To date, this work has involved engaging a consultant to assess how the DCF+ test could be evolved, jurisdictional scans to better understand how other utilities have assessed non-pipeline alternative investments and whether those learnings are applicable to EGI. Additionally, an IRP TWG subgroup has been formed to discuss considerations and issues brought forward by members of the TWG for the enhanced DCF+ test.
- 5) **IRP TWG Meetings** were previously held monthly, now biweekly. The IRP team has dedicated time and resources to prepare materials for these meetings. Various teams are engaged to contribute content, as well as, addressing the takeaway items from the previous meeting.

Appendix B reflects the current state of EGI's IRP Assessment process, as described in **Section 4.3.4.1** of the AMP. **Section 6.3** provides details on the methodologies and process, and the **Appendix B** tables that follow provide the evaluation at the investment level, at the time of filing. EGI will continue to assess investments in the 10-year capital plan for IRPA feasibility. As this is the first year that EGI has applied the IRP Framework to the AMP, a detailed and time-intensive review of all facility-based investments has been required, which includes an in-depth evaluation of the projects to understand the project need, drivers, system grouping opportunities and potential for IRP alternatives. The IRP Assessment Process will become less time intensive as it is further integrated into the Solution Planning & Value Assessment stage of the AIPM process, and as it becomes focused on new investments or those that have changed since the last iteration of the AMP.

3.4 Structure and Scope of EGI's Asset Management Plan

Figure 3.4-1 is an illustration of EGI's Asset Management Plan structure.

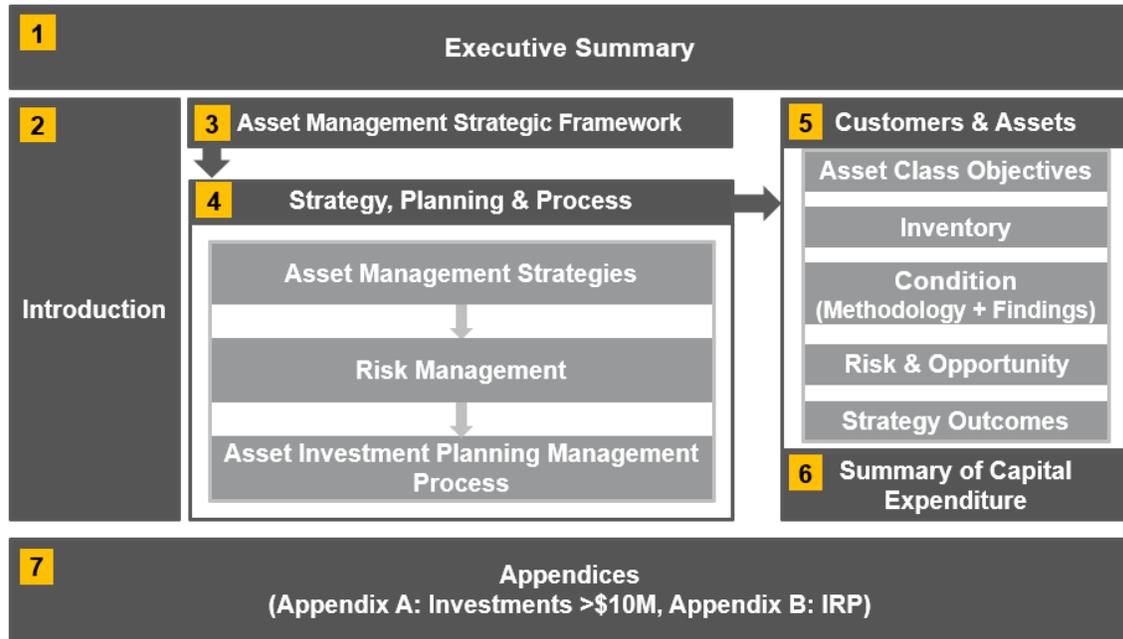


Figure 3.4-1: EGI's Asset Management Plan Structure

Executive Summary (Section 1): This section provides a summary of the Asset Management Plan.

Introduction (Section 2) and Asset Management Strategic Framework (Section 3): This plan starts with an introduction to EGI. It also highlights EGI’s stakeholder commitment, the asset management framework and policy, updates and improvements from previous Asset Management Plans, Energy Transition, IRP, and the structure of the document.

Strategy, Planning and Process (Section 4): This section details the alignment of asset management at EGI with the Enbridge strategic priorities and includes EGI’s asset management strategies, risk management and the Asset Investment Planning and Management (AIPM) process.

Customers and Assets (Section 5): This section details the following:

- EGI’s customers and the customer growth projections
- Asset class objectives
- Asset class strategies
- Asset inventory
- Asset condition
- Risks and opportunities
- Strategy outcomes
- Capital investments to meet life cycle strategies

Summary of Capital Expenditure (Section 6): This section summarizes the 10-year capital investment plan for EGI by rate zone, outlines the optimization process and highlights key assumptions used for **Sections 5 and 6**. Note that projects where solution scopes are still under development are not currently included in EGI’s 10-year portfolio of spend.

Appendices (Section 7): The appendices present supporting information for the Asset Management Plan. Appendix A includes descriptions of discrete investments with a Net Base Capex greater than \$10M in 2023 to 2032. Appendix B – IRP contains the IRP Binary Screening and associated IRPA evaluation statuses by project.

4 Strategy, Planning and Process

EGL's Asset Management framework is aligned to Enbridge's Strategic Priorities, the EGL Asset Management Policy and Asset Management Strategies (see **Section 4.1**). This alignment provides a foundation that supports the Asset Investment Planning and Management (AIPM) process (see **Section 4.3**).



Figure 4.0-1: Asset Management Alignment

- **Enbridge Strategic Priorities (Section 2.2.2)** sets the foundation for all company-wide operations and initiatives.
- **Asset Management Policy (Section 3.1.2)** translates the Enbridge Strategic Priorities into the application of asset management at EGL and outlines the high-level goals and principles used to manage assets.
- **Asset Management Strategies (Section 4.1)** supports the policy and outlines the methods employed for asset management success.
- **Risk Management Process (Section 4.2)** involves a series of activities designed to help management assess, prioritize, and treat hazards and risks that could affect the achievement of key business objectives.
- **Asset Investment Planning and Management (AIPM) Process (Section 4.3)** outlines how the identified strategies will be executed.

4.1 Asset Management Strategies

The EGI Asset Management Program's day-to-day activities are driven by key asset management strategies (see **Figure 4.1-1**) aligned to the six framework components of the IAM Conceptual Asset Management Model (see **Figure 3.1-1**) and operationalized through the Asset Investment Planning and Management (AIPM) process (see **Section 4.3**):

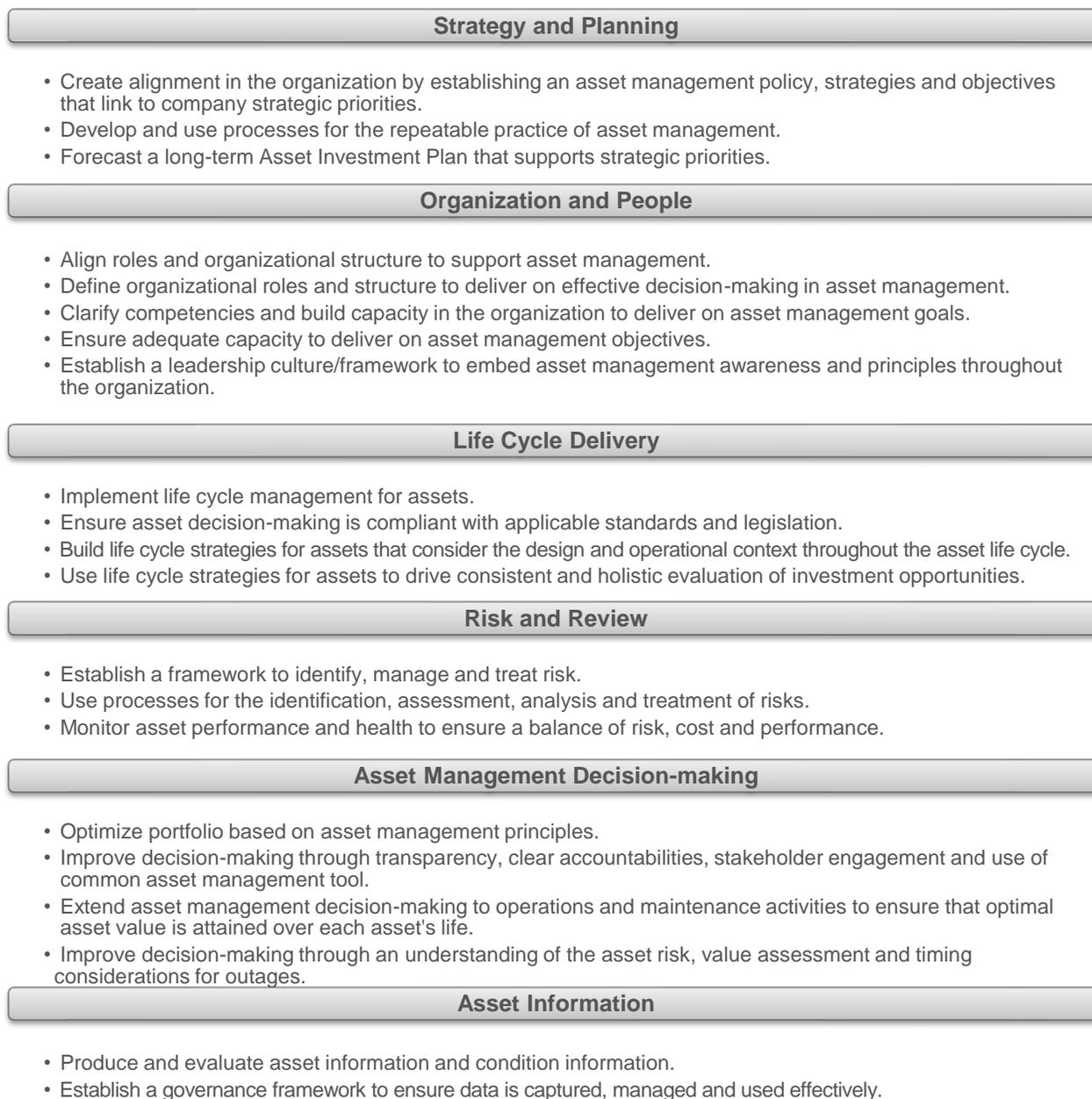


Figure 4.1-1: Asset Management Strategies

4.1.1 Strategy and Planning

EGI uses a governance framework to align asset management plans and decision-making within the Enbridge's overall strategic objectives. The strategies to achieve this are:

- Create alignment in the organization by establishing an asset management policy, strategies and objectives aligned to strategic priorities.
- Develop and use processes for the repeatable practice of asset management.
- Forecast a long-term Asset Investment Plan that supports strategic priorities.

The alignment of EGI's Asset Management Program with organizational priorities (see **Figure 4.1-2**) and a well-defined asset portfolio enables the development of asset-specific programs and investments. The Asset Management Plan is a coordinated activity combining these components to forecast a long-term (10-year) plan for asset investments at each rate zone. Forecasting long-term asset investment plans allows EGI to identify future needs for asset investments and make proactive decisions.

The capital investment summary for EGI's Asset Management Plan can be found in the Summary of Capital Expenditure (see **Section 6**).

4.1.1.1 Alignment of Enbridge Strategic Priorities and Asset Management Strategies

Figure 4.1-2 illustrates how EGI's Asset Management Policy, strategies and value measures align with Enbridge's strategic priorities. This alignment is the core of EGI's Asset Management Strategic Framework.

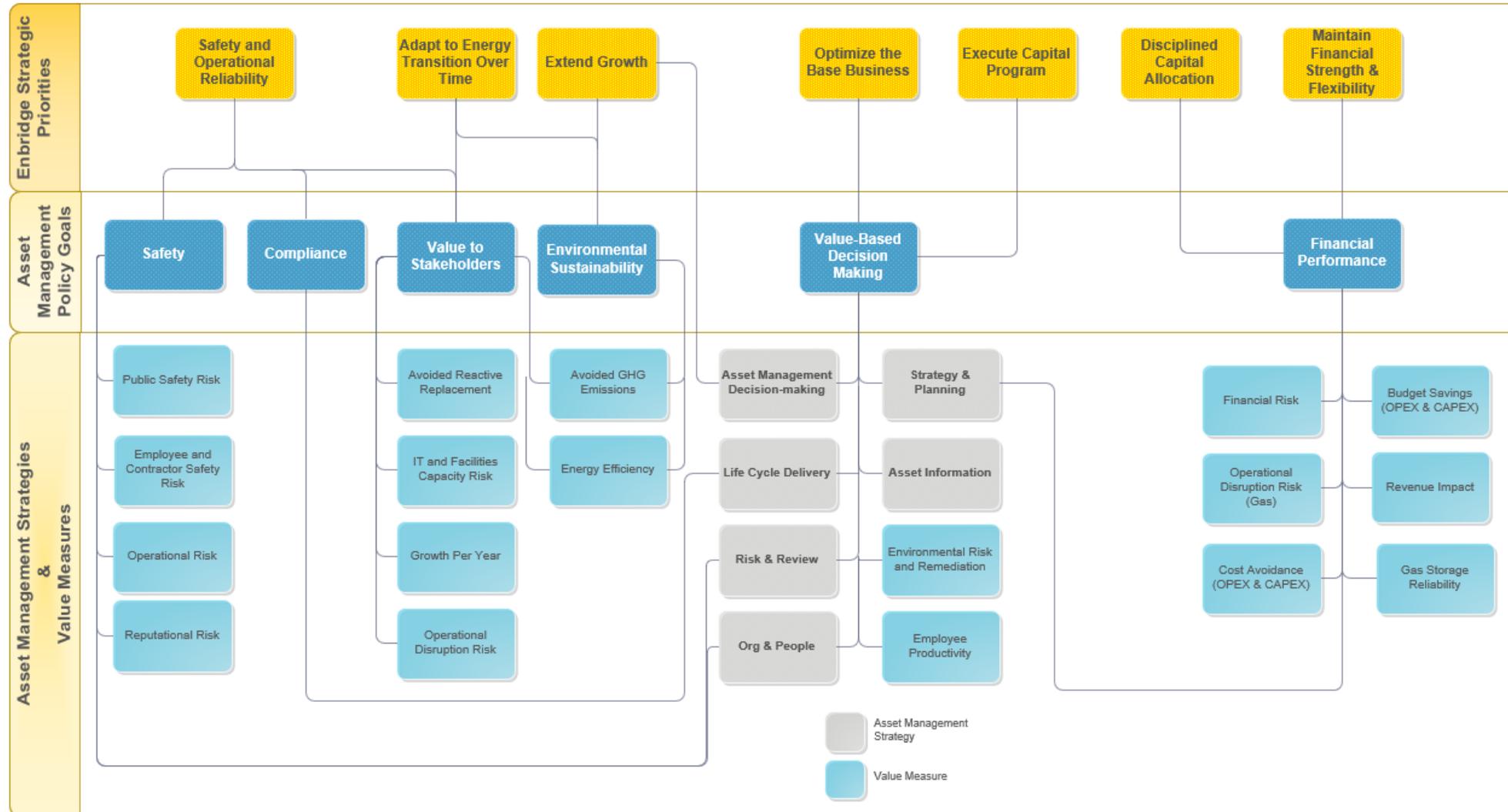


Figure 4.1-2: EGI's Alignment of Enbridge Strategic Priorities and Asset Management Strategies

4.1.2 Organization and People

EGI aims to develop and maintain an adequate supply of competent and motivated people, in key asset management roles across all levels, to support the organization in delivering asset management objectives. The strategies to achieve this are:

- Align roles and organizational structure to support asset management.
- Define roles and structure for the organization to deliver on effective decision-making and asset management.
- Clarify competencies and build capacity in the organization to deliver on asset management goals and objectives.
- Establish a leadership/culture framework to embed asset management awareness and principles throughout the organization.

Asset classes at EGI (see **Figure 4.1-3**) are used to categorize and manage investment decisions. Each asset class has its own asset manager, who is responsible for understanding the operational risks and opportunities for their asset class and for managing the portfolio of work to ensure risk is managed to the lowest practicable level and optimum value is realized.

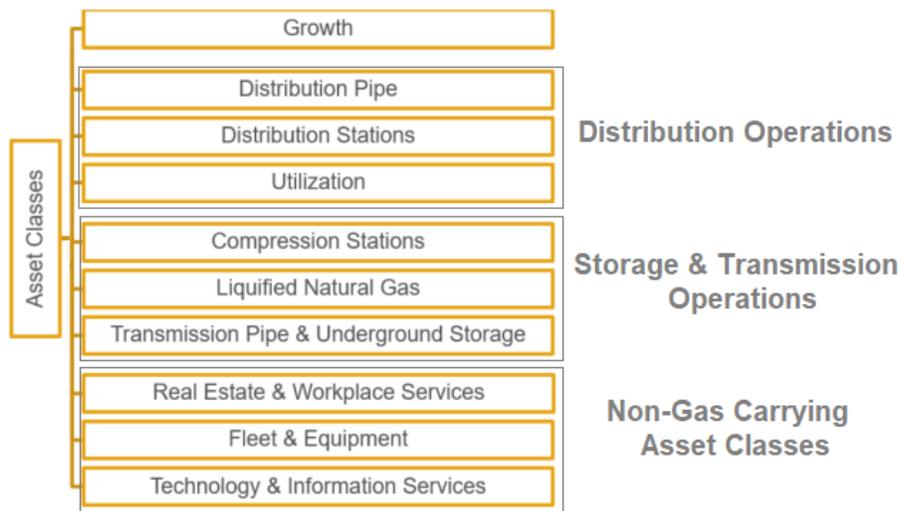


Figure 4.1-3: EGI Asset Classes

A matrix approach to asset management (see **Figure 4.1-4**) enables the coordinated activity of defining an optimized and approved portfolio of work. This streamlines inputs from a diverse group of business stakeholders, while growing asset management practices across EGI.

Asset management is embedded throughout all levels of the organization. Overall guidance is established through the Asset Management Steering Committee, the Integrated Management System (IMS) and the Safety and Reliability Governance Team. Key functions in this matrix approach work together to achieve an optimized portfolio:

- The **Asset Management Director** performs the following:
 - Demonstrates commitment to values and principles of Asset Management set out in the Asset Management Policy, Objectives and Strategic Asset Management Plan
 - Promotes continual improvement
 - Decides on the set of investments that will address risk across EGI through the recommendation of the capital portfolio
 - Ensures resources for the Asset Management Plan are available and actively directs and supports people to contribute to effective asset management
 - Supports and influences staff to deliver the Asset Management Strategy and objectives of the organization
 - Endorses Asset Management Plan documentation
- **Asset Management and Risk Governance** establishes and governs the following:
 - Asset Management Policy
 - Leadership culture to embed Asset Management principles (through organizational change management and training)

- Asset management systems
- Risk Management Framework, Standards, Processes and Value Framework
- Asset Investment Planning & Management processes and tools
- Portfolio optimization
- Preparation and approval of the Asset Management Plan
- **Asset Managers** perform the following:
 - Understanding of asset condition and failure drivers
 - Consolidation of emerging and existing risks, opportunities, and emerging needs
 - Preparation of investments for value assessment
 - Proposal of potential solutions to identified needs
 - Prioritization of solutions and risk treatments across the asset class
 - Development of strategic plans for the asset class which incorporates IRP
 - Stakeholder review and management
- **Functional/Process Departments** support asset management by providing:
 - Integrated Resource Planning Alternative assessments
 - Engineering assessments
 - Value assessments
 - Integrity assessments
 - Energy transition design and analysis
 - Risk owner, accountable for ensuring that a risk is managed throughout the Risk Management Lifecycle (see **Section 4.2**)
 - Asset analytics
 - Records management
 - Financial support
 - Regulatory support including energy policy
 - Tacit knowledge (including identification of existing and emerging issues)
 - Planning and design
 - Safety and incident information
 - System analysis long-range planning
 - Project execution

Together, these roles provide the structured support for the Asset Investment Planning and Management process described in **Section 4.3** to ensure that capital expenditures are based on transparent and defensible asset-based decisions.

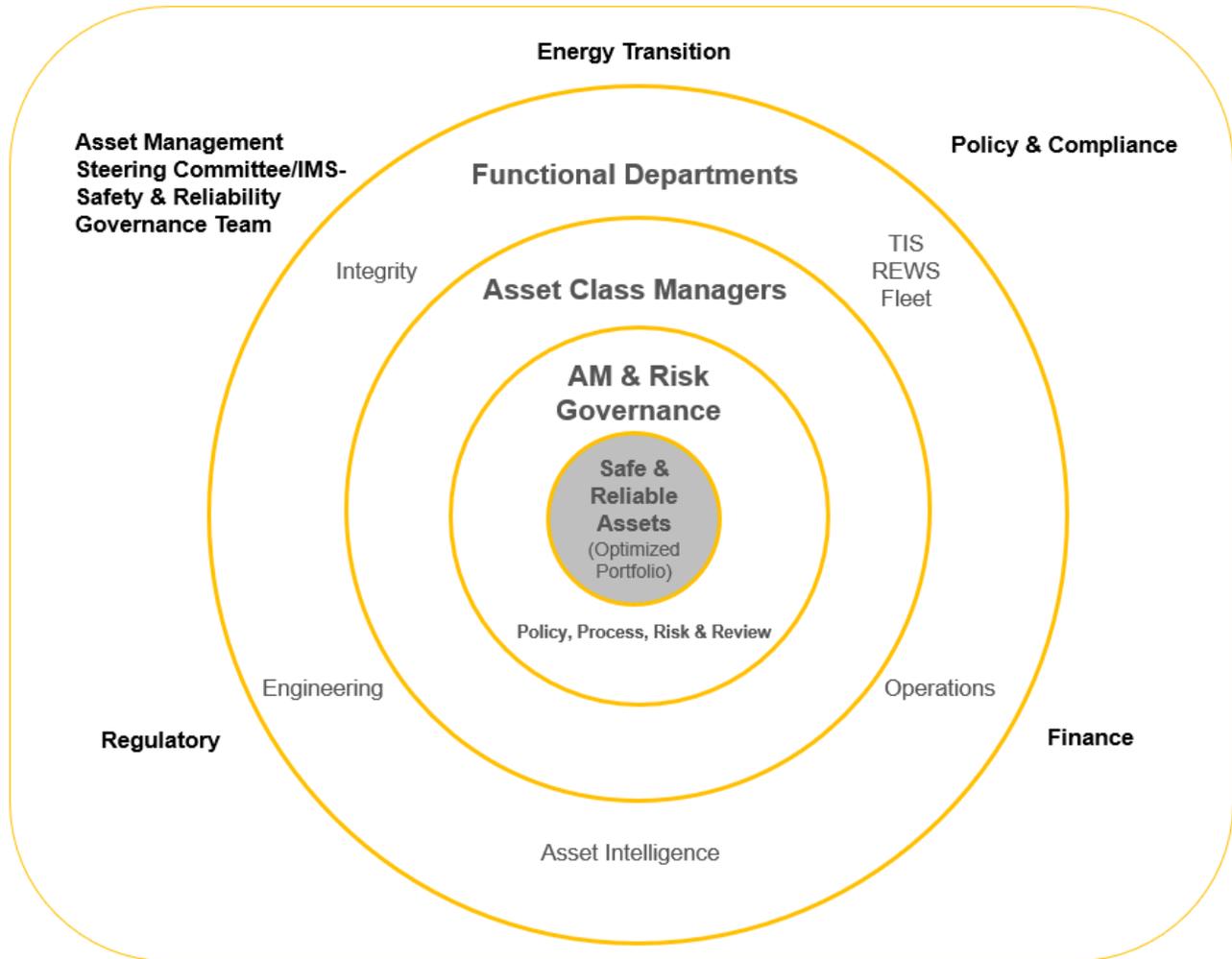


Figure 4.1-4: A Matrix Approach to Asset Management

4.1.3 Life Cycle Delivery

EGL aims to have clear ownership, accountabilities, policies and processes to manage all physical assets throughout their entire life cycle. The strategies to achieve this are:

- Implement life cycle management for assets.
- Ensure asset decision-making is compliant with applicable standards, legislation and regulatory decisions.
- Build life cycle strategies for assets that consider the design and operational context throughout the asset life cycle.
- Use life cycle strategies for assets to drive consistent and holistic evaluation of investment opportunities.

Life cycle strategies for assets drive the consistent and holistic evaluation of needs and opportunities. With clear objectives for the use and operation of assets, life cycle costs can be examined to ensure that optimal asset value is attained over the asset’s life.

EGL has defined asset life-cycle stages that are applied to all asset classes (see **Figure 4.1-5**), adapted from the IAM Conceptual Asset Management Model (see **Figure 3.1-1**):

- Design/Construct
- Operate
- Maintain
- Renew/Retire

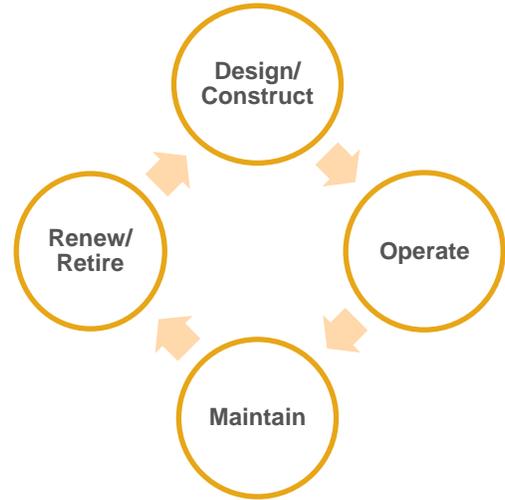


Figure 4.1-5 Asset Life Cycle Stages

Using these life-cycle stages, strategies are developed for each asset class to support asset investment decisions. **Table 4.1-1** describes the typical activities for each life cycle stage.

Table 4.1-1: Life-Cycle Management for Assets

Life-Cycle Stage	Activities
Design/Construct	<ul style="list-style-type: none"> • Design new assets to: • Ensure the safe and reliable delivery of natural gas. • Ensure worker and public safety. • Ensure code compliance. • Support energy transition. • Meet current and future demand requirements. • Reduce risk to the lowest practicable level. • Ensure critical components and systems have multiple layers of failure protection. • Ensure components and systems can be made safe in a reasonable period. • Minimize environmental impact and GHG emissions. • Minimize future maintenance needs. • Suit business purpose and ensure safe business function. • Procure materials to meet or exceed applicable codes, standards and policies. • Construct/install assets to meet or exceed codes, standards, designs and procedures for safe and reliable operations. • Create asset records to meet or exceed standards, policies and procedures that are traceable, verifiable, complete and correct.
Operate	<ul style="list-style-type: none"> • Operate the system to: • Ensure the safe and reliable delivery of natural gas. • Ensure worker and public safety. • Meet or exceed compliance standards and procedures. • Meet current demand. • Minimize end-user disruption.

Life-Cycle Stage	Activities
	<ul style="list-style-type: none"> • Use assets in the most cost-effective manner. • Extend asset life. • Suitably commission assets for safe, efficient and reliable use by employees and contractors. • Provide business and employees with support and service for optimal use of company assets and business solutions. • Monitor the performance and use of assets to inform future life cycle decisions.
Maintain	<ul style="list-style-type: none"> • Maintain integrity of gas-carrying assets to minimize loss of containment, extend asset life and ensure compliance with codes, standards and procedures. • Maintain gas-carrying assets and safety controls to avoid overpressure or delivery outages. • Maintain asset information to meet or exceed standards set out by EGI. • Determine probability and consequence of failure to inform maintenance and repair programs. • Maintain competency levels to ensure work is performed by qualified and competent workers. • Continue to improve methods to maintain and extend life of assets, ensuring a balance between risk, cost and performance.
Renew/Retire	<ul style="list-style-type: none"> • Determine probability and consequence of failure to inform renewal decisions. • Develop proactive renewal programs for assets that are nearing end-of-life (informed by data and tacit knowledge and tracked in the Integrated Management System). • Renew or replace assets to meet the changing needs of the business, support employee and contractor health and safety, support energy transition, meet or exceed regulatory and compliance requirements, increase efficiencies and reduce overall GHG emissions. • Renew or replace assets to meet the changing needs of the business, increase performance, realize efficiencies and address obsolescence. • Retire assets using a process that meets or exceeds regulatory codes and standards.

4.1.4 Risk and Review

EGI aims to manage risks through the adoption of a Risk Management process (see **Section 4.2**) based on ISO 31000 and the Enbridge Framework Standard on Risk Management. The strategies to achieve this are to:

- Establish a framework to identify, analyze, evaluate, and treat risk.
- Implement processes based on the framework to management risks.
- Monitor asset performance, health and risk to balance risk, cost and performance.

Asset performance, health and risk is monitored through a range of formal and informal methods including condition assessment programs, tracking of performance data through Management Programs (part of the Integrated Management System), the Asset Health Review and the Hazard Identification and Risk Assessment process.

Through these inputs and the Risk Management process, EGI manage risks in the following categories:

- **Employee and Contractor Health and Safety:** Level of injury or illness and number of employees impacted
- **Public Health and Safety:** Level of injury or illness and number of people in general public impacted
- **Environmental:** Breadth and severity resulting in environmental damage/impact
- **Financial:** Level of financial impact
- **Operational:** Length of time and breadth of impact on utility and transportation customers and diversion of resources
- **Reputational:** Level of media coverage, impact on customers, potential penalties or impact on ability to operate due to compliance issues

4.1.5 Asset Management Decision-Making

EGI aims to have a clear framework for asset investment decision-making that balances risk, cost and performance throughout the asset life cycle. The strategies to achieve this are:

- Optimize portfolio based on asset management principles.
- Improve decision-making through transparency, clear accountabilities, stakeholder engagement and use of a common tool.
- Extend asset management decision-making to further include operations and maintenance activities to ensure that optimal asset value is attained over each asset's life.
- Improve decision-making through an understanding of the asset context and timing considerations for outages.

Investments fall into one of three categories based on asset management principles: mandatory, compliance or value-driven, as described in **Table 4.1-2**. These categories support portfolio optimization and the determination of optimal investment timing through the AIPM process **Section 4.3**.

Table 4.1-2: Investment Categories

Investment Category	EGI Description
Mandatory	An investment that is required to address a risk or opportunity within its required time window. Mandatory investments can be the result of: <ul style="list-style-type: none"> • Exceeding an established risk upper threshold • Third-party relocation • Program work with sufficient history and risk to warrant continuation • Projects that meet the economic feasibility tests in <i>EBO 188</i> and <i>EBO 134</i>
Compliance	Investments required to adhere with applicable laws and regulations, industry codes, standards and internal policies. Compliance investments receive the same treatment as mandatory investments—both must be addressed within their required time frame.
Value-Driven	Investments whose timing is determined based on consideration of the value it brings to the ratepayer and the organization. Value and investment timing can be informed via the Copperleaf value framework or via the GDS Risk Management process (see Section 4.2).

EGI uses Copperleaf, an asset investment planning tool that provides a common economic scale, to understand and evaluate proposed capital investments. Copperleaf allows EGI to optimize its investment portfolio based on the defined capital considerations (see **Section 6.1.2**), use a normalized scale to support value-based decision-making, and helps to ensure EGI fulfills its regulatory and internal requirements for systematic and transparent investment decisions.

Copperleaf supports the AIPM process (see **Section 4.3**) by:

- Allowing the documentation of risk management opportunities and treatment options
- Capturing growth opportunities
- Providing context on value-driven investments through the value framework, to demonstrate alignment with the Asset Management Policy and organizational strategic priorities
- Performing portfolio optimizations using iterative scenarios to determine an optimal spend profile
- Allowing investment details to be updated throughout the year to optimally manage the investment portfolio
- Providing full transparency to business stakeholders on the approved work plan and understanding year-over-year changes

For value-driven investments (see **Table 4.1-2**), an organization needs a mechanism to determine its investments' relative value. Several elements can contribute to the overall value of an investment, such as:

- The type and severity of the risks treated by an investment
- Financial impacts such as cost savings
- Overall cost of the investment
- Impacts to Key Performance Indicators (KPIs)
- Service measures
- Overall organizational value additions

An investment's value is quantified through Copperleaf's value framework or evaluated via the GDS Risk Management process. The investment timing and scope of work for investments that rely on the GDS Risk Management process is typically

more complex—investment timing is confirmed outside of Copperleaf optimization. For value-driven investments that use the Copperleaf value framework, value measures are used to quantify an investment's value, as described in **Table 4.1-3**.

Value measures are investment attributes that are evaluated objectively based on risk or opportunity to determine how the investment delivers value to Enbridge and the ratepayer. These value measures are placed on an economic scale to assist in optimization. An investment's net value is used to determine both its independent merit and its standing among other investments in a constrained optimization process.

The **Copperleaf value framework** is an analytical framework that complements risk assessments, allows for comparison of dissimilar investments and enables portfolio optimization. Each of the Enbridge's strategic priorities (see **Section 2.2.2**) is comprised of one or more value measures. For more details on valuing investment risk, see **Section 4.2.3**.

Table 4.1-3: EGI's Value Measures

Value Measure	Description
Employee and Contractor Health and Safety Risk	Measures the risk of employee and contractor safety incidents that will be mitigated through the completion of an investment.
Public Health and Safety Risk	Measures the risk of public safety incidents treated through the completion of an investment.
IT and Facilities Capacity Risk	Measures the risk that the organization would not be capable of continued service at acceptable levels following a disruptive incident.
Operational Risk	Measures the mitigation of the risk of disruptive incidents preventing Enbridge from operating or serving its customers.
Reputational Risk	Measures the treatment of the risk of incidents that would be perceived poorly by customers, the media and stakeholders through the completion of an investment.
Gas Storage Reliability	Measures the financial benefits of investments that increase the reliability of gas storage assets to prevent supply interruptions.
Environmental Risk and Remediation	Measures the treatment of risk of environmental incidents through the completion of an investment.
Operational Disruption Risk (Gas)	Measures the societal cost of a disruption in the distribution of gas to customers.
Growth Per Year	Measures the expected customer growth per year the system serves.
Avoided GHG Emissions	Measures the monetary value of reducing CO ₂ greenhouse gas emissions through the completion of an investment.
Avoided Reactive Replacement	The financial savings of replacing an asset proactively before it fails and not having to pay the higher, reactive replacement costs.
Financial Risk	Measures the treatment of potential financial risks, such as financial losses due to damage of equipment/company assets, if the investment is not completed.
Revenue Impact	Measures the impacts to the total amount of gross income generated by Enbridge's primary operations. Revenue represents the total income earned before expenses are deducted.
Budget Savings OPEX	Values the OPEX Budget Savings of the investment.
Budget Savings CAPEX	Budget savings is the net benefit between the anticipated cost increases to the CAPEX budget as well as cost savings to current planned spending. This is not the Investment Cost.
Cost Avoidance OPEX	Any action that avoids having to incur OPEX costs in the future (these costs would be unbudgeted/unplanned). Cost avoidance measures are never reflected in financial statements or the annual budget. Avoided OPEX costs are only reflected in instances where a proposed action is not implemented, thus resulting in a cost increase.
Cost Avoidance CAPEX	Any action that avoids having to incur CAPEX costs in the future (these costs would be unbudgeted/unplanned). Cost avoidance measures are never reflected in financial statements or the annual budget. Avoided CAPEX costs are only reflected in instances where a proposed action is not implemented, thus resulting in a cost increase.

Value Measure	Description
Energy Efficiency	Measures the financial benefits through annual energy savings and reduced CO ₂ emissions.
Employee Productivity	Measures the impact on working conditions and employee productivity.

EGI has been implementing and continues to mature its asset management decision-making practice.

4.1.6 Asset Information

EGI aims to have the right systems, processes and data to support asset management. This is foundational to all other asset management capabilities. The strategies to achieve this are:

- Produce and evaluate asset information and condition information.
- Establish a governance framework to ensure data is captured, managed and used effectively in decision-making.

Asset data provides the foundation for asset investment planning (see **Figure 4.1-6**). Asset analytics supports people, processes and technology advancements to enable defensible asset decisions. Asset analytics provides asset information that informs and supports asset health reviews, engineering reliability assessments, risk and opportunity assessments and asset replacement strategies. It also outlines the processes, governance and systems required to ensure decisions are defensible and repeatable through using data that is fit for purpose.

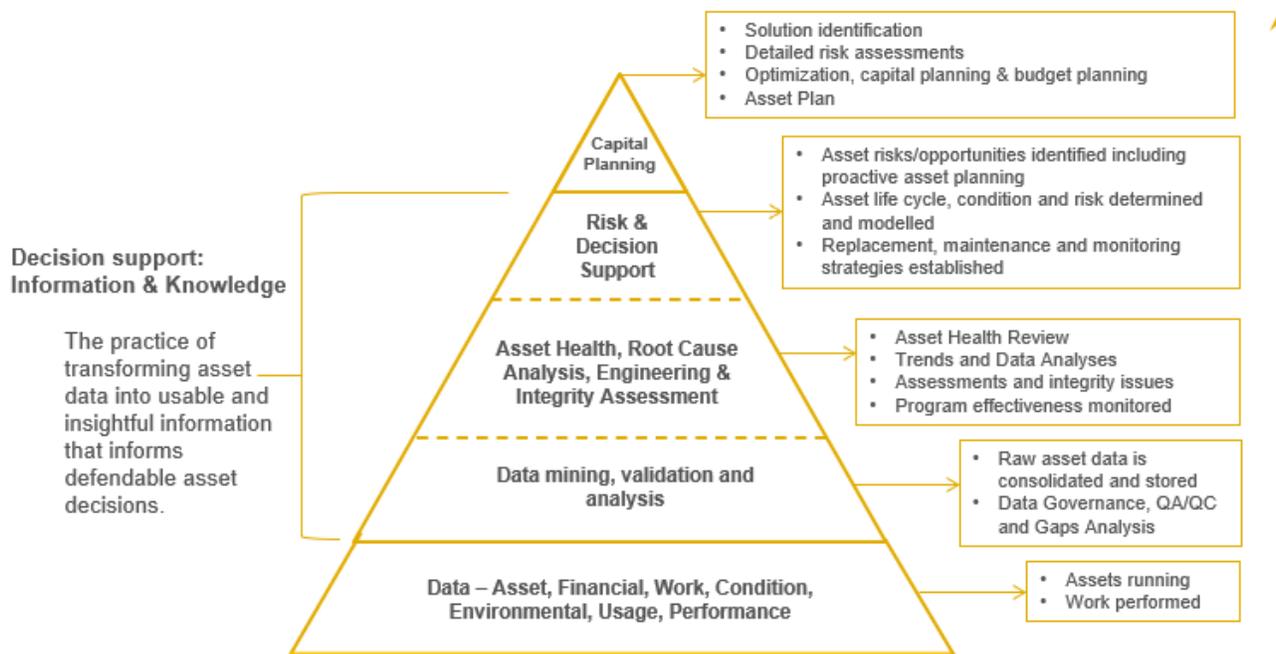


Figure 4.1-6: Asset Information and Support to Asset Investment Planning

Asset data enables the evaluation of existing assets, determines patterns, supports costing of solution options and identifies meaningful information to inform life cycle management strategies. Several reports and tools are used to inform asset investment planning. Supported by EGI and industry knowledge, asset information is leveraged for asset analytics and modelling to:

- Assess asset condition
- Support and predict risk and value assessments
- Develop cost estimates and understand financial performance
- Inform and support asset health reviews and engineering reliability assessments

- Establish asset inventory and population over time
- Ensure compliance with EGI policy and regulatory requirements
- Make operational asset decisions, e.g., emergency response
- Ensure safe and reliable operations e.g., core work, maintenance

4.2 Risk Management

A risk is defined as the negative impact of uncertainty on the organization’s objectives expressed as the combination of the likelihood and consequence of a potential event. To manage risk, the Risk Management process, which is consistent with *ISO 31000* (see **Figure 4.2-1**), involves a series of activities designed to help the organization assess, prioritize and treat risks.



Figure 4.2-1: Enbridge Risk Management Process

The following sections provide more detail about the process steps and the roles involved in Risk Management at EGI.

4.2.1 Identify Risk

Operational hazard and risk identification occur throughout the asset life cycle and are identified through:

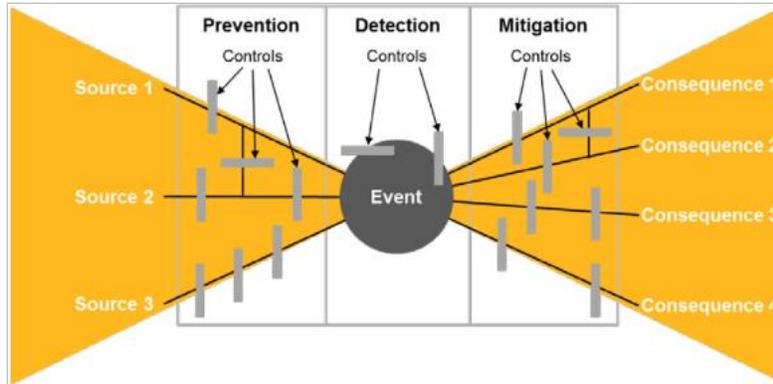
- Internal sources such as databases, frontline processes, targeted reviews, assessments and meetings
- External sources such as published industrial incidents, industry-related publications distributed by regulatory bodies and industry associations, local governments, external crime statistics, industry standards and accepted best practices.

4.2.2 Analyze Risk

Risk factors shown in the Risk Bowtie Model (see **Figure 4.2-2**) are analyzed and assessed. The commonly used types of risk assessments at EGI are quantitative, semi-quantitative and qualitative which are described in **Table 4.2-1**. The selection of the approach is dependent on the scope of the assessment, maturity of risk assessment technique, best available data and information at the time of the assessment and the types of assets.

Table 4.2-1: Risk Assessment Types

Type	Description	Application
Qualitative Approach	General and/or structured brainstorming with a multidisciplinary team to identify and evaluate risks. Relies mainly on qualitative inputs such as expert judgment, experience and technical knowledge.	Used to identify and understand risk factors.
Quantitative Approach	Detailed technical assessments that leverage numerical data and mathematical methods to quantify risks.	Applied to contexts which are well understood and where numerical data and mathematical models can be used to quantify risk factors.
Semi-Quantitative Approach	Relies on qualitative inputs, such as expert judgment, experience and technical knowledge, as well as numerical data and mathematical methods to evaluate risk.	Applied to contexts which are relatively well understood but not all risk factors can be quantified.



Source: Adapted from IEC/ISO 31010 (2009)

Figure 4.2-2: Risk Bowtie Model

In order to provide clear guidance on prioritizing resources on managing risks, the EGI Risk Evaluation Framework (see **Figure 4.2-3**) is applied. When a risk is assessed to be in Region 1, risk treatment must be taken to reduce risk to all practicable extent. The timing of risk treatments to reduce risk may vary by scenario with reduction occurring as soon as possible while following applicable standard operating procedures and related business processes and requirements. Risk in Region 2 must be treated unless it can demonstrate that the risk has already been reduced as low as technically and economically feasible. Region 2 acknowledges that there are practical limits to ability to reduce risk. Risks in Region 3 do not require further treatment but, like risks in other Regions must be monitored according to applicable procedures and related businesses' processes and requirements.

The framework ensures that resource allocations are prioritized to EGI's higher risks to ensure safe and reliable operations. It also ensures the ability to demonstrate that all reasonable measures have been undertaken to reduce risk.

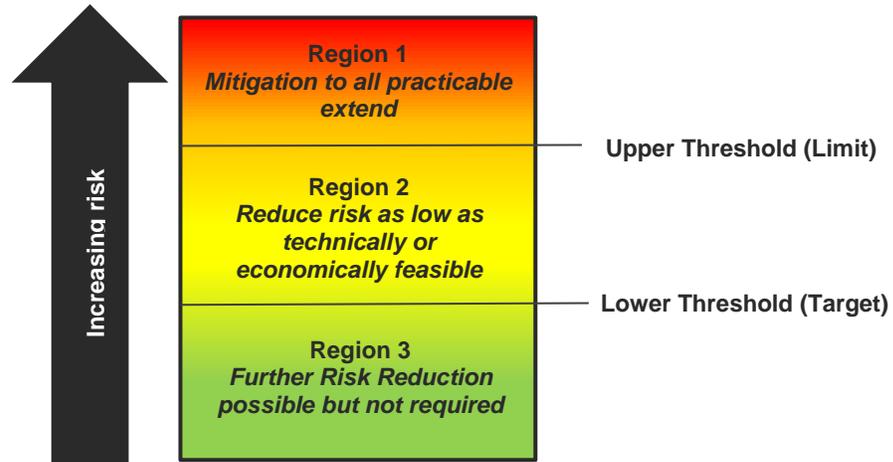


Figure 4.2-3: EGI Risk Evaluation Framework

As EGI evolves its risk management practices, two approaches have been adopted from industry best practices; Enbridge Risk Matrix (see **Figure 4.2-4** where the Y-axis indicates likelihood, and the X-axis indicates consequence) and risk thresholds (upper and lower thresholds) as illustrated in **Figure 4.2-3**.



Figure 4.2-4: Enbridge Risk Matrix

In most cases, the risk matrix is used to support comparison of risks across multiple dimensions where risks are estimated in terms of likelihood and consequence with results being plotted on the matrix. The EGI Risk Evaluation Framework (see **Figure 4.2-3**) and the Enbridge Risk Matrix (see **Figure 4.2-4**) are complementary and support risk informed decision-making.

Sometimes there is a need to understand safety risks due to release of hazardous materials such as flammable and toxic material and their intersection with the public and employees, also known as catastrophic/rare events. In such cases, risk quantification can be applied, provided there are data and analytical techniques to allow for this.

The safety risk evaluation criteria proposed by the Risk Management Task Force (RMTF) (formed by the CSA under the Technical Committee for Z662 Standard on the Oil and Gas Pipeline System) are used for this type of assessment, the criteria have also been adopted by UK Health and Safety Executive (UK HSE). This approach is also in use at major North American energy companies³. These criteria are represented by lower and upper thresholds (i.e., target and limit) as shown in the EGI Risk Evaluation Framework (see **Figure 4.2-3**).

While the EGI Risk Evaluation Framework can support treatment prioritization and risk reduction, ultimately, the actions EGI takes in the face of specific risks are influenced by many factors including the business environment, regulatory, planning, financial, commercial, stakeholders and the quality and maturity of risk assessment data and capabilities. The risk assessment and decision to treat a risk are inputs to the Asset Investment Planning and Management process (see **Section 4.3**).

4.2.3 Evaluate Risk

Having analyzed the risk, the EGI Risk Evaluation Framework (see **Figure 4.2-3**) is used to provide guidance on prioritizing resources on managing risks. For more details on Risk and Review, see **Section 4.1.4**. Once decisions are made to treat risks, they are documented with treatment plans as part of the Risk Management process. Depending on the nature of the risk, these risks may be reported quarterly through EGI’s Integrated Management System processes.

The level of uncertainty of a risk evaluation needs to be considered and can influence the confidence in likelihoods and consequences of specific scenarios. Where level of uncertainty is higher it may be necessary to further augment quantitative assessments with qualitative considerations.

³ Tomic, Aleksandar, Kariyawasam, Shahani, “Critical Review of Risk Criteria for Natural Gas Pipelines”, Proceeding of the 2016 11th International Pipeline Conference IPC 2016-64356, Calgary, AB, September 26-30, 2016.

4.2.4 Treat Risk

Risk treatment is the modification of identified risks, ranging from day-to-day operational activities undertaken by operators and field personnel to inspect equipment, to a large capital project required to replace an existing asset. Operating inspections, procedures and preventive maintenance activities are developed during the commissioning of an asset and are used to treat identified risks throughout the Operate and Maintain phases of the asset life cycle.

Figure 4.2-5 lists the risk treatment options used at EGI. The maintenance strategy for a facility or asset is established based on operating standards requirements, the outputs of a reliability centered maintenance study or Original Equipment Manufacturer (OEM) recommendations. These risk treatment options are considered during the Solution Planning and Value Assessment stage (see **Section 4.3.2**) of the AIPM process.



Figure 4.2-5: Spectrum of Risk Treatment Options

4.2.5 Monitor and Review Risk

EGI maintains a risk register to communicate and review all operational risks. Risks are reported and reviewed on a quarterly basis through a risk reporting process. Each management program owner within the Integrated Management System and each risk owner is also accountable for the ongoing management of risks within their accountabilities.

4.3 Asset Investment Planning and Management (AIPM) Process

Within the overall Asset Management Strategic Framework, as capital investment needs are identified, they are evaluated and executed through the Asset Investment Planning and Management (AIPM) process (see **Figure 4.3-1**). **Figure 4.3-1** represents the current state AIPM process that was used to develop the 2023-2032 Capital Portfolio and Appendix B - IRP, the future state AIPM process will incorporate the IRP Assessment process at the Solution Planning & Value Assessment stage.



Figure 4.3-1: EGI AIPM Process

4.3.1 Identify Investment Need

Capital investment needs enter the AIPM process via EGI’s asset investment planning tool (Copperleaf). An investment need is either a risk or opportunity to the organization. The investment need can be entered directly into Copperleaf, or it may arise through the Risk Management process (see **Section 4.2**) once an identified risk is determined to require capital treatment. The following investments are entered directly into Copperleaf:

- Growth and cost-saving opportunities
- Compliance investments
- Ongoing programmatic spend with sufficient history and risk to warrant continuation

Once an investment need is captured in Copperleaf, the asset manager validates that the need aligns with the strategies for the asset class and that a capital investment is required. Once confirmed that a capital investment is indeed required, solution planning and value assessment (if applicable) can begin.

Depending on the required timing to address the identified investment need with a solution, an investment may be considered for portfolio optimization or may be considered emergent, where it is approved off-cycle from budgeting activities; emergent investments require capital within the current year and are reviewed case-by-case by the asset manager and Asset Management Governance.

4.3.2 Solution Planning and Value Assessment

Solution planning is initiated once an investment need is approved by the asset manager and can occur in parallel with the completion of a value assessment (when required). A Copperleaf investment contains a scope, cost estimate and preferred timing for all identified solutions (facility and non-facility) to address the need. Investments can be in the form of a **Project** or a **Program**, as described in **Table 4.3-1**.

Table 4.3-1: Project and Program Descriptions

Investment Type	EGI Description
Project	A one-time individual initiative with a distinct scope and timeline.
Program	An overarching initiative to address a risk/opportunity that is/will be comprised of multiple projects with varying scopes and timelines.

Cost estimating is an important activity for the solution planning process and the resultant Asset Management Plan. Cost estimates include the direct capital costs, retirement costs and rebillable credits. In addition, any avoided and/or additional operating and maintenance costs are estimated where known and captured in the value assessment. All estimates are based

on current year costs (except for programs that have a defined scope). Note that scoping and estimating for earlier years of the plan will be more accurate than later years.

All solution options have a cost estimate, and the level of accuracy is established using estimate classes (see **Table 4.3-2**). The class of the estimate also informs the level of contingency applied to the project or program.

Contingency is described as the amount of funds budgeted to account for unquantified project costs at the time the estimate is completed; this cost is intended to cover potential risks during execution. Contingency is generally included in estimates with the expectation for it to be expended and allocated on a project-by-project basis based on asset class, project risk and scope of work.

Table 4.3-2: Estimate Classes

Class	Estimate Description	Scope Maturity	Contingency Level
Class 5	High-level cost estimate	Very Low	High
Class 4	Estimate based on initial information	Low	↓
Class 3	Estimate based on cost-estimating tools and reports	Moderate – High	↓
Class 2	Estimate based on Request for Proposal (RFP)	High	↓
Class 1	Estimate based on quote or project completion	Very High	Low

All value-driven investments have their value assessed in Copperleaf once a scope and cost estimate have been defined. Where there is more than one option to address a risk or opportunity, each option is value assessed. The value assessment quantifies the amount of risk reduced and any value gained by the proposed solution option based on the value measures defined in **Table 4.1-3**. The combination of value measures and investment cost is referred to as the total investment value, which is used to prioritize investments in optimization. While the value measures will differ between investments and solution options, the total investment value allows comparison of dissimilar investments.

4.3.3 Optimize Portfolio of Solutions

With solution planning and value assessment complete, portfolio optimization is performed in Copperleaf, where a multi-year investment plan is created based on asset management principles. Prior to optimization, proposed investments are reviewed with business stakeholders to ensure all known risks and opportunities to the organization are captured. The portfolio is then optimized to determine the optimal investment timing for investments that have flexible timing, with constraints on the annual net direct capital and consideration of available resources.

A 10-year time frame is analyzed to determine the long-term capital forecast. Based on required timing, projects and programs have varying degrees of detail; work details proposed earlier in the plan are more refined than work details proposed towards the outer half of the 10-year span. For this reason, programmatic spend is proposed to address risks, where projects are continually defined and attached to programs as scope refinement occurs.

Once all investments are categorized based on **Table 4.1-2**, portfolio optimization begins. Investments identified as mandatory, compliance, or value-driven using the Risk Management process are automatically slotted at the required time rather than using risk and cost to determine optimal timing. Value-driven investments using the Copperleaf value framework are free to shift within the optimization time frame.

Prior to optimizing, an initial portfolio representing the preferred option and timing of investments is captured. This typically results in an inconsistent spend profile over the 10 years, with a much larger proposed spend in earlier years.

Optimization scenarios are determined through the consideration of the following:

- Approved or proposed budget
- Historical capital spends at the organization
- Risks that must be treated because they exceed a threshold in EGI Risk Management process (see **Section 4.2**)
- Asset life cycle strategies
- The original proposal of work (preoptimization) and an understanding of the associated compliance and mandatory projects/programs

Using Copperleaf, the EGI portfolio is optimized and analyzed by varying the net direct capital per year, highlighting the effects of project timing, option selection and value. The results from these scenarios are reviewed with asset managers to find the combination of investment options and start dates that best meet business needs within specified constraints. This scenario is

then reviewed and refined to deliver a final portfolio recommendation. Iterative adjustments are applied, and the recommended portfolio is approved once validated against timing and resourcing constraints.

4.3.4 Produce Capital Portfolio

The capital portfolio is captured in Microsoft Excel as well as Copperleaf. This provides business stakeholders with broad access to the approved capital plan and encourages working on a multi-year plan. The use of Copperleaf enables ongoing refinement of investments in the plan and periodic review of changes and updates to understand their impact.

4.3.4.1 IRP Assessment Process

Once the capital portfolio is produced, EGI uses an IRP assessment process, which includes a binary screen and an IRPA evaluation, to determine the best approach to meet identified system needs/constraints. In a project-specific application (Leave to Construct or IRP Plan), EGI demonstrates that it has followed this process including the results of the analysis at each of the following stages:

1. Identification of Constraints
2. Binary Screening Criteria
3. Two-Stage Evaluation Process
4. Periodic Review

EGI is beginning to integrate the IRP assessment process into its annual planning activities. With 2022 being the first year that EGI has implemented the IRP assessment process, the projects are evaluated after the Produce Approved Capital Portfolio (see **Section 4.3.4**) step in the AIPM process. Once EGI has completed the review of projects in this Asset Management Plan, the process will be adjusted to occur as part of Solution Planning and Value Assessment (see **Section 4.3.2**). It is anticipated that over the next couple of years the IRP assessment process is expected to occur during both Stages 2 and 4 of the AIPM process, in order to ensure all projects have been assessed and reevaluated as required. The result of EGI's IRP Assessment Process is summarized in **Section 6.3**.

4.3.5 Execute Annual Portfolio Plan

During project planning and execution, periodic forecasts track project and program costs, and reports are generated on actual incurred costs.

EGI acknowledges that the identification of risks and the execution of projects is dynamic. During the year, project scopes may change or new projects may arise, resulting in cost pressures (increases or decreases) to the current portfolio. As these pressures are identified, trade-off decisions are made based on value and available capital, a direct demonstration of EGI's Plan-Do-Check-Act cycle (see **Figure 3.0-2**).

All requests for emerging or revised investments are supported with clear purpose, need and timing to allow for evaluation. An overall review is conducted to understand various uncertainties and to ensure that as much risk and opportunity is addressed as possible within the constraints of the portfolio. The execution of the annual work plan is monitored and adjusted monthly through the forecasting process and informs the performance of EGI's Asset Management Program.

4.3.6 AIPM Performance Review

Performance measurement provides insight into assets, asset management performance and the effectiveness of the asset management system. To determine AIPM performance, four key areas are evaluated:

- The end-to-end asset management process
- Delivery to plan of the approved portfolio (Scope Delivery to Plan and Capital Budget Delivery to Plan)
- Adherence to asset class objectives (see **Section 5**)
- Accomplishment of specific asset management objectives

Scope Delivery to Plan is the comparison of the approved portfolio project list to actual projects completed at the end of the fiscal year. Variances are explained to ensure the Asset Management Framework is supporting the reduction of risk and realizing optimal asset value.

Capital Budget Delivery to Plan is informed monthly by the capital forecast. This ensures the governance and controls are in place to optimize the capital plan while operating within an approved budget. It also supports continuous improvement for cost estimating, where the variance between estimate and actual costs are understood and learnings are incorporated in future planning.

Asset Class Objectives have been defined for all asset classes at EGI. These objectives, aligned with asset management goals and principles, outline asset requirements to support successful business operations. Life cycle management is applied across all asset classes to specify strategies that govern decision-making throughout the four stages of the asset life cycle: Design/Construct, Operate, Maintain and Renew/Retire. Adherence to the asset class objectives and life cycle strategies ensures consistent and holistic evaluation of risks and opportunities, setting the foundation for successful asset planning and value realization. Asset class objectives are found in Customers and Assets (see **Section 5**).

The **Asset Management Health Check** will detail specific asset management execution elements supporting the overarching asset management strategies. As asset management is a management program within EGI's Integrated Management System, the management program health check will inform senior management of the effectiveness of the Asset Management team in maturing the Asset Management Program.

5 Customers and Assets

This section provides details on the following:

- EGI’s customers and the customer growth projections
- Asset class objectives, risks and opportunities
- Asset inventory and condition
- Asset class strategic plans to meet life-cycle strategies

In **Figure 4.3-1**, it can be seen that natural gas delivers a significant portion of Ontario’s energy needs on both a peak and average basis. EGI provides this energy safely, affordably and reliably, and is committed to delivering this energy with net-zero operational emissions by 2050. EGI also contributes positively to the low-carbon economy through its investments in innovative low-carbon solutions such as hydrogen and renewable natural gas. In addition, when compared with electricity, natural gas continues to be cost-effective, delivers approximately two times the energy and over four times the peak demand, through underground infrastructure that is less susceptible to the weather events that impact electrical infrastructure, offering much needed resiliency.

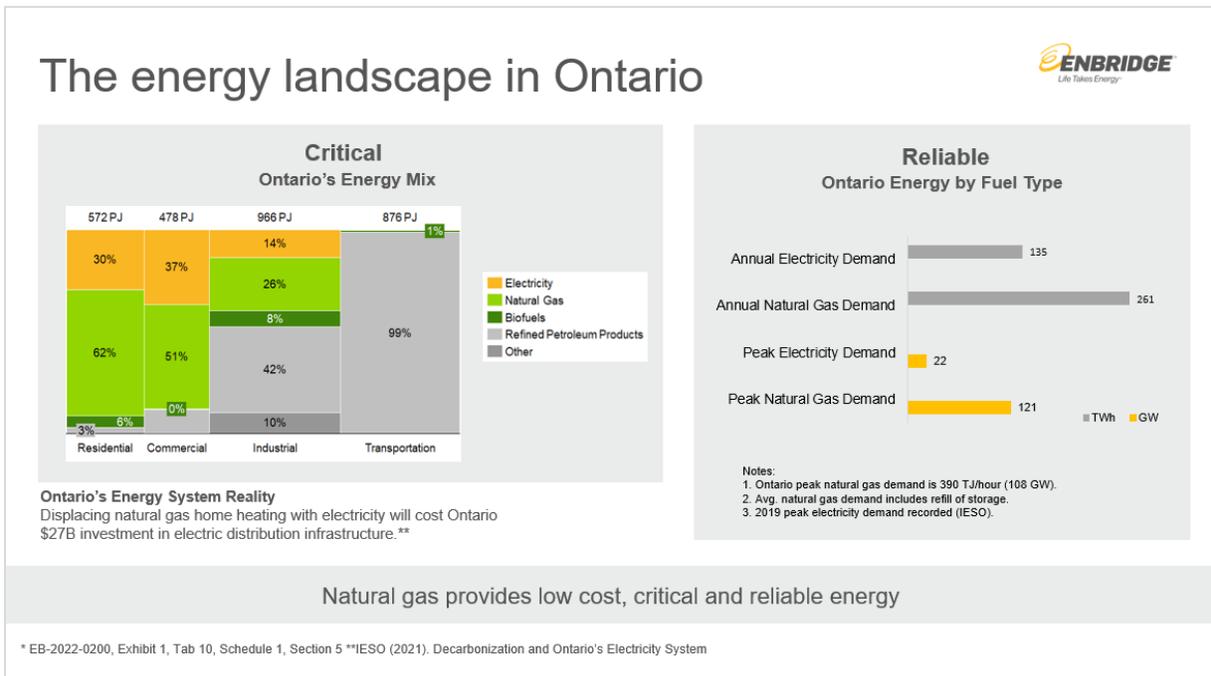


Figure 4.3-1: The Energy Landscape in Ontario

EGI also provides natural gas storage and transportation services for other utilities and energy market participants in Ontario, Quebec and the United States. EGI’s storage and transmission system forms an important link in the movement of natural gas from Western Canadian and U.S. supply basins to Central Canadian and Northeast U.S. markets.

Storage and transmission assets include transmission pipe of up to nominal pipe size (NPS) 48 used to transport natural gas across Ontario, compressor plants to move natural gas to and from storage reservoirs and along the transmission pipelines, and a liquefied natural gas plant used to support peak shaving in one area of the company.

EGI’s distribution assets include smaller diameter pipe, stations, meters and regulators at homes in the franchise areas. EGI’s supporting assets include buildings, fleet vehicles and technology and information services assets across Ontario that support EGI’s critical business needs and activities.

EGI has a network of assets that serve to receive, store, transport and distribute energy. **Figure 4.3-2** shows how these assets and those that support them are interconnected to provide safe and reliable natural gas to EGI’s customers.

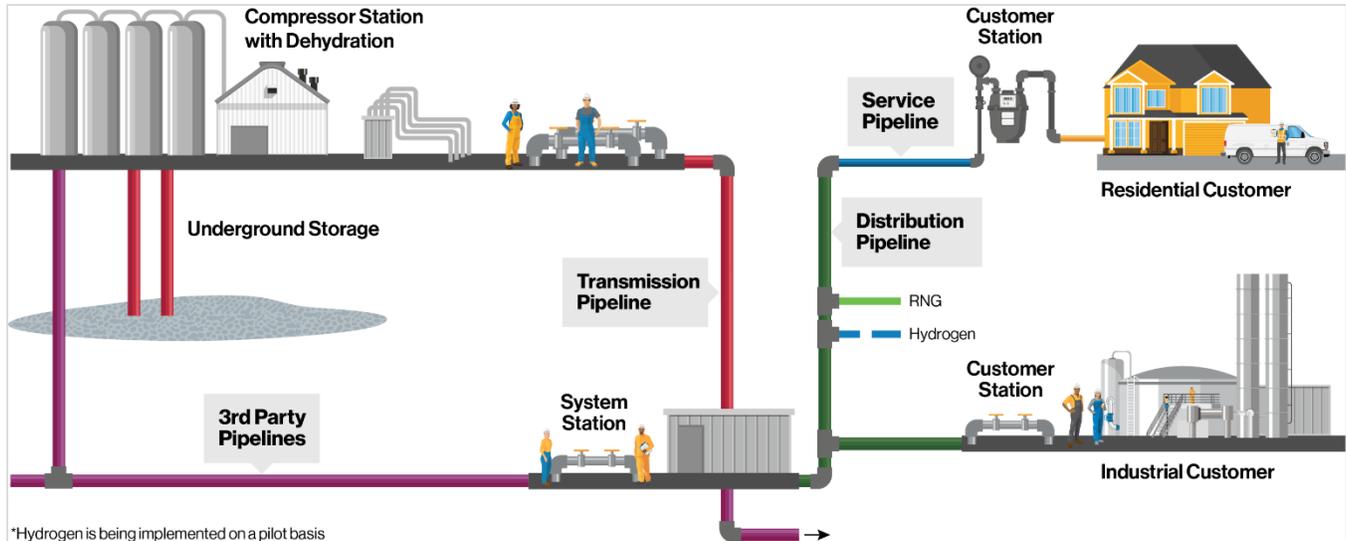


Figure 4.3-2: Components of a Natural Gas System and Supporting Assets

5.1 Growth

EGI delivers safe and reliable natural gas to over 3.8 million customers, and this customer base is forecast to grow over the 10-year period of this Asset Management Plan. EGI services residential, apartment, commercial, industrial and transmission customers within its franchise areas. As practical, verifiable and prudent alternatives are available, the Growth asset class will continue to evolve to incorporate low-carbon technologies and implement energy transition and IRPAs.

The Growth asset class consists of assets to serve the addition of new customers based on new housing or business starts, customers converting to natural gas from another fuel source, as well as equipment and service upgrades to accommodate existing customer load growth. EGI continues to connect customers with natural gas service within its franchise area, consistent with the requirements of *EBO 188* while also considering Integrated Resource Planning alternatives (IRPAs). The Growth asset class is divided into five subclasses:

- **Customer Connections** activity evaluates customers' natural gas consumption needs and ensures demands are assessed and processed in accordance with the guidelines prescribed in the *EBO 188* report. The assets and costs within this asset subclass include materials and installations of distribution mains, services, meters and regulating equipment.
- **Distribution System Reinforcement** projects involve the installation or modification of existing gas distribution assets to maintain minimum required system pressures, maintain distribution capacity and meet growing natural gas demands. These projects are primarily driven by increased customer demand, customer growth and system reliability considerations. The IRP Assessment Process is used to evaluate the preferred solution to meet the specific system needs (see **Appendix B – IRP**).
- **Community Expansion** projects involve the installation of gas distribution assets to serve communities that have not previously had access to natural gas and that are not feasible without funding support. These projects are driven by municipal and/or community interest and supported by an Ontario Energy Board (OEB)-approved funding mechanism of a System Expansion Surcharge (SES) from all connected customers as well as government-approved ratepayer-supported funding under *Bill 32: Access to Natural Gas Act, 2018*.
- **Transmission System Reinforcement** projects involve the installation or modification of existing gas transmission assets to maintain minimum required system pressures, maintain distribution capacity and meet growing natural gas demands in accordance with the *EBO 134* report. These projects are driven by increasing in-franchise and ex-franchise demand growth. Capital costs related to transmission system reinforcements are included in the expenditure summary for the Transmission Pipe and Underground Storage asset class (see **Section 5.3.6.4**). The IRP Assessment Process is used to evaluate the preferred solution to meet the specific system needs (see **Appendix B – IRP**).
- **Hydrogen Blending** projects look for ways in which EGI can reduce GHG emissions through the introduction of hydrogen into the natural gas distribution system and other company assets. With the Q4 2021 in-service date of the Markham Hydrogen Blending Pilot Project (approximately 2% of the gas stream by volume), EGI operates the first North American hydrogen blending facility. Engineering has monitoring standards in place to ensure safe and reliable operations. As hydrogen blending matures and evolves, strategies for maintenance and replacement of existing infrastructure will be established. As government regulations are set and enacted, EGI will continue to respond with programs and projects to meet these requirements with its various existing assets in addition to new assets.

The Growth capital expenditure requirements for materials and asset installation is based on forecast customer growth over the next 2023-2032. To account for the evolving energy transition, reinforcement projects are screened and analyzed in accordance with the IRP Framework (EB-2020-0091 [Appendix A]) and best available energy transition related information. Capital expenditure requirements related to the condition of existing assets (mains, services, measurement, and regulating equipment, etc.) are addressed in the **Distribution Operations** and **Storage and Transmission Operations** asset classes.

5.1.1 Growth Objectives

The Growth asset class is a key component of the Design/Construct stage of EGI’s Asset Management Life Cycle. It supports EGI’s investment in new assets related to customer growth. Growth objectives are listed in **Table 5.1.1-1**.

Table 5.1.1-1: Growth Asset Class Objectives

Asset Class Objectives	Description
Integrated Resource Planning	Screen projects using EGI’s IRP assessment process; for those that pass, determine if there are IRPAs that are economically and technically feasible.
System Growth	Ensure an engaged and positive customer experience.
	Ensure EGI provides new or upgraded natural gas services to residential, apartment, commercial, industrial and transmission customers when projects do not pass IRP Binary Screening or where IRPAs are not feasible.
	Reinforce distribution networks and transmission systems to economically serve short- and long-term demand requirements where projects do not pass IRP Binary Screening or where IRPAs are not feasible.
System Integrity and Reliability	Reinforce existing transmission pipeline systems and distribution networks to ensure capacity and reliably meet current and future customer demand where projects do not pass the IRP screening or where IRP alternatives are not feasible.

The performance measures for the Growth asset class are:

- Number of networks forecast through the long-range planning process to drop below minimum operating pressure
- Number of customer additions
- Number of investments screened using the IRP assessment process and for those that pass the IRP Binary Screening, the number of investments evaluated to determine if there are economically and technically feasible IRPAs.

To achieve the Growth asset class objectives listed in **Table 5.1.1-1**, asset investment decisions are governed by the life-cycle management strategies outlined in **Table 4.1-1**.

5.1.2 Growth Hierarchy

See **Section 4.1.3** for the asset life cycle, for which growth is a key component of the Design/Construct stage. After design/construction of the growth asset as depicted in **Figure 5.1-1**, these assets are operated, maintained, and renewed/retired within the Distribution Operations and Storage and Transmission Operations asset classes.

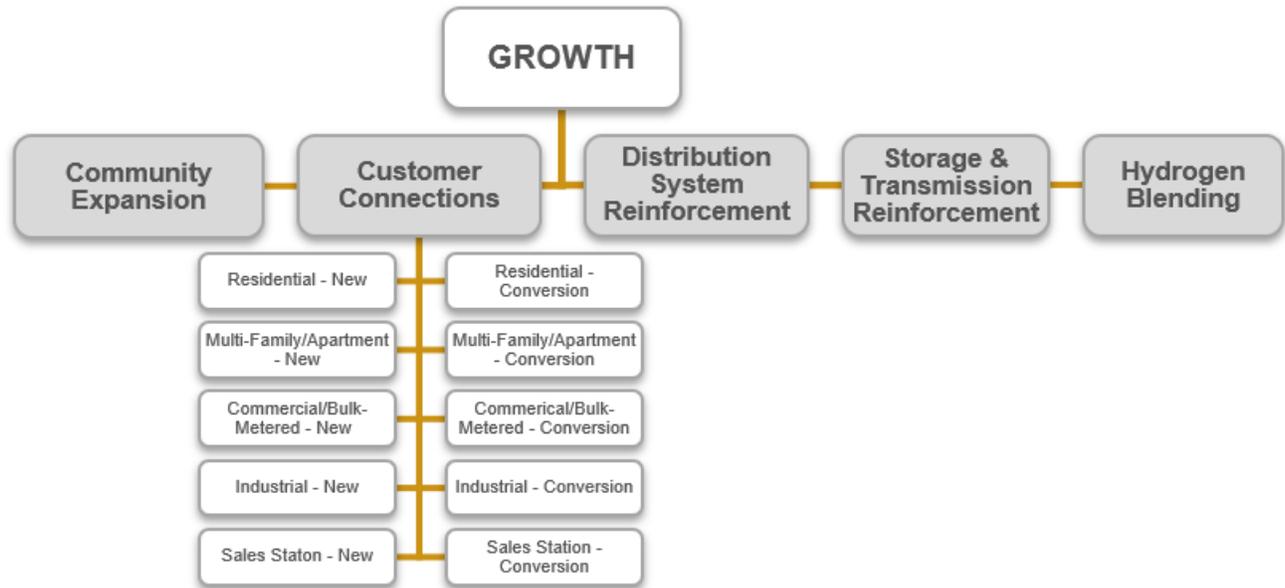


Figure 5.1-1: Growth Hierarchy

5.1.3 Growth Strategy Overview

Table 5.1.3-1: Growth and Hydrogen Condition and Strategy Overview

Asset Program	Growth Forecast	Risk / Opportunity	Strategy
Customer Connections	Figure 5.1-2 and Figure 5.1-3 show the customer growth forecast for the EGD and Union rate zones respectively.	EGI is expected to provide new or upgraded natural gas services to residential and commercial/industrial customers (<i>EBO 188</i>), where the project is feasible, determined by quantifying the value of a project's revenues against its costs (the Profitability Index [PI]).	The strategy for Customer Connections is to continue to ensure required infrastructure is installed to enable the addition of all forecasted customers that are feasible under <i>EBO 188</i> guidelines, while following harmonized forecasting practices. EGI continues to monitor and update the customer additions forecast through the annual long-range planning process, which considers the impact of energy transition. Economic feasibility for growth is based on <i>EBO 188</i> guidelines applied to the investment portfolio and rolling project portfolio.
Distribution System Reinforcement	To identify purpose, need and timing of distribution system reinforcements, EGI utilizes peak hourly consumption to determine distribution system needs.	Ensure security of distribution system capacity to meet the needs of existing customers and support forecasted customer growth using <i>EBO 188</i> guidelines, and in accordance with the IRP Framework.	All reinforcement projects will be subject to a Binary Screening through the IRP assessment process. IRP, as prescribed by the OEB, will allow for non-pipe alternatives to be thoroughly examined, reviewed, and implemented where economically and technically feasible. The strategy for the Distribution System Reinforcements is to continue to ensure the installation of infrastructure required to enable the addition of all forecasted customers feasible under <i>EBO 188</i> guidelines, for those that do not pass IRP screening or where IRPAs are not feasible, while following current forecasting practices, which considers the impact of energy transition.
Community Expansion	Through Phase Two of the Natural Gas Expansion Program, EGI was awarded ~\$214M to support 27 Phase 2 Natural Gas Expansion Projects (NGEP) projects.	Community expansion is a growth opportunity to provide natural gas services to communities not currently being serviced by EGI.	EGI's Community Expansion Strategy is to continue assessing and pursuing opportunities to provide gas distribution service to under-served communities. Application opportunities for project funding are dictated by the government under <i>Bill 32: Access to Natural Gas Act, 2018</i> .
Transmission System Reinforcement	To identify purpose, need and timing of transmission system reinforcements, EGI annually completes a design day demand forecast that is used to identify short- and long-range plans through model simulation.	Ensure safe and reliable transmission system operations and support increasing in-franchise and ex-franchise demand growth using <i>EBO 134</i> guidelines, and in accordance with the IRP Framework.	All reinforcement projects will be subject to a Binary Screening through the IRP assessment process. IRP, as prescribed by the OEB, will allow for non-pipe alternatives to be thoroughly examined, reviewed, and implemented where economically and technically feasible. The strategy for the Transmission System Reinforcements is to continue to ensure that required infrastructure is installed to enable the addition of all forecasted customers and distribution growth feasible under <i>EBO 134</i> guidelines, for those that do not pass IRP screening or where IRPAs are not feasible, while following current forecasting practices, which considers the impact of energy transition.
Hydrogen Blending	EGI continues to evaluate the extent that hydrogen can be used in the distribution system and company assets.	The successful operation of the pilot project requires regulations and standards for hydrogen to be harmonized by governments and regulatory agencies and for hydrogen to be cost-competitive.	EGI continues to evaluate the extent that hydrogen can be used in the distribution system and company assets. EGI will apply learnings from its Hydrogen Blending pilot projects and its hydrogen blending facility in Markham to allow it to further Canadian leadership on hydrogen development and a low-carbon future. EGI continues to collaborate with governments and partners to advance innovative energy solutions to keep energy reliable, affordable and reduce environmental impact.

5.1.4 Customer Connections

The Customer Connections subclass consists of assets to serve new customers based on new housing or business starts, customers converting to natural gas from another fuel source, as well as equipment and service upgrades to accommodate load growth of existing customers. These customers are connected in accordance with the feasibility guidelines prescribed in the *EBO 188* report. The assets and costs associated with connecting these customers include materials and installations of distribution mains, services, and regulating equipment.

EGI expands its distribution system in accordance with the OEB's guidelines for the expansion of natural gas service and the IRP Framework. The intent of these guidelines is to facilitate the rational expansion of natural gas service while protecting existing customers from undue cross-subsidization. Factors evaluated include the number of potential new customers, their gas consumption and the cost of extending gas mains. For details on these requirements, see **Section 5.1.5**.

Capital investments, such as material and labour costs, are required to support new customer connections. For details on the capital investment forecast, see **Section 5.1.4.2**.

Each year, EGI develops a customer growth forecast using a number of information sources. For details on this process and projections, see **Section 5.1.4.3**.

5.1.4.1 Customer Connections Feasibility

EGI uses a portfolio approach (Investment Portfolio and Rolling Project Portfolio) to manage system expansion activities and ensure that required profitability standards are achieved at both the individual project and the portfolio level.

- **Investment Portfolio:** This approach evaluates feasibility on all proposed new distribution customer attachments for a particular test year and ensures required portfolio Profitability Index (PI) thresholds are achieved. The portfolio includes the costs and revenues associated with all new distribution customers forecast to be attached in a particular year (including new customers attaching to existing main or infill services). It also ensures there are no undue cross-subsidizations in the short term. The investment portfolio is designed to include a safety margin to mitigate the forecast risk and achieve a PI threshold greater than 1.0.
- **Rolling Project Portfolio (RPP):** This approach maintains a portfolio of system expansion projects over a rolling 12-month period. RPP is used as a management tool for estimating the future impact of capital expenditures associated with system expansion. RPP excludes customers attaching to existing mains (infill services). RPP is required to achieve a PI threshold greater than 1.0.

The OEB's view, as set out in *EBO 188*, is that by assessing the financial viability of all potential customers as a group (using a portfolio approach), more marginal customers could be served as a result of assessing the cost of serving them together with more financially viable customers.

Feasibility analysis of individual customer connections (i.e., a project) is carried out by using the guidelines prescribed in *EBO 188*. A feasibility analysis determines whether a project meets financial requirements and ensures there is no undue cross-subsidization over the project life cycle. This is accomplished by calculating the PI of the project based on its future revenues versus the costs.

The PI is a ratio of a project's revenues against its costs. $PI = 1.0$ represents the value of a project's revenues being equal to the project's costs. This means that over the life of the project, project revenues will cover the entire project cost, ensuring the project will be economically feasible.

The OEB, through *EBO 188*, expects utilities to maintain a PI of 1.0 or greater at a portfolio level. Each distribution project must meet a PI of at least 0.8 in order to be included in a utility's RPP. EGI is experiencing increased costs to add customers as a result of inflation and increased safety requirements – for example, line locates and changes to construction practices to reduce the likelihood of sewer lateral cross bores.

5.1.4.1.1 FEASIBILITY PROCESS

When assessing the feasibility of a new project, EGI prepares a forecast of project costs and revenues. If the present value of project revenues is equal to or greater than the present value of project costs, the project is economically feasible and can proceed to be built. In such a case, over the life of the project, revenues will recover the entire cost of the project.

When the present value of revenues is less than the present value of costs, customers will be asked to pay a Contribution In Aid of Construction (CIAC). The CIAC is the amount by which the project capital costs must be reduced by the customer to make the project feasible (i.e., to achieve the required PI threshold).

5.1.4.1.1.1 Feasibility Formula

$$\text{Profitability Index (PI)} = \frac{\sum \text{PV (Revenue - O\&M + CCA Tax Shield)}}{\sum \text{PV of Capital Cost}} \text{ or } \text{PI} = \frac{\text{Benefits}}{\text{Cost}}$$

The OEB recognizes that the amount charged as a CIAC is project-specific and varies depending on the costs and revenues for each project. The OEB has established feasibility guidelines and a formula for calculating the CIAC. Utilities can only charge a CIAC as prescribed in *EBO 188*. Starting in 2021, the OEB approved an alternative, known as the Temporary Connection Surcharge (TCS), to CIAC which allows customers to contribute with a portion of their savings over time.

Benefits: The project revenues are based on an estimate of the monthly customer and delivery charges of the forecasted customers and are netted against ongoing incremental operating and maintenance costs of the project.

Costs: Direct capital costs for a project may include materials (pipe, couplings and meter sets), labour and equipment to install or construct the project and reclamation of the surface (such as road, sidewalk, landscaping).

Indirect costs for a project may include planning and design costs, gas distribution network capacity costs and administration costs attributable to customer growth such as inventory management.

5.1.4.2 Customer Connections Capital Expenditure Forecasting Methodology

Customer Connections capital expenditure requirements include the direct costs associated with the material and installation of mains, services and regulator stations. Meter installation costs are included as part of the direct capital cost within the Customer Connections budget; however, the cost of the metering equipment/instrumentation is accounted for in the Utilization asset class.

Generally, four components of capital investments are needed to support customer addition requirements:

- Material costs related to mains, services and meters. These costs can vary according to size and type of materials.
- Installation costs related to mains, services and meters. These costs can vary according to permits, fees, land rights and construction complexity (e.g., horizontal directional drilling, sensitive environments, geo-technical considerations, proximity to existing infrastructure).
- Costs related to measurement and regulation equipment required to support customer growth.
- Improvements to construction practices to support the long-term safety and reliability of assets.

The Customer Connections capital expenditure required to facilitate the connection of new gas customers includes:

- Attachments for residential subdivisions (New)
- Residential replacement, i.e., fuel conversions of existing homes (Conversion)
- Commercial buildings (New and Conversion)
- Multi-family/apartment (New and Conversion)
- Industrial facilities (New and Conversion)

5.1.4.2.1 METHODOLOGY

One of the key drivers of customer connections capital requirements is the historical spend profile in each area. Capital spend is not uniform across all areas, as some areas have inherently higher costs. Based on the historical spend in each area, combined with forecast customer additions and inflation, the 10-year capital expenditure forecast is determined. The capital requirement includes an allowance for some localized main extensions and operational considerations.

Other capital cost considerations:

- Type of customers requiring connection: Each customer class has different infrastructure requirements.
- Type of connection (greenfield vs. urban infill/growth): Greenfield expansions are less expensive.
- Joint Utility Trenches (JUT) in greenfield areas save costs and are safer because there is a single excavation.
- Time of year: Construction costs in winter months are generally higher and carry winter premium costs.
- Environmental: System growth in conservation areas or green spaces have incremental costs.
- Long-term contracts with construction partners can provide cost savings.

5.1.4.3 Customer Connections Forecast

The customer growth forecast is a projection of how many new customers will be attached to the distribution system over the next 10 years. Development of this forecast considers attachments, additions and conversions including detailed information originating from direct contact with builders, developers and municipalities. There are important data considerations using this approach. For instance, a primary data source used in predicting growth is historical housing starts from Canadian Mortgage and Housing Corporation. For growth projections particularly in the apartment sector, housing starts are much higher than the customer additions in the sector. Based on known applications and development projects, a consolidation of forecasts and known projects are used to determine the final customer growth forecast.

Figure 5.1-2 and **Figure 5.1-3** show the customer 2022 Long Range Plan (LRP) growth forecast for including energy transition (ET) assumptions for EGD and Union rate zones respectively (for detail on ET assumptions, refer to Exhibit 1, Tab 10, Schedule 4). The 2023-2032 customer connections capital expenditure (see **Table 5.1.10**) was informed by the 2022 LRP forecast (without ET assumptions), this was the most current forecast available at the time of optimization. When the 2022 LRP including ET forecast was produced, EGI compared it to the 2022 LRP forecast without ET assumptions. The comparison showed that the ET assumptions reduced the capital expenditure forecast by ~\$60k in 2024 and by ~\$44M over the 2024-2028 rebasing period. EGI did not revise the AMP’s capital expenditures to reflect the forecast with ET assumptions as the impact was minimal over the rebasing period and there was insufficient time for rework.

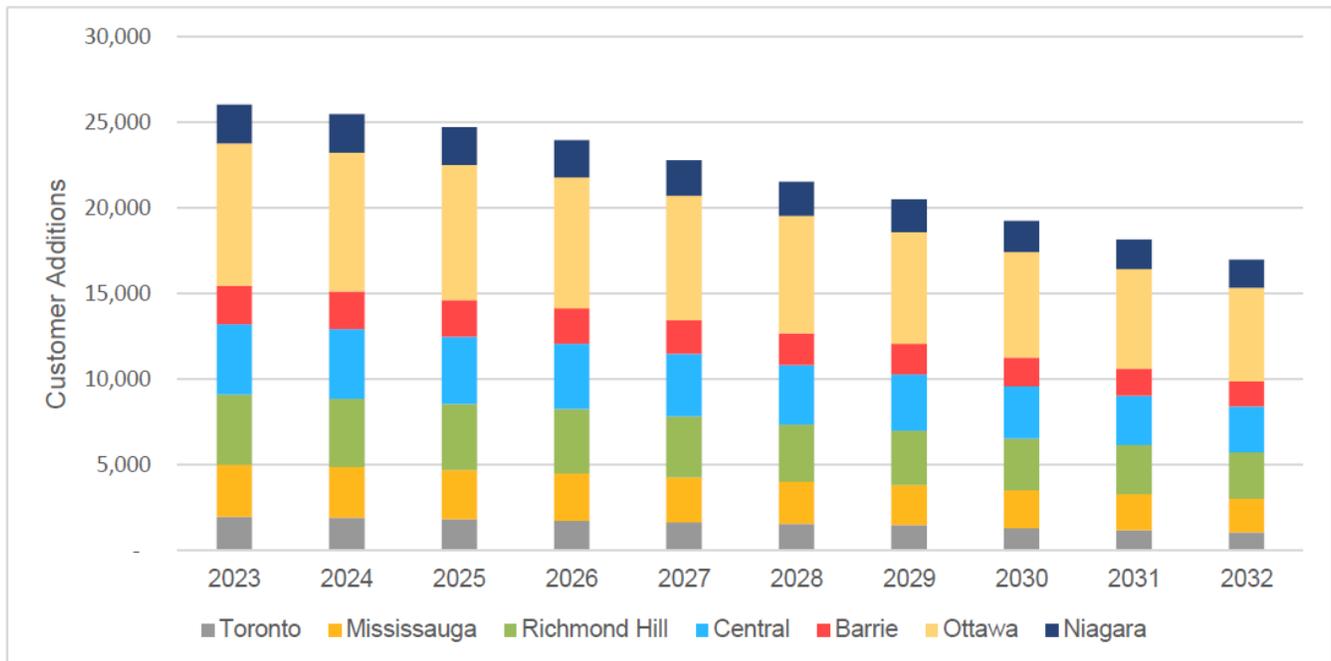


Figure 5.1-2: 10-Year Customer Growth Forecast - EGD Rate Zone⁴

⁴ Based on 2022 LRP with Energy Transition Assumptions

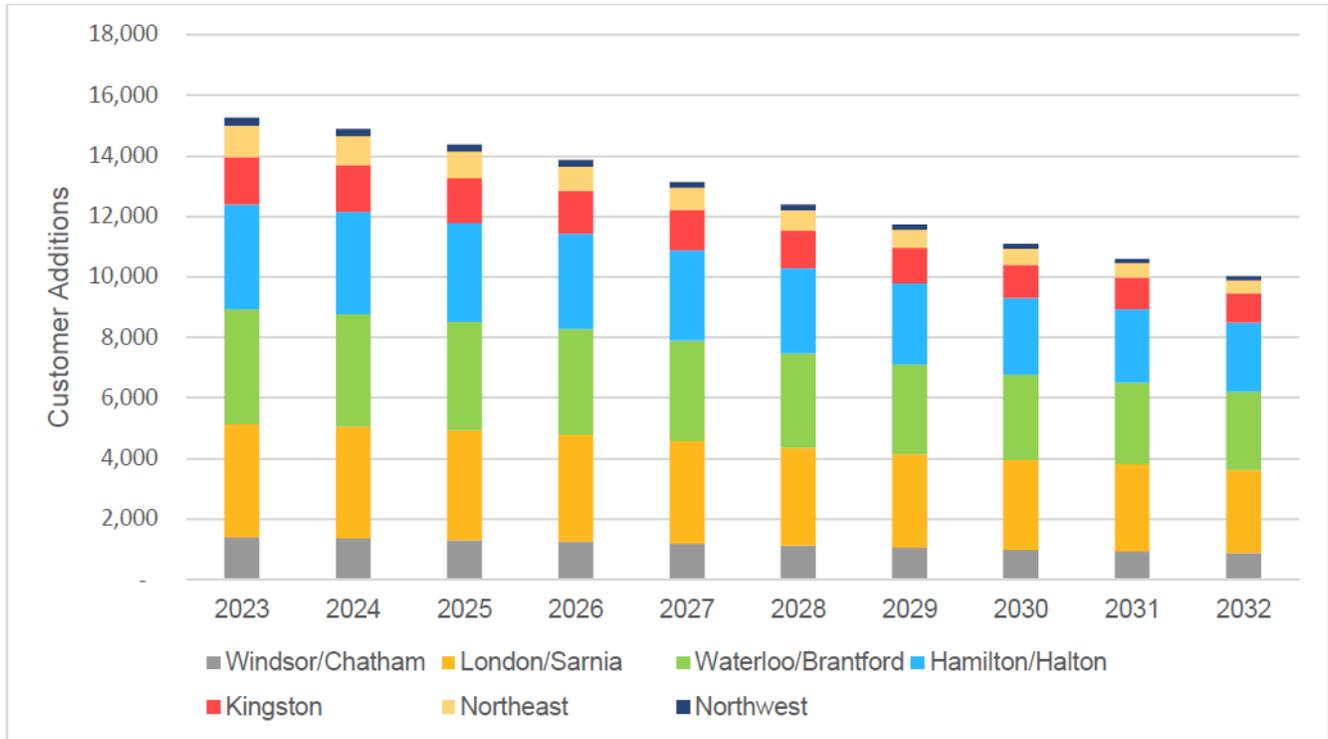


Figure 5.1-3: 10-Year Customer Growth Forecast - Union Rate Zones⁵

Over the 10-year forecast, the number of customer connections decline when factoring in energy transition. Customer additions, connections and growth are projected to remain flat in the short term and slightly decline thereafter.

- Due to the increasing scarcity of land supply and the associated increase in housing prices in EGI’s franchise areas, particularly in the Greater Toronto Area (GTA), non-apartment housing starts in the area have seen a decline.
- Urban density in EGI’s franchise areas is reflected in the fact that apartments have been accounting for a larger share of total housing starts. Given that one building counts as a single customer because of the use of bulk meters, lower customer additions do not reflect lower loads served, but simply a shift in the makeup of the sectoral source of growth.

⁵ Based on 2022 LRP with Energy Transition Assumptions

Based on the methodology described in **Section 5.1.4.2.1**, **Figure 5.1-4** and **Figure 5.1-5** represent the forecast number of customer additions over 10 years by sector.

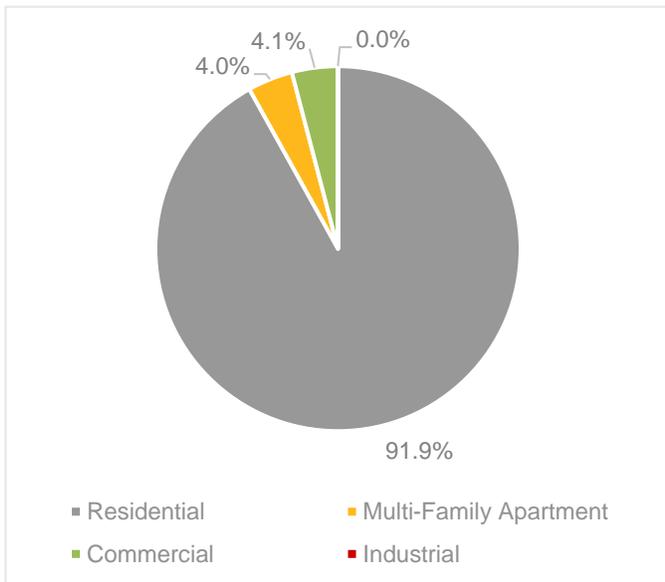


Figure 5.1-4: Growth Forecast by Customer Type – EGD Rate Zone (Includes Energy Transition Forecasting)

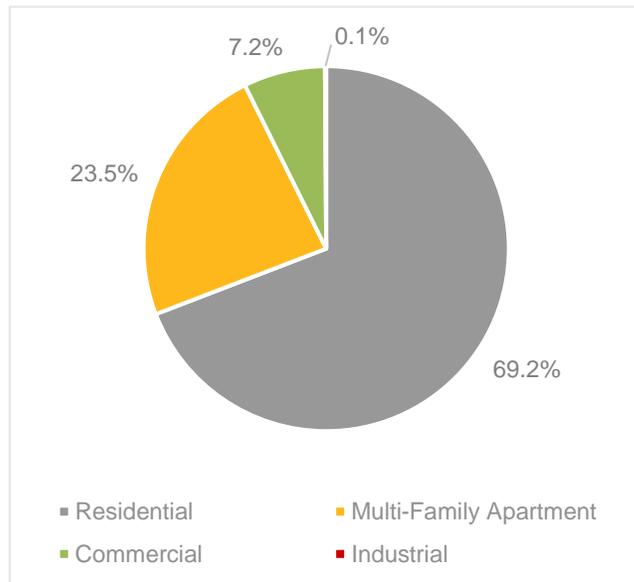


Figure 5.1-5: Growth Forecast by Customer Type – Union Rate Zones (Includes Energy Transition Forecasting)

The customer additions by sector reflect continued residential growth over the forecast period in both the residential subdivision and residential replacement (conversion) markets. Over the 10-year forecast, the pace of growth declines when factoring in energy transition.

5.1.5 Distribution System Reinforcement

Distribution System reinforcements refer to asset investments required to maintain minimum system pressures, so that demand for gas can be met on design day conditions. These investments must meet the requirements of *EBO 188* (see **Section 5.1.4.1**) or *EBO 134* as applicable. Details on the process for identifying and planning these investments are in **Section 5.1.5.1**. In accordance with the IRP Framework (EB-2020-0091), the IRP assessment process is used to evaluate the preferred facility solution compared to IRPAs to meet the specific system needs (see **Appendix B – IRP**).

Distribution System reinforcement projects involve the installation of new infrastructure or modification of existing gas distribution assets to maintain minimum required system pressures, maintain distribution capacity and meet growing natural gas demands. These projects are primarily driven by increased customer demand, customer growth, identification of system low pressure points, capacity constraints and other system reliability considerations.

This strategy fosters long-term system reliability and the ability to serve existing and forecast customers during peak design conditions. Failure to implement reinforcement projects in a timely manner could potentially lead to an inability to support future customer growth and the potential loss of existing customers during peak demand periods.

As part of the forecasting process, EGI establishes reinforcement needs and timing for all operating regions, ensuring the system meets anticipated peak hourly demand. Load additions to the system are modelled based on the Peak Day Peak Hour Methodology described in Exhibit 4, Tab 2, Schedule 3.

5.1.5.1 Distribution System Forecasting Methodology

EGI completes an annual simulation and verification of hydraulic models using pressure and flow measurement on the system during peak conditions experienced in that year. This provides a reliable, and repeatable process for estimating general demand on the distribution system. For many large volume customers, hourly data is available, and these loads are included within the analysis.

For long-range system planning, EGI uses operational input, economic factors and energy transition assumptions (Exhibit 1, Tab 10, Schedule 4), as well as data from builders, developers, municipalities. Together, this information will establish the future loads on the system, including the resultant need, timing, location and scope for distribution system reinforcement. EGI utilizes the IRP assessment process to screen the identified needs; and for those that pass the binary screening, a technical and economic evaluation of IRPAs is completed (see **Appendix B – IRP**). This leads to the creation of a reinforcement plan to sustain the 10-year customer growth forecast.

5.1.5.2 Risk and Opportunity

Distribution system reinforcement projects identify areas of the distribution network where there is risk of not having the required capacity to meet the peak hour demands of EGI's customers or operating below minimum required pressures for safe and reliable operations. This provides EGI the opportunity to develop and manage projects that will provide service to new customers while ensuring continued reliable service to existing customers and efficiencies in operation. This aligns with the 2024 Rate Rebasing Customer Engagement results which indicate customers are supportive of investing to maintain current levels of safety and reliability.

Reinforcement projects, which include projects being developed for security of supply and system reinforcement, are governed by the *EBO 188* report. A key principle of *EBO 188* is that existing customers should not have their rates unduly impacted by the costs of connecting new customers. **Section 5.1.4.1** provides further details on *EBO 188* guidelines for feasibility purposes.

To meet *EBO 188* requirements, a preliminary feasibility analysis is conducted using cost estimates, customer addition forecasts and discounted cash flow assumptions. This analysis determines the aggregate cost-benefit ratio for all reinforcement projects that are proposed as part of the System Reinforcement Plan (SRP). Overall, the projects proposed in this plan are in the acceptable feasibility range for inclusion in this Asset Management Plan.

In addition to *EBO 188*, EGI uses the IRP assessment process to complete a binary screening of reinforcement projects, and for those that pass binary screening, a technical and economic evaluation of IRPAs is completed (see **Appendix B - IRP**).

5.1.6 Community Expansion

Community Expansion projects involve the installation of gas distribution assets to serve communities that have not previously had access to natural gas and that were not previously feasible without funding support. These projects are driven by municipal and/or community interest and supported by an OEB-approved funding mechanism of a SES from all connected customers as well as government-approved ratepayer supported funding under *Bill 32: Access to Natural Gas Act, 2018*. Community expansion projects range in size, customer capture, and geography to extend the gas network within an existing served municipality or into an entirely new community. The Community Expansion Program expenditures do not meet current *EBO 188* economic feasibility guidelines without a rate rider. Because the projects are contingent on funding support to make them feasible, acquisition of new projects into the program is dictated by government allocation of funding to support expansion which has been released in phases under the current *Bill 32*. The Community Expansion Program expenditures do not pass the IRP Framework's binary screening and, therefore, do not require a technical or economic evaluations of IRPAs.

In addition to government-approved funding, an ES is also applied to every customer attaching to the new network to be paid over a maximum term of 40-years. The OEB issued a decision November 2020 approving a harmonized ES between Union and EGD stipulating project parameters including a 10-year rate stability period for forecasted attachments and an ES term of up to 40-years (see EB-2020-0094).

Bill 32 Background

EGI has several community expansion projects completed or underway, made possible through Phase 1 of the Natural Gas Support Program, which was announced in March 2019 with allocated funding of approximately \$56M. These projects included bringing natural gas to the communities of Chippewas of the Thames First Nation, North Bay-Northshore and Peninsula Roads, Saugeen First Nation, and Scugog Island, with two projects still in consultation including Cornwall Island and Hiawatha First Nation. EGI has also brought natural gas to Fenelon Falls and Moraviantown First Nation, made possible with funding provided by the Government of Ontario's previous Natural Gas Grant Program.

In December 2019, the Government of Ontario announced it is continuing to expand access to safe, reliable, and affordable natural gas to rural, northern and Indigenous communities. The Government of Ontario requested that interested parties submit proposals on potential community expansion projects. The OEB evaluated the proposals and submitted its report to the Ministry of Northern Development and Mines (MENDM) by October 31, 2020. The MENDM reviewed the OEB's report and used it as an input to make project selections.

In June 2021, the Government of Ontario announced funding for community expansion and economic development projects under Phase 2 of the Natural Gas Expansion Program. EGI was awarded ~\$214M to support 27 Phase 2 NGEF projects. With

a total estimated capital of ~\$335M, EGI’s net capital investment is ~\$121M (these metrics include 2 economic development projects). The approved projects for community expansion Phase 2 have a mandated requirement for execution start (shovels in the ground) by 2025 at the latest. See **Figure 5.1-6** for the approved project locations.

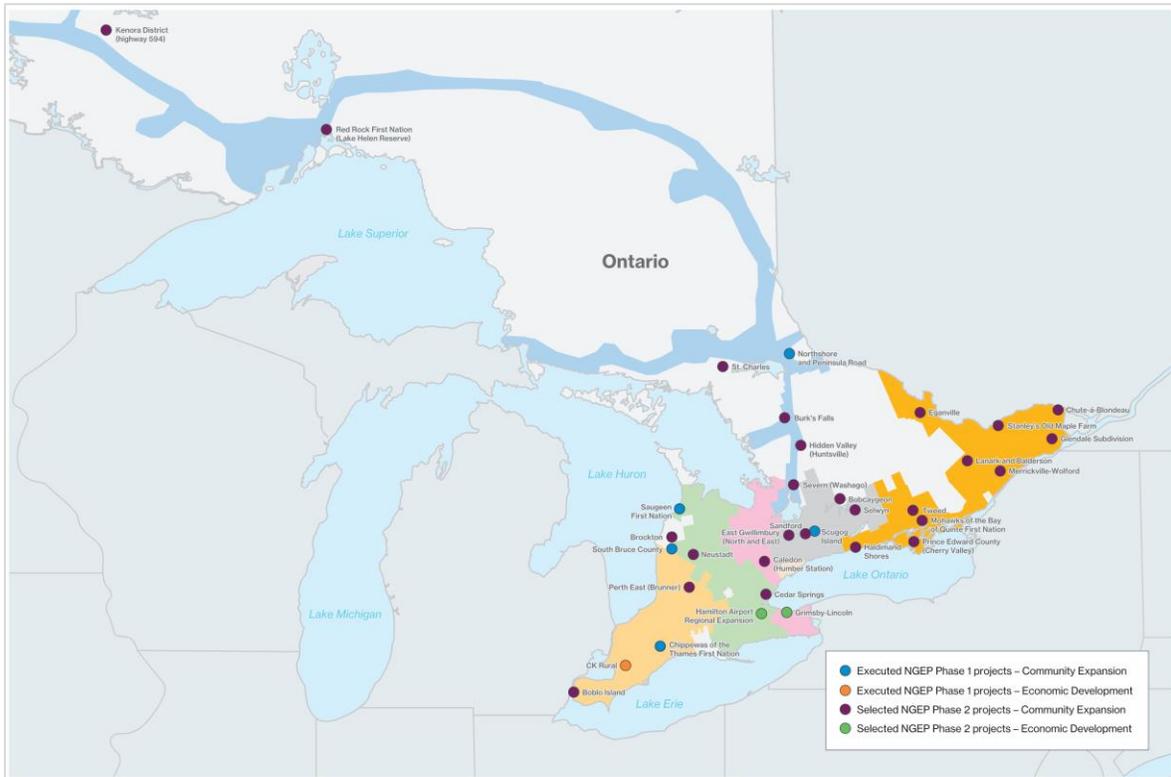


Figure 5.1-6: Approved Community Expansion Project Locations – Phase 1 and 2 Approved Projects (including Community Expansion and Economic Development)

5.1.6.1 Risk and Opportunities

Community expansion is a key business activity that helps grow and sustain EGI’s core business and provides economic benefits to those served. As a result, there are a number of risks EGI would experience if community expansion activities are not pursued, including the potential loss of investment opportunities, potential franchise bypass, and the potential negative impact to EGI’s brand and reputation.

Executing the program offers many opportunities including delivering on the commitment to the Government of Ontario and expanding EGI’s asset footprint, promoting natural gas as an alternative energy source for rural, northern and Indigenous communities, enhancing relationships with local communities and government, and ensuring EGI maintains a competitive approach to acquiring new business, maintaining the EGI franchise area.

The Community Expansion Program offers continued opportunity through potential future phases of the government program. Application opportunities for project funding are dictated by the government under *Bill 32: Access to Natural Gas Act, 2018* and are released in phases with a maximum funding potential. EGI will continue assessing and pursuing opportunities to provide gas distribution service to under-served communities. The process will require submissions to the OEB for approval of funding awarded by the MENDM as well as the subsequent submissions of Leave to Construct (LTC) applications to the OEB for the awarded projects, as applicable. With changing government, future phases of this program may evolve over time and or be revoked which is a risk that could arise for the longevity of the program.

5.1.7 Transmission System Reinforcement

In addition to distribution system reinforcements, transmission reinforcements are required to support system-wide distribution growth, contract customer growth and, depending on market conditions, ex-franchise transportation growth (specifically in

Ontario, Quebec, the Maritimes and major U.S. natural gas consuming areas). The identification of the need for a capital expenditure can either be to satisfy a growth requirement or to optimize system performance of an existing asset. In either case, the process to install a new asset is the same. Capital costs related to transmission system reinforcements are included in the expenditure summary for the Transmission Pipe and Underground Storage asset class (see **Section 5.3.6**).

5.1.7.1 Transmission System Forecasting Methodology

EGL's transmission systems move natural gas from receipt points to delivery locations along the pipeline to meet the volumetric demands and pressure requirements of EGL's in-franchise and ex-franchise customers. The pipeline system forms the foundation for future development and provides supply capacity into many of the EGL distribution systems.

EGL will periodically conduct new or existing capacity open seasons to gauge market demand for transportation services. In addition, EGL conducts reverse open seasons to ensure that the existing assets are maximized before contemplating new growth expansion. Transmission systems are designed to meet capacity on a design day demand to ensure all firm customer demand can be reliably served on the design day. Metered data is gathered and analyzed each year to calculate demand assumptions used for system design.

To identify purpose, need and timing of transmission system reinforcements, EGL annually completes a design day demand forecast that is used to identify short- and long-range plans through model simulation. In addition, EGL uses the IRP assessment process to binary screen the identified needs; and for those that pass the binary screening, a technical and economic evaluation of IRPAs is completed (see **Appendix B – IRP**).

5.1.7.2 Transmission System Forecast

Shippers continue to want access to the Dawn Hub and with potential further reductions in North American coal consumption, the flow of natural gas on the Canadian and U.S. pipeline grid is changing and continuing to evolve.

The Dawn Hub attracts a diversified supply mix from most major natural gas producing regions including the Western Canadian Sedimentary Basin (WCSB) and Marcellus and Utica basins as Dawn remains one of the most active natural gas trading hubs in North America. Dawn storage continues to provide security of supply and price stability for Ontario including during times of supply constraint.

EGL determines the need, timing, location and scope for system reinforcement. Transmission system reinforcements required for in-franchise customers typically have a long planning lead time while reinforcement for ex-franchise customers can have a shorter lead time as they are driven by different factors.

No storage growth is forecast for the regulated asset base at this time. Based on the most recent demand forecast, EGL is forecasting the need for incremental capacity requirements on the Dawn Parkway system by November 1, 2026. As stated above, EGL will confirm Dawn Parkway system demand approaching the forecast time of need by completing an open season and a reverse open season for capacity turnback. As part of the planning process, EGL will evaluate facility and non-facility alternatives to determine the most reliable and cost-effective way to deliver firm supply to meet customer demand.

EGL anticipates further growth on the Panhandle Transmission system supporting new demand from the greenhouse sector based on the latest expression of interest completed in 2021.

5.1.7.3 Risk and Opportunity

The risks identified for transmission reinforcements are operational and financial risks. While the probability of occurrence is low for the aforementioned risks, the impact, given the criticality of transmission assets to both in- and ex-franchise customers, is very high. The opportunities identified include the ability to provide gas service to meet the needs of new customers while ensuring the continued reliable service to existing customers, and the delivery of a low-cost energy source and efficiencies in operation.

Two key aspects to mitigate risk are transmission system reinforcements (as required by demand) and transmission system maintenance (covered in **Section 5.2.3.3**). If reinforcements are not completed as required, there is a risk of supply shortfalls (both in- and ex-franchise) on design day. A lack of supply can lead to operational and safety risks as downstream distribution systems may experience pressures below minimum to sustain operations; and there could be a loss of supply to customers. As well, if interconnects are shorted, supply to other natural gas franchises can incur customer losses. The financial risks identified are litigation if contract or service commitments are not met and potential lost revenues.

5.1.8 Hydrogen Blending

Enbridge intends to adapt to the energy transition over time to achieve net zero scope 1 and 2 emissions by 2050 and reduce the emissions intensity of EGI's operations 35% by 2030 (2018 baseline) while continuing to provide the energy people need. Through hydrogen feasibility studies and pilot projects, EGI continues to mature and apply learnings to ensure operations can be safely adapted to a hydrogen-based economy while simultaneously meeting both EGI's goal of net-zero emissions and realizing the commitments Canada has made to reduce Greenhouse Gas (GHG) emissions. Many effective energy transition initiatives will be required to meet EGI's future emission goals and hydrogen is a key initiative towards this goal. Exhibit 4, Tab 2, Schedule 6 provides detail on EGI's Hydrogen Strategy.

EGI is a North American leader in hydrogen with the launch of EGI's hydrogen blending facility in Markham, Ontario. This pilot project blends hydrogen into the natural gas grid and services about 3,600 homes. The emissions offset from this small pilot is a reduction of up to 119 tons of CO₂e per year or the equivalent of removing 25 cars from the road. This project is one of the many strategies that EGI has executed to facilitate Ontario's transition towards a net-zero future.

EGI has categorized the hydrogen strategy and its associated investments within the growth asset class. In addition, proposed hydrogen facilities are expected to be long term assets and should be treated in alignment with other gas distribution system assets.

5.1.8.1 Risk and Opportunity

There are several factors that support hydrogen as a clean energy solution. First, by converting operations to hydrogen, EGI can meet heating requirements with a carbon neutral supply, this supports both the province's and customers' GHG reduction goals. EGI's 2024 Rate Rebasing Customer Engagement results indicate that the majority of residential and business customers are in favour of EGI's plans for hydrogen gas. In addition, blending hydrogen directly into the existing natural gas network makes use of existing assets in which significant investments and expertise have been created over the past century of safe and reliable operations. Leveraging the existing infrastructure is a practical and fiscally responsible approach to reducing GHG emissions.

Government and regulatory agencies around the world including Canada are working to harmonize codes and standards for hydrogen use as an energy source. There is a great opportunity for hydrogen to become one of the key factors in reducing carbon emissions and delivering a cleaner energy. Delays in government policy to harmonize codes and standards in various jurisdictions could pose a risk to rolling out a hydrogen solution.

The use of hydrogen as a fuel source compared to natural gas is not yet an economical alternative. Additional hydrogen production scale will be required before the cost of hydrogen is competitive. As EGI expands the scope of hydrogen blending, additional renewable or low-carbon hydrogen production facilities and injection sites will be needed at a cost that is competitive for rate payers.

5.1.9 Growth and Hydrogen Strategy Outcomes

The strategies for growth and hydrogen include:

5.1.9.1 Customer Additions under EBO 188

The strategy for Customer Connections is to continue to ensure that required infrastructure is installed for the addition of all forecast customers that are feasible under *EBO 188* guidelines, in accordance with the IRP Framework, while following current forecasting practices. EGI continues to monitor and update the customer additions forecast through the annual long-range planning process, which, continues to evaluate the scope of its low-carbon strategy and the impact of energy transition on customer growth forecasts.

5.1.9.2 Distribution System Reinforcement under EBO 188

The strategy for the Distribution System Reinforcements is to continue to ensure that required infrastructure is installed to enable the addition of all forecasted customers feasible under *EBO 188* guidelines, in accordance with the IRP Framework, while following current forecasting practices. The IRP assessment process is used to evaluate whether there is an economically and technically feasible IRPA that can meet the identified system needs (see **Appendix B – IRP**).

Major distribution reinforcement projects reflected in the forecast include:

Ottawa Reinforcement Phase 2 (previously Rideau Reinforcement)

This project will reinforce an extra-high pressure pipeline network servicing approximately 190,000 customers in the Ottawa Valley and reduce volumes required from TC Energy’s pressure-reduced Ottawa lateral. The project involves approximately 7 km of NPS 12 pipe extending from Greenbank Road and West Hunt Club Road to Princess of Wales Drive and West Hunt Club Road. See **Appendix A, Pg. 22** for additional detail on this investment.

East Kingston Creekford Road Reinforcement

The Kingston system is nearing capacity; flows and growth are sustainable until winter 2022/2023 (CNG will be installed for winter operations as required until project completion). Failure to implement this project could result in an inability to add customers to this system and maintain adequate system pressures beyond 2024. See **Appendix A, Pg. 24** for additional detail on this investment.

Hamilton Industrial Reinforcement

This reinforcement project supports changes to industrial demand in the area. See **Appendix A, Pg. 23** for additional detail on this investment.

North Parry Sound Seguin Trail Reinforcement

This reinforcement project supports the growth of the Parry Sound system. Failure to implement this project could result in an inability to add customers to this system and maintain adequate system pressures beyond 2032. See **Appendix A, Pg. 25** for additional detail on this investment.

Southeast Owen Sound County Road 40 Reinforcement

System reinforcement is required to support the growth on the Owen Sound system north of St. Jacobs in 2025. See **Appendix A, Pg. 26** for additional detail on this investment.

Wheatley 1B Panhandle Distribution Reinforcement - Wheatley Lateral Replacement and Reinforcement

Greenhouse growth in the Windsor area continues. The Panhandle distribution network requires reinforcement to allow for the continued industrial customer expansion. The Panhandle Transmission System Reinforcement (see **Section 5.1.9.4**) is also required to meet the demand of the region. Wheatley-1B is a distribution system looping project which requires a new station at Wheatley Rd. and Goodreau Line to include 5,300 m of NPS 8 and 10,800 m of NPS 8. See **Appendix A, Pg. 27** for additional detail on this investment.

5.1.9.3 Community Expansion

The strategy for Community Expansion is to execute the required infrastructure on all projects that were awarded funding under *Bill 32*. All Phase 2 projects must begin execution before the end of 2025 which has been built into the long-range plan. **Table 5.1.9-1** identifies the large Community Expansion projects reflected in the forecast. Capital expenditure associated with Community Expansion projects is not included in the AMP’s capital expenditure (see Phase 2 of the Natural Gas Expansion Program (ERO 019-3191)).

Table 5.1.9-1: Major Community Expansion Projects

EGI Community Expansion Projects	Operations Region	Rate Zone(s)	Pipe Length (km)	Pipe Diameter	Forecast (NET BASE CAPEX)
Bobcaygeon	GTA East	EGD	77.5	1.25 to 6 PE & ST, NPS 6 ST, NPS 8 ST (9.5 km)	\$47.5M
Eganville	Eastern	EGD	59.4	4 ST (1.2 km), 8 PE, 6 PE, 4 PE, 2 PE	\$10.6M
Washago	Northern	Union	51	6 PE, 4 PE, 2 PE	\$9.7M
Lanark and Balderson	Eastern	EGD	36	6 PE, 4 PE, 2 PE	\$6.5M
North and East (East Gwillimbury)	GTA East	EGD	30.2	2 PE, 4 PE	\$7.2M

5.1.9.4 Transmission System Reinforcement System Growth under EBO 134

The strategy for the Transmission System Reinforcements is to continue to ensure that required infrastructure is installed to enable the addition of all forecasted customers and distribution growth feasible under *EBO 134* guidelines, while following current forecasting practices. The IRP assessment process is used to evaluate whether there is an economically and technically feasible IRPA that can meet the identified system needs (see **Appendix B – IRP**). Due to the Copperleaf classification, the capital expenditure related to Transmission System Growth Investments is captured under the Transmission Pipe and Underground Storage capital expenditure summary (see **Section 5.3.6.4**).

The following major transmission reinforcement projects are reflected in the forecast:

Dawn to Parkway - Kirkwall to Hamilton Expansion

The Dawn Parkway - Kirkwall to Hamilton Expansion is required to provide reliable, secure, economic natural gas capacity to meet the growing design day demand of the Dawn Parkway Transmission system which serves both in- and ex-franchise markets. The Kirkwall-Hamilton Expansion Project consists of 10.2 km of NPS 48 pipeline from the Kirkwall Valve Site to the Hamilton Valve Site. The project is estimated to provide 72.4 TJ/d of incremental capacity to the Dawn Parkway Transmission System and is required to be in service in 2026. See **Appendix A, Pg. 58** for additional detail on this investment.

Dawn Parkway Expansion Project - Dawn-Enniskillen

Based on the current demand forecast, EGI has determined that the next Dawn Parkway System facilities will need to be in place as early as the 2029 to 2030 winter season (construction beginning in 2029). These facilities are incremental to the Kirkwall to Hamilton Expansion and timing is dependent on the Dawn Parkway System demands. See **Appendix A, Pg. 57** for additional detail on this investment.

Panhandle Transmission System Reinforcement

In response to increasing natural gas demand growth in the areas served by EGI's Panhandle Transmission System ("Panhandle System"), EGI is proposing to construct the following facilities, collectively referred to as the Panhandle Regional Expansion Project. See **Appendix A, Pg. 60** for additional detail on this investment.

Panhandle Regional Expansion Project - Leamington Interconnect

Approximately 12 km of NPS 16 natural gas pipeline with a MOP of 6,040 kPa will be installed in the Municipality of Lakeshore, the Town of Kingsville, and the Municipality of Leamington with a 2024 in-service date. See **Appendix A, Pg. 62** for additional detail on this investment.

Panhandle Regional Expansion Project - NPS 36 looping to Comber Transmission

Panhandle System expansion is driven by in-franchise growth in Chatham-Kent, Windsor-Essex and surrounding areas, including the fast-growing greenhouse market in the Leamington/Kingsville area. Based on the current forecast for in-franchise general service and contract growth in the Panhandle Transmission System market, EGI has determined that the next Panhandle facilities for expansion will need to be in place as early as the 2028 winter season. These facilities are incremental to the Panhandle Regional Expansion Project and timing is dependent on the Panhandle System demands. See **Appendix A, Pg. 64** for additional detail on this investment.

5.1.9.5 Hydrogen Strategy

EGI plans to apply learnings from its Hydrogen Blending pilot projects and its hydrogen blending facility in Markham to allow it to further Canadian leadership on hydrogen development and a low-carbon future. EGI continues to collaborate with governments and partners to advance innovative energy solutions to keep energy reliable and affordable while reducing environmental impact.

EGI continues to evaluate the extent that hydrogen can be used in the distribution system and company assets, the following projects and feasibility studies are planned for 2023 to 2032:

- **Hydrogen Blending Phase 2:** Phase 2 of the Markham Hydrogen Blending pilot project includes adding an additional 12,400 customers (approximate).
- **Hydrogen Studies:** As hydrogen technology is relatively new within the natural gas distribution industry, these studies are required to allow EGI to identify and prioritize the sections of the gas grid and equipment most suitable for hydrogen blending and to evaluate any required upgrades. See **Appendix A, Pg. 28** for additional detail.

5.1.10 Growth Capital Expenditure Summary

In the Growth asset class, proposed spending is organized programmatically by sector (residential, commercial and industrial) for the Customer Connections asset subclass. The total average capital spend is forecast to be \$295M (EGI) as summarized in **Table 5.1.10-1**. Growth capital is further summarized as part of EGI's total 10-year capital plan in **Section 6**. See **Appendix B – IRP** for the status of the outcomes of the IRP assessment process, including the binary screen and the status evaluation of IRPAs.

Note: The Community Expansion investments are not included in the capital summaries of this AMP. Capital costs related to transmission system reinforcements are included in the expenditure summary for the Transmission Pipe and Underground Storage asset class (see **Section 5.3.6.4**).

Table 5.1.10-1: Growth Capital Summary (\$ Millions) - EGI⁶

Asset Class Strategy/Investment Name	Asset Program	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Forecast
Customer Additions under EBO 188⁷	Customer Connections	220.4M	249.2M	249.2M	250.3M	260.6M	250.1M	242.8M	246.7M	240.2M	229.6M	2439.0M
Hydrogen Strategy	Hydrogen Blending	2.1M	3.8M	5.2M	2.0M	-	-	-	-	-	-	13.0M
Enbridge Gas Distribution System Hydrogen Feasibility Study		-	5.1M	5.2M	5.2M	-	-	-	-	-	-	15.5M
Distribution System Reinforcement under EBO 188	System Reinforcement	44.5M	41.9M	14.9M	27.1M	8.3M	10.3M	3.4M	10.9M	13.9M	9.2M	184.5M
Rideau Reinforcement		-	-	-	-	-	-	-	0.4M	7.5M	63.7M	71.6M
Hamilton Industrial Reinforcement		2.5M	10.3M	113.6M	6.5M	-	-	-	-	-	-	132.9M
East Kingston Creekford Road Reinforcement		4.6M	24.1M	-	-	-	-	-	-	-	-	28.7M
North Parry Sound Seguin Trail Reinforcement		-	-	-	-	-	-	-	-	-	23.8M	23.8M
Southeast Owen Sound County Rd 40 Reinforcement		-	-	34.1M	-	-	-	-	-	-	-	-

⁶ Includes overhead allocation

⁷ The 10-Year Forecast for Customer Connections was informed by the 2022 LRP

Asset Class Strategy/Investment Name	Asset Program	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Forecast
Wheatley 1B Panhandle Distribution Reinforcement - Wheatley Lateral Replacement and Reinforcement		1.2M	19.9M	-	-	-	-	-	-	-	-	21.1M
Total		275.3M	354.3M	422.1M	291.1M	268.9M	260.4M	246.2M	258.0M	261.6M	326.3M	2964.2M

5.2 Distribution Operations

EGI’s distribution operations provide safe, affordable, reliable energy to about 3.8 million homes, businesses and industries and serves about 75% of Ontario residents. The distribution operations asset classes consist of a network of natural gas assets that take gas from the higher-pressure transmission system and distribute it to residential, commercial and industrial customers. This is achieved through a series of pipelines of various operating pressures, regulation stations that safely manage the pressure of the gas and delivery points where the gas is measured. In some cases, distribution systems are somewhat isolated, serving one or more communities from a single feed from a transmission system.

EGI’s distribution assets are categorized in the following asset classes:

- Distribution Pipe
- Distribution Stations
- Utilization

Distribution Stations are facilities and assets whose primary purpose is to reduce pressure from a system operating at higher pressure to a system operating at lower pressure and to provide overpressure protection to the lower-pressure system. Distribution Stations include all natural gas entry points into the EGI distribution network, control points throughout the network and delivery points to end-use customers. Depending on the facility, additional purposes may include gas metering, odourization and monitoring.

Once regulated to distribution pressures, natural gas is transported through the Distribution Pipe network. Distribution Pipe includes pipe, valves, all pipe appurtenances, services and risers installed up to Utilization assets.

Utilization assets are the components of the distribution system that regulate system pressure, ensure low pressure delivery to the customer and measure gas consumption, these assets support the delivery of gas primarily to customers consuming volumes less than 17.0 m³/h at a typical pressure of 7” wc, Utilization assets typically begin at the service shut-off valve.

Figure 5.2-1 shows EGI’s distribution operations system service maps.

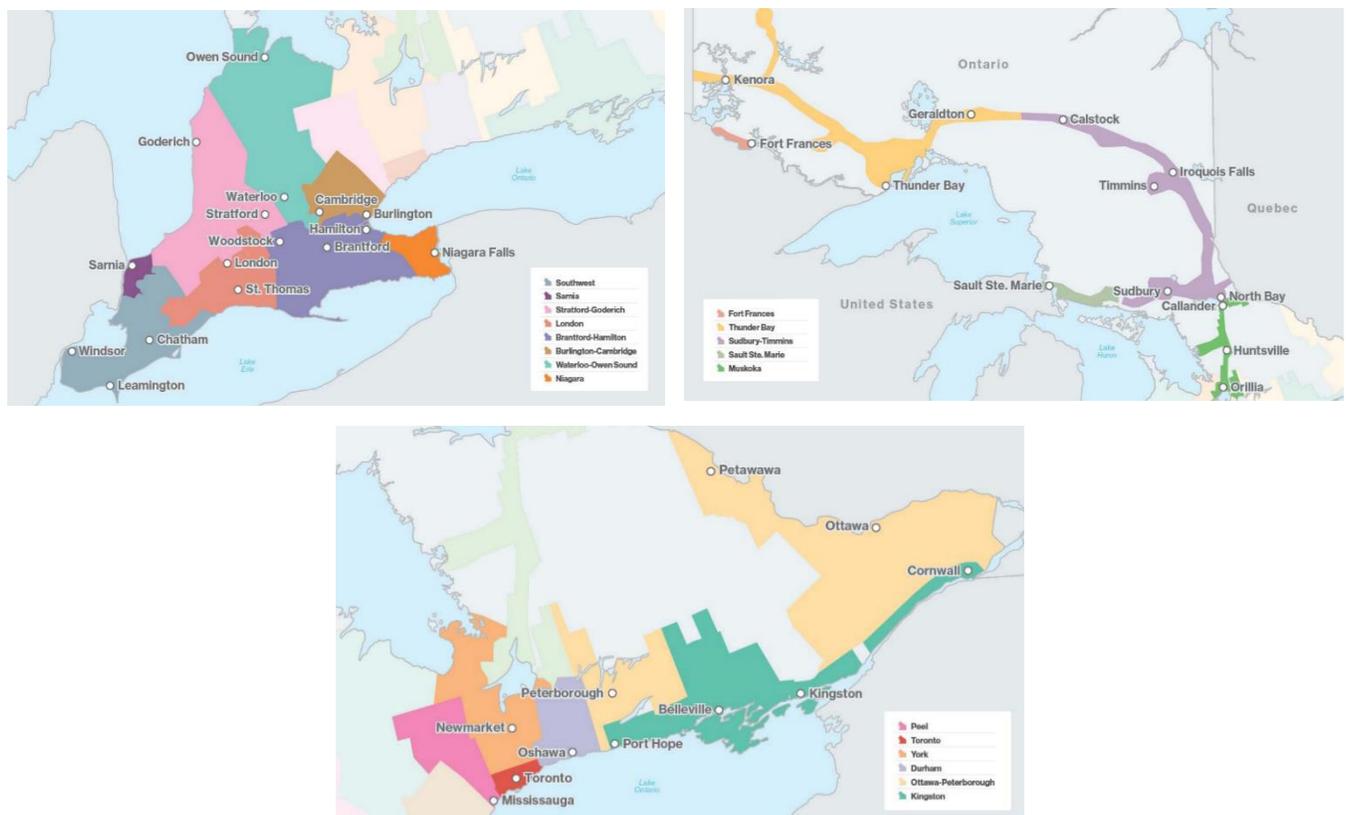


Figure 5.2-1: Distribution Operations System Service Maps

5.2.1 Distribution Operations Objectives

The objectives of Distribution Operations are shown in **Table 5.2.1-1**.

Table 5.2.1-1: Distribution Operations Objectives

Applicable Asset Class	Asset Class Objective	Description
Distribution Pipe Distribution Stations Utilization	System Integrity and Reliability	Maintain the natural gas system to meet or exceed codes, standards and requirements of applicable governmental authorities for safety and operational effectiveness.
		Ensure the safe and reliable delivery of natural gas to end users.
		Continuously evolve the understanding of condition and risk associated with pipe assets.
		Use risk, cost and performance information to drive asset-related decisions.
Distribution Pipe Distribution Stations	Integrated Resource Planning	Screen projects using EGI's IRP Assessment Process; for those that pass, determine if there are IRPAs that are economically and technically feasible.
Distribution Pipe	Relocations	Relocate pipe assets to reduce or mitigate the impact of planned third-party work to ensure the safe and reliable operation of the distribution system.
		Recover costs allowed by municipal franchises and other agreements for relocations initiated by third parties.

5.2.1.1 Performance Measures

The performance measures for the Distribution Operations asset classes are shown in **Table 5.2.1-2**.

Table 5.2.1-2: Distribution Operations Performance Measures

Asset Class	Performance Measure
Distribution Pipe	<ul style="list-style-type: none"> Percentage of leaks reported by leak survey (vs. leaks reported by the public) Leaks per 1,000 km Number of immediate digs per 100 km Number of scheduled digs per 100 km Bare and unprotected steel systems (km) Steel Mains (Pre- and including 1970) pipeline systems (km)
Distribution Stations	<ul style="list-style-type: none"> Composite Compliance – Delivery to Plan Stations Inspections Work Orders Percentage Complete
Utilization	<ul style="list-style-type: none"> Completion of Government Inspection Meter Exchange (MXGI) Program Number of aboveground leaks Number of non-program failures and explanations

To achieve the asset class objectives listed in **Table 5.2.1-1**, asset investment decisions are governed by the life-cycle management strategies outlined in **Table 4.1-1**.

5.2.2 Distribution Operations Asset Class Hierarchy

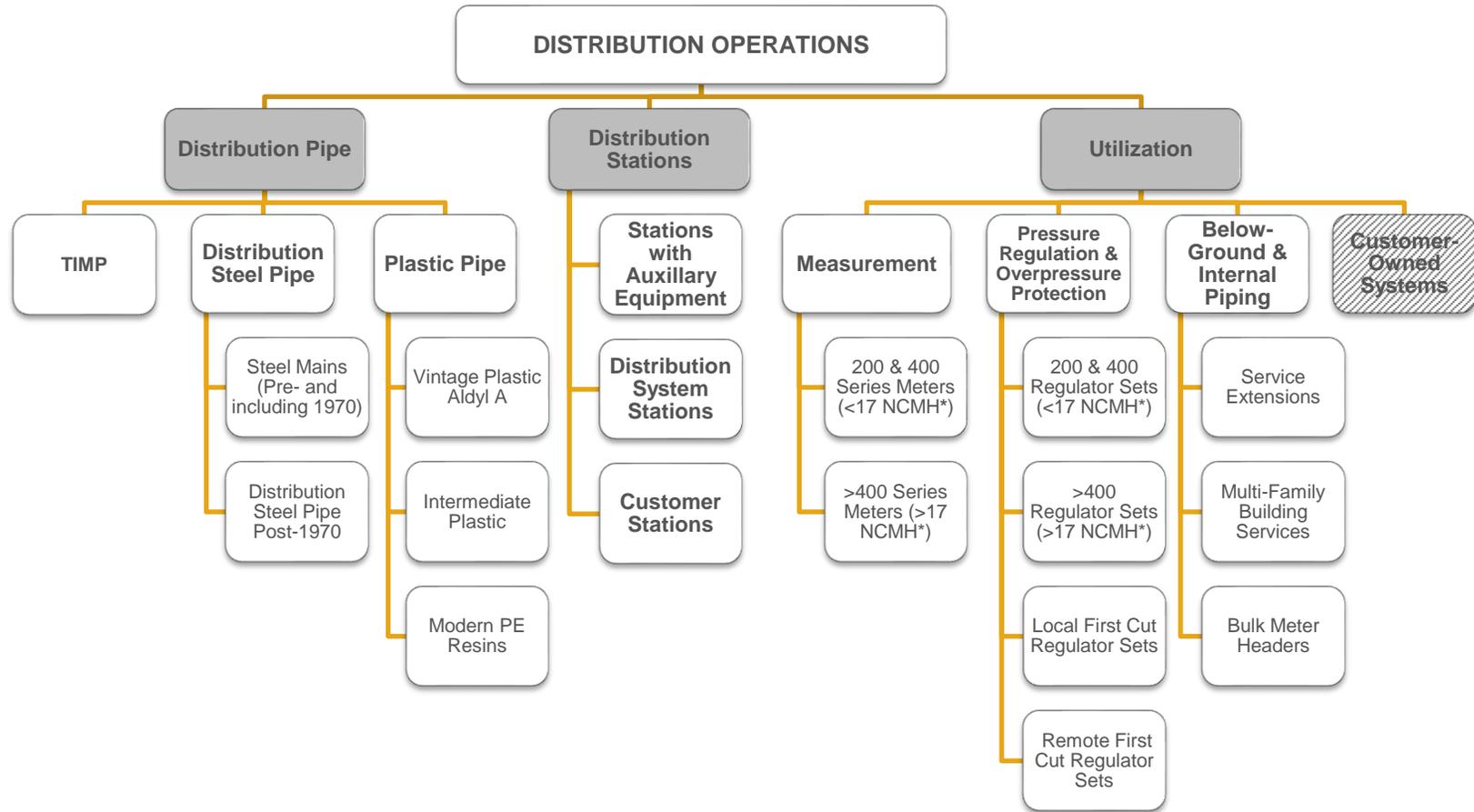


Figure 5.2-2: Distribution Operations Asset Class Hierarchy

Notes:

- Some Pipe asset subclasses (e.g., Distribution Steel Pipe Pre-1970) have programs that apply to only a portion of the assets (e.g., bare and unprotected steel).
- The Transmission Integrity Management Program (TIMP) asset subclass is a subset of steel mains that are part of the TIMP In-Line Inspection (ILI) Program or are subject to some other periodic nondestructive assessment of integrity such as external corrosion direct assessment (ECDA). These pipelines either operate at greater than 30% SMYS or have been identified for inclusion in TIMP because of their criticality. A subset of TIMP pipe is included in the Transmission Pipe and Underground Storage asset class and a subset is included in the Distribution Pipe asset class.
- Customer-owned systems are included for illustrative purposes only.
- *Normal Cubic Metres per Hour

5.2.3 Distribution Pipe

EGI's gas transmission and distribution system operates at a variety of pressures and uses a variety of specifications and materials to achieve the safe and reliable delivery of natural gas to customers. Pipe is the connection between the entry of natural gas into EGI's system and the delivery of gas to where energy is used by customers.

The distribution system takes gas from the higher-pressure transmission system and distributes it to residential, commercial, and industrial customers. This is achieved through a series of pipelines of various operating pressures, regulation points that safely manage the pressure of the gas, and delivery points where the gas is measured. In some cases, distribution systems are somewhat isolated, serving one or more communities from a single feed of a transmission system.

Pipe includes pipe, valves, all pipe appurtenances, service lines and risers installed up to Utilization components (typically, assets belonging to the Utilization asset class [see **Section 5.2.5**] begin at the service shutoff valve). Distribution piping can be located inside or outside of a building.

5.2.3.1 Distribution Pipe Inventory

Table 5.2.3-1 lists the inventory details for each asset subclass, along with selected other component inventories relevant to certain programs.

Table 5.2.3-1: Distribution Pipe Inventory⁸

Asset	EGD Rate Zone	Union Rate Zones
Mains (km)	42,973	44,690
TIMP Pipe - Distribution Pipe	341	1,744
TIMP Pipe - Transmission Pipe*	142	1,312
Steel Mains (Pre- and including 1970)	7,292	10,131
Distribution Steel Pipe Post-1970	6,593	8,788
Plastic Pipe - Modern PE	22,763	12,372
Plastic Pipe - Intermediate Plastic Mains	4,721	1,342
Plastic Pipe - Not yet categorized	N/A	7,893
Plastic Pipe - Vintage Plastic Aldyl A	1,042	1,053
Select additional asset inventories		
Bare unprotected pipe (km) **	0	136
Copper Services (#)	2,006	0
Copper Risers (#)	257,712	0

*TIMP Pipe includes assets that are part of the Transmission Pipe and Underground Storage asset class and the Distribution Pipe asset class. Transmission Pipe is shown here as well for clarity as it is discussed in following subsections.

**Bare unprotected pipe is a subset of Steel Mains (Pre- and including 1970).

⁸ Inventory as of December 2021.

5.2.3.2 Pipe Condition and Strategy Overview

Table 5.2.3-2: Pipe Condition and Strategy Overview

Asset Subclass	Avg. Age (Year)	Condition	Risk / Opportunity	Maintenance Strategy	Replacement / Renewal Strategy
TIMP Pipe	EGD RZ: 45 Union RZ: 45	These pipelines are generally believed to be in generally good condition with respect to failures caused by corrosion or other geometric anomalies, the risk for which is monitored through various condition monitoring techniques such as in-line inspections (ILI) and external corrosion direct assessment (ECDA). Actionable features from these activities are then prioritized for direct examination via the Integrity Dig Program. As technologies which support these inspections improve, EGI continues to identify and assess new anomalies which require remedial action to maintain risk levels within a tolerable region. Additionally, as EGI continues to enhance its hazard assessment and maintenance programs, additional hazards such as geohazards and long seam anomalies will be assessed and managed as they are identified.	Risks identified for TIMP pipe: Employee and Contractor Health and Safety Risk / Public Health and Safety Risk: Gas pipelines operating above 30% SMYS can rupture, leading to explosion. For lower stress pipelines, gas leaks would be the preeminent failure mode. Financial Risk: Total repair costs, commodity loss, relighting customer gas appliances, regulatory penalties and any property damages caused by loss of containment, penalties due to inability to meet contractual obligations Operational Risk: Extensive customer outages Environmental Risk: Greenhouse gas (GHG) emissions, environmental impact Reputational Risk: Unreliable service and customer outages	The maintenance strategy for TIMP pipe includes: <ul style="list-style-type: none"> • TIMP Condition Monitoring Operating Standard • Vital Main Damage Prevention Program • Corrosion Control Operating Standard including Cathodic Protection (CP) Survey • Leak Management Operating Standard including Survey Program conducted with defined frequency depending on material, age, CP protection and presence of wall-to-wall hard surface area • Valve Maintenance Operating Standard including inspection • Depth of Cover Operating Standard • Easement Control Operating Standard including easement encroachment and easement clearing • Geohazard baseline reports 	The replacement/renewal strategy for TIMP pipe includes: <ul style="list-style-type: none"> • Inspection Program Integrity Retrofits and Digs • Alternative condition verification methods such as hydrostatic testing. • Class Location Program • Depth of Cover Program • MOP Verification Program • Replacement of pipelines or pipeline segments as required based on condition and risk assessment findings
Steel Mains (Pre- and including 1970)	EGD RZ: 57 Union RZ: 57	Vintage steel mains have varying degrees of corrosion associated with material, coatings, design requirements, construction practices and maintenance practices based on standards at the time. The condition methodology of distribution steel and plastic mains is common across its asset subclasses. Identifiable condition of these assets is determined through maintenance programs, condition assessment programs, tacit knowledge (subject matter advisor [SMA] / worker input) and reliability modelling.	Risks identified for Distribution Steel and Plastic pipe: Employee and Contractor Health and Safety Risk / Public Health and Safety Risk: Gas leaks and migration through underground infrastructure into buildings can result in gas accumulation and explosions. Financial Risk: Total repair costs, commodity loss, relighting customer gas appliances, regulatory penalties and any property damages caused by a gas leak Operational Risk: Greenhouse gas (GHG) emissions, environmental impact, service interruptions and reputational damages Environmental Risk: GHG emissions, environmental impact Reputational Risk: Unreliable service and customer outages	The maintenance strategy for distribution steel pipe includes: <ul style="list-style-type: none"> • Leak Management Operating Standard including Survey Program conducted with defined frequency depending on material, age, cathodic protection (CP) and presence of wall-to-wall hard surface area • Corrosion Control Operating Standard including CP survey • Valve Maintenance Operating Standard including inspection • Bridge Crossing Survey Program • Watercourse Crossing Survey Program • Vital Main Damage Prevention Program (for vital main subset) • Distribution Integrity Management Program (DIMP) Asset Health Review operating process • Condition assessment programs including integrity assessments and Quality Material Equipment Reports (QMER) to identify and assess failure mechanisms of assets 	The replacement/renewal strategies to manage distribution steel pipe includes: <ul style="list-style-type: none"> • Bare and Unprotected Steel Pipe Replacement Program • Proactive Vintage Steel Pipe Replacement Program • General Replacement Program • Emergency Replacement Program • Major discrete replacement project work • Corrosion Prevention Program • Continuous Improvement of reliability models and asset understanding • Service Replacement Program • Copper Services Replacement Program • Relocation Program (externally driven)
Distribution Steel Pipe (Post-1970)	EGD RZ: 31 Union RZ: 36	Mains are in good condition, associated with adequate cathodic protection and good coating performance.			
Distribution Plastic Mains Modern Polyethylene (PE)	EGD RZ: 23 Union RZ: 17	These assets are considered to be in good condition. The materials and manufacturing processes support the longevity of this asset.		The maintenance strategies for distribution plastic pipe include: <ul style="list-style-type: none"> • Leak Management Operating Standard including Survey Program conducted with defined frequencies • Valve Maintenance Operating Standard including inspection • Watercourse Crossing Survey Program • Condition assessment programs including integrity assessments and Quality Material Equipment Reports (QMER) to identify and assess failure mechanisms of assets 	The replacement/renewal strategies to manage distribution plastic pipe include: <ul style="list-style-type: none"> • AMP-Fitting Replacement Program • Reactive Vintage Plastic Aldyl A Replacement • Service Replacement Program • Emergency Replacement Program • General Replacement Program • Relocation Program (externally driven) • Continuous Improvement of reliability models and asset understanding
Distribution Plastic Mains Intermediate Plastic Mains	EGD RZ: 38 Union RZ: 37				
Distribution Plastic Mains Vintage Plastic Aldyl A	EGD RZ: 44 Union RZ: 38	These assets are considered to be in good condition and will be monitored through EGI processes. Replacements/repairs will take place as required.			

5.2.3.3 TIMP Mains

EGI has implemented an Integrity Management Program (IMP) pursuant to Technical Standards & Safety Authority (TSSA) and Canada Energy Regulator (CER) regulatory requirements.

The TIMP (Transmission Integrity Management Program) asset subclass is a subset of steel mains that are part of the TIMP In-Line Inspection (ILI) Program or are subject to other periodic condition monitoring techniques such as external corrosion direct assessment (ECDA). These pipelines either operate at greater than 30% SMYS or have been identified for inclusion in TIMP because of their criticality. TIMP pipe is included in the Transmission Underground Storage and the Pipe asset classes.

Pipelines with Maximum Operating Pressures (MOPs) resulting in hoop stress levels of 30% SMYS or higher meet the technical definition of **transmission** as prescribed by the *TSSA Oil and Gas Pipeline Systems Code Adoption Document Amendment (Ref. No.: FS-220-16)*. Integrity management of TIMP pipelines represents one of the critical aspects in fulfilling the safe and reliable operation of EGI assets as these pipelines are critical infrastructure for energy markets in Ontario and beyond.

The population of TIMP pipe in the Distribution Operations TIMP portfolio consists of approximately 341 and 1,744 km of steel pipe for the legacy Enbridge Gas Distribution (EGD) and legacy Union Gas (Union) rate zones respectively, for a combined length of 2,085 km.

The population of TIMP pipe in the Storage and Transmission Operations TIMP portfolio consists of approximately 142 and 1,312 km of steel pipe for the EGD and Union rate zones respectively, for a combined length of 1,454 km.

Despite increasing age, TIMP pipelines are generally in good condition with low failure susceptibility to monitored hazards. The population of TIMP pipelines by decade of installation is shown in **Figure 5.2-3**, illustrating a wide distribution of age for this group of assets. Based on length, over 40% of TIMP pipelines were installed prior to 1970. To ensure continued safe and reliable operation and in response to failures experienced by other pipeline operators, EGI has introduced enhanced hazard susceptibility assessments to ensure TIMP assets remain fit for service. To achieve the appropriate levels of safety and reliability, EGI will expand the ILI Program to include more pipelines, introduce additional condition monitoring methods, and will retrofit select pipelines where advances in ILI technology enable newly identified or emerging hazards to be detected. Where condition monitoring methods are operationally infeasible or more costly than renewal, some assets may be renewed in lieu of inspection.

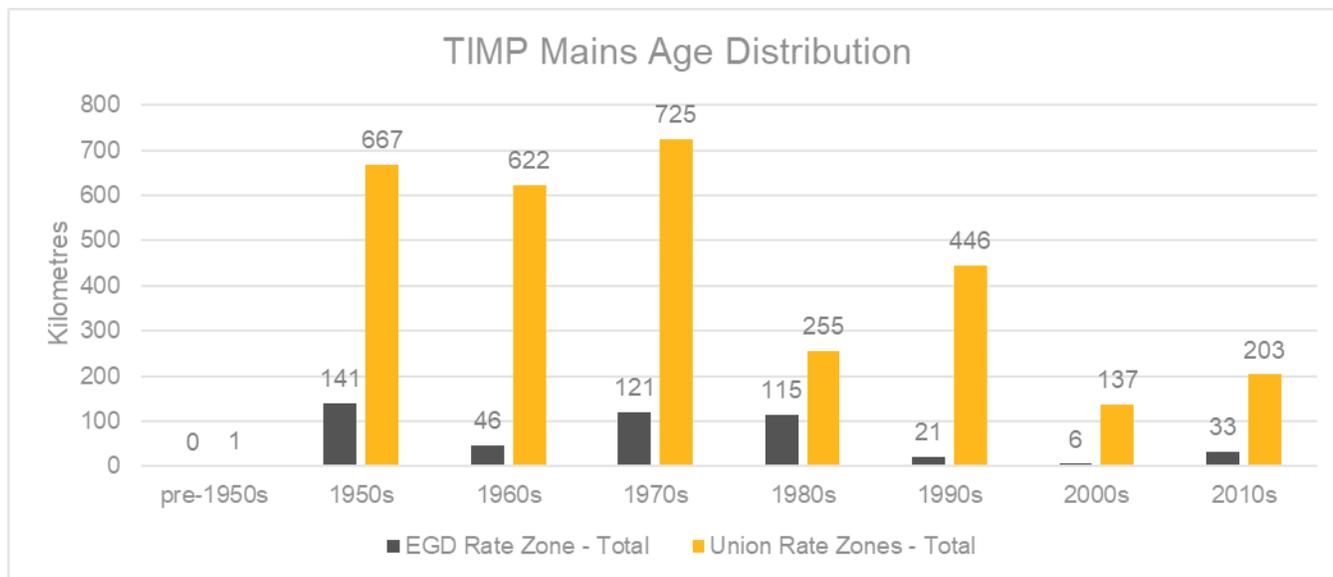


Figure 5.2-3: TIMP Pipelines Age Distribution

5.2.3.3.1 CONDITION METHODOLOGY

Using engineering analysis and a risk-based approach, the TIMP manages pipeline inspection frequencies and harmonizes inspection schedules to meet compliance requirements and industry-leading standards.

The TIMP is a systematic approach for continually assessing and remediating the integrity of pipeline systems through prevention, detection, and mitigation techniques. Data is compiled, assessed, validated, and analyzed in a comprehensive and iterative manner. Hazard mechanisms are understood, and risks are assessed through data analytics that establish the likelihood and consequence of various types of failures. This facilitates pipeline integrity management activities and optimizes the use of resources to control risk. Hazards assessed include:

- External corrosion
- Internal corrosion
- Internal erosion
- Manufacturing-related defects
- Welding/fabrication-related defects
- Equipment failure
- Third-party/mechanical damage
- Stress-corrosion cracking
- Outside forces
- Weather-related hazards
- Incorrect operations
- Cold-weld weakening bond line defects

As hazards are identified on pipelines, appropriate methods of preventing and detecting hazards are used to determine the condition of the asset.

The TIMP employs a reliability-based process, using risk analysis as a tool for developing and prioritizing maintenance on anomalous pipeline features such as corrosion, cracks, mechanical damage, and manufacturing defects. The majority of these features are identified using in-line inspections (ILI), direct assessments and/or other condition-monitoring methods proven effective in the pipeline industry. Features meeting prescribed criteria are subject to further evaluation via direct examinations of pipeline sections through excavation (i.e., digs) and inspection using nondestructive examination (NDE) methods. Pipeline defects found during integrity excavations are repaired before backfilling the exposed pipe.

The TIMP reduces the probability of failure through the inspection and assessment process by spotting and remediating detectable pipeline hazards. There are, however, some hazards that are undetectable by modern integrity inspection techniques, including some long seam anomalies. Progression of such defects cannot be practically monitored using current in-line inspection and external corrosion direct assessment (ECDA). Therefore, alternative condition verification methods such as hydrostatic testing are considered and compared to an option to replace such pipelines based on inherent risk and cost benefits associated with each option.

TIMP pipelines are also subject to depth of cover surveys and class location surveys as part of the TIMP Mains Strategies (see **Section 5.2.3.6.1**). Any changes in class location or depth of cover are assessed to determine if mitigations are required.

5.2.3.3.2 CONDITION FINDINGS

Many of the TIMP pipelines have been subject to two or more inspections since the inception of the Integrity Management Program. As such, the condition of these inspected assets is generally well understood. Integrity activities on these pipelines typically result from the investigation of time-dependent events (such as corrosion) and time-independent events (such as third-party damage).

In the TIMP, EGI uses ILI data analysis and risk assessment of pipeline features along with corrosion growth modelling to project known detectable corrosion features of the TIMP pipelines from the last ILI date to future years. This enables excavations to be scheduled prior to corrosion features reaching critical size, accounting for a factor of safety.

The number of digs depends on inspection findings and is an important part of preventing leaks on the TIMP pipeline system. As legacy practices are aligned and ILI is introduced for more pipelines, it is anticipated that the number of digs may increase over the short term before settling into a more stable pattern. For reference, the number of digs over the preceding six-year period is shown in **Figure 5.2-4**.

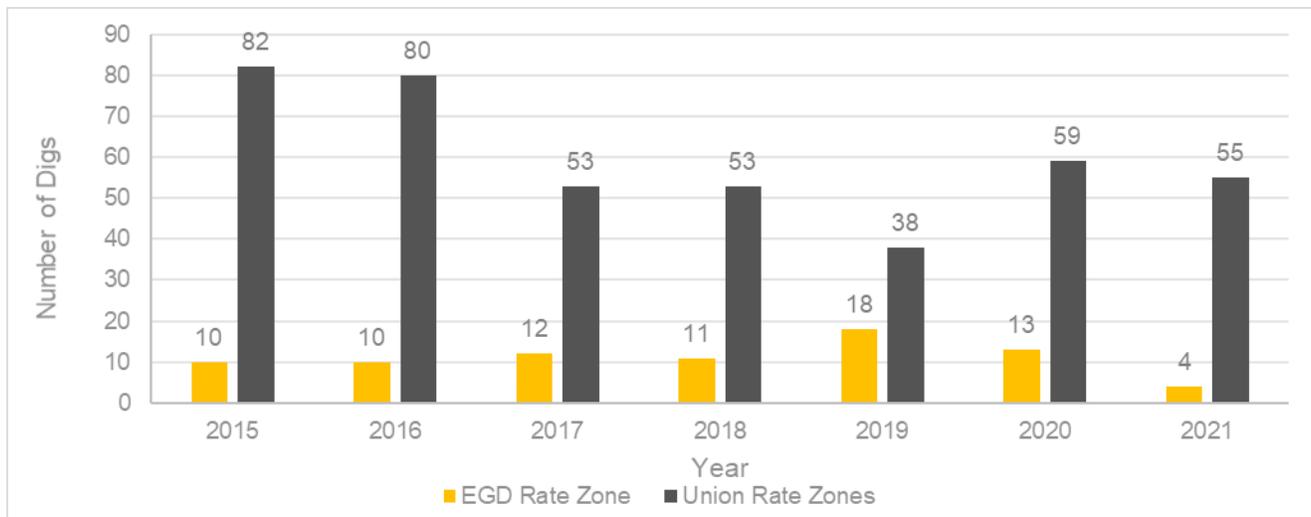


Figure 5.2-4: EGI Historical Digs

In addition to the identification of hazards through in-line inspection, EGI has also successfully identified and remediated pipeline sections with low depth of cover and exposed watercourse crossings through previously listed maintenance strategies. EGI will continue to monitor changing conditions around its pipelines and ensure such hazards are sufficiently managed.

5.2.3.3.3 RISK AND OPPORTUNITY

TIMP pipelines are critical infrastructure forming the backbone of the EGI system. These pipelines convey gas into downstream networks for distribution, supply large industrial customers (including natural gas-fired power plants) and transport natural gas to major North American markets. Some of these pipelines are located in urban areas and pass through High Consequence Areas (HCAs). Any gas release in such areas could require a substantial emergency response and a temporary shutdown of the pipeline; pipeline failures can pose a risk to public safety as well as gas-supply reliability risk.

The risks associated with these pipelines are mitigated through the TIMP by identifying and remediating (as required) pipeline defects prior to failure. These inspections allow EGI to determine whether a pipeline is fit for service and provide quantitative data that can be used to forecast maintenance activities, inform models and the expected life of the asset. Understanding pipeline condition allows EGI to make informed decisions on service life extensions. By mitigating immediate and scheduled pipeline features, the TIMP reduces the probability of pipeline failures, reducing the overall public risk and helping to ensure a reliable gas supply to customers.

As a result of the potentially high consequences related to a failure on these pipelines, EGI is retrofitting pipelines with launchers and receivers so that in-line inspections can be used to assess pipeline condition as this technology provides the best data for predicting the condition of the pipeline. Where pipeline defects cannot be identified and monitored by modern inspection techniques, alternative condition verification methods such as hydrostatic testing are considered and compared to an option to replace such pipelines based on operational viability and inherent risk and cost benefits associated with each option.

5.2.3.4 Distribution Steel Pipe

The Distribution Steel Pipe asset subclass includes mains (along with associated services and components) covered by the Distribution Integrity Management Program (DIMP). This population consists of approximately 13,884 and 18,918 km of steel pipe for the EGD and Union rate zones respectively, for a combined steel pipe network of 32,802 km. This population is further subdivided into two asset subclasses, Steel Mains (Pre- and including 1970) and Distribution Steel Pipe Post-1970, due to differences in design, construction, and maintenance practices. It is also worthwhile to note that between the early 1950s and early 1970s, steel mains were the only material used in the gas distribution system. These mains operate at different pressure classes and range in size. Note that distribution steel mains do not include pipe covered under the Transmission Integrity Management Program. **Figure 5.2-5** and **Figure 5.2-6** illustrate the calendar age of the steel main population for the EGD and Union rate zones respectively.

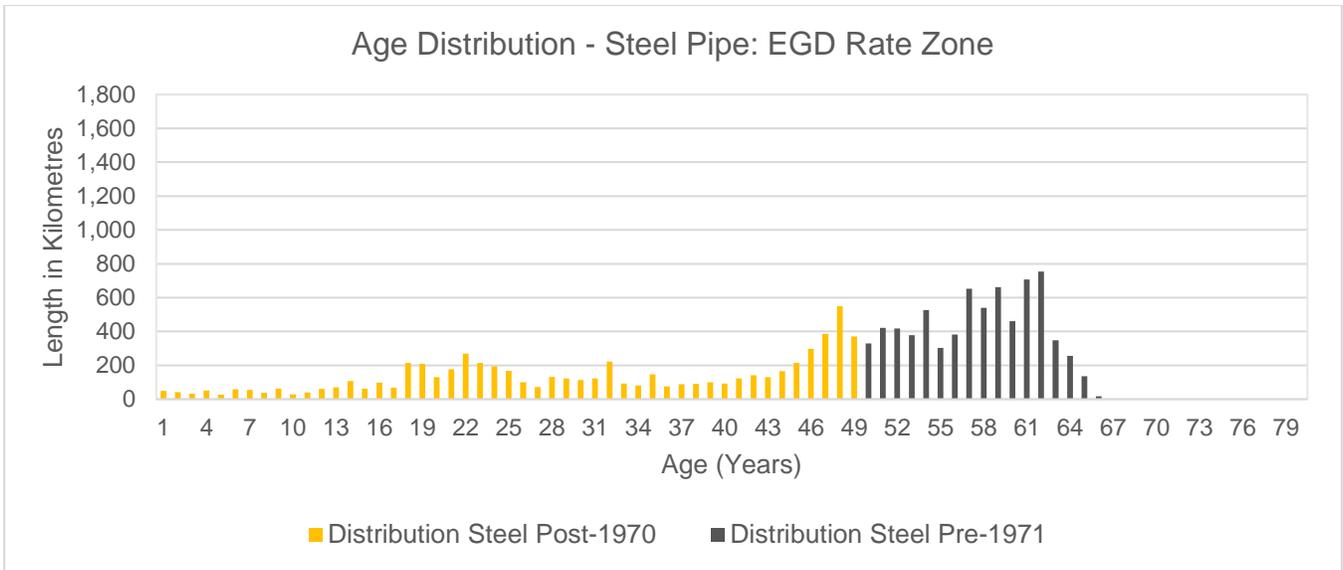


Figure 5.2-5: Age Distribution - Steel Pipe: EGD Rate Zone

In **Figure 5.2-6**, the population spike in 1958 (at age 62) is due to rapid expansion and acquisitions made by Union (e.g., one major purchase was the Dominion Natural Gas Company). Unfortunately, records are not available to adequately classify the installation dates of the acquired assets.

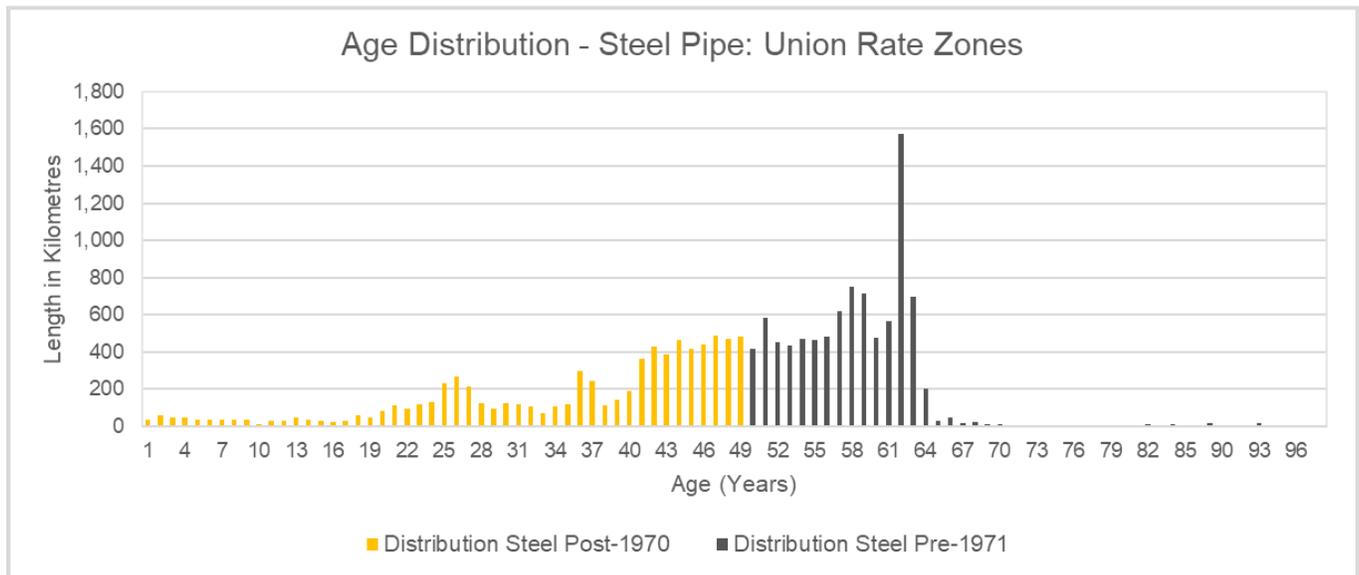


Figure 5.2-6: Age Distribution - Steel Pipe: Union Rate Zones

5.2.3.4.1 STEEL MAINS (PRE- AND INCLUDING 1970)

The Steel Mains (Pre- and including 1970) asset subclass consists of mains (along with associated services and components) installed in 1970 or earlier and covered by the Distribution Integrity Management Program (DIMP). This asset subclass represents more than 50% of the steel pipe population (approximately 7,292 and 10,131 km of pipe for the EGD and Union rate zones respectively, totaling 17,423 km). These mains were installed using materials, coatings, design requirements, and construction practices based on standards at the time. Similarly, protection programs such as utility locate, and cathodic protection procedures were different from current practices.

Distribution steel mains provide gas to some of the oldest and most populated parts of the EGI franchise area, including the downtown cores of Toronto, Hamilton, London and Ottawa. Over time, urban encroachment and infrastructure activities supporting municipal growth have impacted the condition and consequences associated with potential asset failures. In urban areas, challenges exist in ensuring adequate cathodic protection due to interference from subway, streetcar, and light-rail transit systems.

5.2.3.4.1.1 Condition Methodology

The condition methodology of distribution steel mains is common across its asset subclasses and determined through:

- **Maintenance programs:** These programs (such as Leak Survey and Cathodic Protection) monitor asset conditions and restore assets to their functional state.
- **Condition assessment programs:** These programs (such as integrity assessments and Quality Material Equipment Reports (QMER)) identify and assess the failure mechanisms of EGI's assets.
- **Tacit knowledge (subject matter advisors [SMAs] / worker input):** Field knowledge is used to identify potential condition issues through regular meetings with SMAs.
- **Reliability modelling:** One of the major hazards to steel mains is corrosion. A reliability model accounting for pipe attributes has been developed through the Asset Health Review (AHR) operating process under DIMP to forecast the number of corrosion leaks based on statistical analysis of corrosion leak history (including factors that accelerate degradation).

5.2.3.4.1.2 Condition Findings

5.2.3.4.1.2.1 Steel Mains

Based on the condition assessment methodologies outlined in the previous section, **Table 5.2.3-3** outlines the condition findings generally associated with assets in the Steel Mains (Pre- and including 1970) asset subclass.

Table 5.2.3-3: Condition Findings for Steel Mains (Pre- and including 1970)

Issue	Description
Corrosion	Over time, coating degradation and poor cathodic protection can cause corrosion, resulting in wall loss. Some components that are particularly susceptible to corrosion are: bare and unprotected steel mains, isolated steel mains and headers, and mains with vintage coatings – for example, coal tar coatings can disbond and cause shielding. Below-grade threaded connections are also susceptible to corrosion. Bare and unprotected failures (see Figure 5.2-7) are corrosion-driven and directly tied to lack of coating and cathodic protection.
Bridge Crossing: Corrosion	Continuous exposure to road salt and seasonal ground movement on bridge-crossing assets can result in accelerated corrosion and external loading/stresses (see Figure 5.2-9).
Pipe Casing: Corrosion	Casings may cause a short with the carrier pipe if the spacers or internal integrity of the casing degrades over time. Many casings in the EGI network lack test points, preventing monitoring for shorts.
Compression Couplings: Corrosion	Compression couplings on steel mains can be susceptible to external corrosion and lead to an increased risk of leaks.
Compression Couplings: Pull-Out	Compression couplings (mechanical fittings not welded onto the main) that are not properly restrained can cause a loss of containment due to exposed points of thrust. Compression couplings are held in place by the weight of the soil. When the soil is disturbed, the pipe can pull out of the fitting, resulting in gas escaping through the open pipe end. Some vintage gas mains (such as the Kipling Oshawa Loop [KOL] main) do not have sufficient records identifying the existence and location of these fittings. EGI has mitigation practices in place to address existing known compression couplings.

Issue	Description
Seam Welds	Manufacturing defects associated with seam welds and fittings are weak points in the distribution system and can result in a loss of containment due to prolonged exposure to stress and corrosion (see Figure 5.2-10 and Figure 5.2-11). Low-frequency Electric Resistance Welded (ERW) pipe (used up to the early 1970s) can also pose a hazard through the potential of cold welds weakening bond lines leading to brittle-like failures. Defects in low-frequency ERW pipe welds have ruptured at operating pressures below 30% SMYS.
Geohazard	Geohazards are earth conditions that pose hazards to the public or their activities. The cause of the hazard may be natural or spurred by human activities. The following are integrity issues relating to Geohazard risks at EGI: spanning/ loss of support, deformation, overloading, and stretching/compression. These risks are accentuated by melting of ice sheets, landscape erosion by running water, landform by highly compressible organic soils, shoreline coastal erosion, and landslides, etc.
Depth of Cover	Reduction in the original depth of cover due to urban development or initial poor depth of cover due to construction practices at the time of installation can increase the potential for damages due to excavation activities and increased external loading. A minimum depth of cover is needed to ensure the maximum weight of vehicles traversing across pipelines is not exceeded. If the depth of cover is not appropriate, excessive pipe stress and failures can result (see Figure 5.2-8).
Aerial Crossings (Union)	Aerial crossings are segments of unsupported steel pipe that span water crossings and ditches. These are from legacy construction practices from the Union distribution network; and over time, the condition of these aerial crossings has degraded. Since they are aboveground pipe segments, the cathodic protection barrier is not effective, so corrosion initiation sites are able to progress unchecked (see Figure 5.2-14). The coatings have degraded over time as well; erosion in many locations has increased unsupported spans (see Figure 5.2-15). There may also be mechanical couplings present that can experience pull-outs with ground movement (see Figure 5.2-13). Third-party damages continue to be problematic for these exposed pipe segments.
Third-Party Damage: Appurtenances on Pipe	Any appurtenances which protrude from the surface of the main are susceptible to damage during excavation activities, as their depth of cover may be significantly less than that of the main. Steel drips (see Figure 5.2-12 :) with a protruding drip rod that extend vertically towards the surface and shallow blow-off valve assemblies are examples.
Latent Third-Party Damage	Unreported, latent damages to pipe coatings can become active corrosion sites and can reduce the effectiveness of the corrosion protection system, resulting in accelerated corrosion and potential loss of containment.



Figure 5.2-7: Bare and unprotected steel failures



Figure 5.2-8: Shallow and embedded gas main due to road grade change



Figure 5.2-9: Severe corrosion on bridge-crossing pipe

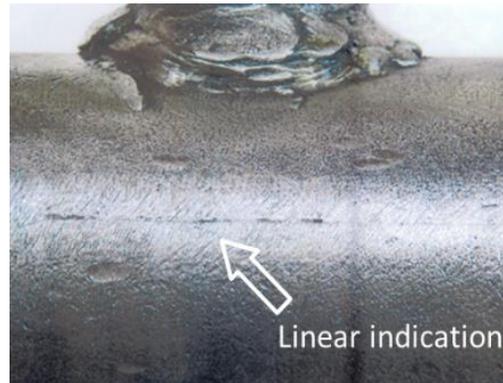


Figure 5.2-10: Vintage NPS 2 steel main with linear indication along weld seam

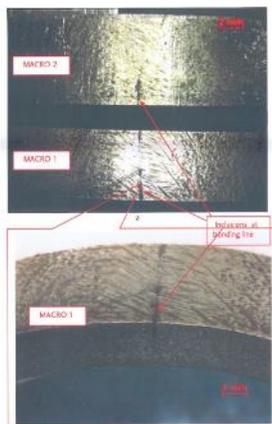


Figure 5.2-11: Inclusion at pipe weld seam on vintage NPS 2 gas main



Figure 5.2-12: Damaged drip rod on vintage NPS 2 gas main



Figure 5.2-13: Aerial crossing with exposed mechanical fitting



Figure 5.2-14: Coating degradation and corrosion pitting



Figure 5.2-15: Erosion increasing the unsupported length of an aerial crossing

Failure history for the Steel Mains (Pre- and including 1970) population is shown in **Figure 5.2-16** and **Figure 5.2-17** for the EGD and Union rate zones respectively.

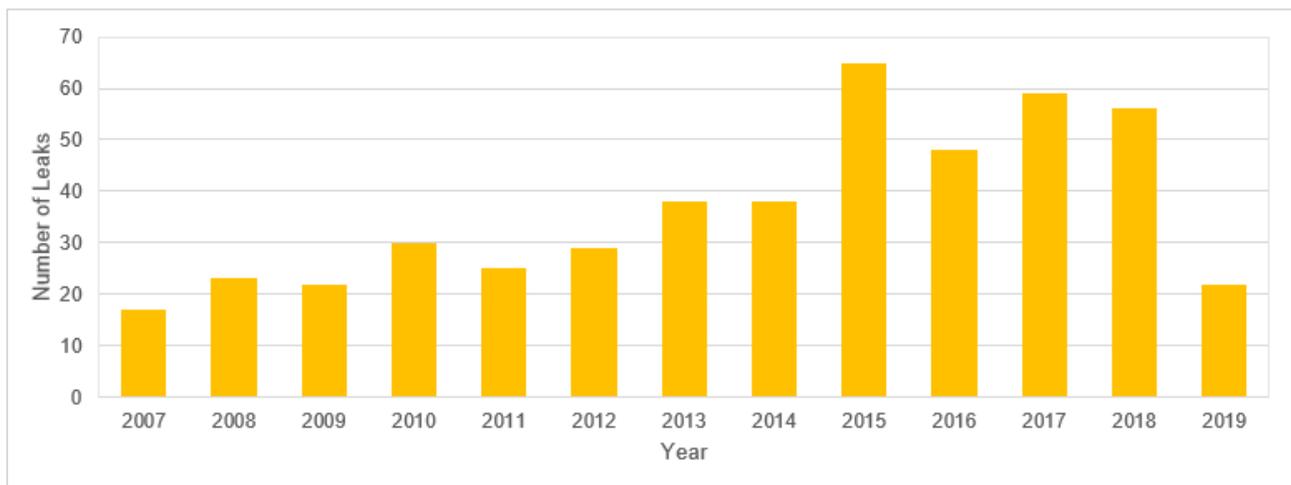


Figure 5.2-16: Corrosion Leak History: Steel Mains (Pre- and including 1970) - EGD Rate Zone

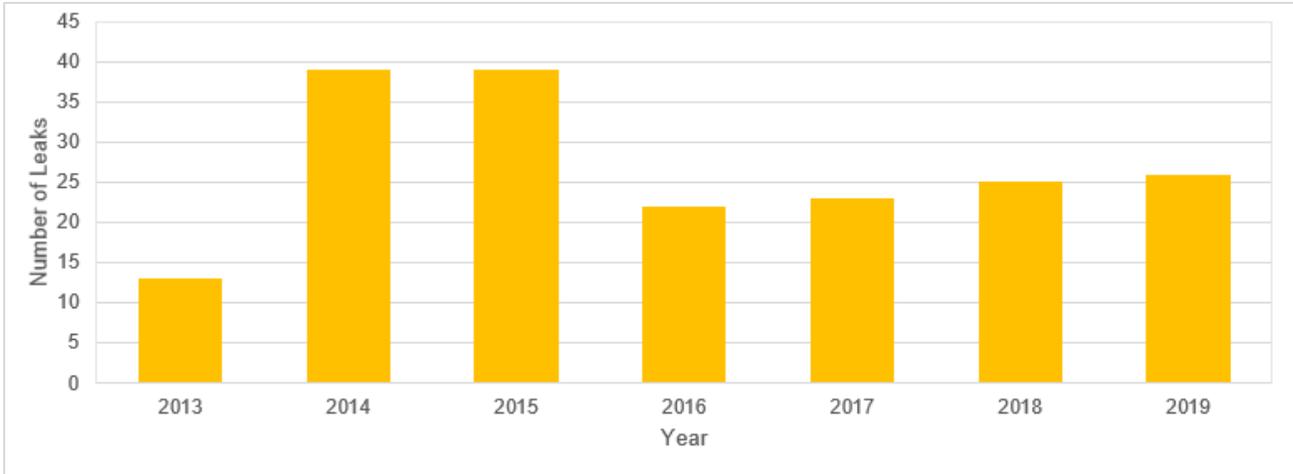


Figure 5.2-17: Corrosion Leak History: Steel Mains (Pre- and including 1970) - Union Rate Zones

The failure history is shown over the 2007 to 2019 timeframe for the EGD rate zone (see **Figure 5.2-16**) and between 2013 and 2019 for the Union rate zones (see **Figure 5.2-17**). Irregularities are most likely due to the mix of assets being leak-surveyed in a given year and the survey cycle. The survey is optimized for geography for efficient execution, rather than leveling the number of leaks found. Note additional differences in the origins of these two charts:

- **EGD Rate Zone:** Leak repair data was analyzed to classify leaks to the failure type (i.e., leak), failed component (i.e., pipe) and failure cause (i.e., corrosion), as part of reliability modelling within DIMP.
- **Union Rate Zones:** Leak repair data was analyzed for location (i.e., above-grade vs below-grade), operating pressure, pipe diameter and others. Open leaks (i.e., C-leaks) are excluded from this data set.

As the analytics practices are aligned for reliability modelling within DIMP, the trends and predictions will evolve and become increasingly reliable.

Reliability modelling within DIMP is used to project the annual number of leaks on steel mains (pre- and including 1970) over the next 20 years (see **Figure 5.2-18** and **Figure 5.2-19**). Projections assume no change to maintenance practices (namely, that most steel main leaks are mitigated via repair within a relatively short period of time and a small number of leaks are eliminated when the pipe is replaced).

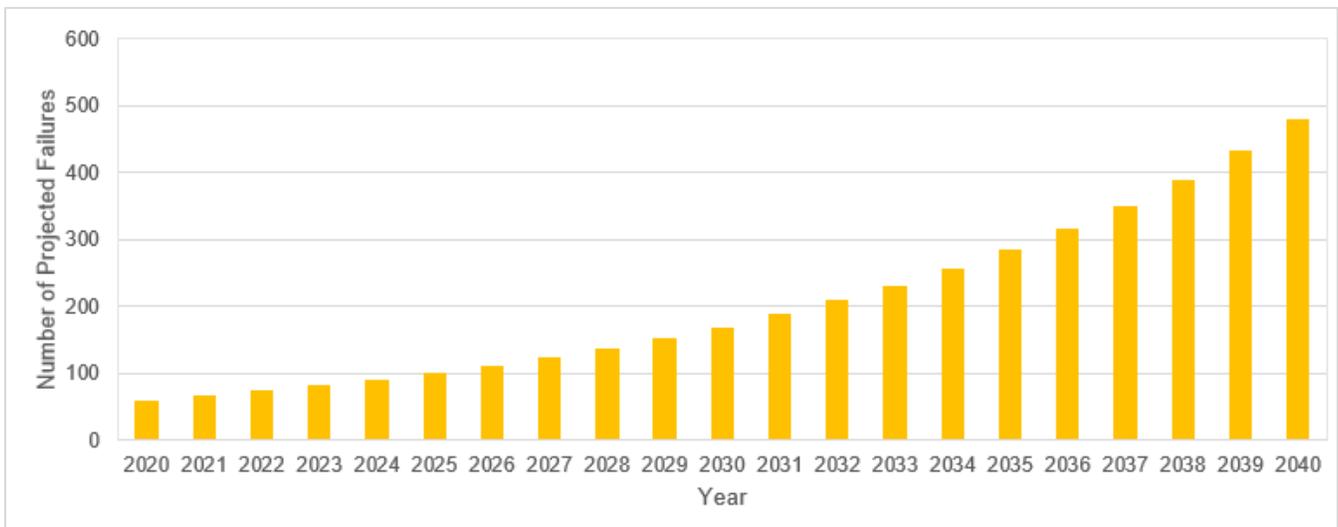


Figure 5.2-18: Corrosion Leak Projections for Steel Mains (Pre- and including 1970) - EGD Rate Zone

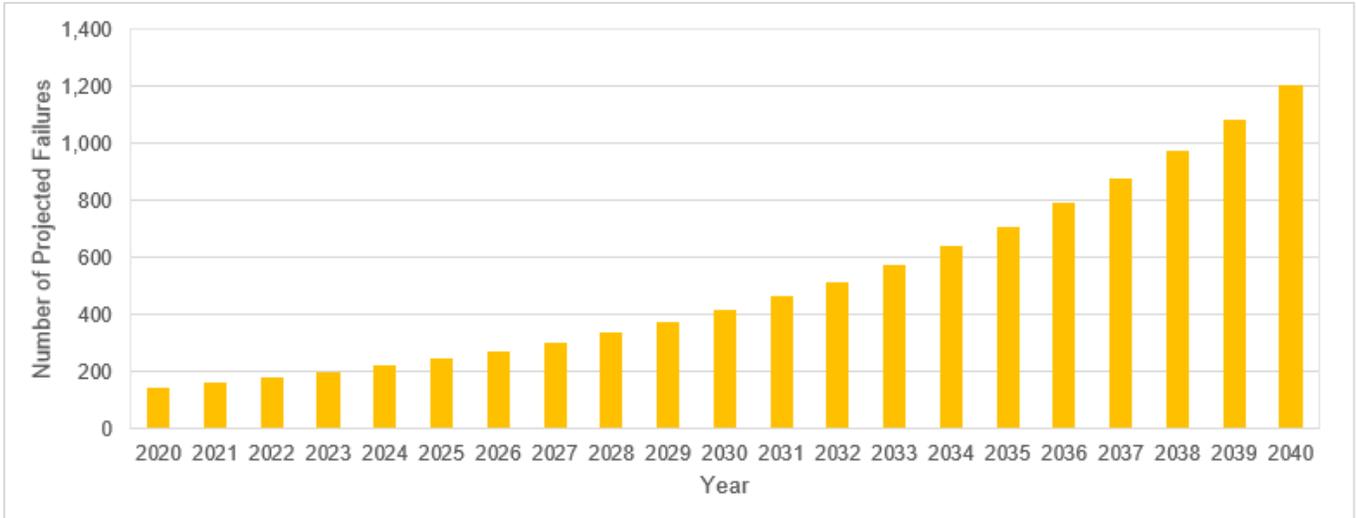


Figure 5.2-19: Corrosion Leak Projections for Steel Mains (Pre- and including 1970) - Union Rate Zones

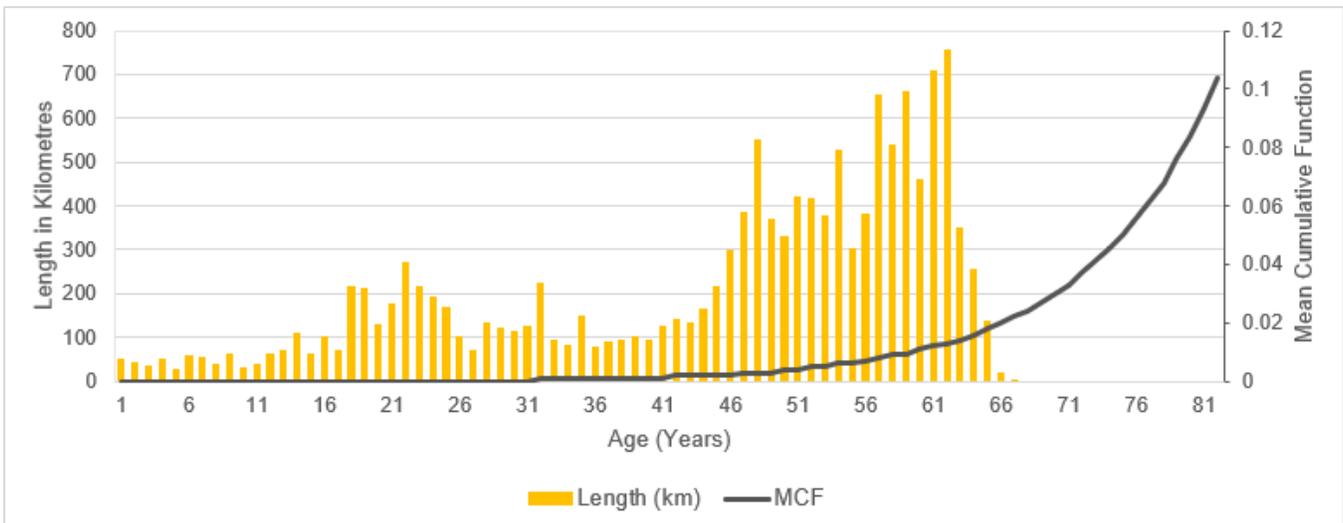


Figure 5.2-20: Steel Mains Population vs. Mean Cumulative Function for Corrosion Leaks - EGD Rate Zone

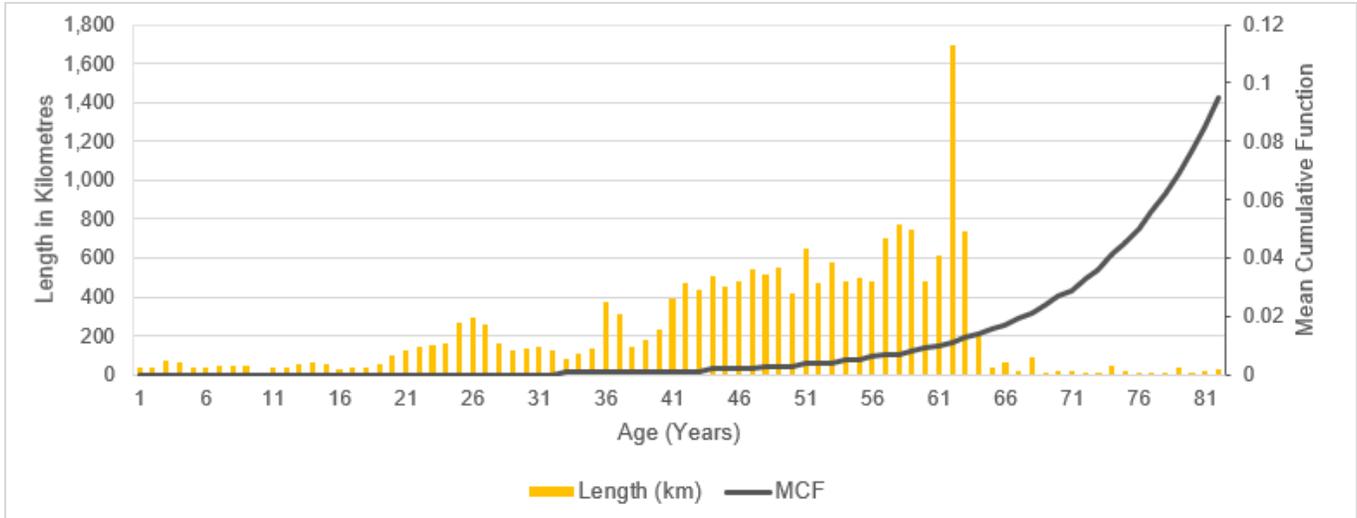


Figure 5.2-21: Steel Mains Population vs. Mean Cumulative Function for Corrosion Leaks - Union Rate Zones

The steel main reliability model forecasts the number of annual leaks will increase steadily over the next 20 years. **Figure 5.2-18** and **Figure 5.2-19** show the predicted cumulative number of corrosion-based leak failures of pipe for a given age. By 2040, the number of leaks will have increased by approximately tenfold. This represents an exponential growth in the number of leaks.

The significant increase in corrosion leaks is forecast to take place as a portion of the mains population approaches 100 years of age. This occurs between 2037 and 2057. **Figure 5.2-20** and **Figure 5.2-21** show a sharp increase in failures that could be due to multiple coating defects along the pipe body and/or poor cathodic protection history. Coating defects can result from manufacturing defects, field-applied coating anomalies, coating degradation from environmental factors or latent third-party damage.

Pipe coatings used on steel mains (pre- and including 1970), like coal tar and field-applied coatings such as mastic wrap, can get brittle over time and are susceptible to cracking and disbondment, allowing for corrosion to occur. As an example of a corrosion failure, **Figure 5.2-22** to **Figure 5.2-25** show a leak repair on a 12-inch vintage steel main located in downtown Toronto. This steel main was installed in the 1960s, showing the use of mechanical fittings (i.e., compression couplings) to join gas mains together using a fabricated fitting (i.e., steel cross).

EGI continues to monitor the asset health of steel mains and updates its reliability models with best available information to determine the appropriate mitigating action. Failure data from repair work orders and field observations made during steel main repairs and other maintenance activities show that vintage steel mains have demonstrated a more rapid decline in health compared to steel mains installed after the 1970s. This is attributed to material specifications, construction, past damage prevention practices and latent damage (such as coating damage) from third-party construction activities near the mains.



Figure 5.2-22: Leak investigation on vintage NPS 12 gas main



Figure 5.2-23: Detail of fabricated fitting after removal



Figure 5.2-24: Multiple leaks due to severe corrosion on vintage NPS 12 gas main

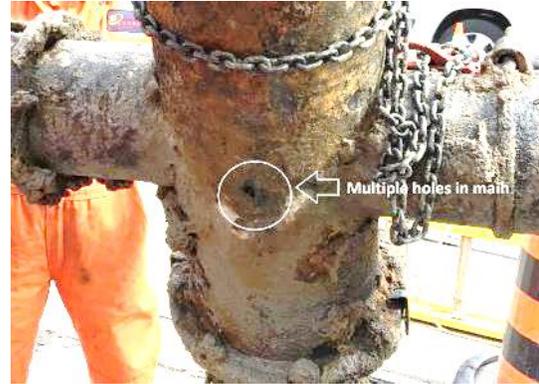


Figure 5.2-25: Multiple leaks on vintage NPS 12 gas main

Figure 5.2-26 shows that for the EGD rate zone, about 70% of recorded steel main corrosion leaks in the past 13 years are from pipe installed before 1970. **Figure 5.2-26** also displays the failures normalized by pipe length for EGD confirming that corrosion leaks per kilometre are disproportionately higher than those on post-1970 pipe.

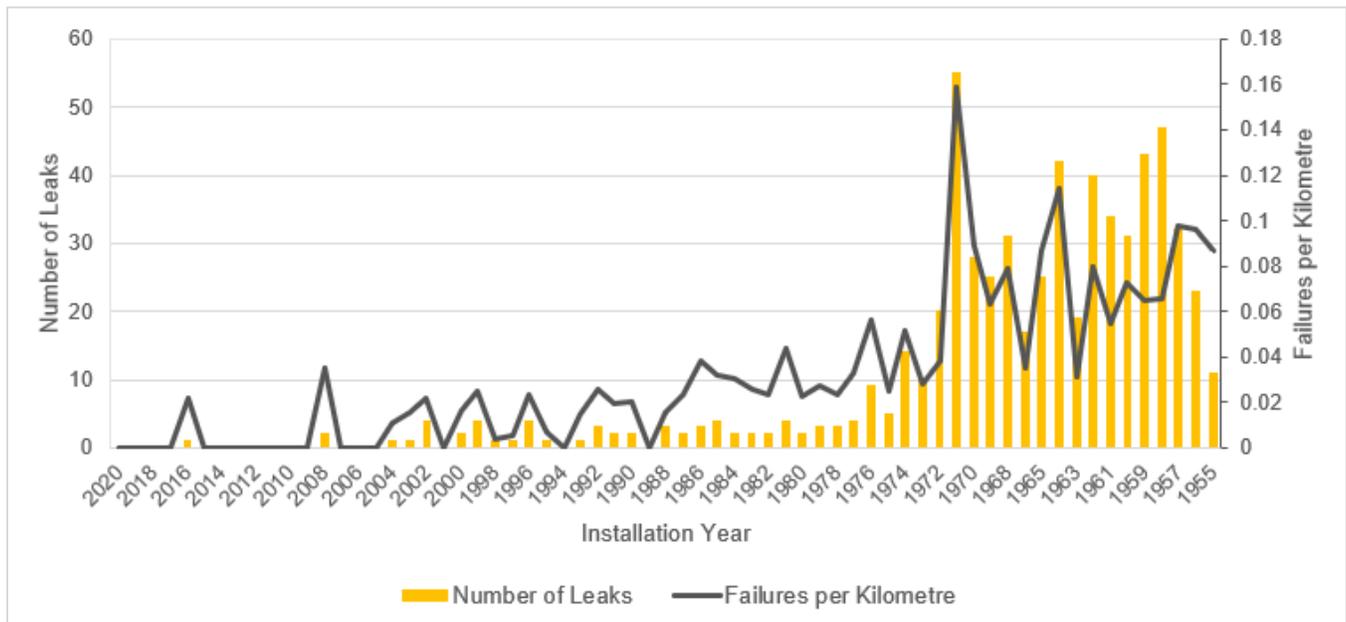


Figure 5.2-26: Steel Main Corrosion Leaks on Pipe Installed from 1955 to 2020 - EGD Rate Zone

5.2.3.4.1.2.2 Copper Services

Copper services were installed from 1960 to 1979 in the EGD rate zone only. Typical issues associated with these assets include leaks, circumferential cracks and choked flow due to buildup of corrosion by-product, resulting in the interruption of gas service. Degradation mechanisms for copper services include galvanic corrosion in the vicinity of the copper service connection to the main, external corrosion at above- and below-ground transitions and internal corrosion (also known as erosion corrosion), which causes thinning of the service wall over time.

Annual failure rates for copper services are steadily increasing. Highest-risk copper services have been removed from the system and any remaining copper services now require replacement to prevent future failures.

5.2.3.4.1.3 Risk and Opportunity

Distribution pipe provides natural gas services to EGI’s customers and runs down the streets of most residential, commercial, and industrial neighbourhoods in close proximity to buildings and dwellings.

Steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. Underground corrosion leaks can migrate to nearby structures and create gaseous environments. Leaks on steel mains in densely populated areas pose a greater risk than in suburban settings, as the ground surface is often paved across the entire width of the street, leaving no openings for escaping natural gas to vent to the atmosphere. In these cases, the path of least resistance can be underground infrastructure. Gas can migrate through these channels into buildings, creating a gaseous and potentially explosive environment for customers and the public. Corrosion leaks through pinholes are the common mode of failure for steel mains.

5.2.3.4.1.3.1 DIMP Risk Model

Understanding the condition and risk of the distribution pipe system has long been an industry struggle due to the vast number of assets (for EGI, this is over 32,802 km of steel mains of which over 17,423 km are Vintage Steel Mains) and the complexities associated with the distribution network geographically. According to CSA Z662 Clause 10.3.1:

The pipeline system integrity management program required by Clause 3.3 shall include procedures to monitor for conditions that can lead to failures, to eliminate or mitigate such conditions, and to manage integrity data. Such integrity management programs shall include a description of operating company commitment and responsibilities, quantifiable objectives, and methods for:

- a) assessing risks
- b) identifying risk reduction approaches and corrective actions
- c) implementing the integrity management program; and
- d) monitoring results.

To provide insight into the Distribution Pipe system risk, EGI has recently developed a DIMP Risk Model, that adopts an analytical platform (PiMSlider) from TIMP to combine the Asset Health Review operating process reliability models (specifically the corrosion failure model for steel mains) with a geospatially-assessed consequence of failure to produce risk for each distribution main. The analytical process dynamically segments pipelines based on changes to factors (such as changes in population density, Ontario building footprints and Municipal Property Assessment Corporation [MPAC] property assessment data) that impact the consequence of a failure (in this case, the failure is a below-grade corrosion leak). The analytics follow an event tree format to assess the likelihood of several consequence streams, then aggregate all contributions into a risk value for the main. These analytics are performed systemically for all mains. The risk results can then be outputted as data tables and can be graphically represented on a GIS format map view (see **Figure 5.2-27**).

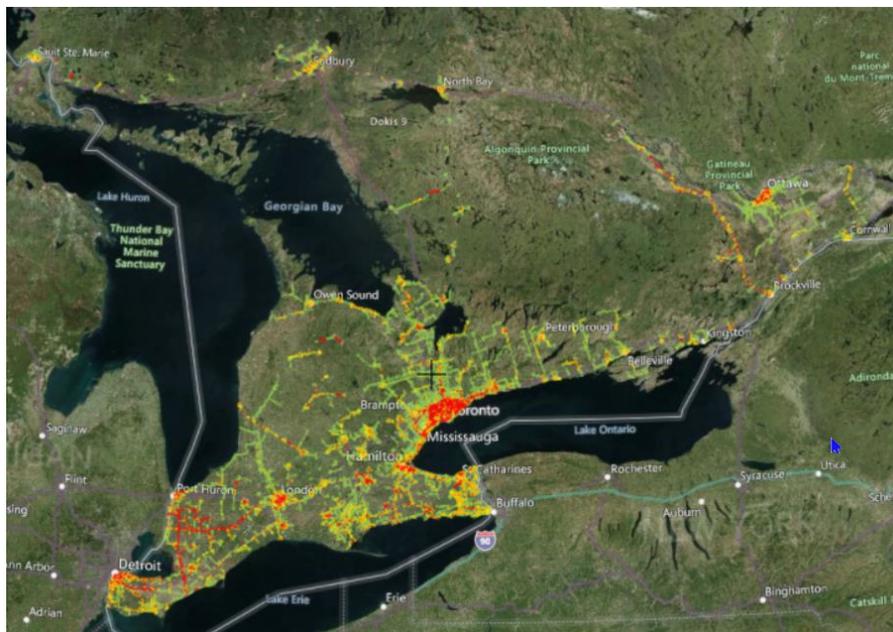


Figure 5.2-27: DIMP Risk Model output showing EGI Distribution Steel Pipe Relative Ranked Risk

Figure 5.2-27 shows the results from the DIMP Risk Model for the EGI Steel Distribution pipe system, where predicted risk is a result of combining the likelihood of a corrosion failure with the consequence of that failure. The map shows a **heat map** colouring scheme (i.e., red, orange, yellow, green) where assets are assigned a relative risk ranking based on the risk of a specific main as compared to the population. Mains coloured red represent assets with the highest predicted risk for the population. Green-coloured mains represent assets with the lowest predicted risk for the population. The colour-coded outputs assist the user to identify steel mains that pose the highest-predicted relative risk for the population. The platform allows the user to create systemic risk views for current or future years, based on the reliability curves from the Asset Health Review Reliability Models. **Figure 5.2-27** shows the predicted relative risk of steel mains in 40 years for the EGI Distribution network.

As previously discussed and demonstrated the pre- and including 1970 Vintage Steel population is expected to experience increased corrosion based failures in the near future, creating increased risk for EGI, possible reductions in reliability and service for EGI's customers, and increased Greenhouse Gas (GHG) emissions. As the number of leaks grows over time, there is a risk to EGI's ability to respond to emergency calls and manage operational costs.

5.2.3.4.1.3.2 Copper Services

Copper service lines (underground gas infrastructure close to a building) pose another risk; a service leak may have a more direct path to the building foundation, increasing the chance of migration. Natural gas migrating into a building has the potential of creating a gaseous and potentially explosive environment, which poses safety and property risks.

The consequences of these failures are dependent on the proximity of the service to building premises, number of linear assets in the vicinity, foundation integrity and surface structures (soft/hard street surface). These consequences are then quantified and evaluated by translating the condition and leak projection to risk. This evaluation indicates that as the failure rate increases, so does cumulative asset risk. Other risks that are associated with pipe failures are right of way costs, regulatory penalties, GHG emissions and customer outages.

5.2.3.4.1.3.3 Aerial Crossings

Aerial crossings are segments of unsupported steel pipe that span water crossings and ditches. These are from legacy construction practices from the Union distribution network; and over time, the condition of these aerial crossings has degraded. Since they are aboveground pipe segments, the cathodic protection barrier is not effective; so, corrosion initiation sites are able to progress unchecked. The coatings have degraded over time as well; erosion in many locations has increased unsupported spans. There may also be mechanical couplings present that can experience pull-outs with ground movement. Third-party damages continue to be problematic for these exposed pipe segments.

The risk for these degrading unsupported aerial crossings is through corrosion leaks, third-party damages, environmental damages from fallen trees or waterborne debris, potential pipe failures due to mechanical fitting pull-out, or potential pipe failure due to unsupported stress to the pipe. Some of these mains supply a significant number of downstream customers, so a failure could result in loss of gas supply for these customers while repairs are performed.

Failures as described above are increasing as these degradation factors have fueled the deterioration of these pipe segments. Some recent failures have resulted in loss of gas supply to hundreds of customers.

5.2.3.4.2 DISTRIBUTION STEEL PIPE POST-1970

The Distribution Steel Pipe Post-1970 asset subclass consists of mains (along with associated services and components) installed after 1970 and covered by the Distribution Integrity Management Program (DIMP). In this portfolio, the steel pipeline system consists of approximately 15,381 km of steel mains for EGI (see **Figure 5.2-5** and **Figure 5.2-6**). This pipe was generally constructed with improved materials and construction practices and is performing well. These mains operate at different pressure classes, ranging from low pressure to extra-high pressure.

Although post-1970 steel mains are exposed to many of the same hazards as steel mains from 1970 and earlier, their materials, coatings and construction practices have enabled the primary corrosion barriers of pipe coating and cathodic protection to be more effective, resulting in fewer corrosion-based leaks as shown in **Figure 5.2-24**.

5.2.3.4.2.1 Condition Methodology

See **Section 5.2.3.4.1.1**.

5.2.3.4.2.2 Condition Findings

These mains are exposed to some of the same issues as steel mains from 1970 and earlier (see **Table 5.2.3-3**). However, some issues (such as unrestrained compression couplings) do not apply due to different design and construction practices and other issues (such as corrosion) are better mitigated as a result of better construction practices, maintenance practices and materials. Corrosion-based leak history for the post-1970 distribution steel pipe population for the EGD and Union rate zones is shown in **Figure 5.2-28** and **Figure 5.2-29** respectively.

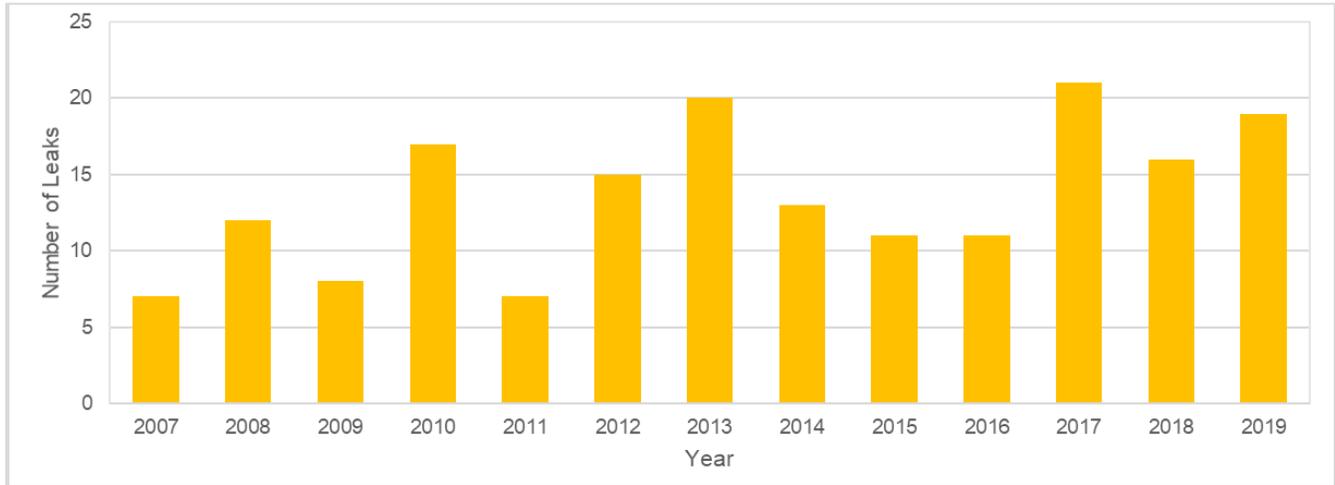


Figure 5.2-28: Historical Steel Main Corrosion Leaks (Post-1970) – EGD Rate Zone

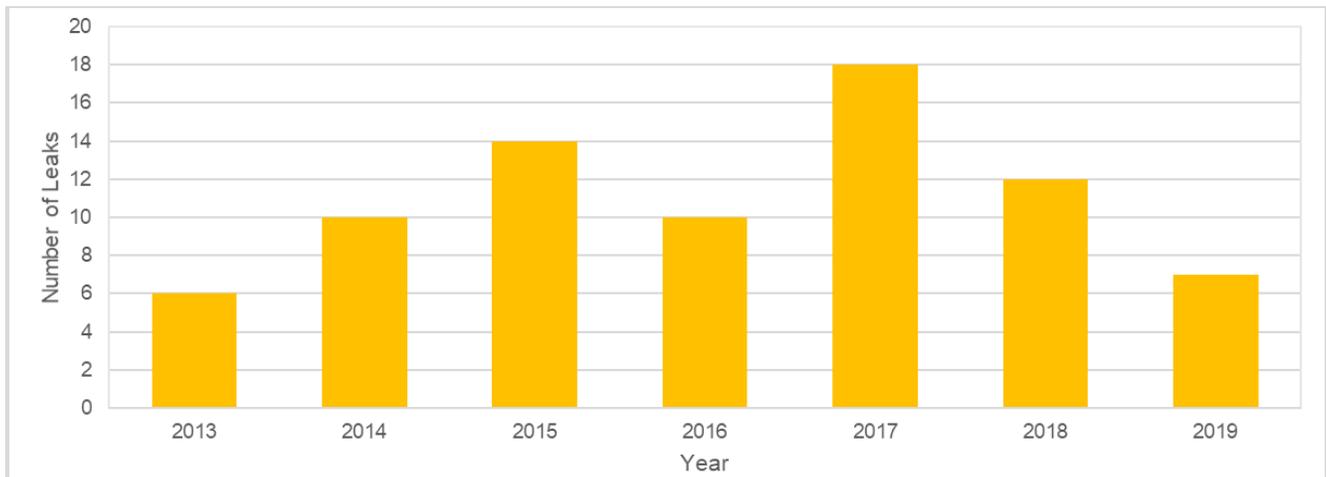


Figure 5.2-29: Historical Steel Main Corrosion Leaks (Post-1970) – Union Rate Zones

5.2.3.4.2.3 Risk and Opportunity

As demonstrated by the projected leak trends in **Figure 5.2-30** and **Figure 5.2-31**, the post-1970 steel mains population is performing well and is expected to continue to perform well in future years, with leak rates that do not pose a significant risk. Mains are in good condition, associated with adequate cathodic protection and good coating performance. However, some hazards (third-party latent damages and environmental conditions) may accelerate degradation and result in leaks. These carry the same risks noted for pre- and including 1970 steel mains (see **Section 5.2.3.4.1**), including supply interruption to customers and greenhouse gas emissions associated with an uncontrolled gas release. As well, gas can migrate into buildings, creating a gaseous and potentially explosive environment for customers and the public.

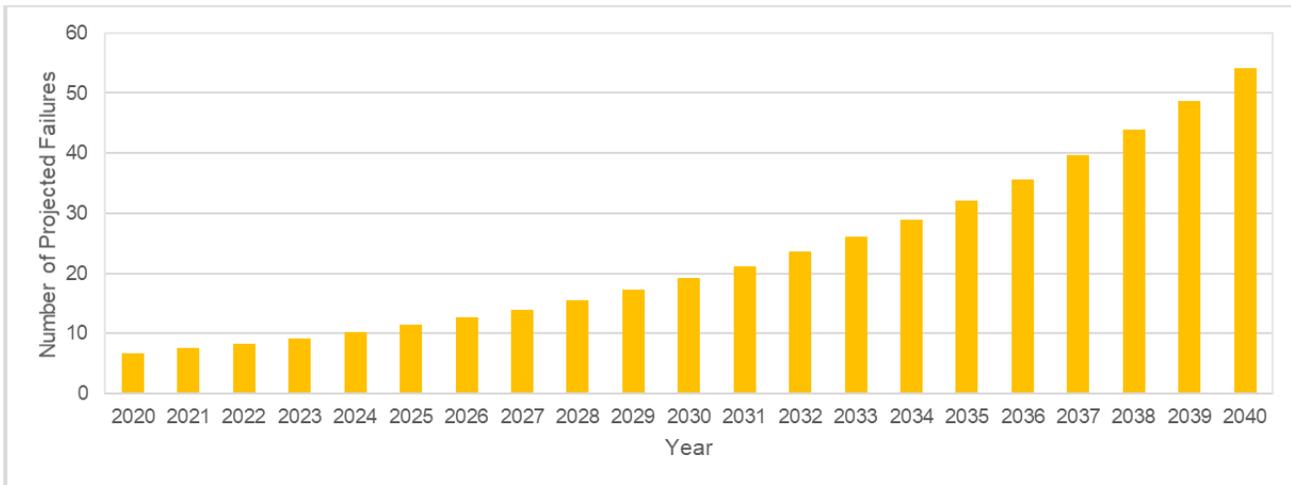


Figure 5.2-30: Post-1970 Steel Mains Corrosion Leak Projections (2020 to 2040) – EGD Rate Zone

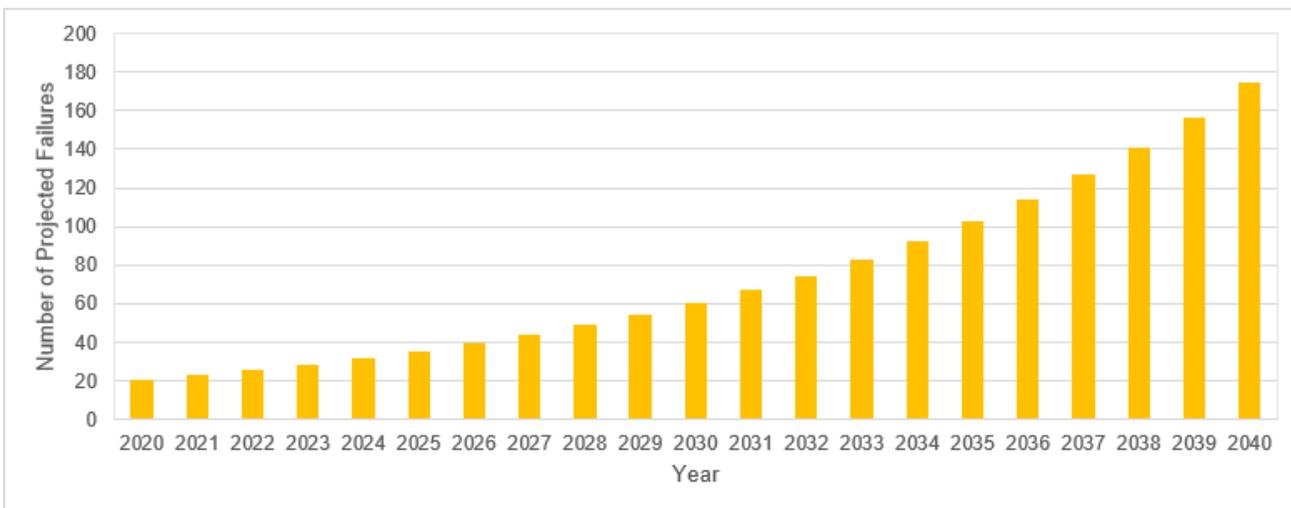


Figure 5.2-31: Post-1970 Distribution Steel Pipe Corrosion Leak Projections (2020 to 2040) – Union Rate Zones

5.2.3.5 Distribution Plastic Pipe

Plastic mains were first introduced into EGI’s distribution network in late 1960s on a field trial basis. Plastic mains became more widely used in the early 1970s and have since been installed across the EGI franchise area, replacing steel mains in low and intermediate pressure class systems. Plastic mains assets are divided into three subclasses: (1) Vintage Plastic Aldyl A, (2) Intermediate Plastic Mains and (3) Modern Polyethylene (PE) Resins. In some instances, records are not clear on if pipe material-conservative assumptions were made to categorize the asset. In the Union rate zones, work is required to classify some pipe assets, currently grouped as To Be Categorized Plastic.

Population distributions for the EGD and Union rate zones are shown in **Figure 5.2-32** and **Figure 5.2-33** respectively.

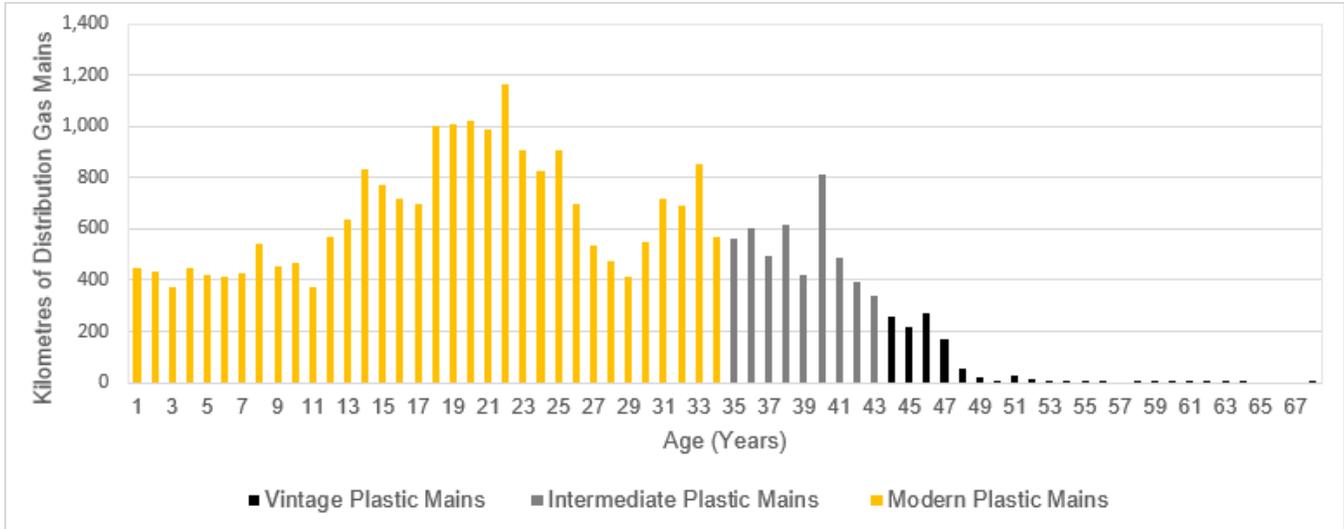


Figure 5.2-32: Age Distribution - Plastic Pipe: EGD Rate Zone

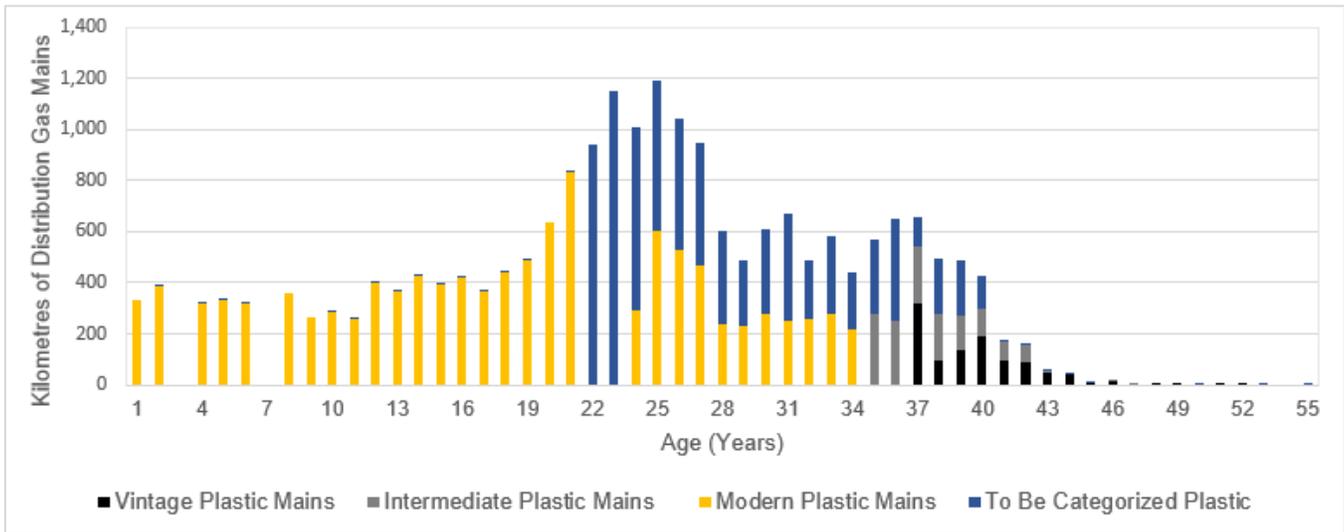


Figure 5.2-33: Age Distribution - Plastic Pipe: Union Rate Zones

Copper risers are also discussed in this section as they are primarily associated with Vintage Plastic Aldyl A and Intermediate Plastic Mains systems. Copper risers on these systems include an AMP-fitting (i.e., a mechanical transition fitting between the plastic service and the copper riser). These assets were installed between 1969 and 1984 in the EGD rate zone only. **Figure 5.2-34** illustrates the calendar age of the copper riser population for the EGD rate zone as of 2019.

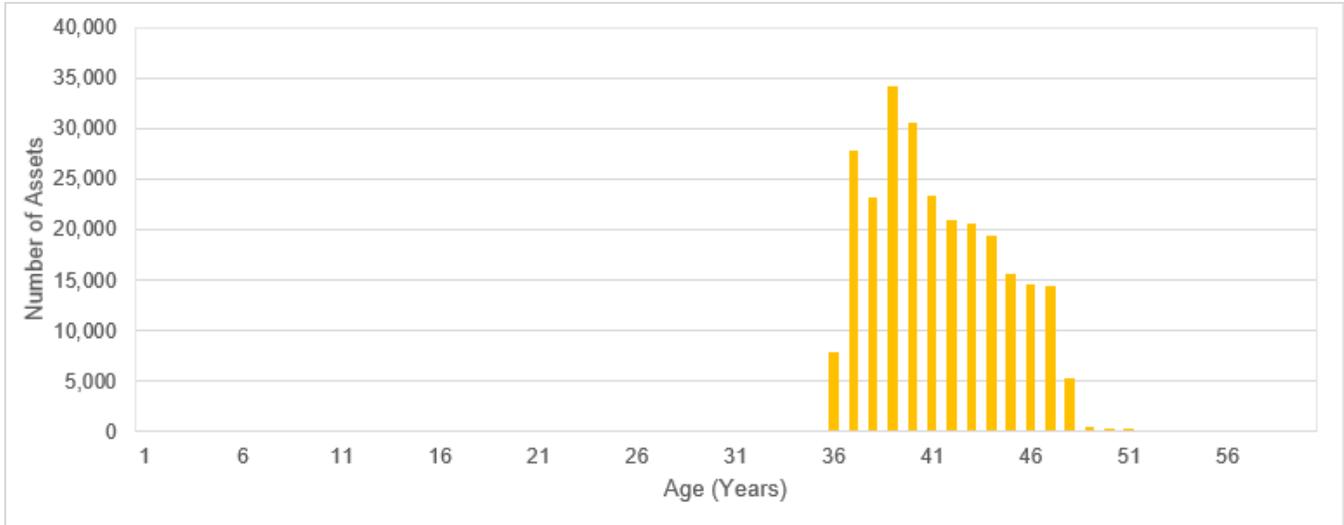


Figure 5.2-34: Age Distribution – Copper Risers: EGD Rate Zone

Note: Condition Methodology and Risk and Opportunity are consistent across plastic pipe assets. Asset subclasses are discussed in detail in Condition Findings only.

5.2.3.5.1 CONDITION METHODOLOGY

The condition methodology of distribution plastic mains is common across its asset subclasses. The condition of these assets is determined through:

- **Maintenance programs:** These programs (such as leak surveys) monitor asset conditions and restore assets to their functional state. Failure data from leak surveys is used to manage leaks in the short term and to build reliability models for pipe and copper services in the longer term.
- **Condition assessment programs:** These programs (such as integrity assessments and Quality Material Equipment Reports [QMER]) identify and assess the failure mechanisms of EGI’s assets. EGI has also concluded an extensive study on vintage plastic Aldyl A pipe with the Gas Technology Institute (GTI) to develop data-driven predictions on the remaining useful life expectancy of plastic pipe. Studies are now being extended to Intermediate Plastic Mains material to further enhance EGI’s knowledge of this material; sampling programs and laboratory testing for TR-418 are underway with results analysis expected by 2023.
- **Tacit knowledge (subject matter advisors [SMAs] / worker input):** Field knowledge is used to identify potential condition issues through regular meetings with SMAs.
- **Reliability modelling:** A reliability model has been developed for vintage plastic Aldyl A pipe and copper risers through the Asset Health Review (AHR) operating process under the DIMP. This has used a structured methodology to convert historical failure data into a statistical model that forecasts the probability of failure. Leak projections are refined with input obtained through direct assessment, internal and external industry studies, and SMA input.

5.2.3.5.2 CONDITION FINDINGS

The methodologies described in **Section 5.2.3.5.1** drive condition findings for the following subclasses: Vintage Plastic Aldyl A, Vintage Plastic Intermediate Plastic Mains, Copper Risers, and Modern PE Resins.

5.2.3.5.2.1 Vintage Plastic Aldyl A

Vintage Plastic Aldyl A mains are the earliest plastic mains used within the distribution system. The installation period of Aldyl A plastics started in the late 1960s on a field trial basis and was concluded by the end of 1976 for the EGD rate zone and 1984 for the Union rate zones.

It is well known and studied in the North American gas industry that Aldyl A plastic mains have brittle-like cracking properties (see **Figure 5.2-35**). The oxidation of the inner wall surface during manufacturing (also known as Low Ductile Inner Wall [LDIW]) and the large spherulites found in its microstructure cause pipe to be susceptible to cracking and premature failure in

the presence of stress intensifiers such as a large number of connections, squeeze-off locations, and the presence of rock impingement points caused by rocky soil.

Many gas utilities have already started and in some cases completed the replacement of Aldyl A pipe as a result of concerns about its brittle-like cracking properties. EGI commissioned a study through GTI to evaluate the performance of varying vintages of Aldyl A pipe used by EGI to identify failure modes over time and to determine the mean time for failure. Results of the initial sample testing showed that the LDIW property was observed and that the expected asset life of Aldyl A plastic mains is highly affected by ambient temperature and total stress intensifiers on the pipe.



Figure 5.2-35: Rapid Crack Propagation on Aldyl A Pipe from Saddle Tee Fusion (Mississauga, ON)

Using the failure data and statistical modelling yields a reliability model that shows a very strong correlation to asset age, although it is important to note that the model is based on a relatively small number of failures. The reliability model for vintage Aldyl A plastic mains shows a slow rise in expected failures over the next 20 years. Leak projections based on historic failure rates for the asset subclass are shown in **Figure 5.2-36** for EGD and **Figure 5.2-37** for the Union rate zones.

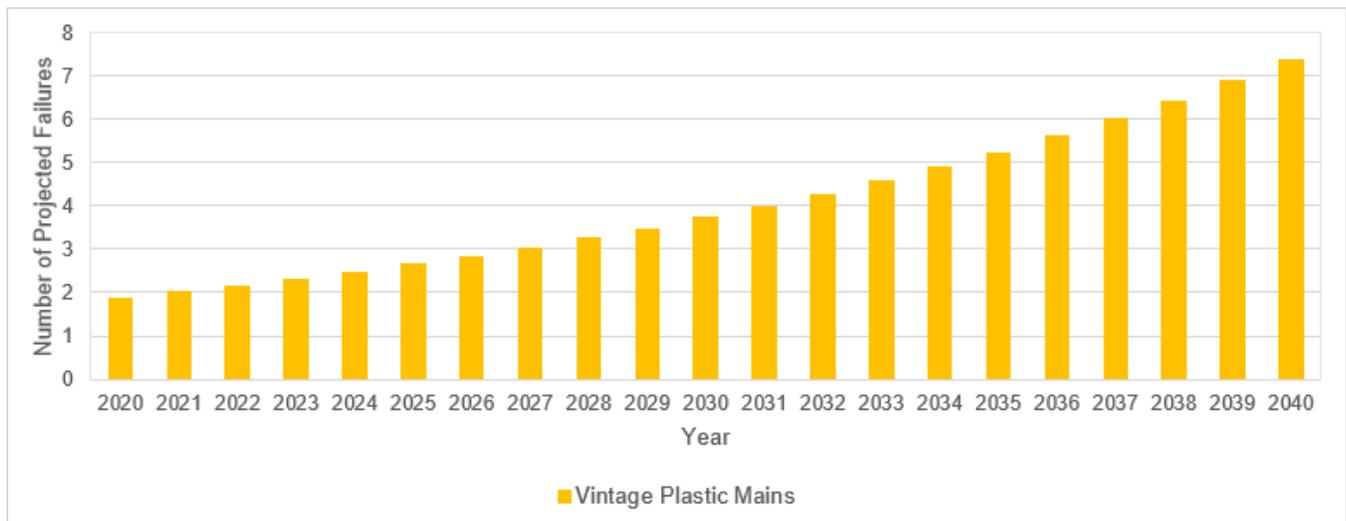


Figure 5.2-36: 20-Year Projection: Vintage Plastic Aldyl A Mains Failures (2020-2040) EGD Rate Zone

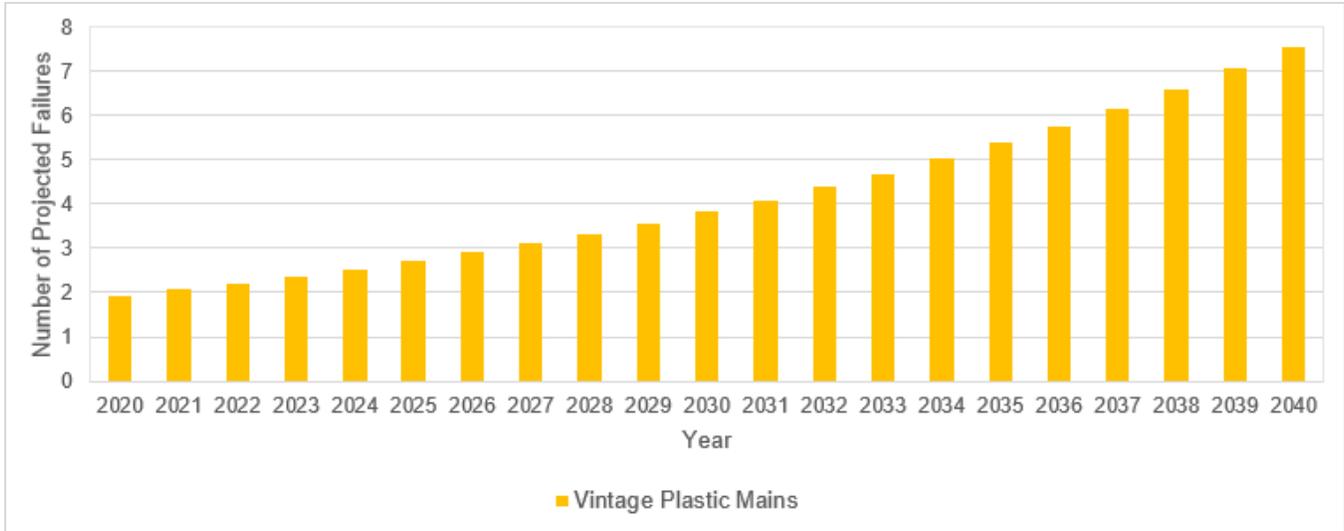


Figure 5.2-37: 20-Year Projection: Vintage Plastic Aldyl A Mains Failures (2020-2040) Union Rate Zones

The current population of vintage plastic Aldyl A mains is in generally good condition as is represented by the reliability models and shown in the Mean Cumulative Function (MCF) curves in **Figure 5.2-38** for EGD and **Figure 5.2-39** for the Union rate zones. These graphs indicate that EGI can expect relatively low failure rates for another 30 years before the rate is projected to dramatically increase. This is in contrast to the steel pipe MCF graphs **Figure 5.2-20** and **Figure 5.2-21** that show significant increases to failure rates in less than 10 years for pre- and including 1970 vintage steel.

Results of various laboratory testing conducted on EGI samples as well as samples from other utilities yielded parameters required to estimate the time to failure of vintage plastic Aldyl A pipes using a mechanical model known as Rate Process Method (RPM). Due to the large bounds of the RPM model and lack of sufficient EGI failure data, a Bayesian approach was used to integrate existing mechanical and statistical models and make EGI's reliability estimates more accurate. Overall, the results of the Bayesian model yield moderate failure projections for vintage plastic Aldyl A pipes in upcoming years. The Bayesian model has changed EGI's understanding of the future failure rates for Aldyl A. In previous Asset Plans, EGI showed how the company's previous information and models yielded more aggressive failure curves.

Although natural gas distribution utilities in the southern United States have made the replacement of Aldyl A pipe a priority, EGI has not yet observed any signs of significant increases to failures, likely due to the colder soil temperatures that increase the life expectancy for this plastic.

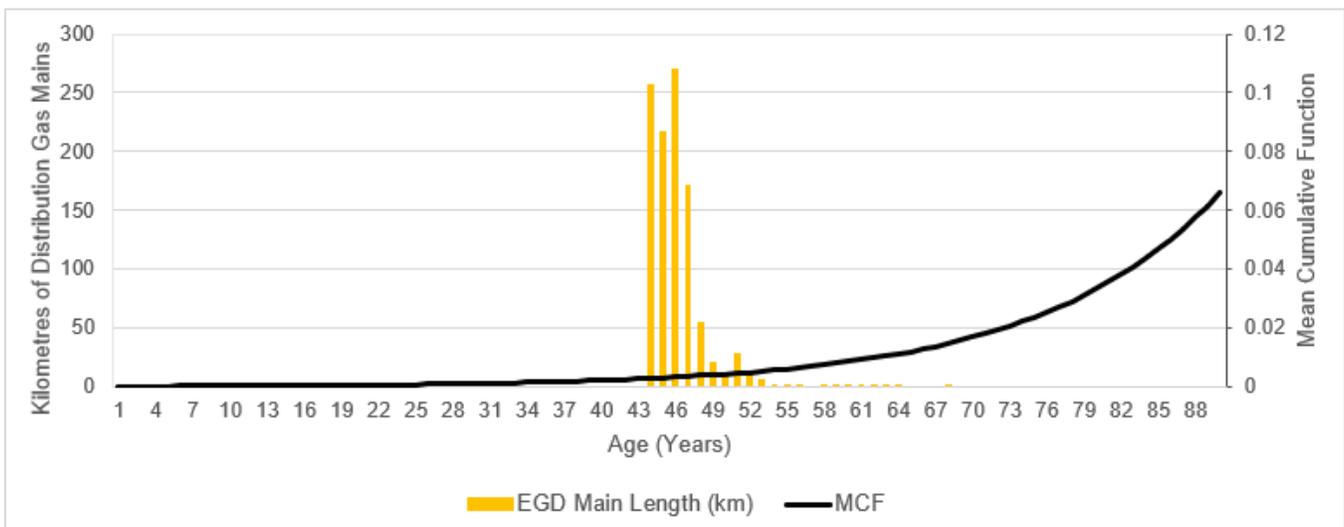


Figure 5.2-38: Installation History vs. MCF – Vintage Plastic Mains EGD Rate Zone

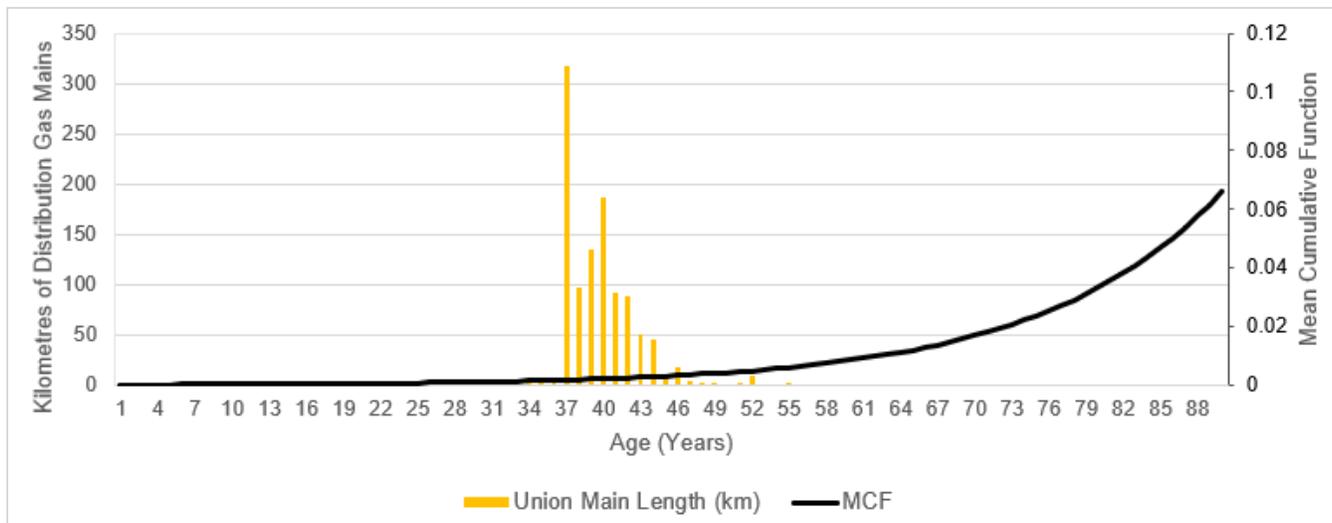


Figure 5.2-39: Installation History vs. MCF - Vintage Plastic Union Rate Zones

5.2.3.5.2.2 Intermediate Plastic Mains

After using vintage plastic Aldyl A pipe, EGI transitioned to installing other resin-based plastic pipes designated as Intermediate Plastic Mains, such as Aldyl HD and TR-418. This occurred by the end of 1976 and by 1977 for the EGD and Union rate zones respectively, with an overlap period of vintage plastic Aldyl A installations as Intermediate Plastic Mains pipe was introduced.

Intermediate plastic pipe was phased out by 1985 in the EGD rate zone. For the Union rate zones, there remains a population of plastic pipe not readily classified (designated as To Be Categorized Plastic) and may include some vintage plastic Aldyl A and intermediate plastic material. The installation year for this population extends until 1998. Excluding pipe designated as To Be Categorized Plastic, the current asset age of Intermediate Plastic Mains pipe ranges from 32 to 40 years and 34 to 42 years for the EGD and Union rate zones respectively (see **Figure 5.2-40** and **Figure 5.2-41**).

Currently, there is no known industry research or investigation completed on intermediate plastic mains to provide insight to its degradation and failure mechanisms. Sampling programs took place in 2019 and 2020 to extract samples from EGI pipe systems to further enhance EGI knowledge. These samples are in the process of undergoing testing and analysis in 2022 and final reports should be available to EGI in 2023.

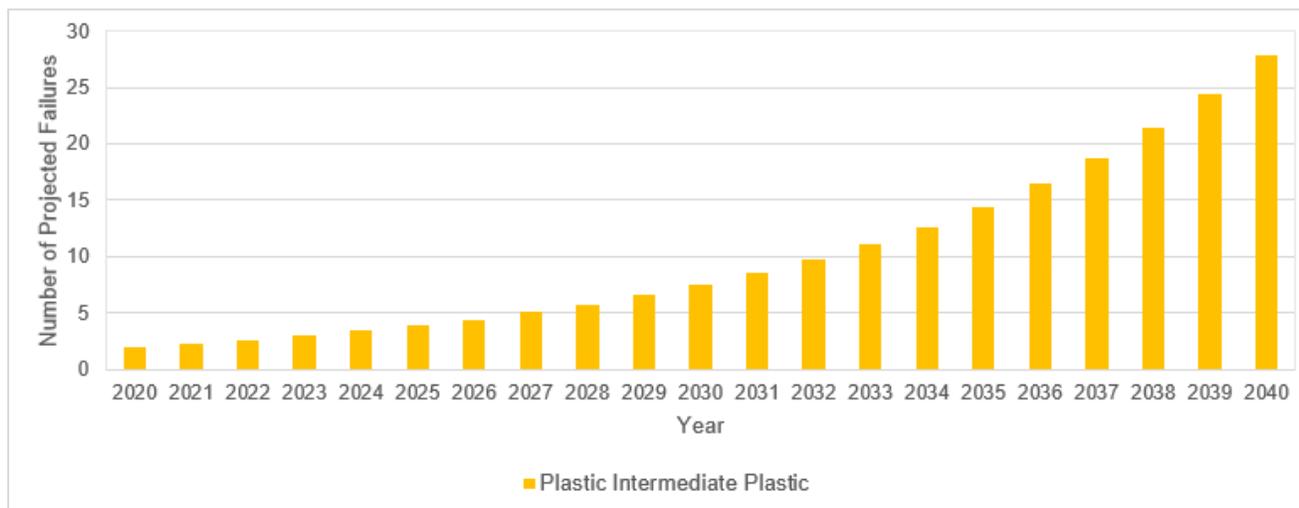


Figure 5.2-40: 20-Year Projection – Plastic Intermediate Plastic Mains Failures (2020 to 2040) – EGD Rate Zone

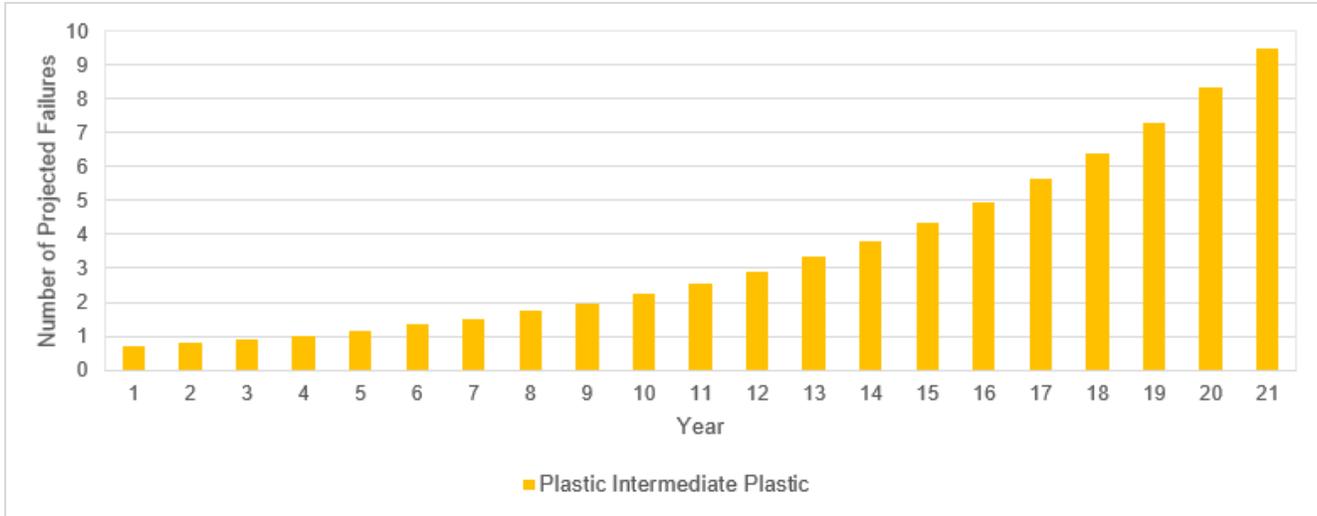


Figure 5.2-41: 20-Year Projection – Plastic Intermediate Plastic Mains Failures (2020 to 2040) Union Rate Zones

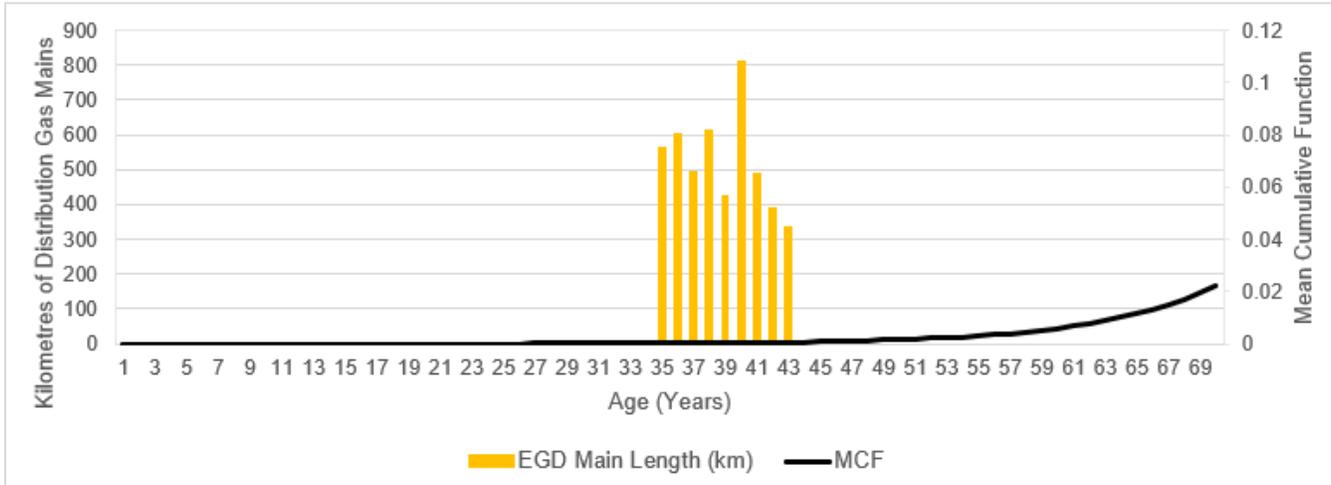


Figure 5.2-42: Installation History vs. MCF – Plastic Pipe Intermediate Plastic – EGD Rate Zone

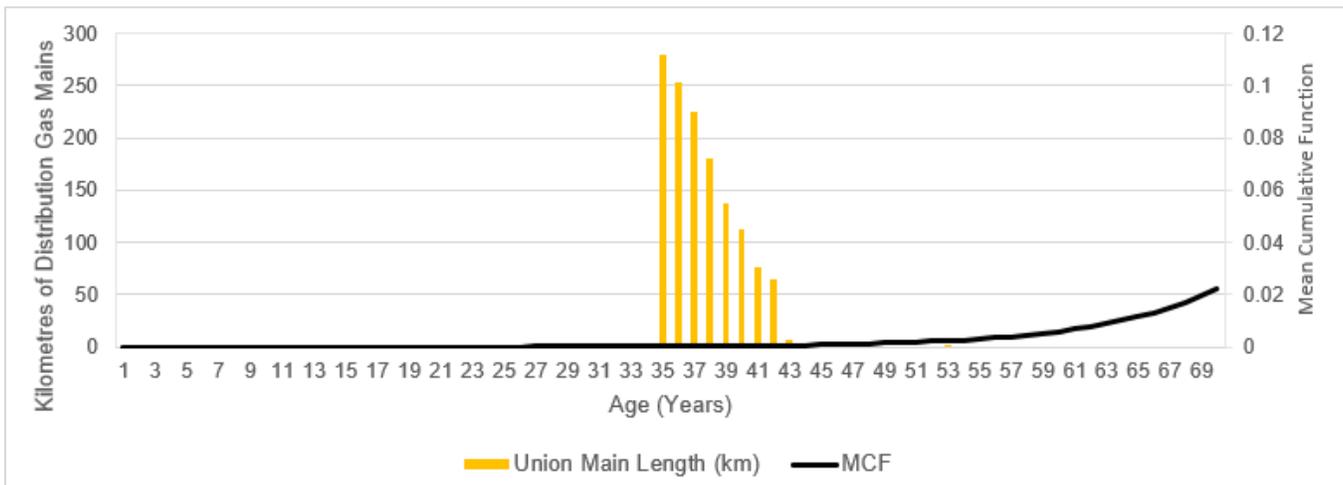


Figure 5.2-43: Installation History vs. MCF – Plastic Pipe Intermediate Plastic – Union Rate Zones

5.2.3.5.2.3 Copper Risers

The copper riser’s AMP-fitting causes a disturbance in the flow of gas, creating a low pressure zone after the fitting when the gas flow becomes turbulent. This turbulence causes an erosion-corrosion failure to occur, which manifests itself into a pinhole or a circumferential crack. All sampled copper risers have shown some degree of corrosion after the AMP-fitting. Based on the sampled risers and reliability modelling, it is expected that all copper risers will corrode, causing a leak at some point in their lifetime. Subsequent sampling has confirmed these findings. The reliability modelling for copper risers has been refined to improve failure forecasts.

The predominant failure mechanism for these assets at EGI is associated with turbulent flow and is not affected by external conditions or the environment. Analysis determined the conditions (pressure and flow) that would lead to this and supported the sampling program which showed wall loss on all copper risers. The AMP-fitting assembly, typical AMP-fitting installation, and localized corrosion failure are illustrated in **Figure 5.2-44**, **Figure 5.2-45** and **Figure 5.2-46**.

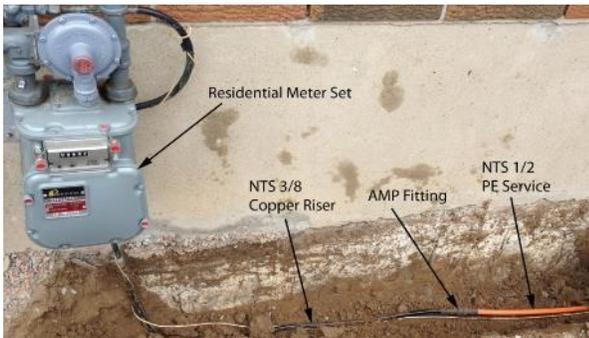


Figure 5.2-44: AMP Fitting Assembly

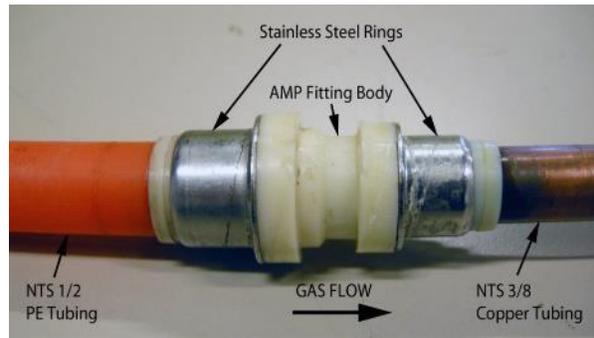


Figure 5.2-45: Typical AMP Fitting Installation

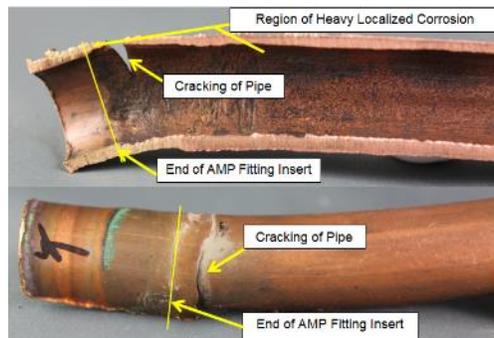


Figure 5.2-46: Localized Corrosion Failure at AMP Fitting Outlet

The condition of copper risers is expected to significantly degrade over time with a yearly increase in the number of leaks over the next 10 years as shown in a cumulative distribution function in **Figure 5.2-47**. Actual failure data has trended very closely to the statistically projected number of leaks as shown in **Figure 5.2-48**.

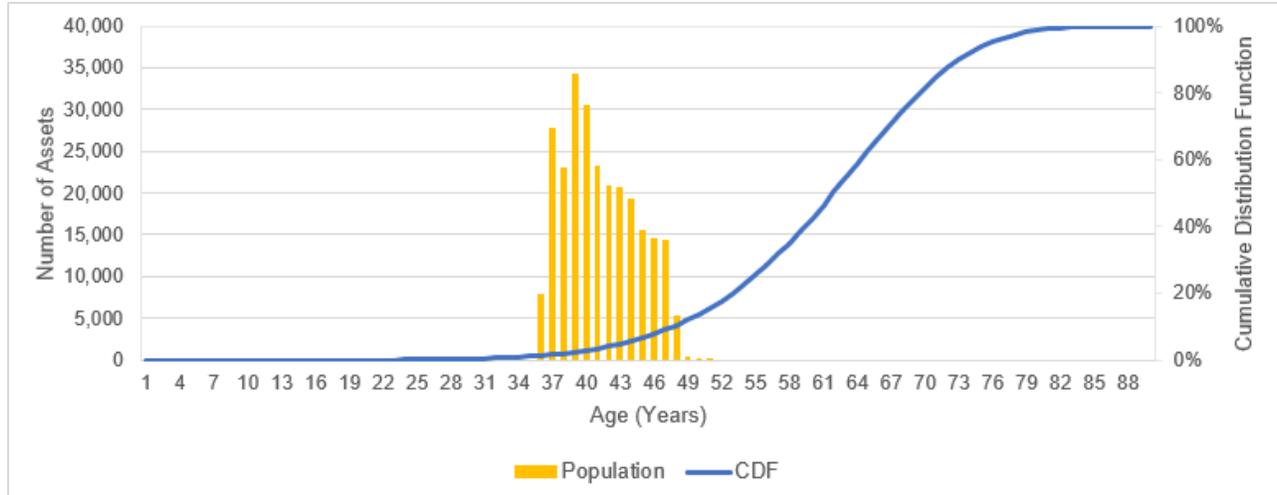


Figure 5.2-47: Population of Copper (AMP) Risers vs. CDF – EGD Rate Zone

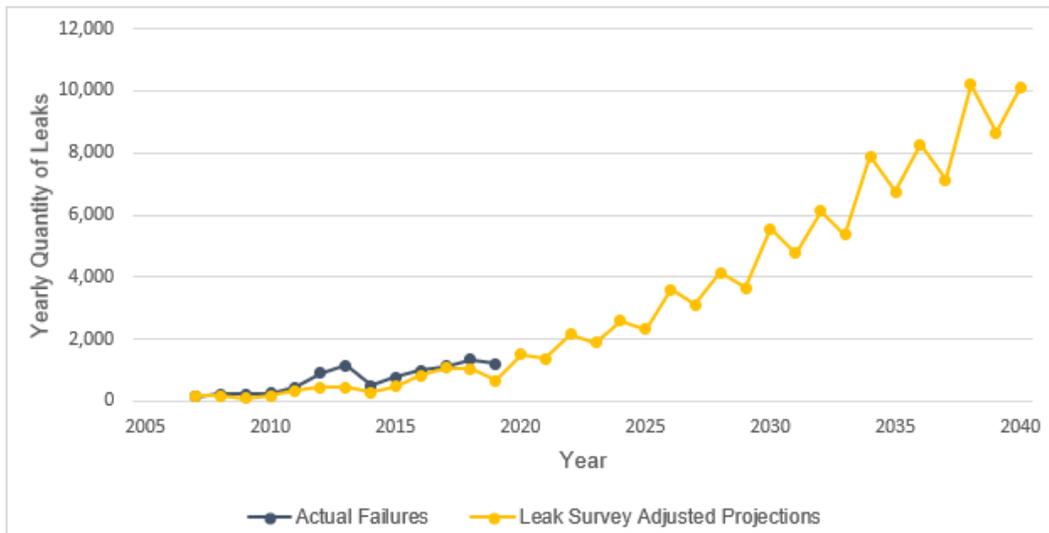


Figure 5.2-48: Copper Riser Discovered Leaks

5.2.3.5.2.4 Modern PE Resins

By the mid-1980s, EGI had started to use a different resin type, classified as Modern Polyethylene (PE) Resins. The newer generation of plastic resin and the improvement of installation practices resulted in a plastic mains asset that outperformed earlier assets of its kind. These newer resins have experienced fewer failures. EGI continues to gather data to better understand failure modes and mean time to failure.

The industry has proven that these resins do not exhibit slow crack growth (SCG) issues. These are relatively young assets and have experienced few material failures, and as such, statistical analysis to project future failures has been difficult. The entire population of this asset subclass is expected to remain in good condition for at least the next 40 years. A failure projection model is not included for this asset subclass.

5.2.3.5.3 RISK AND OPPORTUNITY

As demonstrated by the projected leak trends, the three categories of PE mains population are performing well and are expected to continue to perform well in future years, with leak rates that do not pose a significant risk. Mains are in good condition; however, some hazards (third-party latent damages and environmental conditions) may accelerate degradation and

result in leaks. These carry the same risks noted for steel mains (see **Section 5.2.3.4.1**), including supply interruption to customers and GHG emissions associated with an uncontrolled gas release. As well, gas can migrate into buildings, creating a gaseous and potentially explosive environment for customers and the public.

5.2.3.6 Distribution Pipe Strategy Outcomes

5.2.3.6.1 TIMP MAINS STRATEGIES

The Transmission Integrity Management Program (TIMP) pipelines strategy is to continue performing in-line inspections (ILI) including retrofits to enhance the amount and quality of condition data and digs to evaluate pipeline features. Depth of cover surveys and class location surveys are also included as part of the TIMP pipelines strategy and any changes in class location or depth of cover are assessed to determine if mitigations are required.

Safety is the primary driver for the TIMP, which uses a strategic and long-term risk mitigation approach to ensure these pipeline assets remain fit for service. Inspection data allows EGI to assess system health and helps ensure pipeline safety.

The TIMP contributes to system longevity and is used to extend the useful life of assets by identifying condition issues prior to the occurrence of an incident. The inspections and remedial activities performed through the TIMP reduce the probability of pipeline failures and prevent large-scale customer interruptions or unplanned gas releases. The information acquired through inspection is paramount to managing the balance between pipeline repairs and full replacement of TIMP pipelines. Where inspection data cannot be obtained by known techniques as in the case of pre-1970 vintage steel, full replacement of pipelines is used to mitigate high level of uncertainties associated with the continuous operation of these high pressure pipelines.

As EGI further develops and extends its Integrity Management Program (IMP), condition issues are identified and assessed to establish the appropriate remediation and timing. Examples that are emerging at this time include depth of cover, exposure of pipelines in and near watercourses, as well as pipelines that are located on bridge crossings.

Pipeline program management is evaluated on a continual basis using Plan-Do-Check-Act methodology. When analysis indicates that ongoing repair costs are likely to exceed capital requirements to replace the asset, the mitigation strategy is evaluated to ensure that risk is managed to the lowest practicable level.

The replacement and renewal strategies for TIMP mains are as follows:

5.2.3.6.1.1 Inspection Program Integrity Retrofits and Digs

Investments in TIMP retrofits and digs are mandated by the IMP, a regulatory requirement designed to comply with all applicable codes and standards. The program manages the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Investments in this program include installation costs for ILI inspection tools, retrofits to existing lines and replacement of pipeline segments with integrity issues.

EGI inspects pipelines on a risk-based frequency that considers pipeline operating characteristics and conditions and whether location has an impact on the potential consequence of a failure. EGI also continues to retrofit some pipelines initially assessed through external corrosion direct assessment (ECDA) to accommodate ILI tools and improve integrity assessment completeness. In-line inspection provides the most complete data on pipeline condition and is considered best-in-class for integrity management. Further work has also been completed to reconfigure some previously inspected pipelines and improve data quality. The following investment has been identified within this program:

Sudbury Lateral Integrity Digs 2023

The NPS 10, 121 km Sudbury Lateral Section 1 was constructed in 1958 and operates above 50% SMYS as a TIMP pipeline. This pipeline runs from North Bay (Barnett Road TC tap) to Coniston PCS feeding Sudbury and smaller adjoining communities. The pipeline section was in-line inspected in 2021 with several Phase 2 features (corrosion with metal loss, and dents, etc.) reported. 67 digs have been planned for the 2023 integrity dig works to effect repair or replacement of affected sections. See **Appendix A, Pg. 17** for additional detail on this investment.

5.2.3.6.1.2 Depth of Cover Program

In compliance with *TSSA Oil and Gas Pipeline Systems Code Adoption Document*, EGI has a depth of cover survey program for all TIMP pipelines. These surveys may identify locations where remediation is required. The current cycle of depth of cover surveys will be completed in 2023, at which time a prioritized list of capital replacements will be created to plan for any identified pipelines requiring remediation.

5.2.3.6.1.3 Class Location Program

Annual class location surveys are required as per *Canadian Standards Association Z662 – Oil and Gas Pipeline Systems* for pipelines greater than 30% SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs near EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system to meet current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.

5.2.3.6.2 COMMON DISTRIBUTION PIPE ASSET STRATEGIES

The strategies grouped together here apply to a number of different asset subclasses.

5.2.3.6.2.1 Corrosion Prevention Program

This program consists of annual anode installations and rectifier installations. In addition to active steel mains, the Corrosion Prevention Program also covers corrosion control on steel casings and replacement of rectifier systems, and coating and renewal work on bridge crossings.

- **Anodes and rectifiers:** Program to ensure steel mains have adequate cathodic protection, using pipe-to-soil survey results to determine which steel main networks require additional or replacement anodes, additional or replacement rectifiers, and groundbeds.
- **Bridge crossings:** Refers to mains installed above ground and affixed to a bridge structure. Mains on bridges are exposed to atmospheric elements and road salt during winter months, which could accelerate corrosion on the main, casing and pipe hangers. Annual bridge crossing surveys are conducted to identify faults and issues. Issues found trigger engineering assessments which recommend risk mitigation measures such as the replacement of components or the entire bridge crossing if necessary.

5.2.3.6.2.2 Emergency Replacement Program

This program addresses unforeseen pipeline emergencies that are small in nature. Examples of these types of jobs include cutting out a leaking section of main/fitting, removing blow-offs that require immediate attention, ongoing municipal work that encounters an unexpected gas plant catch basin placements, structures, temporary main cut-out to access municipal plant and water mains.

- **Leaking mains and emergency replacements:** Throughout the year, unforeseen short main replacement projects must be expedited on short notice, such as replacing a short section of main or fittings that are leaking, removing blow-off assemblies or repairing mechanical fittings that require immediate attention.

5.2.3.6.2.3 General Replacement Program

This program addresses planned main replacement work that are not emergency repairs. The capital expenditures included in this category cover a variety of planned projects. The projects covered under this expenditure include low-pressure system replacements, distribution pipeline replacements due to historical leakage and integrity concerns (like MOP Verification Program spend), pipeline casing replacements, and bridge and water crossing replacements and repairs. These projects are often identified through planned inspections and pipeline surveys. They would then be assessed and planned based on risk and resource availability.

5.2.3.6.2.4 Service Replacement Program

A distribution service refers to the pipe between the distribution main and the customer's meter set. Over the years, different materials have been used for this asset, including steel, copper, and varying resins of plastic, each with unique characteristics that contribute to their performance over time. Services can be repaired or replaced depending on asset condition and the nature of the issue exhibited. Generally, replacement is the preferred approach to mitigate unacceptable asset condition.

5.2.3.6.2.5 Relocation Program

A relocation project is required when a municipality, road authority, outside agency, other utility or other third-party constructs or reconstructs a road, bridge, railway, canal or building, and the work is deemed in conflict with an existing gas plant.

This program aims to relocate gas-carrying assets in conflict with third-party proposed work, ensuring conflicts are resolved within the framework of various third-party agreements (in most cases by relocating the existing gas infrastructure) to ensure the continued safe and reliable delivery of natural gas to customers. Relocation renews the asset by replacing it with new pipe.

5.2.3.6.2.6 Continuous Improvement of Reliability Models and Asset Understanding

Condition assessment programs: Condition assessment programs including integrity assessments and QMER are used to identify and assess the failure mechanisms of EGI's assets. EGI has also concluded an extensive study on vintage plastic Aldyl A pipe with the Gas Technology Institute to develop data-driven predictions on the remaining useful life expectancy of plastic pipe. Studies are now being extended to Intermediate Plastic Mains material to further enhance EGI's knowledge of this material. Sampling programs and laboratory testing for TR-418 are underway with results analysis expected by 2022.

Reliability modelling: A reliability model has been developed for vintage plastic Aldyl A pipe and copper risers through the Asset Health Review operating process under the Distribution Integrity Management Program. This has used a structured methodology to convert historical failure data into a statistical model that forecasts the probability of failure. Leak projections are refined with input obtained through direct assessment, internal and external industry studies, and subject matter advisor input.

5.2.3.6.3 STEEL MAINS (PRE- AND INCLUDING 1970) STRATEGIES

The approach for the Steel Mains (Pre- and including 1970) asset subclass consists of program work that includes condition monitoring, a reactive repair program, and proactive and reactive replacement programs.

EGI continues to evaluate load shed zones (system isolation) to manage customer outages and improve safety and operational reliability, while balancing the opportunity for performance improvements with risk and cost.

The maintenance strategies are described in **Section 5.2.3.2** and the resultant replacement/renewal strategies for the Steel Mains (Pre- and including 1970) asset subclass are as follows:

5.2.3.6.3.1 Bare and Unprotected Program

This program manages the replacement of all bare and unprotected steel mains in the Union rate zones. These mains are more susceptible to leaks as they have not been cathodically protected since installation. About 60% of these mains are in urban areas, of which approximately 5% are in highly developed areas; the remainder are in rural areas. Removing these mains from service will reduce the potential for leaks due to corrosion.

5.2.3.6.3.2 Vintage Steel Replacement Program

EGI has developed a Proactive Vintage Steel Replacement Program to mitigate the predicted future risk that results from some of EGI's oldest steel mains reaching the end of their useful life and beginning to fail. The goal of the Proactive Vintage Steel Replacement Program is to avoid the risk that these aging assets pose by renewing them before they fail; this is in accordance with the expectations set out by the Safety and Loss Management System contained within CSA Z662-19. As depicted in **Figure 5.2-24**, the population of Vintage Steel has a failure rate almost 3 times the failure rate of more modern steel pipe and is expected to increase exponentially over the next 20 years. The rate of renewal will not be able to match the rate of failing pipe if EGI were to take a reactive stance to this issue. EGI has chosen to take a proactive mitigation approach to the aging steel population which is consistent to the approach many natural gas distribution utilities are taking in the North American natural gas distribution industry⁹.

The Proactive Vintage Steel Replacement Program at EGI seeks to follow industry best practices¹⁰, as noted above, to create a master plan and program to identify and proactively replace pipe that is at elevated risk of failure through an ongoing risk-based fitness for service assessment.

With the lens of the new DIMP Risk Model, most of the Vintage Steel mains population are predicted to remain in the Low Risk region (see **Figure 5.2-49**) well into future years. Leveraging the DIMP Risk Model outputs for steel mains and comparing the predicted future risk against the Enbridge Risk Matrix (see **Figure 4.2-4**), assets that move into the yellow medium risk zone are targeted for replacement within the program (see **Figure 5.2-49**).

⁹ Washington UTC – Commission Policy on Accelerated Replacement of Pipeline Facilities with Elevated Risk (December 31, 2012)

¹⁰ The American Gas Foundation – Gas Distribution Infrastructure: Pipeline Replacement and Upgrades (July, 2012)

Medium	Medium	High	Very High	Very High	Very High	Very High
Medium	Medium	Medium	High	Very High	Very High	Very High
Low	Medium	Medium	Medium	High	Very High	Very High
Low	Low	Medium	Medium	Medium	High	Very High
Low	Low	Low	Medium	Medium	Medium	High
Low	Low	Low	Low	Medium	Medium	Medium
Low	Low	Low	Low	Low	Medium	Medium

Figure 5.2-49: Vintage Steel Mains Selection Process

This selection process identifies approximately 5,100 km of the 17,423 km of Vintage Steel mains for renewal based on their predicted future risk. The Proactive Vintage Steel Replacement Program proposes renewing these targeted mains over a 20-year term. This would equate to renewing about 253 km/year after ramping up to full pace. It is expected that the program ramp-up will take five years to reach full volumes. The predicted failure rates and risks for the targeted mains (5,100 km) are shown in Figure 5.2-50 and Figure 5.2-51. A do-nothing scenario shows a significant increase to leak rates and risk for the company should a more reactive stance be taken. By taking proactive action, EGI can reduce the number of below-grade leaks experienced within the distribution network as well as eliminate the risk that those below-grade leaks may pose.

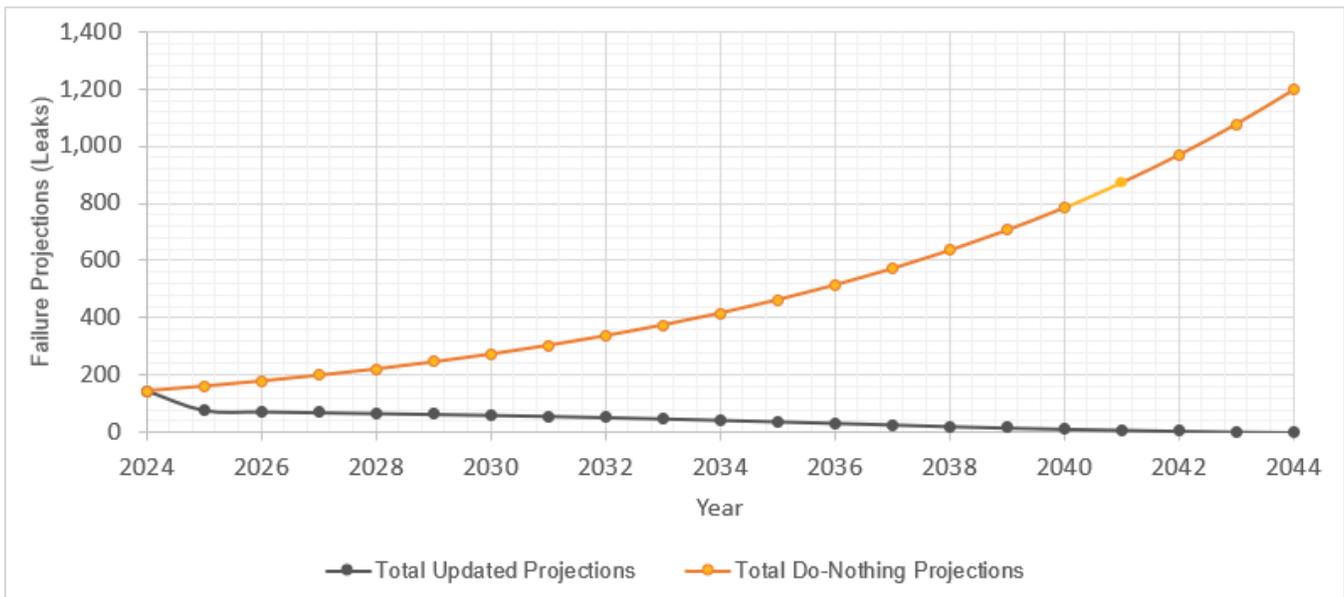


Figure 5.2-50: Predicted Failure Projections – Targeted Mains within the Program (5,100km)

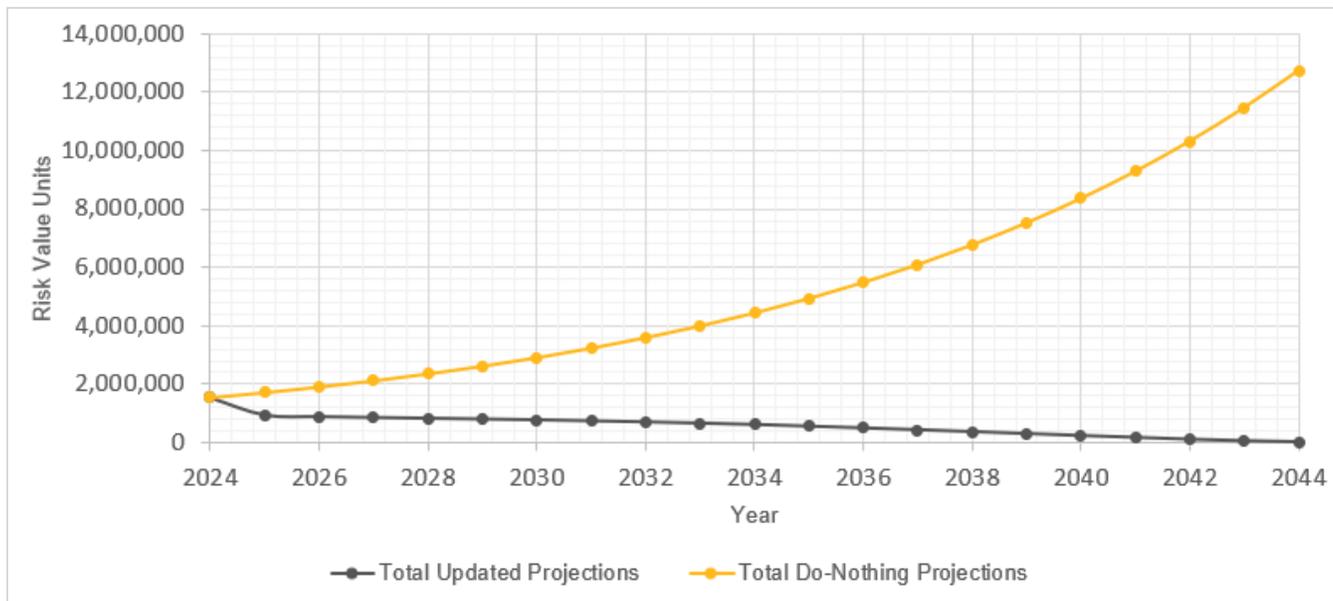


Figure 5.2-51: Predicted Risk Reduction for the Proactive Vintage Steel Replacement Program

The vast majority (over 80% of steel mains) of distribution steel pipe being targeted within the Proactive Vintage Steel Replacement Program is small diameter (NPS 6 or smaller) intermediate pressure (MOP 64 psi or less) pipe that will be replaced by PE pipe, eliminating the corrosion leak risk, removing cathodic protection and cathodic protection survey costs. Replacing aging steel pipe with PE pipe will better equip the distribution network for transition to hydrogen blending. Renewing aging steel pipe before it leaks will also assist EGI in reducing greenhouse gas emissions.

By proactively replacing aging assets, in addition to avoiding significant risk, savings can be achieved as planned work can be executed with less cost than emergency work once a leak has occurred. A proactive vintage steel replacement program will assist EGI in sustaining EGI’s current reliability levels and to prepare the network for the eventual delivery of low carbon, blended hydrogen. This program was included in the 2024 Rate Rebasng Customer Engagement, where the majority of customers agreed that EGI should increase its spending on the Vintage Steel Program in order to prepare the system for the future.

The projects created to support the Vintage Steel Program will initially be prioritized based on the following factors:

- Relative risk in comparison to other projects within the program.
- Opportunities to combine with other pipe replacement programs such as Relocations.
- Planned moratoriums which will limit the ability to execute projects for a specified period of time.

The LTC decision for St. Laurent is not expected to impact the Vintage Steel Replacement Program as this program and the associated selection of pipe replacements are based off of predictive analytics (condition and risk from the DIMP Risk Model as described in **Section 5.2.3.4.1.3.1**). This program is a proactive approach replace deteriorating piping at a planned and manageable pace before the rate of deterioration and failure exceeds EGI’s ability to respond to such failures.

Additionally, as studies to support the hydrogen strategy are finalized and new areas targeted for hydrogen injection are identified, these will be given priority among the other considerations.

5.2.3.6.3.3 Major Pipe Replacement Projects

Where the condition or risk related to a significant pipeline has been established to be a concern, EGI will establish a project team to gather relevant information, commission additional studies to support decision-making, and evaluate alternatives to address the concerns. These pipelines may require a large capital investment subject to the Ontario Energy Board’s Leave-to-Construct process.

Analytics, failure history, tacit knowledge and condition assessments have identified condition and risk issues with some of EGI’s more significant distribution mains. In response to the St. Laurent Decision (EB-2020-0293) and direction from the OEB, EGI will evaluate the viability, cost and effectiveness of alternate inspection and maintenance methods on these distribution

pipelines. Failures to these mains could result in significant negative impact to public and worker safety and/or significant customer outages. Condition issues and risk concerns have been identified through tacit knowledge and condition assessments on the following mains:

NPS 12 St. Laurent

The NPS 12 St. Laurent main is a single-source system that consists of vintage steel mains installed in 1958 and is a critical supply to the cities of Ottawa and Gatineau, supplying natural gas to more than 165,000 customers. This pipeline feeds 12 distribution system stations and one header station, as well as numerous non-interruptible residential, industrial, and commercial customers (including Parliament buildings), and a natural gas-fired power plant.

The NPS 12 St. Laurent main is located in downtown Ottawa and is known to have all the characteristics of vintage steel pipe as discussed in **Table 5.2.3-1**. Should the NPS 12 St. Laurent main experience a pipeline defect or sustain damage, EGI may have to either temporarily reduce operating pressures or shut down the line. Any pipe defects or failures that could release gas would require a significant emergency response and could have severe consequences on customers and residents. Shutting down the pipeline could lead to customer loss in excess of 60,000 on a cold day. **Figure 5.2-52** to **Figure 5.2-54** show areas in the St. Laurent pipeline that exhibit poor condition.

Following the OEB decision in May 2022, EGI is undertaking a series of field activities to further evaluate the condition of this distribution line. This includes comprehensive external corrosion surveys, recurrent leak surveys and odourant verification tests, opportunistic digs, in-line inspections of various, representative segments of the line, and non-destructive examinations. In parallel, EGI is currently evaluating impacts from an Integrated Resource Planning (Energy Transition) perspective and is planning related discussions with the impacted municipality. Obtaining such evidence is in line with the recommendation from the OEB's Decision and will provide factual data to determine the next steps for this and similar projects without prejudice. While the outcome of the further condition evaluation and IRP opportunities were not fully understood at the time the capital requirements for the project were adjusted in the capital forecast; EGI is still expecting a relatively large capital investment will be necessary to address the pipeline condition and continue to safely and reliably serve the current and future energy needs for the City of Ottawa.

See **Appendix A, Pg. 9-10** for additional detail on this investment.



Figure 5.2-52: Multiple corrosion sites on NPS 12 St. Laurent pipe

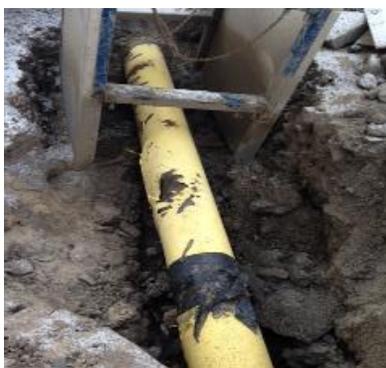


Figure 5.2-53: Gouges and dents due to latent damages



Figure 5.2-54: Coating damages

Port Stanley Line

The NPS 8 Port Stanley line was constructed in 1959 and is approximately 20 km in length. This single feed system provides natural gas to Port Stanley and St. Thomas, with about 13,000 customers, including the St. Thomas hospital and a retirement home in Port Stanley. The pipeline has unknown grade and wall thickness, is classified as bare and unprotected, and is known to exhibit the characteristics of vintage steel pipe as discussed in **Table 5.2.3-1**.

The pipeline has had a number of leaks which have been compounded by maintainability issues – the pipeline is difficult to access in places and extensive corrosion has made welding repairs difficult to complete.

Figure 5.2-55 to Figure 5.2-57 show areas in the Port Stanley line exhibiting factors that can lead to difficulty in maintaining the pipeline, poor condition and increased risk. See **Appendix A, Pg. 16** for additional detail on this investment.



Figure 5.2-55: Corrosion



Figure 5.2-56: Exposed Crossing



Figure 5.2-57: Below-Grade Stations

NPS 12 Martin Grove Rd

The NPS 12 Martin Grove Rd project addresses condition and risk concerns for approximately 6.4 km of 1955-installed vintage steel pipe located in Toronto.

There are several concerns such as a large number of connections (approximately 360) to the high pressure (>175 psi / 1,200 kPa) main system as well as poor depth of cover issues. The large number of connections to the high-pressure main is a concern due to the known integrity issues associated with the degradation of the Field Applied Coatings and there being possible corrosion initiation locations. There are two known unrestrained compression couplings, nine restrained compression couplings, and three suspect valves that may have been tied into the main using compression couplings but not shown in EGI records. Cathodic Protection (CP) history for the past 20 years shows that over 15% of the readings taken were below the minimum requirements. Poor CP protection levels can lead to corrosion.

Depth of cover (DOC) has been identified as a significant concern for these main segments as identified by 2018 and 2019 DOC surveys that found over 52% of the survey locations had DOC less than 90 cm, with 77 survey locations measuring less than 60 cm of cover. Poor DOC can lead to increased third-party damages. See **Appendix A, Pg. 12** for additional detail on this investment.

NPS 12 Wilson Ave

The NPS 12 Wilson Ave project mitigates the risk from 8.3 km of early 1960's pipe (with some main segments as old as 1955) located in Toronto. This main supplies key customers including the Humber River Hospital.

There were issues with stray current-induced corrosion from nearby Toronto Transit Commission (TTC) rail systems resulting in significant leak repairs in 2017. There are three unrestrained compression couplings and four restrained compression couplings along this section of main. Another significant degradation factor is the poor field-applied coatings at service connections. There are approximately 250 service connections along this section of main, and there has been a history of leaks arising from these service connections. SMA input noted that when repairs were made, they observed very poor coating conditions; and in some cases, the coatings were no longer present leaving bare steel exposed. Curb Valve Tees have been damaged historically due to their location within the roadway and lack of cover. **Figure 5.2-58** shows corrosion pitting from TTC stray current. See **Appendix A, Pg. 10** for additional detail on this investment.



Figure 5.2-58: Corrosion Pitting from TTC Stray Current

Moulton Replacement Bare and Unprotected

The Moulton Replacement project is part of the Bare and Unprotected Replacement Program. There is 5.6 km of NPS 8 Intermediate Pressure (IP) bare steel main to be replaced with NPS 8 modern coated steel pipe between #1472 Hwy 3 to #2199 Hwy 3. These mains are more susceptible to leaks as they have not been cathodically protected since installation. See **Appendix A, Pg. 15** for additional detail on this investment.

Erin Township

Erin Township investment is replacing Aldyl-A PE pipe that is prone to slow crack growth (SCG) due to its known material and manufacturing flaws (large inner bore spherulitic structures and surface oxidation of the inner surface). The presence of stress intensification factors (for example, rock, service connections, and bend radius) can accelerate SCG and lead to loss of containment. Erin Township has seen several loss of containment Aldyl-A crack failures (see **Figure 5.2-59**), due to rocky soil where rocks create a stressor on the pipe that accelerates the cracking failures. This is a multi-year investment that will replace about 13.2 km of Aldyl-A mains and service pipe. See **Appendix A, Pg. 9** for additional detail on this investment.



Figure 5.2-59: Sample of Aldyl-A Pipe with Crack Failure

NPS 10 Glenridge Avenue

This project looks to replace approximately 8.7 km of mostly 1954 to 1960 vintage NPS 10 intermediate pressure (IP) pipe with sections of NPS 12 and NPS 8 spliced in over the years as repairs.

A 2019 Depth of Cover (DOC) survey found that 366 (33%) survey locations had less than 90 cm of cover, and 90 survey locations (8%) had DOC less than 60 cm, with one location found having exposed pipe due to creek erosion. Poor DOC leads to increased third-party damages (as has been seen with blow-off valves). Other risk factors include black coal tar pipe coatings used on 1959/1960 vintage NPS 10 pipe which show evidence of degradation, yielding to corrosion.

There are many unusual fittings (Stop-and-Go) and unusual construction practices (such as using unrestrained compression couplings to tie in service connections) that can lead to difficult emergency responses. Unrestrained compression couplings have been a source of leaks due to ground settlement and increases the risk of pull-out. The river crossing at Twelve Mile Creek is very difficult to access due to steep creek banks and heavy vegetation, making it difficult to perform cathodic protection and leak surveys (see **Figure 5.2-60**). It will pose as a significant concern for any required emergency response. The numerous transitions from NPS 8 to NPS 10 to NPS 12 also creates concern and difficulties for operational work to be completed.

There are two main line valves that are suspected to be tied in with unrestrained compression couplings as per an Integrity Assessment for suspect compression coupling locations. Cathodic protection for some of the NPS 10 segments has been historically poor, showing as much as 25% of historical readings over the last 20 years below minimum required levels. See **Appendix A, Pg. 11** for additional detail on this investment.



Figure 5.2-60: Exposed Pipe in Creek Crossing

5.2.3.6.3.4 Copper Services Replacement Program

The proactive Copper Services Replacement Program aims to remove all outstanding active copper services and replace these assets with new plastic services and anodeless risers as part of the Service Replacement Program. Additionally, EGI will be monitoring condition-based and customer-related drivers that trigger the need to replace these assets. Condition-based drivers are monitored through existing activities of the DIMP, as well as the Leak and Corrosion Survey programs. Copper services are also replaced through proactive vintage mains replacement programs and relocation projects.

5.2.3.6.3.5 Aerial Crossings

Through EGI's DIMP, condition surveys and assessments are planned in 2022 to get a full population understanding. From these condition assessments, further risk assessments will take place to understand the impacts from the degradation that has taken place. This may lead to specific replacements or a more systemic replacement mitigation approach.

5.2.3.6.4 DISTRIBUTION STEEL PIPE POST-1970 STRATEGIES

The maintenance strategy for post-1970 distribution steel pipe is consistent with pre- and including 1970 steel mains (see **Section 5.2.3.4.1**), where several condition inspection programs are in place, such as the Leak Survey and the Cathodic Protection Survey programs. For more detail on Common Distribution Strategies, see **Section 5.2.3.6.2**.

The preferred life cycle approach to corrosion leaks on post-1970 distribution steel pipe is to repair them as they are discovered and perform replacements for a few select mains where condition, risk and other factors cause a repair to not be viable through the Emergency Replacement Program. The number of failures for this asset subclass in the short term is considered manageable through existing approaches. EGI continues to monitor these failures to determine if a proactive maintenance and replacement program is required. This strategy meets the expectations of EGI's rate payers for sustaining a reliable system, based on the 2024 Rate Rebasement Customer Engagement results in which the majority of customers indicated that EGI should maintain current reliability levels.

5.2.3.6.5 DISTRIBUTION PLASTIC PIPE STRATEGIES

EGI evaluates asset strategies for the value that they deliver in terms of operational reliability, risk and cost over the long term. This drives a combination of reactive programs to respond to assets that have already failed and proactive programs to manage the growing number of leaks expected to occur as pipe assets approach the end of their useful life and the overall system condition degrades.

Maintenance strategies are described in **Section 5.2.3.2** and lead to the following replacement/renewal strategies for distribution plastic pipe:

5.2.3.6.5.1 Vintage Plastic Aldyl A Replacement Program

In prior EGI Asset Management Plans, the reliability modelling for Aldyl A suggested a need for a proactive replacement program. However, as EGI performs continuous improvement of reliability models and asset understanding, the view towards Aldyl A has changed with the aid of introducing a Bayesian approach to integrate existing mechanical and statistical models that made EGI's reliability estimates more accurate. Overall, the results of the Bayesian model yield moderate failure projections for vintage plastic Aldyl A pipes in upcoming years (see **Figure 5.2-38** and **Figure 5.2-39**). Therefore, the approach for Vintage Plastic Aldyl A is to address leaks and other material faults on a reactive basis through the Emergency Replacement Program. There may be some localized replacement projects where stress intensification factors (like rocky soil) are accelerating degradation and increasing failures.

5.2.3.6.5.2 Intermediate Plastic Mains

Intermediate Plastic Mains will need to be further studied and understood through sampling and testing to determine if escalation of mitigation activities is warranted. Samples have been collected and sent for testing and analysis, and results should be available in 2023. The approach for Intermediate Plastic Mains is to address leaks and other material faults on a reactive basis through the Emergency Replacement Program.

5.2.3.6.5.3 AMP-fitting Replacement Program (Copper Risers)

Based on the Asset Health Review operating process and reliability models, it is expected that the majority of copper risers will fail after 2037. The degradation of the asset is significant, outpacing current leak quantities over the next 10 years. Due to the very large numbers of projected leaks, a proactive replacement program is required to manage the risk and ensure that costs and emergency response can be managed on a year-by-year basis. The current pacing of the AMP-fitting Replacement Program plans to replace increasing numbers of copper risers per year increasing to 20,000 by 2027. **Figure 5.2-61** demonstrates the number of expected leaks discovered on a yearly basis.

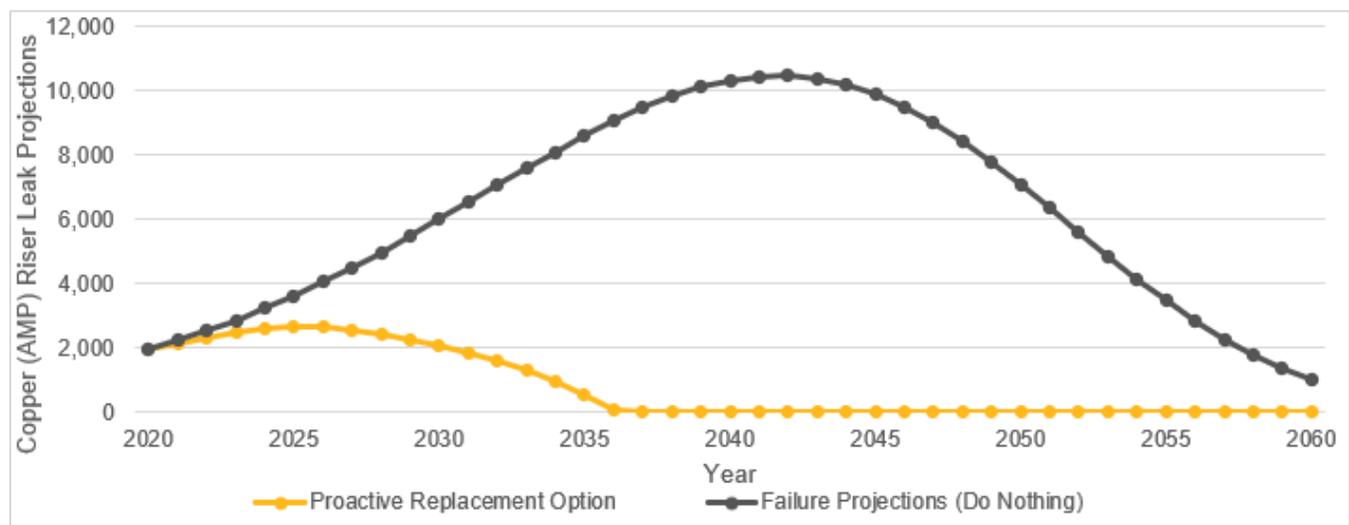


Figure 5.2-61: Copper (AMP-Fittings) Riser Leak Projection – Reactive vs. Proactive Strategy

EGL continues to evaluate asset condition and adjust its strategy accordingly to manage the integrity of AMP-fittings. The current annual Service Replacement Program continues to manage the failing and noncompliant riser assets. Risers continue to be monitored under the Leak Survey and Corrosion Survey programs.

5.2.3.7 Distribution Pipe Capital Expenditure Summary

The total average capital spend is forecast to be \$360M (EGL) as summarized in **Table 5.2.3-4**. The Distribution Pipe capital is further summarized as part of EGL's total 10-year capital plan in **Section 6**. See **Appendix B – IRP** for the status of the outcomes of the IRP assessment process, including the binary screen and the status evaluation of IRPAs.

The Distribution Pipe Capital Expenses increase rapidly from 2027 onward due to the start of the Vintage Steel Replacement Program (see **Section 5.2.3.6.3.2**).

Table 5.2.3-4: Distribution Pipe Capital Summary (\$ Millions) – EGI¹¹

Asset Class Strategy/Investment Name	Program/Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Forecast
TIMP Retrofits and Digs		21.2M	21.8M	22.4M	20.7M	22.1M	2.8M	2.7M	2.8M	2.8M	2.7M	122.2M
Inspection Program Integrity Retrofits and Digs	Integrity	51.6M	51.4M	27.0M	42.0M	26.2M	21.9M	21.7M	22.5M	22.2M	21.6M	308.0M
Depth of Cover Program	Integrity	7.5M	5.1M	5.2M	4.2M	4.5M	3.0M	1.7M	0.7M	0.7M	0.7M	33.2M
	Main Replacement	-	-	0.0M	0.4M	0.5M	0.5M	0.2M	-	-	-	1.6M
Class Location Program	Class Location	3.5M	2.6M	2.6M	6.5M	6.9M	6.9M	6.8M	7.1M	7.0M	6.8M	56.7M
Corrosion Prevention Program	Corrosion	11.6M	11.5M	10.6M	10.2M	10.3M	10.4M	10.8M	10.9M	11.0M	11.1M	108.6M
Emergency Replacement Program	Main Replacement	3.7M	3.9M	4.0M	4.1M	4.5M	4.5M	4.6M	4.8M	4.8M	4.8M	43.6M
General Replacement Program		28.7M	5.4M	14.8M	14.2M	32.9M	34.5M	19.2M	19.9M	38.4M	17.4M	225.4M
Service Replacement Program	Service Relay	28.2M	29.6M	30.5M	31.4M	34.1M	34.5M	34.9M	36.7M	37.1M	36.7M	333.7M
Relocation Program	Relocations	48.6M	42.9M	43.7M	44.4M	48.6M	56.4M	46.2M	47.8M	47.3M	45.9M	471.7M
Bare and Unprotected Program		16.1M	12.6M	0.1M	-	-	-	-	-	-	-	28.7M
Vintage Steel Replacement Program	Main Replacement	19.0M	41.7M	33.8M	19.1M	54.4M	94.0M	146.6M	208.7M	270.7M	320.5M	1208.4M
St. Laurent Phase 3 - North/South (NPS12/16 Steel)		1.2M	56.1M	2.0M	-	-	-	-	-	-	-	59.4M

¹¹ Includes overhead allocation

Asset Class Strategy/Investment Name	Program/Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Forecast
St. Laurent Phase 4 - East/West (NPS12 Steel)		-	-	23.5M	0.7M	-	-	-	-	-	-	24.2M
Port Stanley Line		0.6M	18.5M	-	-	-	-	-	-	-	-	19.1M
NPS 12 Martin Grove Rd		-	-	0.5M	22.6M	0.8M	-	-	-	-	-	24.0M
NPS 12 Wilson Ave		-	36.1M	53.8M	1.2M	0.0M	-	-	-	-	-	91.2M
Moulton Replacement Bare and Unprotected		-	0.8M	17.8M	-	-	-	-	-	-	-	18.5M
Erin Township		3.0M	3.0M	2.8M	2.9M	-	-	-	-	-	-	11.7M
NPS 10 Glenridge Avenue		-	0.4M	7.8M	7.1M	-	-	-	-	-	-	15.3M
Copper Services Replacement Program		Service Relay	2.3M	2.4M	0.9M	-	-	-	-	-	-	-
AMP Fitting Replacement Program	15.2M		22.4M	29.5M	36.8M	46.6M	47.1M	47.7M	50.2M	50.6M	50.1M	396.2M
Total		261.9M	368.3M	333.3M	268.7M	292.3M	316.4M	343.3M	412.1M	492.5M	518.2M	3606.9M

5.2.4 Distribution Stations

The Distribution Stations asset class is comprised of facilities and assets whose primary purpose is to reduce pressure from a system operating at higher pressure to a system operating at lower pressure and to provide overpressure protection to the lower-pressure system. Depending on the facility, additional purposes may include gas metering, odourization and monitoring.

This asset class is comprised of approximately 36,000 sites throughout Ontario. This includes all natural gas entry points into the EGI distribution network, control points throughout the network and delivery points to end-use customers. Renewable Natural Gas (RNG) and Compressed Natural Gas (CNG) customer stations which support EGI's low-carbon strategy are included in the Distribution Stations asset class. Distribution Stations are organized into three subclasses based on function:

- **Stations with Auxiliary Equipment** reduce upstream pressure and distribute natural gas to pipeline systems operating at lower pressures and/or customers and employ additional equipment to ensure the safe and reliable distribution of natural gas.
- **Distribution System Stations** reduce upstream pressure and distribute natural gas to a downstream gas main or header in the downstream system.
- **Customer Stations** reduce upstream pressure and deliver to a downstream customer that consumes the natural gas with a total connected load greater than 12 m³/h and with a delivery pressure to the customer of 14 kPa or greater.

EGI monitors the industry for incidents that may be relevant to EGI's assets. As such, EGI has assessed the potential for an incident on a low-pressure system such as that which occurred in Merrimack Valley, Massachusetts where a distribution system was overpressured. EGI took some immediate measures to review procedures and records and ensure that sense lines were inside the perimeter of regulation stations. EGI has evaluated the risk in each of these installations and will target the stations that require additional layers of protection to bring the risk to broadly tolerable or as low as reasonably practicable.

With more than 36,000 stations of varying degrees of complexity and criticality, EGI is developing analytics to establish age, condition and risk to develop the associated maintenance and replacement strategies.

As EGI continues to review and standardize operating standards and the use of various equipment and fittings, plans will be developed to bring these into alignment in a way that balances risk, cost and performance. An example would be the addition of fire suppression systems at large Stations with Auxiliary Equipment stations to ensure compliance with applicable codes and standards.

Figure 5.2-62 shows the station hierarchy by station type. Note that there are many possible configurations of distribution station assets downstream of the entry point into the distribution system. **Figure 5.2-62** is for illustrative purposes only and is not meant to display all possible configurations.

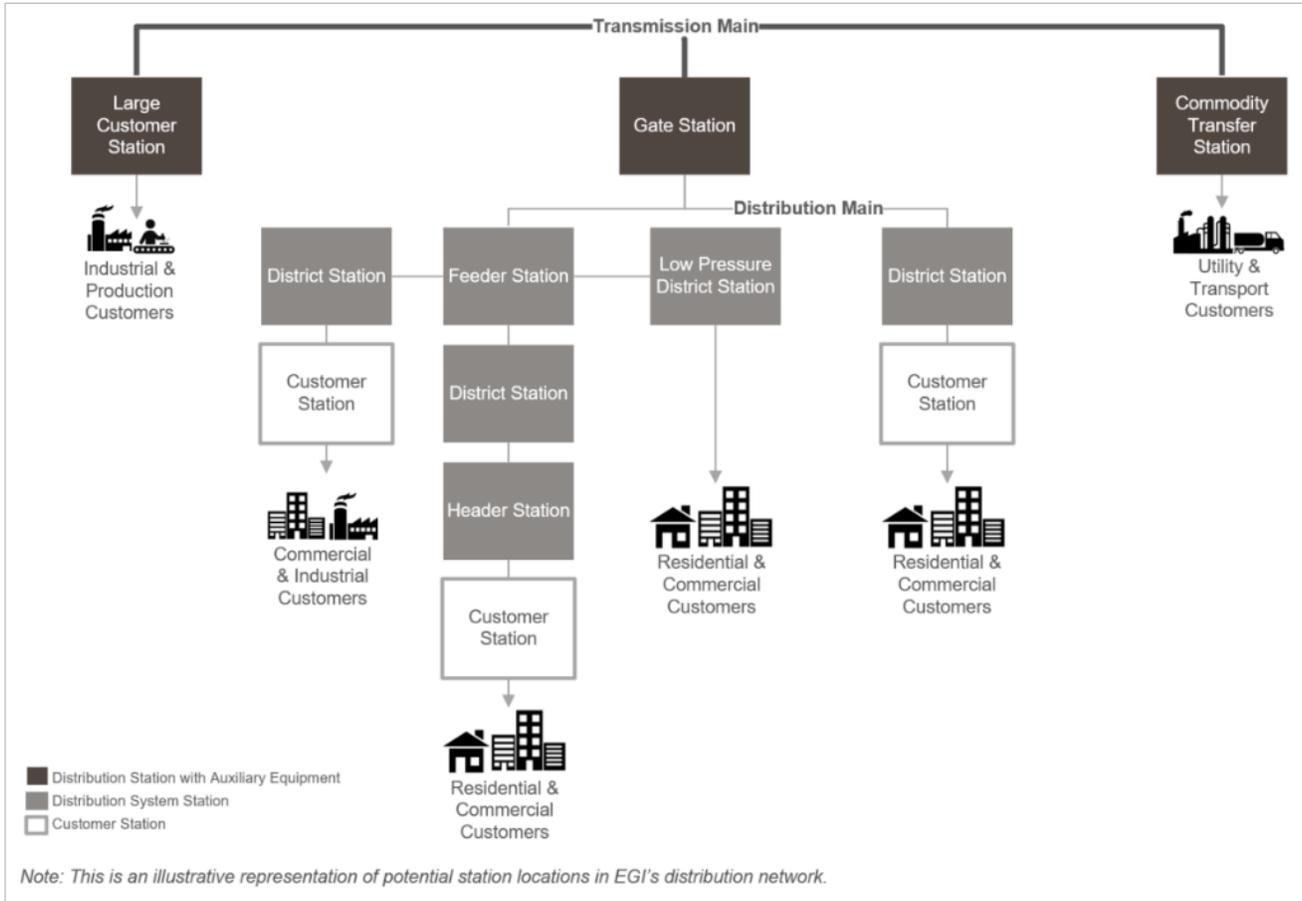


Figure 5.2-62: Station Hierarchy by Type

The Distribution Stations asset class includes the following asset component sub-systems:

- Pressure control
- Station valves
- Strainers and filters
- Piping systems
- Heating system (boilers and heat exchangers)
- Telemetry system
- Odourization system
- Measurement system
- Civil and site assets

Figure 5.2-63 depicts the typical schema and interconnection of systems associated with distribution stations. Station components and layout will vary based on the design, type and function of the station. A typical example of a station in the Station with Auxiliary Equipment subclass consists of the following system components: the inlet valve assembly for isolating and/or bypassing the station, filtration to remove contaminants (where applicable), the measurement system to accurately track the gas flow or volume, the heating, pressure control and odourization systems, the outlet/supply valve assembly and the outlet piping. These systems are interconnected through the telemetry system, which monitors and controls the operation and performance of each station component.

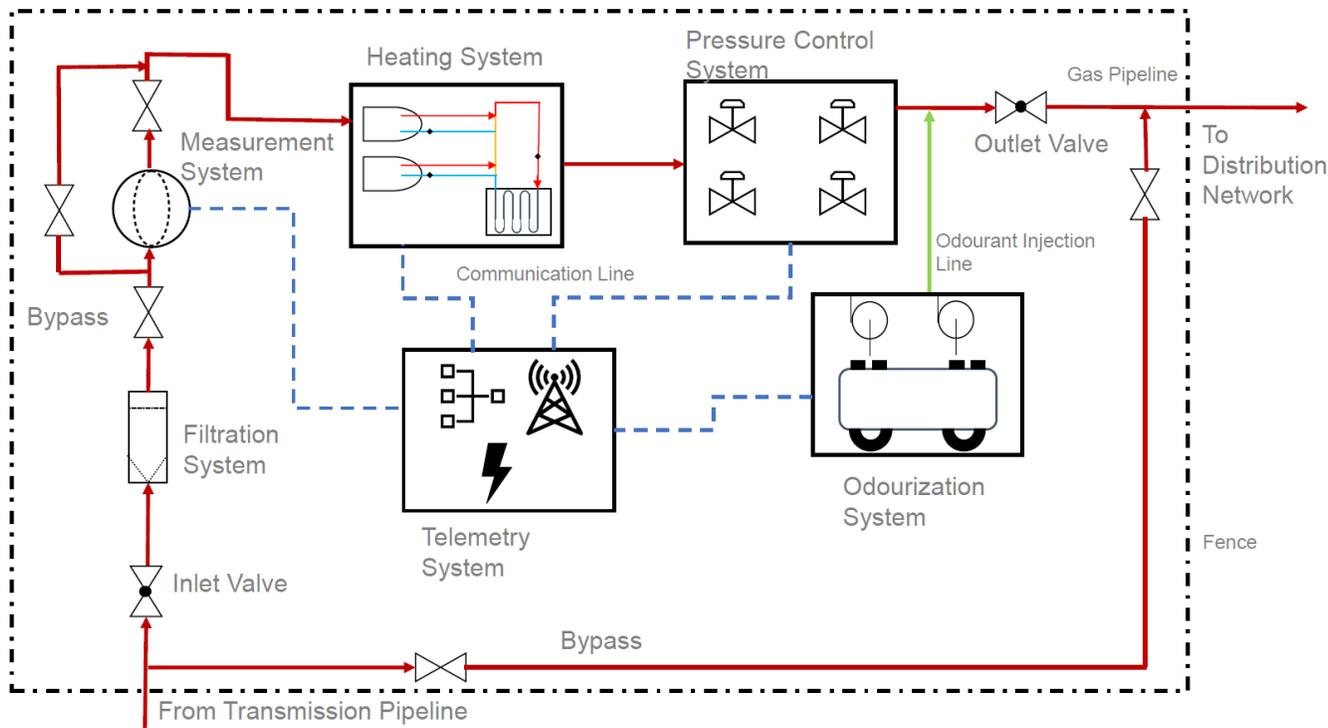


Figure 5.2-63: Station Components

The **pressure control** components control and regulate gas pressure from a higher pressure (inlet pressure) to a set lower pressure (outlet pressure). Pressure control equipment typically consists of operator regulators, monitor regulators, relief valves and slam-shut devices. Operator regulators control pressures while monitor regulators, relief valves or slam-shut devices provide overpressure protection in the event the operator regulator fails. Pressure regulators maintain a desired outlet pressure while providing the required flow to satisfy a variable downstream demand and can be direct-operated or pilot-operated. Relief valves provide an audible and odour notification in the event of operator-regulator malfunction.

The **station valve** components control the flow of gas through the station and include all inlet valves, outlet valves, bypass valves and component isolation and process valves. Station valves are used to direct flow, isolate station components and shut down gas supply for planned or unplanned events.

Strainers and filters are utilized to remove particles of dirt and/or liquids from the gas before they can damage downstream system components such as regulators, pilots, meters or other equipment.

The **pipng system** within stations is comprised of the pipe connecting each of the component groups, as well as ancillary piping and tubing. Ancillary piping includes glycol piping for the heating system, tubing for pressure control and piping and tubing for the odourization system. Piping may be installed below- or above-grade with pipe supports and may be insulated to retain heat or for noise attenuation. Protection of the piping system consists of underground corrosion control systems and aboveground high-performance coating and paint.

The **heating system** components ensure that gas temperatures within the distribution system remain above a site-specific targeted setpoint, as the reduction in temperature caused by pressure regulation can have detrimental effects on equipment performance. The heating system is comprised of two subcomponents: the boiler and the heat exchanger. The pressurized boiler heats and circulates glycol through a glycol loop to the heat exchanger, which transfers heat to the gas prior to pressure reduction. Heating systems may also be comprised of small component heaters or heat trace systems that are used for thermal protection of critical components such as regulators and pilots as well as protection against frost heave of the station piping.

The **telemetry system** connects station equipment to a network that remotely transmits station performance information to centralized gas control management for monitoring and control. Information such as inlet and outlet pressures and temperature, gas flow rate, odourant injection rate and other critical characteristics of station performance are monitored in real time. Typical sub-components include:

- Programmable Logic Controller (PLC) / Remote Terminal Unit (RTU) as the central processor

- Pressure and temperature sensors and transmitters
- Pressure recorders
- Gas monitors
- Communications devices and antenna towers
- Power supply, Uninterruptible Power Supply (UPS) and backup generators and other electrical assets
- Weather systems

The **odourization system** components are responsible for the introduction of odourant into the gas stream to ensure gas is detectable at low concentrations as natural gas is odourless in its basic state. Odourant is introduced automatically at all stations at the entry point to the gas distribution network. Subcomponents of the odourization system include:

- Odourant tank
- Odourant pumps
- Injection point with sight glass
- Odourant containment
- Meters or orifice plates, valves, tubing, controllers
- Atmospheric monitoring devices
- PLCs

The **measurement system** components provide a corrected volumetric measure of the amount of natural gas flowing through a particular site. Measurement devices are used in Customer Stations as a custody transfer point between EGI and the customer, subject to the MXGI Program in **Section 5.2.5.5**. EGI uses many different meter types and electronic volume correcting equipment to calculate pressure and temperature compensation factors in real time. At customer or system stations where the design requires, EGI incorporates measurement devices to measure the rate of gas flow through its system. These measurement devices are critical for calculating the demand requirements (rate of odourant flow and heating system temperature requirements) for other station components.

Civil assets in the Stations with Auxiliary Equipment subclass can include individual buildings for housing telemetry assets, heating/boiler equipment, the odourization system, the pressure control system and other miscellaneous equipment. Civil assets also include fencing, foundations, property lighting, security systems, piping supports and barriers, water management systems such as culverts and ditches and general property.

5.2.4.1 Distribution Stations Inventory

Table 5.2.4-1 lists the inventory details for the Distribution Stations asset class.

Table 5.2.4-1: Distribution Stations Asset Class Inventory

Asset Subclass	EGD Rate Zone ¹²	Union Rate Zones ¹³
Stations with Auxiliary Equipment	171 stations	373 stations
Distribution System Stations	5,007 stations	2,345 stations
Customer Stations ¹⁴	12,936 stations	15,314 stations

Note: The inventory for meters and regulators (discussed in **Section 5.2.5**) also includes meters and regulators located at Customer Stations and included in the inventory shown in **Table 5.2.4-1**.

¹² EGD rate zone inventory as of September 4, 2021.

¹³ Union rate zones inventory as of May 27, 2021.

¹⁴ CNG stations included in Customer Stations inventory class as of November 17, 2021.

5.2.4.2 Distribution Stations Condition and Strategy Overview

Table 5.2.4-2 Distribution Stations Condition and Strategy Overview

Asset Subclass	Avg. Age (Year)	Condition	Risk / Opportunity	Maintenance Strategy	Replacement / Renewal Strategy
Stations with Auxiliary Equipment	See Table 5.2.4-3.	Assets in the Stations with Auxiliary Equipment subclass are inspected and maintained on a regular basis in accordance with operating standards. At certain sites, the telemetry, pressure control and heating system components have been found to have the following deficiencies: obsolescence, performance issues and nonstandard configurations.	Risks identified for Stations with Auxiliary Equipment: Employee and Contractor Health and Safety Risk / Public Health and Safety Risk: Impact on surrounding population in the event of loss of containment Financial Risk: Commodity loss, repair costs and regulatory penalties Operational Risk: Loss of service to customers Environmental Risk: Noise, spills and GHG emissions	The maintenance strategy for Stations with Auxiliary Equipment includes: <ul style="list-style-type: none"> • Facilities Integrity Management Program (FIMP) inspections • Pressure Control and Protection Inspection Standard • Equipment operating standards for auxiliary components 	The replacement/renewal strategy for Stations with Auxiliary Equipment includes: <ul style="list-style-type: none"> • Stations with Auxiliary Equipment Replacement strategy • Compliance Remediation Strategy • Obsolete Heating Equipment Strategy • Odourization Strategy • Telemetry Strategy • Stations Capital Upgrades Program • Facilities Integrity Management Program • Stations Painting Program • Renewable Natural Gas (RNG) Strategy
Distribution System Stations	See Table 5.2.4-5.	Distribution System Stations assets are inspected through field condition survey assessments to identify the type of regulators, belowground installations, nonconforming configurations and vintage/obsolete components, contributing to a higher potential of failures and operational issues.	Risks identified for Distribution System Stations and Customer Stations: Employee and Contractor Health and Safety Risk / Public Health and Safety Risk: Public impact, threat to overpressuring customer piping Financial Risk: Repair and high maintenance costs, customer supply impact Operational Risk: Loss of service to customers	The maintenance strategy for Distribution System Stations includes: <ul style="list-style-type: none"> • Distribution Integrity Management Program (DIMP) • Pressure Control and Protection Inspection Standard 	The replacement/renewal strategy for Distribution System Stations includes: <ul style="list-style-type: none"> • Distribution System Station Replacement Strategy • Header Station Replacement Program • Vaulted Stations Replacement Program • Stations Painting Program • Stations Capital Upgrades Program
Customer Stations	See Table 5.2.4-7.	Customer Stations assets are inspected through field condition survey assessments to identify the type of regulators, belowground installations, nonconforming configurations and vintage/obsolete components, contributing to a higher potential of failures and operational issues.			The replacement / renewal strategy for Customer Stations includes: <ul style="list-style-type: none"> • Customer Station Replacement Program • Inside Regulator Room Program • Pressure Factor Metering Rebuild Program • Compressed Natural Gas (CNG) Strategy • Stations Painting Program • Stations Capital Upgrade Program

5.2.4.3 Stations with Auxiliary Equipment

The assets in the Stations with Auxiliary Equipment subclass are the most complex distribution stations within EGI - most are uniquely configured and involve the highest pressures and volumes. These stations include entry points into the gas distribution system and require additional types of equipment, which are not required in other stations downstream of the network.

Station components can vary greatly depending on the station’s purpose and design complexity. Stations with auxiliary equipment have components that consist of piping, meters, regulators, valves, filters, separators, heaters, odourant, controls, and in some cases, structures. These stations are grouped according to function:

- **Gate and Transmission Stations** accept gas from a transmission company’s pipeline (EGI or other) and supply gas to the distribution system, acting as the custody transfer and entry points of natural gas into the network. Station components included in these stations are filters, pressure control, odourization, measurement, station valves, heating and telemetry. Gate stations typically accept incoming gas pressures from the transmission company at high pressures and regulate to distribution pressures. In a particular location, a single gate station can supply gas to over 600,000 customers.
- **Feeder Stations** are large regulator stations within the gas distribution system. Station components included in feeder stations are pressure control, measurement, gas pre-heating and telemetry. Feeder stations typically accept incoming high pressures and regulate to distribution pressures.
- **Large Customer Stations** refer to a commercial or industrial station where the downstream system served is a single service.
- **Gas Producer Stations** are stations fed from an Ontario Producer’s facility and feed into a company pipeline. This includes Renewable Natural Gas (RNG) injection stations.

The majority of station sites have aboveground components, with some piping and operating equipment located belowground. All gate and transmission, feeder, large customer station, and gas producer sites are located on EGI-owned or leased property and most within fenced and controlled access compounds. The additional station equipment (i.e., filtration, heating systems and/or odourization) at these sites present increased hazards that require enhanced attention in the form of more frequent on-site inspections. These sites are the custody transfer point and critical pressure control location from the transmission company’s pipelines into the EGI distribution network or to a large customer site.

Table 5.2.4-3 represents the age of the various systems components at all station sites for this subclass. The age of individual systems is used for evaluation, rather than the age of the original activation of the station site, as individual station components are replaced based on their condition. Typically, the oldest assets tend to be the pressure control components, which have the longest expected life span.

Table 5.2.4-3: Stations with Auxiliary Equipment Station Component Age

Station Component	Average Asset Age (Years)		Maximum Asset Age (Years)	
	EGD Rate Zone	Union Rate Zones	EGD Rate Zone	Union Rate Zones
Pressure Control	12	20	61	63
Odourization	12	12	26	49
Heating System	11	18	26	63
Telemetry	8	15	36	38

Table 5.2.4-3 shows EGD and Union rate zones have differences in the actual average age and the maximum asset age. This is expected due to different design standards and maintenance strategies. As part of integration activities, best practices for engineering design and operating standards are being applied to the combined station asset population to better understand asset condition.

5.2.4.3.1 CONDITION METHODOLOGY

EGI station assets are inspected and maintained on a regular basis in accordance with operating standards. For example, the pressure control system is inspected on a frequency that considers inlet maximum operating pressure (MOP), inlet pipe size, station type and regulator type. Inspection results and trouble call history are recorded and analyzed to understand asset performance, condition and health.

EGL has enhanced the Facilities Integrity Management Program (FIMP), which provides the framework to identify threats, monitor facility conditions and manage integrity data to ensure that the pipeline facilities system is suitable for continued safe and reliable service and to comply with applicable regulations. FIMP applies to stations that meet the following criteria:

- Facilities connected to pipelines that are part of the GDS Transmission Integrity Management Program (TIMP), including STO, System, Customer Stations, and valve sites.
- Any station interconnected between EGL and any other gas transmission company, distribution utility or production facility that supplies gas into or receives gas from the EGL network and is not the final point of use (including facilities connecting EGL with a GDS affiliate, and facilities receiving RNG or hydrogen for blending into the pipeline system).
- A station which contains any of the following equipment:
 - Glycol-based heating system (heat exchanger or line heater)
 - Filtration of one of the following types, where the filter is deemed to be a pressure vessel as per ASME Boiler and Pressure Vessel Code:
 - Liquid Removal (filter separator, separator, scrubber and coalescer)
 - Large Dry Gas Filters
 - Odourization

5.2.4.3.2 CONDITION FINDINGS

The condition at each station is unique (in terms of asset condition, obsolescence and compliance). Station components may vary in age due to the replacement history of the site. Historically, station issues have been identified when existing maintenance procedures are executed. A list of typical findings can be found in **Table 5.2.4-4**.

Table 5.2.4-4: Typical Station Issues

Issue	Description
Construction and Configuration	<ul style="list-style-type: none"> • Station configurations are not in compliance with current design standards. • Electrical configurations not in compliance with current design standards may result in a higher potential for electrical supply failures, employee safety concerns and violation of Electrical Safety Authority (ESA) standards. • Lack of adequate backup power contributes to a high probability of station power loss during hydro outages, resulting in system and monitoring failures. • Leak containment issues contribute to potential code compliance violations and potential high cleanup costs in the event of loss of containment for glycol or odourant.
Function	<ul style="list-style-type: none"> • The asset is unable to deliver the required demand (i.e., insufficient gas supply, heating requirements or overworked components) and can result in loss of supply to customers. • Equipment inaccuracy results in incorrect gas measurement systems and potential revenue loss. • Sealing issues increase the probability of asset failure and downstream overpressure situations.
Operability	<ul style="list-style-type: none"> • Operating performance and reliability interventions contribute to increased unplanned maintenance costs and potential safety concerns.
Maintainability	<ul style="list-style-type: none"> • Component accessibility issues contribute to increased maintenance costs, potential asset failures and employee safety concerns.
Components	<ul style="list-style-type: none"> • Parts are no longer available, repairs result in long downtime, or repair costs are excessive. • Glycol conditioning issues indicate the degradation of heating system internal components, which result in higher maintenance costs and decreased component reliability • Communication issues contribute to electronic component failures, loss of remote monitoring, alarming and control. • Recurring component issues contribute to increased failures and component reliability concerns. • Corrosion is an indication of component degradation and less reliable assets • Insulation damage promotes rapid corrosion growth on piping. • Building issues can result in leaks and lack of component protection, causing premature failure and less-reliable assets.
External Factors	<ul style="list-style-type: none"> • Dirt and debris increase the probability of failure and downstream overpressure situations. • Damaged components contribute to increased maintenance costs and potential employee safety concerns. • Pipe heaving occurs due to inadequate heating supply or improper construction methods, resulting in undue stress to piping and other components.

Issue	Description
	<ul style="list-style-type: none"> Improper support can result in movement or settlement, causing undue stress to piping and components. A sinking foundation causes stress in piping and other critical components. Damages to fences or other physical security equipment could result in vulnerability threats.

In addition to maintenance inspection results, the condition and health of station components may be subject to further engineering analysis and future FIMP inspections. These stations are evaluated based on the following:

- The age of critical components, such as regulators, boilers and RTU
- The performance of the asset, such as known operational problems
- Asset history and the evaluation of failure events
- Subject Matter Advisor (SMA) input

To better understand asset condition, the FIMP will provide direct assessment data as described in **Section 5.2.4.3.1**.

5.2.4.3.3 RISK AND OPPORTUNITY

Assets in the Stations with Auxiliary Equipment subclass are a vital part of the distribution network; as such, failures have significant consequences and must be avoided. Mitigation strategies to reduce risk to the lowest practicable level include redundancy of critical systems and a comprehensive inspection and maintenance program.

When station components are not maintained, the following are types of failures and the likely consequences (failure scenarios) that are observed for this asset subclass:

- **Loss of Pressure Control:** Pressure control failures could cause an overpressure or under-pressure scenario.
 - **Overpressure Event:** Stations are the delineation between different operating network pressures. Failures causing overpressure situations result in the upstream higher-pressure network interacting with the downstream lower-pressure network. In this scenario, the pressure of the downstream network increases to levels beyond which it is rated. Overpressure could lead to component failure in the downstream network, overstressing pipe or fittings, loss of containment and gas entering customer premises if the customer regulator fails. The potential for fire or explosion is increased in an overpressure situation.

The frequency of pressure control failure is dependent on the configuration of the station. A station with a single regulator and single run will fail more frequently than a station with double regulators and double runs. Each of these could result in a release to the environment, leading to potential ignition or explosions.

The consequence of an overpressure event from a financial impact includes commodity loss, service disruptions, increased network leak surveys and system checks, repairs or replacement of company-owned property or damages to public, commercial or industrial property. Pressure control failures may lead to unintended GHG emissions of natural gas to the environment, impact EGI’s reputation and fail to meet the expected high levels of operational reliability.

- **Under-pressure Event:** Under-pressure at a station can lead to loss of service for customers. This is of particular concern for industrial customers, who expect a reliable natural gas supply for processes, and other customers for heating needs during colder periods. Stations approaching design capacity could experience under-pressure situations, loss of service to customers and station equipment performing beyond recommended operating limits.

Typically, the pressure control design includes redundancy with a method of overpressure protection to reduce the likelihood of a pressure control failure.

- **Loss of Measurement System Function:** Measurement equipment can be used to measure customer and system gas flow rates, and accurately inject odourant into the pipeline. Loss of measurement functionality could lead to inaccuracy of gas measurement, inaccurate billings of commodity transfer which could result in volume billings or purchase disputes and improper odourant levels (undetectable gas leaks).
- **Loss of Odourant System Function:** The odourant system adds the odour in natural gas so that it is detectable in the event of a release. Failure of the odourant injection system could result in leaks not being readily detectable which could lead to service disruption implications, commodity losses from undetected leaks, public property damages or fines from the technical regulatory authority. Reputational and financial risk may result from the increase in emergency and unplanned callouts to unreliable odourant injection systems. Inoperable odourant systems would

lead to a failure to maintain proper odourant levels as mandated by code requirements, potentially impacting the safety and reliability of the gas distribution network.

- **Loss of Heating System Function:** Loss of the heating system function could result in two scenarios, (1) frost heave or (2) pressure control failure due to the freezing of station components. Frost heave occurs when the gas is cooled due to the pressure reduction and causes an upward swelling of soil around public or private property near the gas main. Freezing of station components such as creating large ice buildup around valves can prevent operation if gas isolation is required. This could result in the loss of pressure control and potentially lead to an overpressure or under-pressure situation. The financial impact includes commodity loss, service disruptions, increased network leak surveys and system checks, repairs or replacement of company-owned property, or damages caused to public, commercial or industrial property. Inoperable systems will lead to a failure to maintain operational supply to customers.
- **Valve System Malfunction:** The frequency of a valve malfunction is low. Inoperable station valves prevent isolating gas flow within the station. This would lead to isolation of the station where available (up and/or downstream of the location), increased maintenance and potentially longer emergency response times.
- **Loss of Telemetry System Function:** Failure of real-time monitoring would cause a delay in responding to system operation problems or emergencies. Stations with an older telemetry system have a higher failure frequency. Without the telemetry system, there is no visibility to the performance and operation of EGI's system, causing increased callouts, emergency system repairs, greater patrols, and potential impacts to station equipment dependent on Telemetry components. Failures of the telemetry system could also be caused by cybersecurity attacks into the communications network.
- **Loss of Electrical System Function:** Loss of the electrical system function could impact the odourant, telemetry, auxiliary systems (i.e., fire suppression), and heating systems as all rely on electrical power or backup power systems to function properly. Without a power supply, the failures described for each station component can exist. The frequency of losing power at a station depends on the frequency of electricity outages in the area, third-party damage and backup power system failures.

Equipment failures can occur in any asset subclass component and its impact is dependent on-site location, demand on the system and redundancy, which could affect response times if a failure occurs. The impact of each system failure is different; however, there are some interdependencies between system failures. The extent of impact is dependent on the station location (i.e., whether the station is in a populated or remote area), the number of customers serviced by the station and whether the station is a single-feed or multi-feed system. The subsystems within these stations have interdependencies which may impact the reliability and performance of other systems. Therefore, the complexity of failures in one subsystem may lead to potential failures of other subsystems. For example, the measurement system is used to both measure gas flow and calculate the proper odourant injection rate. The response times to address equipment failure can vary depending on the location of EGI's response team, reinforcing the design strategy to include redundancy where appropriate.

The risk for assets in the Stations with Auxiliary Equipment subclass is dominated by financial risk, which may require fixing any damages to public property, relights due to service disruption, commodity loss, replacing and repairing company property and any regulatory penalties. Failures at these stations could impact gas supply to EGI's customers, leading to decreased operational reliability and reputational impacts. The public health and safety and employee and contractor health and safety risks for these assets are higher if the station is located in an urban or developed area due to a high potential impact on the surrounding population. Operational risks identified include loss of service to customers. Finally, there can be environmental risk through the unplanned release of GHG's in the event of a component malfunction.

5.2.4.4 Distribution System Stations

The assets within the Distribution System Stations subclass reduce gas pressure from a network operating at a higher pressure to a network operating at a lower pressure depending on the needs of downstream natural gas main. These types of stations are typically located above ground, with or without an enclosure and differ in size, operating pressure conditions, number of downstream connected customers and gas volume delivered. Distribution System Station components consist of piping, meters, regulators, valves, and in some cases, limited pressure monitoring. Distribution System station function and components vary greatly depending on use and design complexity:

- **District Stations** operate within the gas distribution network and regulate the flow of gas from a higher pressure to a lower pressure. District stations are primarily used for pressure control and may have basic pressure-monitoring capabilities (district stations with a gas pre-heating system are included in the Stations with Auxiliary Equipment subclass). District stations are typically located within roadway allowances and can be housed within a box enclosure, fenced in, located above ground without an enclosure or buried below-grade in a vault.
- **Multi-unit building (MUB):** Multi-unit residential buildings which have a mix of residential customers with in-suite appliances, commercial customers, and/or central boilers. The supply of gas is through vertical piping that runs through a chase or outside the building, and the distribution of gas may involve a garage header with sub-metering.

These are sometimes referred to as garage headers or vertical subdivisions. Garage headers have meters in a meter closets or branches in a basement parking garage. Vertical subdivisions include vertical runs to meter closets or individual units.

Distribution System Stations consist of mechanical components with shorter lifespans relative to other gas-carrying assets (see **Table 5.2.4-5**).

Table 5.2.4-5: Distribution System Stations Station Component Age

Distribution System Station Rate Zone	Average Asset Age (Years)	Maximum Asset Age (Years)
EGD Rate Zone	17	57
Union Rate Zones	21	70

The rate zones have differences in the average asset age and the maximum age of the current population. This is expected due to the different design standards and maintenance strategies employed throughout the history of the legacy companies. Integration activities are ongoing to harmonize best practices for engineering design and operating standards in the rate zones.

In addition to the average age of assets, there are variations in how the replacement of components have been captured in record systems. In some cases, the age of the asset reflects the last intervention to replace a component; and in other cases, the age of the asset reflects its initial installation date even if some components have been replaced since that time.

Based on information in the appropriate systems of record, **Figure 5.2-64** and **Figure 5.2-65** reflect the age of the Distribution System Stations in the EGD and Union rate zones respectively. Two outliers in the number of stations in the Union rate zone at 19 and 30 years can be attributed to the integration of legacy asset information systems. This reflects the date of the acquisition of the assets – not the installation date. Work continues to understand the demographics of station assets and their component systems.

Although age is not the only factor in evaluating station asset condition, an increase in failure is seen as the asset approaches the end of its life.

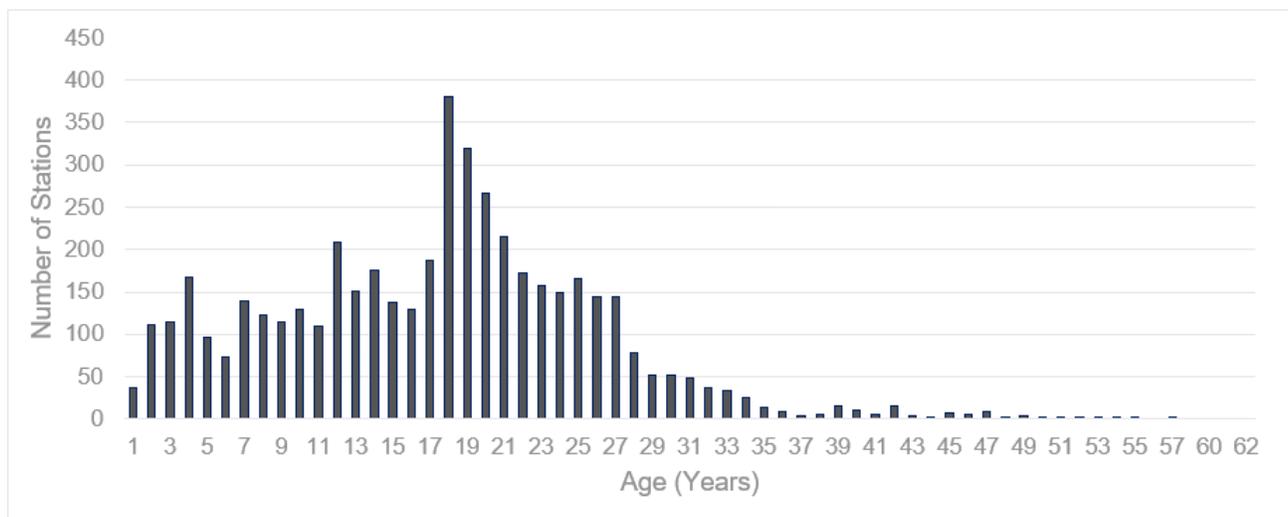


Figure 5.2-64: Distribution System Stations – Age Demographics (EGD Rate Zone)

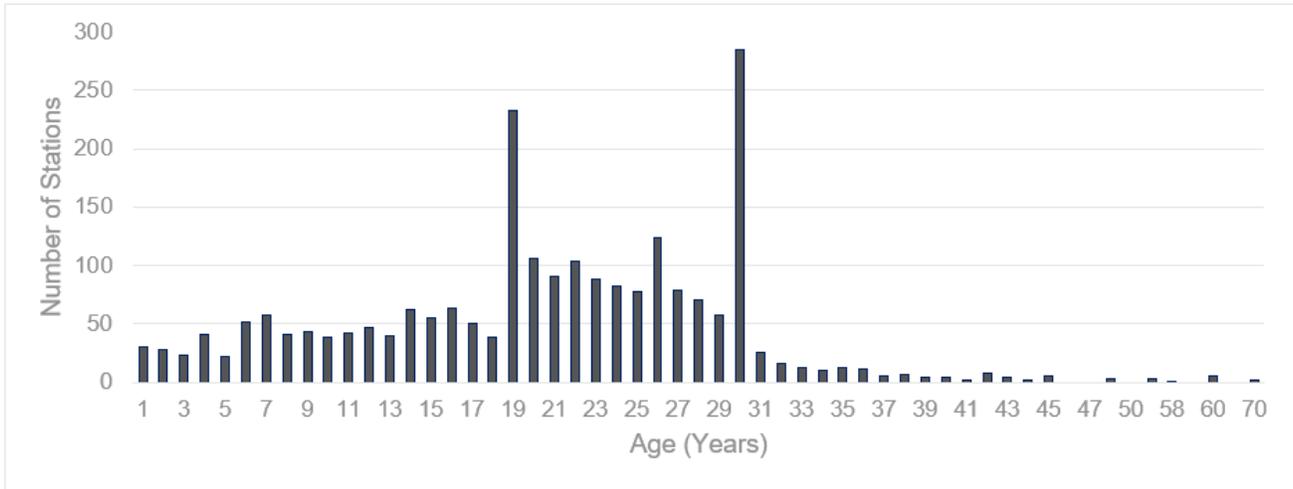


Figure 5.2-65: Distribution System Stations – Age Demographics (Union Rate Zones)

Distribution System Stations are generally installed either above ground or belowground in a vault (see **Figure 5.2-66**) and typically installed on public rights-of-way but can also be on private property or easements. Above ground, they may be protected from the elements within a box enclosure or exposed to the elements. Belowground vault locations can experience aggressive condition degradation from a wet environment, flooding or sidewalk/road runoff and may create confined spaces requiring specific procedures for safe entry. These assets can experience accelerated pipe coating degradation which can lead to corrosion. Flooding could impact the mechanical operation of the pressure control and valve systems.



Figure 5.2-66: Examples of Distribution System Stations

5.2.4.4.1 CONDITION METHODOLOGY

The methodology for determining the condition of Distribution System Stations assets uses a combination of data analysis of the asset’s failure and event history and a qualitative on-site condition assessment. These methods provide an understanding of the station asset age, past performance and future projected reliability. This methodology is also applied to Customer Stations assets (see **Section 5.2.4.5**).

The Distribution Integrity Management Program (DIMP) used statistical reliability analysis and modelling of the EGD stations historical failure data to make predictions about the life of distribution system station assets in a previous version of the Asset Management Plan¹⁵. In order to support an integrated approach for assessing asset health for EGI stations and accounting for differences in design, construction practices, maintenance, and availability of data for both legacy companies, the most recent Asset Health Review (AHR) leveraged available condition related data through field inspection programs to evaluate the asset health.

Since Distribution Stations are predominately above-grade assets and inspected regularly through maintenance programs, the DIMP leveraged this opportunity to collect condition-related information during inspections. The condition information is comprised of a series of visual evaluations as well as some functional operational assessments which have been determined by SMAs to be an early indicator of functional failure of a specific station subsystem.

The Field Assessment Survey Tool (FAST) was used to capture condition information at EGD stations, while the 2018 Station Painting Survey that recorded corrosion severity was used for Union stations. To better understand how the condition of each subsystem aggregates to the station level, the condition of the four major subsystems was assessed on various parameters that contribute to the different failure modes. A scoring methodology was designed to differentiate between the ranking of each subsystem based on their criticality prior to rolling up the subsystem’s condition. The roll-up methodology is considered as an indicator for the overall station condition. The results of this analysis can be seen in **Section 5.2.4.4.2**.

On-site condition assessments are conducted to assess, classify and further understand condition details that cannot be determined through data analysis alone. **Table 5.2.4-6** outlines the specific condition evaluation criteria used to assess station components. These assessments inform the priority of individual stations for station replacement programs.

Table 5.2.4-6: Evaluation Criteria for Station Components

Station Component	Condition Evaluation
Pressure Control	<ul style="list-style-type: none"> • Correct operating parameters for each regulator (i.e., outlet pressure matches the correct set point) • Ability to lock up under zero flow condition • Appropriate response to changes in outlet pressures and flows • Overpressure protection device operating at its specified set point and adequate capacity • Obsolete equipment and/or parts unavailable • Improper/nonstandard configuration
Station Valves	<ul style="list-style-type: none"> • Difficulty with operating and moving freely • Valve leaking to atmosphere • Valve damaged or inaccessible • Valve not sealing completely and inability to isolate gas flow
Piping	<ul style="list-style-type: none"> • Presence of corrosion indicators • Damage to insulation or coating • Pipe heaving or movement
Other issues	<ul style="list-style-type: none"> • Level of corrosion • Signage or station protection • Issues impacting safety and the ability to perform maintenance inspections • Condition of paint and pipe coating • Performance of the components • Level of heaving or piping alignment • Overall site safety condition • Obsolete equipment no longer supported by product manufacturers

¹⁵ EB-2020-0181, Exhibit C, Tab 2, Schedule 1

Other factors to be assessed include:

- Station capacity verification (to ensure the reliability of supply to EGI’s growing customer base)
- Compliance with relevant codes and standards

5.2.4.4.2 CONDITION FINDINGS

As assets age and degrade, they typically begin to fail at an increasing rate; and the accumulation of those failures over time will begin to account for a greater proportion of the total population. As of March 2021, over 8,000 station condition assessments were collected through FAST in the EGD rate zone representing approximately half of the total population, and 2,421 were Distribution System Stations.

Utilizing the aggregated ranking of each sub-system based on their criticality to the station level, **Figure 5.2-67** helps to illustrate the findings of the condition assessments and provides insight into the mitigation levels required for the current replacement program. Note that the section of the chart marked as Unknown reflects the assets that were not part of the station condition assessments completed as of March 2021.

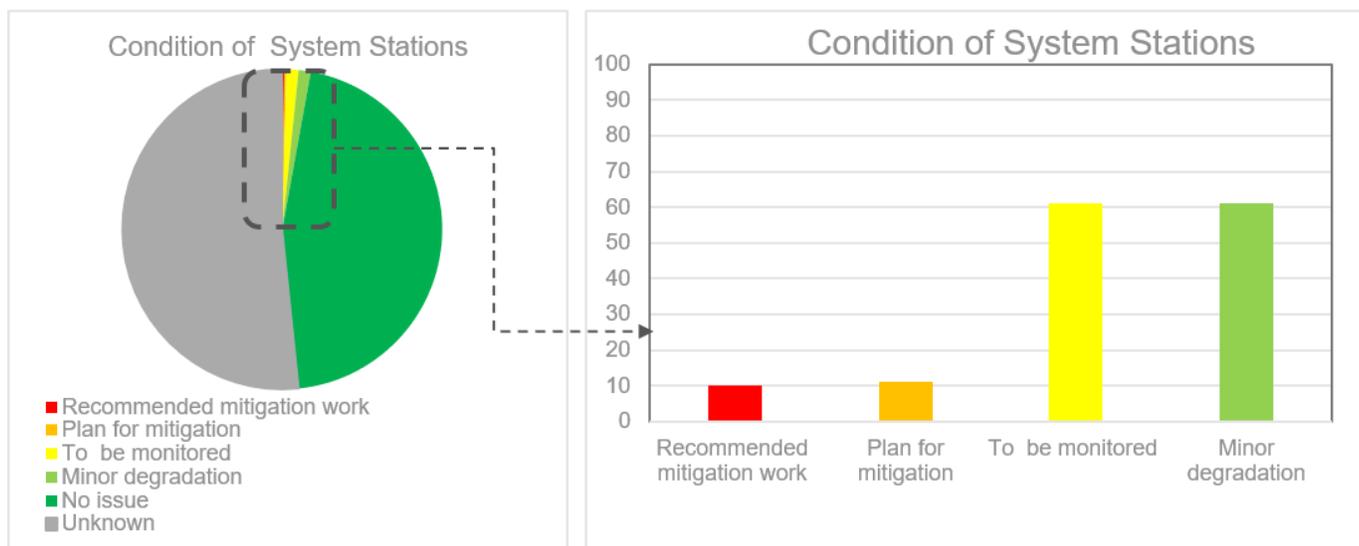


Figure 5.2-67: Distribution System Stations Condition Aggregate – EGD Rate Zone

Figure 5.2-67 reveals that Distribution System Stations are in relatively good condition with a constantly low-component failure rate indicating the historical replacement and renewal programs are effective. At this time, Union rate zones’ assets have a different assessment methodology, that was described above, within the Asset Health Review (AHR) program. A plan is being developed to integrate both legacy assessment methodologies into a common approach.

In the Union rate zones, a Station Painting Survey was initiated in 2018 to collect corrosion assessments at Union Distribution System Stations. The inspections focused on the corrosion defects on station subcomponents (mainly piping subsystem). Corrosion degradation was evaluated using the criteria defined in ASTM D 160-01 standard. Approximately 5,000 stations identified by Union SMAs as critical or exposed to higher risk of degradation were selected for the assessments. Since 2018, approximately 1,480 stations with some corrosion indications have received mitigation work mostly related to corrosion removal and repainting activities; and there is a program to continue with the balance of the population.

On-site condition assessments continue to be collected on an ongoing basis to thoroughly understand the condition of distribution system station assets for the rate zones. Results of the surveys (issues have been identified in the valve, pressure control or piping component groups) are actively addressed through reactive repairs or through replacement programs where appropriate.

The system station replacement programs are informed by condition surveys to reduce the risk of any issues observed. For example, boot-style regulators, which use a combination of a flexible **boot** element and gas pressure to regulate downstream flow and pressure, may be more susceptible to higher failure rates due to their design. This type of regulator station design has demonstrated susceptibility to failures caused by debris, particulates, hydrates and sulfur deposits. Adopting a new design philosophy to use alternative regulator models or including filtration minimizes the potential for downstream overpressure events.

Another example of issues from field reviews of distribution system station sites have found nonconforming configurations or locations deemed to be potential hazards to safe site operation, such as clearance issues or potential threats from third-party damage. It is anticipated that these potential hazards may exist across the distribution system station population of certain vintages when construction practices and standards were not consistently applied. It is also expected, in some cases, that local area development over time has encroached on the facilities resulting in higher risk of station damage from external influences, such as vehicle traffic or debris from above or compromised station supports.

Distribution System Stations that experience a high differential pressure reduction from inlet to outlet pressure are associated with a higher risk of failure. For instance, as natural gas passes through the pressure control device, the gas temperature decreases approximately 4°C for each 700 kPa of pressure reduction (the Joule-Thomson Effect). High differential pressure control significantly decreases gas temperature (from high inlet pressure to lower outlet pressure). Stations where a high-pressure reduction occurs can be subject to freezing of station components, which may cause a loss of pressure control if there is moisture in the gas, heaving of the station piping if there is moisture in the ground surrounding the station, or the temperature reduction of the gas could cool the downstream piping and impact the surrounding grounds including the potential to damage roads. The effects of the Joule-Thomson Effect are illustrated in **Figure 5.2-68**. Ice buildup is visible on the downstream components and the station assembly is misaligned due to heaving.



Figure 5.2-68: The Joule-Thomson Effect on a District Station

5.2.4.4.3 RISK AND OPPORTUNITY

The risks identified for Distribution System Stations are operational risk, financial risk, employee and contractor health and safety risk and public health and safety risk, which may lead to the following consequences:

- Public impact, threat to overpressuring customer piping
- Repair and high maintenance costs, customer supply impact
- Loss of service to customers

These risks are also applicable to the Customer Stations asset subclass (see **Section 5.2.4.5**). Risks are dependent on station design and location:

- **Overpressure Event:** In an overpressure event, the downstream network is operating above the designed maximum pressure. In addition to the risks discussed in **Section 5.2.4.3.3**, Distribution System Stations feeding low-pressure networks have additional safety consequences, as these networks are designed without individual regulators at customer meter sets, normally considered a second line of defence against potential piping overpressure inside the customer's premises.
- **Loss of Pressure Control (Lock Up):** A regulator fails to lock up when it cannot completely shut off gas flow in low-flow conditions. Pressure control failures could cause the unplanned release of natural gas, a pipeline rupture or overpressure delivery to customers. The impact and frequency of a pressure control failure varies - the frequency of a pressure control failure causing a minor impact, such as a repair, is higher than the frequency of overpressure delivery to a customer due to the multiple layers of protection within the gas distribution network.
- **Loss of Containment (Leaks):** A leak is an unplanned release of gas from the gas distribution system. The risk of a leak leading to a fire or explosion has the potential to cause injury to members of the public. The risk of an overpressure event at the station could similarly lead to a leak in the downstream system, including inside the customer's premises if other safeguards fail. Financial loss is possible due to total repair costs, commodity loss,

relighting customer gas appliances and any property damages caused by a gas leak. Risks identified are potential GHG emissions, environmental impact, service interruptions, overpressure or under-pressure events and reputational damages associated with reduced public confidence.

- **Under-pressure Event:** In an under-pressure event, the downstream network is operating below the designed minimum pressure. For risks associated with under-pressure events, see **Section 5.2.4.3.3**.
- **Valve System Malfunction:** A valve malfunctions when it no longer provides isolation of the gas as intended. For risks associated with valve system malfunctions, see **Section 5.2.4.3.3**.

Additional issues that were considered in the risk assessments were obsolete regulators, single-run stations and stations with noncompliance issues. When obsolete regulators fail, they cannot be easily replaced as the existing station configuration may not have replacement parts available. When this occurs, the station must be replaced in its entirety, leading to a disruption in service and gas delivery impact. Single-run configurations are stations without a standby run available. A standby run can take over control to provide the required capacity and pressure of gas to a system in the event that maintenance of the station is required. Some stations are capable of a manual bypass as a mitigation measure to reduce the potential for a disruption of service. Exposure to under-pressure risk is greater in the absence of a standby run. Noncompliant stations are typically locations where surrounding developments have encroached within the hazardous zone, causing clearance concerns.

Distribution System Stations that were installed below grade in a vault were evaluated to consider risks such as additional maintenance requirements, leaks within a confined space, increased replacement cost and potential for worker injury. It is expected that the projected reliability for these belowground assets will be lower and will degrade faster than other aboveground assets.

5.2.4.5 Customer Stations

Customer Stations reduce upstream pressure and deliver gas to a downstream customer with a total connected load greater than 12 m³/h and with a delivery pressure of 14 kPa or greater (with a limited number of exceptions). Customer pressure and volume requirements are driven by their natural-gas-fired equipment requirements.

Typical components of Customer Stations can vary greatly based on customer delivery requirements (e.g., gas volume, delivery pressure). The smallest Customer Stations are typically comprised of small diameter piping, a single regulator, meter and shut-off valve. Larger Customer Stations can be comprised of multiple regulators and meters, large-diameter piping and headers, an electrical system, controls and telemetry and multiple valves. EGI’s largest in-franchise customer station facilities typically supply natural gas to major electric power producers, steel mills, chemical plants, smelters and other process-based industrial plants. Compressed Natural Gas (CNG) stations are included in the Customer Stations subclass.

Note that all Customer Stations that have filters/strainers, odourant and heating equipment are considered part of the Stations with Auxiliary Equipment asset subclass (see **Section 5.2.4.3**).

Table 5.2.4-7: Customer Stations Station Component Age

Rate Zone(s)	Average Asset Age (Years)	Maximum Asset Age (Years)
EGD	16	62
Union	16	62

Although age is not the only factor in evaluating station asset conditions, an increase in failure is seen as the asset approaches the end of its useful life. In addition to the average age of assets, there are variations in how the replacement of components have been captured in systems. In some cases, the age of the asset reflects the last intervention to replace a component and in other cases the age of the asset reflects its initial installation date, even if some components have been replaced since that time.

Based on information in the appropriate systems of record, **Figure 5.2-69** and **Figure 5.2-70** reflect the age of the Customer Stations in the EGD and Union rate zones respectively. An outlier in the number of stations at 30 years can be attributed to the integration of legacy asset information systems; the date reflects the date of acquisition – not the date of installation. Work continues to understand the demographics of station assets and their component systems.

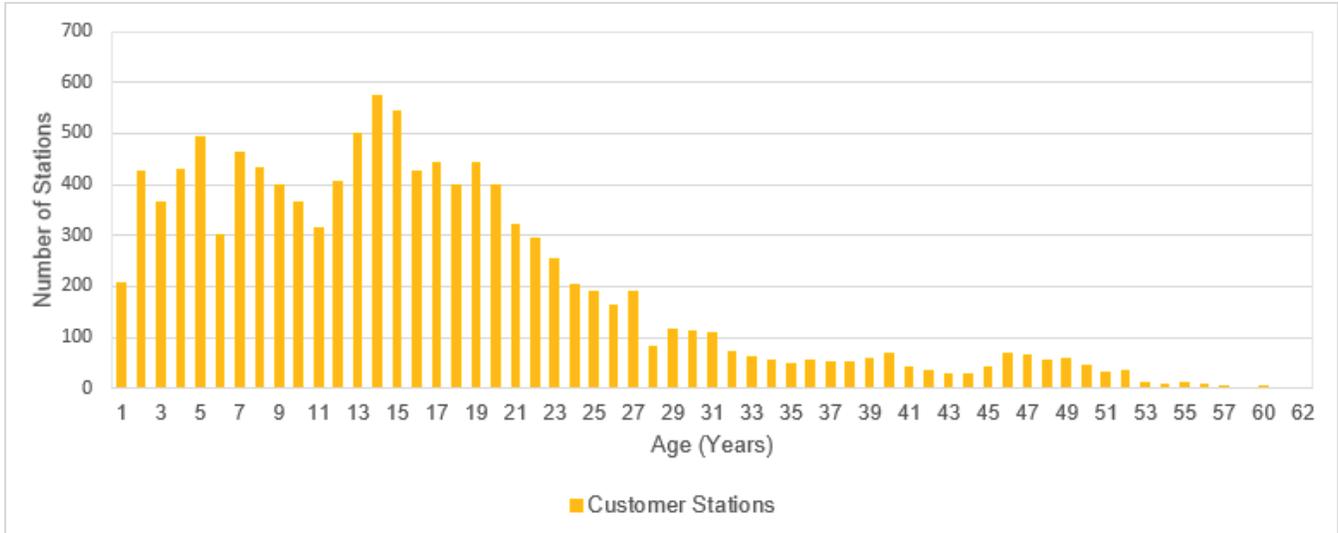


Figure 5.2-69: Customer Stations – Age Demographics (EGD Rate Zone)

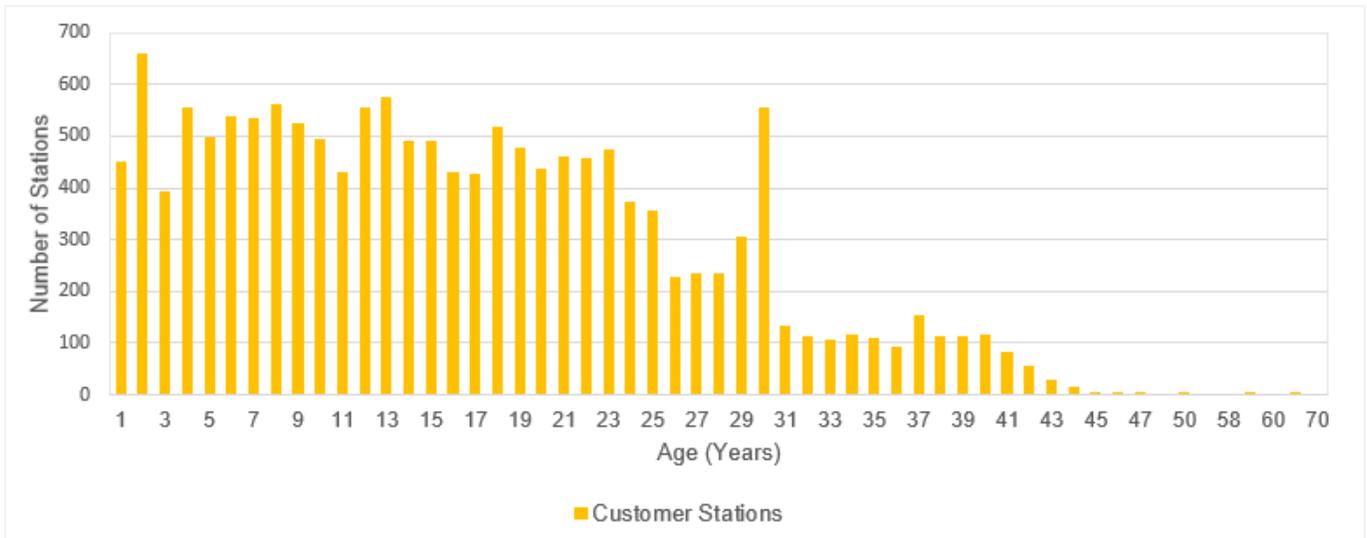


Figure 5.2-70: Customer Stations – Age Demographics (Union Rate Zones)

5.2.4.5.1 CONDITION METHODOLOGY

The condition methodology for Customer Stations is the same as for Distribution System Stations (see Section 5.2.4.4.1).

5.2.4.5.2 CONDITION FINDINGS

Customer Stations experience failures similar to Distribution System Stations (see Section 5.2.4.4.1). The condition findings for the EGD rate zone are similar to what was described in Section 5.2.4.4.2. Of the 8,000 assessments, 4,098 were Customer Stations and from the aggregated ranking of each sub-system based on their criticality to the station level, Figure 5.2-71 helps to illustrate the findings of the condition assessments and provides insight into the mitigation levels required for the current replacement program. Note that the assets reflected as Unknown were not part of this initial condition assessment.

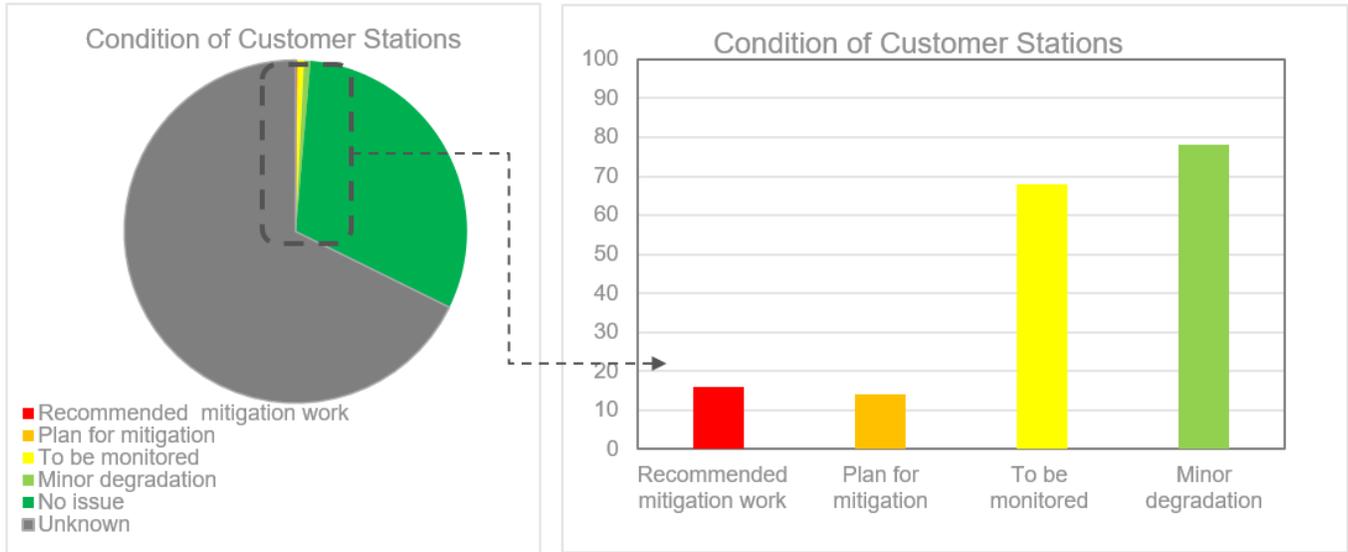


Figure 5.2-71: Customer Stations: Projected Failure Events

5.2.4.5.3 RISK AND OPPORTUNITY

The risks identified for the Customer Stations asset class are similar to risks for Distribution System Stations (see **Section 5.2.4.4.3**) The hazards identified include:

- Overpressure of non-boot style regulators
- Nonconforming station configurations
- Stations with compliance-related issues
- Stations experiencing loss of containment (leaks)

The risk assessment on these conditions determines the potential failure of the asset: pressure control failure, valve system malfunction and loss of containment (leaks), discussed in **Section 5.2.4.4.3**.

Customer Stations are the final pressure control point prior to entering into a customer’s building. Leaks or loss of containment at a customer station can lead to an explosion or fire. Some factors included in this risk category are damage to property, injuries to members of the public and the cost to repair the damaged assets.

Another concern with a subset of these assets is the design or configuration of some Customer Stations, which does not allow for required maintenance work (compliance work) to be completed without customer interruptions.

Inside Regulator Relocation risks

EGI has performed a survey to identify inside regulators at Customer Stations which may experience a higher leak rate from higher-operating pressure piping compared to pipes operating at lower pressures (for same hole size). Indoor regulators use higher-operating pressure pipe indoors; potential leaks may be able to reach their lower flammability limit (LFL) faster. Depending on leak rate, building ventilation, and room size, it is possible for an indoor gas leak to build up to its LFL, leading to possible ignition and resulting in an explosion.

5.2.4.6 Distribution Stations Strategy Outcomes

5.2.4.6.1 STATIONS WITH AUXILIARY EQUIPMENT STRATEGIES

5.2.4.6.1.1 Stations with Auxiliary Equipment Replacement Strategy

This strategy targets the replacement and/or rebuild of station components at sites prioritized based on condition, age and observations identified through site inspections and SMA reviews. Station investments are selected based on value framework assessment results and compliance/design standards. The goal of this strategy is to proactively replace or rebuild station components prior to end of life to reduce risk and maintain a safe and reliable distribution system. This is aligned with 2024

Rate Rebasing Customer Engagement results in which customers were supportive of investing to maintain current levels of safety and reliability. Despite this strategy, there may be instances where reactive replacement occurs.

This strategy includes considerations to leverage resources and plan capital replacements in a thoughtful manner that can vary by site. Some considerations include:

- Replacement of components based on expected failure. For example, if the entire boiler system is in poor condition with a high expectation of system failure, the entire system is replaced (proactive).
- Multiple component rebuilds to benefit from combined resources and project scope. For example, if the boiler system is in poor condition with a high expectation of failure and the telemetry and odourization systems are currently approaching poor condition, all three systems are replaced (proactive).
- Replacement and upgrade of components evaluated to be at or approaching capacity, based on projected forecast demands. For example, if regulators are evaluated to be approaching capacity in the upcoming year, components will be upsized to handle the appropriate projected system demands (proactive).
- Replacement of individual component assets as they fail. For example, a failure of one of the pumps within the boiler system results in the pump being replaced (reactive).

Major Stations with Auxiliary Equipment investments include:

Lisgar Gate Station Risk Mitigation

The Lisgar Gate Station is located in a highly populated area in the City of Mississauga. The station is situated in an urban setting and is surrounded by residential buildings, a commercial plaza, and a place of worship. The station has multiple feeds (two transmission lines and one extra high-pressure [XHP] Canada Energy Regulator (CER) line and various outlets to local distribution networks. In the event of a major incident, consequences would be significant given the close proximity of houses and buildings to the station. A recent inspection has identified degradation of the heating system and one of the buildings has structural degradation. Renewal of degraded assets and potential relocation of portions of the station to the Parkway East Station will be necessary to support risk reduction and improve long-term reliability of the site. See **Appendix A, Pg. 21** for additional detail on this investment.

Crowland Station

The Crowland Station has obsolescence issues related to the Remote Terminal Unit (RTU) and electrical system and does not have backup power generation. Mitigation of these issues has been limited due to the location of the RTU building that is located in an electrical hazardous area. In addition, there is an opportunity to better utilize the Crowland Storage Pool by abandoning the station's 1970 vintage compressor and other aging assets, and rebuilding the distribution components with new regulation, measurement, and remote capabilities. Doing so will eliminate the requirement to staff the site during operation of the compressor while improving operational control during peak hours, thereby reducing the cost of purchasing high-priced gas on the spot market during the coldest days. See **Appendix A, Pg. 18** for additional detail on this investment.

5.2.4.6.1.2 Compliance Remediation Strategy

This strategy targets the elimination of compliance concerns at stations identified through engineering assessments and Process Hazard Analyses (PHAs), using a managed approach to monitor and address identified code compliance issues. The strategy targets individual station sites found to have compliance deficiency issues such as issues on access/egress, building codes and fire codes, venting and site security vulnerabilities, as well as environmental compliance approvals.

5.2.4.6.1.3 Obsolete Heating Equipment Strategy

This strategy targets stations with heating equipment that have reached end of life, with a focus on systems where there is a risk of a glycol spill. Natural gas heating equipment is used in many System and Customer Stations to help mitigate failure of equipment due to the freezing of liquids in the gas stream and moisture surrounding buried piping. Over many years of operation, a variety of heating systems have been used, resulting in varying equipment age and ultimately, equipment obsolescence. This work will maintain system reliability, ensure operating costs for heating systems are minimized and reduce the potential for glycol spills, including providing the appropriate containment systems to minimize the impacts of an event.

5.2.4.6.1.4 Odourization System Strategy

This strategy targets stations with older odourization systems, specifically those with compliance issues. The expenditures in this portfolio include investments to upgrade odourant systems to ensure compliance to current codes, such as replacing old tanks and painting rusted containment pans and tank stands. Additionally, performance capability will be added by installing heat tracer lines, heated cabinets, improved tank valves and indoor regulator panels. This work will help to ensure safe,

compliant and continuous odourization and will help mitigate the risk of tank rupture, frequent freeze-offs and nuisance odour calls.

5.2.4.6.1.5 Telemetry Strategy

This strategy aims to maintain reliable telemetry equipment and will focus on component replacements as these have a much shorter anticipated life span than other station equipment. Telemetry components have varying life expectancies and are upgraded to address obsolescence, communication issues, electrical configurations and backup power. Obsolete equipment cannot be replaced like-for-like if it is damaged and may compound communication issues. The scope of the Telemetry Strategy includes:

- Replacement and upgrade of telemetry instrumentation, electrical and power generation assets and telemetry communications assets
- Replacement and upgrade of servers and network devices such as firewalls, modems and routers
- Supply and installation of security assets (swipe card access, video surveillance and intrusion detection assets)
- Tower network expansion as required to augment communication pathways
- Computer terminal and server expansion to support central logbook repository, data analytics and data historians

5.2.4.6.1.6 Facilities Integrity Management Program

FIMP assesses stations against threats that are listed in the EGI Hazard and Risk Common Register to identify susceptibility to the risks and determine mitigation strategies for individual sites, ensuring that risk is managed to the lowest practical levels. The strategy for the FIMP is to perform inspections with approved technologies used at EGI or other utilities for similar asset types. These inspections will assess the condition of existing station assets and will detect any concerns or issues to help determine the likelihood and consequence of failure of individual components and evaluate the risk. This strategy will allow for targeted replacement and will extend the useful life of assets by identifying condition issues prior to the occurrence of an incident. When analysis indicates that ongoing repair costs are likely to exceed capital requirements to replace the asset, the mitigation strategy is evaluated to ensure that risk is managed to the lowest practicable level.

5.2.4.6.1.7 Renewable Natural Gas Station Strategy

RNG is a renewable source of energy generated by methane emissions from landfills and other waste sources. It can be captured, cleaned and blended into EGI's natural gas network and used for residential and commercial energy needs as well as transportation fuel. The RNG strategy supports customer stations that allow RNG producers to inject their lower-carbon fuel into the distribution system. RNG opportunities help achieve lower emissions and make productive and economic use of landfill and other organic sources. This capital expenditures in this AMP do not include costs for RNG, refer to Exhibit 2, Tab 5, Schedule 2 for the associated capital expenditures.

5.2.4.6.2 DISTRIBUTION STATIONS STRATEGIES

5.2.4.6.2.1 Distribution System Station Replacement Strategy

This strategy mitigates risks associated with station condition and legacy station designs. Risks can be significant. One station may supply gas to hundreds of customers; and accordingly, all downstream mains and services can be affected by a failure. Stations are identified through regular inspections, information collection and condition methodology. This strategy will maintain the station population's current average condition and operational reliability, ensure operational capacity to meet current demands and minimize process safety risk. The program targets stations with the following issues:

- Belowground boxes
- Boot-style regulators
- Capacity issues
- Poor performance and poor condition
- Low-pressure control
- Obsolete components

Condition assessment reviews, SMA consultation and risk assessments are all used to prioritize stations for replacement. Since these stations are small and prefabricated off site, the scope of the investment includes replacing the entire station (pressure control, overpressure protection, valves) and as necessary, associated inlet and outlet piping belowground.

The replacement pace for Distribution System Stations is based on history and maintains the reliability of the station population at a relatively consistent level within the 10-year plan. This aligns with feedback from the 2024 Rate Rebasings Customer Engagement as the majority of customers indicated a preference for EGI to assess the long term health of the system and to spread out costs over time (even if that means higher rates now).

5.2.4.6.2.2 Header Station Replacement Program

This strategy targets header stations that require replacement due to the following issues: unsafe installation locations, poorly performing components, poor condition, obsolete components, nonstandard configurations and other issues identified in **Section 5.2.4.4.2**. Stations are evaluated to validate downstream customer impact, asset condition and workers' health and safety to ensure maximum risk reduction and benefit for each replacement.

For the EGD rate zone, the strategy for header stations is to replace approximately 25 header stations per year, based on condition assessments, component age and obsolescence. Header Stations are called System Stations in the Union rate zone and the strategy is included in the Distribution System Station Replacement Strategy (see **Section 5.2.4.6.2.1**).

5.2.4.6.2.3 Vaulted Stations Replacement Program

This program targets a subset of Distribution System Stations installed in below-grade vaults. The scope of this program includes replacing all remaining vaulted stations with above-grade facilities, reducing the risk of equipment failure. These stations are advanced in age and present significant maintenance challenges due to their confined nature and risks related to asset deterioration and equipment failure. The vault design is prone to water ingress that can cause frost heave, accelerated corrosion of assets and of the vault itself and can interfere with the proper equipment operation. These factors have a negative effect on reliability and worker safety. Solutions for each asset are developed considering either a typical system station design with land purchase or an above-grade enclosure station if land purchase is impractical. This program will decrease the risk of equipment failure, improve system reliability and result in stations being more safely and efficiently maintained.

5.2.4.6.3 CUSTOMER STATIONS STRATEGIES

5.2.4.6.3.1 Customer Station Replacement Program

This program targets stations that have issues and concerns identified through regular inspections and will be based on condition, age and obsolescence. Issues targeted include nonstandard configuration, unsafe installation locations, poor performing components, poor condition and obsolete components. Execution of this program will maintain reliable gas supply to customers, address sites with nonconforming configurations and minimize impacts to businesses and customers.

Condition assessment reviews, SMA consultation and risk assessments are used to prioritize stations for replacement. Since these stations are small and prefabricated off site, the scope of the investment includes replacing the entire station (pressure control, overpressure protection, valves) and as necessary, associated inlet/outlet piping belowground. Customer Stations are the direct supply and control to commercial and industrial customers and the consequence of a station failure can be significant. Prior to replacement, all stations are evaluated to validate customer impact, asset condition and workers' health and safety to ensure maximum risk reduction and benefit.

The conditions and risks associated with Customer Stations assets continue to be monitored and assessed to determine if the current replacement rate is adequate in maintaining the operational reliability and risks associated with these assets.

5.2.4.6.3.2 Inside Regulator Room Program

This program aims to reduce the risks associated with the installation of pressure-reducing regulators inside a building by relocating the regulator to a lower-risk location (at the exterior of the building envelope). An external regulator room is an enclosed room with adequate ventilation that has not been specifically designed and approved to house EGI regulators or stations. The scope of work involves remediating the room enclosure to ensure adequate ventilation to the exterior and to modify enclosing walls to be air-sealed from the building to prevent gas migration. Across the Union rate zones, services that have inside regulators are being relocated outside of the building envelope where appropriate. Development of the scope and pacing of the project is ongoing and the highest risk installations are being prioritized for remediation.

5.2.4.6.3.3 PFM Rebuild Program

A subset of the Customer Stations population are called Pressure Factor Metering (PFM) stations. Many PFMs in the Union rate zones do not have built-in bypasses or provisions for a bypass which does not allow for standard operation inspections to be performed. These installations are operationally inspected every five years and during this period the

total population will be assessed. Those that require a rebuild will be identified within the next five-year window. The mitigation of this configuration will be completed before the next inspection within the following five-year window.

5.2.4.6.3.4 CNG Station Strategy

The new CNG Station Strategy involves the acquisition of new large and mobile Natural Gas Transportation (NGT) and small Vehicle Refueling Appliances (VRA) station customers and the installation of the necessary fueling equipment. The timing and scope for new NGT assets are based on the likelihood of contract confirmation and historical station installations of similar size and scope.

The renewal and upgrade of existing stations to ensure the continued safe, efficient, and reliable operations of all NGT stations. This approach includes the following activities:

- Small NGT Stations (VRAs)
- Proactively replacing/rebuilding VRA compressors (~35 units per year)
- Proactively replacing/rebuilding remote panels (~33 units per year)
- Reactively replacing gas detectors as needed (~5 units per year)
- Large, mobile and Utility NGT stations
- Maintaining a proactive compressor block rebuild program (~3 to 4 units per year).
- Reactively remediating station components due to findings from on-site condition assessments
- Proactively replacing manual shutoff valves with automatic models when identified for replacement

5.2.4.6.4 COMMON DISTRIBUTIONS STATIONS STRATEGIES

5.2.4.6.4.1 Stations Capital Upgrades Program

This program addresses various risk remediation activities including replacement of obsolete equipment, addressing regulator freeze-offs, remediating stations that have experienced frost heave, and investing in unforeseen issues at stations that require immediate remedy.

5.2.4.6.4.2 Distribution Stations Painting Program

This program is to apply high-performance paint to mitigate corrosion of station assets. This program targets stations where existing paint has begun to fail or wear off or has a higher risk of corrosion due to roadside salt exposure or are physically shaded. High-performance paint reduces the probability of leaks and piping/equipment failure due to significant corrosion. This program is specific to the Union rate zones only.

5.2.4.7 Distribution Stations Capital Expenditure Summary

The total average capital spend is forecast to be \$113M (EGI) as summarized in **Table 5.2.4-8**. Distribution Stations capital is further summarized as part of EGD’s total 10-year capital plan in **Section 6**. See **Appendix B – IRP** for the status of the outcomes of the IRP assessment process, including the binary screen and the status evaluation of IRPAs.

Table 5.2.4-8: Distribution Stations Capital Summary (\$ Millions) – EGI¹⁶

Asset Class Strategy/Investment Name	Program Name	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Forecast
Stations with Auxiliary Equipment Replacement Strategy		35.9M	46.1M	36.3M	39.8M	49.8M	61.5M	56.1M	59.9M	58.9M	56.8M	501.1M
Lisgar Station		19.2M	2.3M	-	-	-	-	-	-	-	-	21.5M
Crowland Station	Gate, Feeder & A Stations	23.6M	0.6M	-	-	-	-	-	-	-	-	24.1M
Compliance Remediation Strategy		2.5M	2.5M	2.6M	2.8M	0.7M	-	-	-	-	-	11.2M
Obsolete Heating Equipment Strategy		0.5M	0.6M	3.1M	1.0M	0.5M	-	-	-	0.6M	-	6.3M
Odourization System Strategy	Station Rebuilds & B and C Stations	1.7M	2.1M	2.1M	2.5M	2.6M	2.6M	2.6M	2.7M	2.7M	2.6M	24.1M
	Gate, Feeder & A Stations	4.0M	8.3M	10.4M	10.7M	9.6M	4.4M	4.5M	4.9M	5.0M	5.0M	66.7M
Telemetry Strategy	Station Rebuilds & B	0.1M	1.2M									

¹⁶ Includes overhead allocation.

Asset Class Strategy/Investment Name	Program Name	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Forecast
	and C Stations											
Facilities Integrity Management Program	Integrity Initiatives	5.8M	5.9M	6.0M	6.0M	6.4M	6.4M	6.3M	6.5M	6.5M	6.3M	62.2M
Distribution System Station Replacement Strategy	Station Rebuilds & B and C Stations	42.7M	40.1M	36.1M	38.4M	26.0M	30.7M	34.3M	22.0M	19.8M	26.8M	316.8M
Header Station Replacement Program		1.2M	1.2M	1.2M	1.2M	1.3M	1.3M	1.3M	1.3M	1.3M	1.3M	12.4M
Customer Station Replacement Program		1.2M	1.3M	1.3M	1.3M	1.4M	1.4M	1.4M	1.4M	1.4M	1.4M	13.4M
Inside Regulator Room Program	Inside Regulator & ERR Program	3.8M	3.8M	3.9M	3.9M	4.2M	4.1M	-	-	-	-	23.8M
CNG Strategy	CNG	4.7M	2.9M	4.2M	1.0M	1.1M	1.1M	1.1M	1.1M	1.2M	1.1M	19.5M
Stations Painting Program	Station Rebuilds & B and C Stations	2.5M	2.8M	2.6M	2.6M	2.8M	2.8M	2.7M	2.8M	2.8M	2.7M	27.1M
Total		149.3 M	120.6M	109.8M	111.4M	106.5M	116.3M	110.4M	102.8M	100.2M	104.2M	1131.5M

5.2.5 Utilization

Utilization assets are the components of the distribution system that regulate system pressure, ensure low pressure delivery to the customer and measure gas consumption. Safety is the paramount role of these assets, as the regulation system within it is the last line of defence to prevent overpressure to the customer. Unlike customer stations (described in **Section 5.2.4**), these assets support the delivery of gas primarily to customers consuming volumes less than 17.0 m³/h at a typical pressure of 7" wc.

Each Utilization asset subclass has unique characteristics and the management of each is tailored to ensure the safe and reliable delivery of natural gas. Utilization is comprised of three asset subclasses: (1) measurement, (2) pressure regulation and overpressure protection, and (3) belowground and internal piping.

5.2.5.1 Utilization Hierarchy

The asset class hierarchy for the Utilization asset class is summarized in **Figure 5.2-72**.

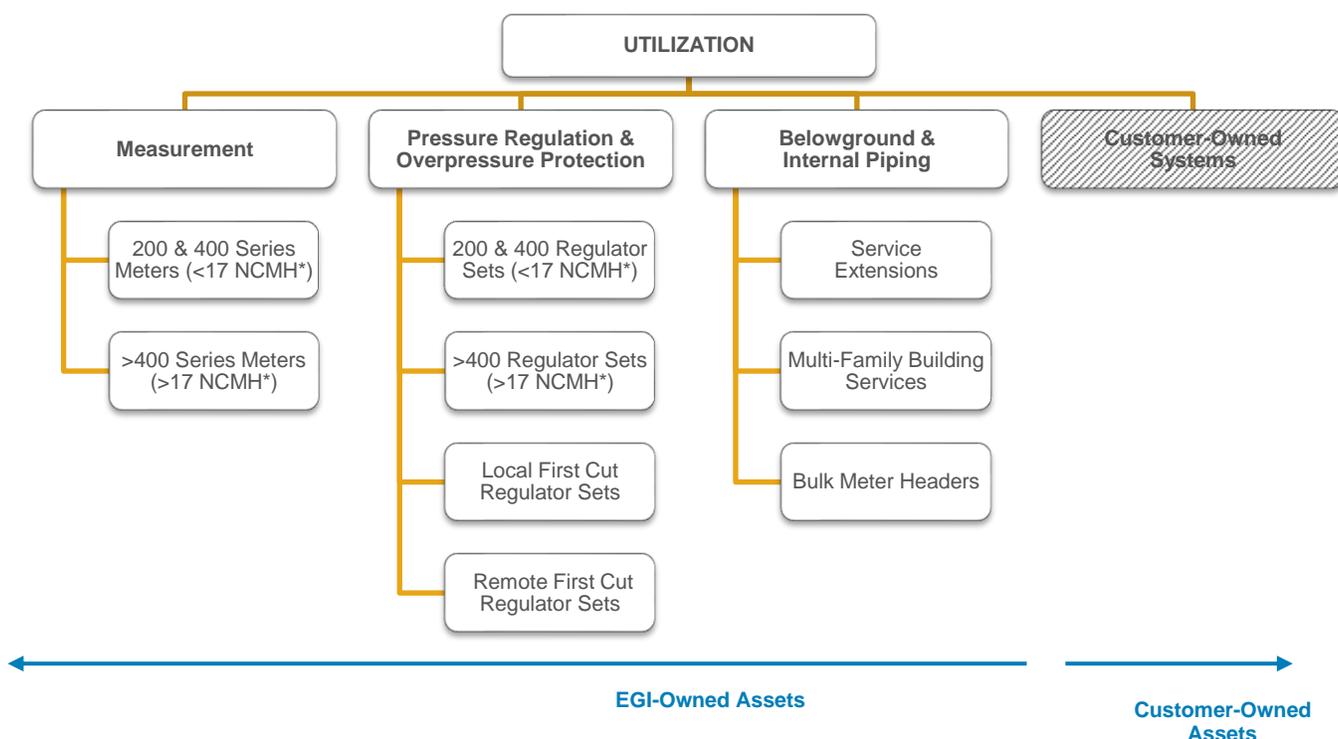


Figure 5.2-72: Utilization Asset Class Hierarchy

Notes:

- Customer-owned systems are included for illustrative purposes only
- *Normal Cubic Metres per Hour

Measurement Systems (natural gas meters and electronic volume correctors [EVCs]) track customer gas consumption. These systems directly link to customer billing and are subject to a stringent replacement program overseen by Measurement Canada. Measurement assets allow the safe operation of the natural gas network, provide accurate and timely measurement, and monitor and control the flow of natural gas in real time.

- **Natural Gas Meters** are devices used in measuring the quantity of natural gas delivered. Meters are classified as custody transfer or non-custody transfer. The former are billing meters for gas purchased from suppliers or sold to customers and must meet the legal requirements of the *Electricity and Gas Inspection Act*. The latter are used for internal accounting of gas inventories. EGI uses a variety of gas meter types to fit different applications and requirements:
 - Diaphragm meters use positive displacement technology and internal mechanical temperature compensation to calculate delivered natural gas volumes at base temperature and pressure. The 200 series meter is the most

common meter type in use. The 400 series meters are used for commercial and large residential loads and have incrementally more capacity than a 200 series meter. To mitigate supply chain challenges, EGI can substitute 200 & 400 class diaphragm meters with ultrasonic meters as required to continue connecting new customers and completing out of date meter exchanges pending industry approvals.

- Commercial ultrasonic meters are used as a direct substitute for 800/1000 series diaphragm meters. These meters use inferential ultrasonic flow measurement, electronic temperature correction and consumption recording.
- Rotary meters are positive displacement devices comprised of a meter body with an EVC and are used in commercial and industrial applications.
- Turbine meters are inferential metering devices used at large commercial and industrial customer stations for high-volume metering. They are also used for volumetric measurement at interconnect sites between EGI and other pipeline companies.
- Large ultrasonic meters are sophisticated multi-path inferential measurement devices directly connected to remote terminal units (RTUs) for measurement of large volumes of gas at high pressures.
- **Electronic Volume Correctors (EVCs)** typically receive volume measurement inputs from a meter. EVCs measure the temperature and pressure and correct the measured volume for both.

Pressure Regulation and Overpressure Protection Systems regulate the delivery of gas at a pressure appropriate for customer-owned gas-firing appliances and are the last line of defence for overpressure protection.

With the exception of customers connected to low-pressure mains, each customer location has at least one regulator and one overpressure safety device installed to prevent gas entering the building at an unsafe pressure in the event of a malfunction. This asset subclass is comprised of the following components:

- **Regulators** reduce natural gas pressure to safe operating limits and control its flow based on customer demand. Regulators in the Utilization asset class are regulated to deliver low pressure, typically at 7" wc.
- **Safety devices** prevent downstream overpressure and are the last line of defence to prevent potentially hazardous conditions. Three typical safety devices used in the Utilization asset class are: (1) internal relief valves, (2) external relief valves and (3) overpressure cut-offs.
- **Piping on regulator sets** refers to any of the aboveground piping between the shut-off valve (commonly referred to as a shutoff or lockwing valve) and the meter outlet.

Belowground and Internal Piping Systems: These systems are located upstream of inside meters and refer to piping running below grade or piping running inside a building.

EGI owns a type of belowground asset called a Service Extension. Service Extensions are belowground pipe between the regulator outlet and the meter inlet. This belowground piping is necessary in some configurations but is susceptible to corrosion and can require costly maintenance. Internal piping is typically found in multi-family buildings, this piping runs between the regulation and piping system located outside to meters inside the building.

Customer-Owned Systems: Piping and assets downstream of the meter are customer-owned. Although EGI does not own these assets, *O. Reg. 212/01* requires an inspection of all installations upon initial connection to the gas supply or during the reintroduction of gas. In addition, EGI continues to inspect customer assets as part of a quality management program. By meeting these requirements, EGI helps to ensure the safe delivery of natural gas. As a last resort, EGI can terminate the natural gas supply if the customer fails to remediate any identified critical safety issues. As customer-owned systems are not part of EGI's assets, they are included in this discussion for illustrative purposes only (see **Figure 5.2-73**).



Figure 5.2-73: Utilization Assets Illustration

5.2.5.2 EGI’s Customer Classifications

EGI’s distribution network delivers natural gas to a range of customers throughout Ontario. **Table 5.2.5-1** describes EGI’s customer classifications.

5.2.5.3 Utilization Inventory

Utilization assets include all assets downstream of the shut-off valve and upstream of the meter outlet. The utilization asset subclass delivers natural gas to a range of customers. **Table 5.2.5-1** describes EGI’s customer classifications.

Table 5.2.5-1: Customer Definitions

Customer Type	Subtype	Customer Definition
Commercial / Bulk Metered Uses natural gas for commercial purposes, buying and selling goods or services usually for a profit.	Commercial New Construction	A customer intending to operate a commercial business (including apartment buildings with one bulk meter) in a newly-constructed building and intending to use natural gas to meet energy needs.
	Commercial Conversion	A commercial customer using a fuel other than natural gas for commercial business and is converting to natural gas.

Customer Type	Subtype	Customer Definition
Multi-Family / Apartment Uses natural gas for residential purposes in a large building with multiple residential suites that are individually metered.	Apartment New	A traditional apartment customer and is a multi-residential dwelling containing more than six units that are metered individually.
	Apartment Conversion	A multiple unit residential building where each suite is individually metered.
Industrial Uses natural gas for commercial purposes, manufacturing or processing products.	Industrial New Construction	A customer intending to run an industrial manufacturing business in a newly-built facility and intending to use natural gas.
	Industrial Conversion	An industrial facility using a fuel other than natural gas for industrial purposes and is converting to natural gas.
Residential Uses natural gas for residential purposes.	Residential New Construction	A new residential construction development of homes constructed by a builder for domestic purposes. This includes new subdivisions.
	Residential Conversion	A residential customer using a fuel other than natural gas for domestic purposes and is converting to natural gas.

Over 90% of customers are residential, with the remaining being mostly commercial. With 3.8 million EGI customers requiring low pressure delivery, understanding and maintaining the health of these assets is a critical part of providing safe and reliable gas delivery. **Figure 5.2-74** to **Figure 5.2-77** profile EGI’s existing customer base by type and location. For a map of the EGI distribution operating regions, see **Figure 2.3-2**.

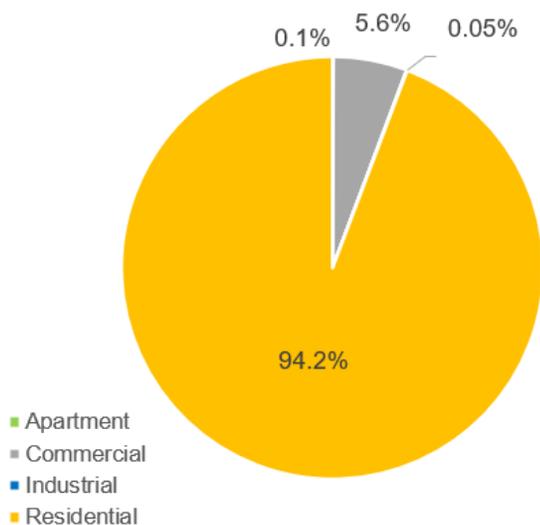


Figure 5.2-74: Customer Breakdown by Type – EGD Rate Zone

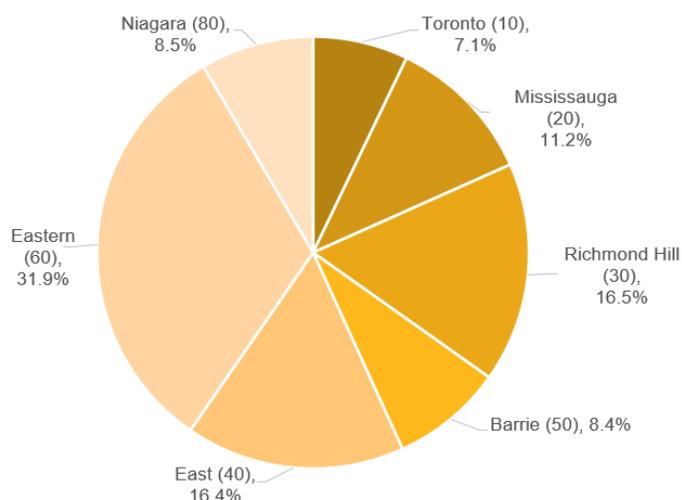


Figure 5.2-75: Customer Breakdown by Area – EGD Rate Zone

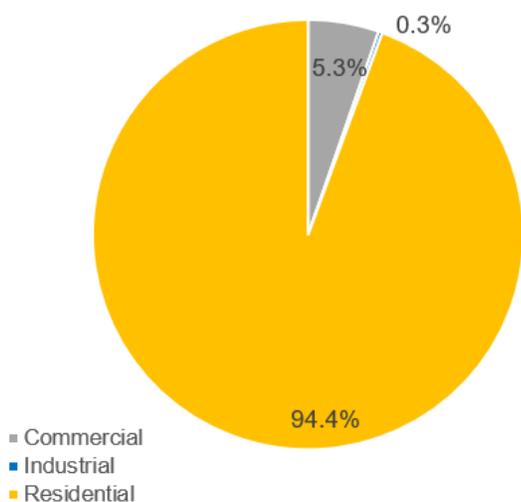


Figure 5.2-76: Customer Breakdown by Type – Union Rate Zones

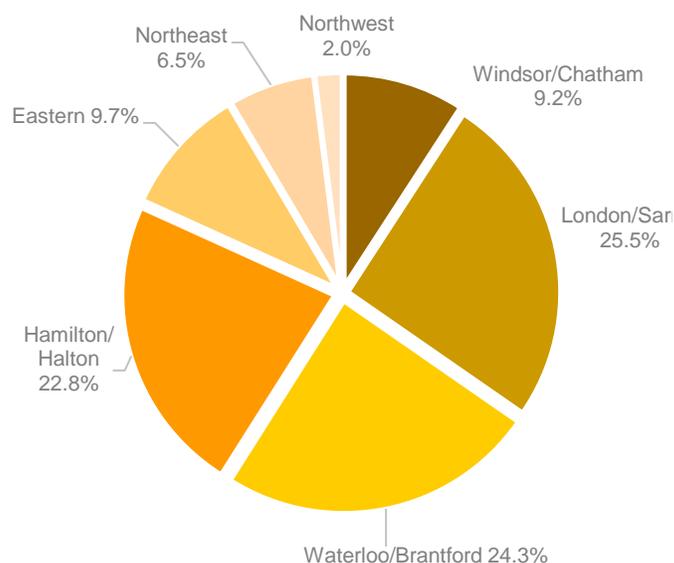


Figure 5.2-77: Customer Breakdown by Area – Union Rate Zones

For the Union rate zones, efforts are underway to recategorize multi-family/apartment customer data to align customer classifications as part of integration activities.

Table 5.2.5-2 lists the inventory details for the Utilization asset class.

Table 5.2.5-2: Utilization Asset Class Inventory¹⁷

Asset Subclass	EGD Rate Zone	Union Rate Zones
Measurement Systems		
200 & 400 Series Meters (<17 NCMH*)	2,232,345	1,503,843
>400 Series Meters (>17 NCMH*)	68,033	44,024
Pressure Regulation & Overpressure Protection Systems		
200 & 400 Regulator Sets (<17 NCMH*)	2,018,115	1,514,650
>400 Regulator Sets (>17 NCMH*)	90,229	26,279
Local First Cut Regulator Sets	25,093	25,205
Remote First Cut Regulator Sets	10,679	
Belowground and Internal Piping Systems		
Service Extensions	12,457	N/A
Multi-Family Building Services	3,002	N/A
Bulk Meter Headers	39	N/A

*Normal Cubic Metres / Hour

¹⁷ Inventory as of November 30, 2021.

For the EGD rate zone, the number of meters includes those at Customer Stations within the Distribution Stations Asset Class (see **Section 5.4**). The number of regulators exclude the regulators at customer stations. The populations of >400 Series Regulator Sets, local and remote first cut regulator Sets have stations excluded.

For Union rate zones, the regulators at customer stations are excluded. The double cut regulator sets may include Customer Stations – this will be refined as more asset population information is available. The inventories for belowground and internal piping systems are not currently available. The inventories for Local First Cut Regulator Sets and Remote First Cut Regulator Sets are combined and include a portion of the customer stations, EGI's DIMP is developing a field survey to identify and validate each subpopulation.

5.2.5.4 Utilization Condition and Strategy Overview

Table 5.2.5-3: Utilization Condition and Strategy Overview

Asset Subclass	Avg. Age (Year)	Condition	Risk / Opportunity	Maintenance Strategy	Replacement / Renewal Strategy
Measurement Systems 200 & 400 Series Meters (<17 NCMH) >400 Series Meters (>17 NCMH)	200 Series Meters: 24 to 27 years old 400 Series Meters: 13 to 15 years old >400 Series Meters: 16 to 20 years old	Meter Exchange Government Inspection (MXGI) Program: This program is designed to replace meters before they fail. Meter seal life (and extensions) is based on sampling and testing to ensure Measurement Canada specifications are maintained. Non-program: Non-program meters that fail before the prescribed maximum service life are discovered during emergency calls or customer-initiated work.	Failing to remove expired meters from service carries penalties under the <i>Electricity and Gas Inspection Act</i> . Penalties could eventually lead to EGI's loss of accreditation, leading to higher meter replacement program costs. Therefore, maintaining Measurement Canada accreditation is critical for resealing meters, which allows for an extension to the life of meter assets that would otherwise need replacement. Financial Risk: A monetary penalty to EGI for not removing failed and overdue meters if the MXGI Program was not executed, as well as the financial impacts of a reduced asset life cycle. The financial risk of failed or leaking meters may lead to financial loss due to repair costs, relighting customer gas appliances and any property damages. As well, EGI may lose revenue from stopped meters.	The maintenance strategy for meters is to continue with the current MXGI program and managing non-program exchanges. Reactive maintenance, based on operating standards, is on an as-needed basis to address customer leaks and/or emergency calls.	EGI's replacement/renewal strategy for replacing is through: <ul style="list-style-type: none"> • Meter Purchases: Review 10-year meter replacement forecasts and smooth purchase requirements by adjusting replacement dates within regulations. • MXGI Program: Follow the Measurement Canada regulated exchange program (MXGI) which replaces meters before their measurement seal expires. This approach optimizes sampling and meter group replacement costs, to stabilize workload and meter purchases as some years have larger populations to survey.
Regulation, Safety and Piping Systems: 200 & 400 Regulator Sets (<17 NCMH)	Dependent on meter and regulator type: between 20 to 30 years old (~16% of the population is over 20 years old)	Failure history and trending indicates that the wear-out phase for regulators associated with 200 & 400 Series Meters is unlikely to occur before 30 years of age.	Majority of customers are connected to the distribution system through 200 & 400 Series Regulator Sets. Not maintaining these assets can lead to: Public Health and Safety Risk: Loss of containment, threat of overpressuring customer piping, possibly leading to explosion Financial Risk: Repair, commodity loss, relights, potential property damage costs Operational: Customer service disruptions Environmental: GHG emissions and environmental impact of a leak	The maintenance strategy for Regulator Sets is to proactively maintain units in conjunction with EGI's MXGI Program. Reactive maintenance is on an as-needed basis (based on operating standards) to address customer leaks and/or emergency calls. Note: EGI's MXGI Program, which covers all variations of meters and regulators, adheres to Measurement Canada requirements.	EGI's replacement/renewal strategy for replacing is through: <ul style="list-style-type: none"> • MXGI Program: Exchanging regulators during MXGI inspections prevents the population from reaching the wear-out phase. • Opportunistic Replacement: If found to be 20 years or older, Regulator Sets are opportunistically replaced. • Targeted Inspection and Remediation Program: The Targeted Inspection and Remediation Strategy is used to remediate high-priority condition issues identified through EGI's DIMP. Through the DIMP, surveys collect information on the failure rates of assets, informing future policy decisions on replacement frequency.
Regulation, Safety and Piping Systems: >400 Regulator Sets (>17 NCMH)	Dependent on meter and regulator type: between 20 to 30 years old	Condition findings include corrosion of piping and regulators and not complying with installation specifications. The inspection program is planned to target the entire population of the >400 Series Regulator Sets.	The risks identified for >400 Series Regulator Sets are the same as 200 & 400 Series Regulator Sets. Since delivery rates for >400 Series Regulator Sets are higher than delivery rates for the 200 & 400 Series, the consequences are potentially greater and put a higher number of end users at risk.		
Regulation, Safety and Piping Systems: Local First Cut Regulator Sets	Dependent on meter and regulator type: between 20 to 30 years old	Failure history and trending indicate the wear-out phase for regulators associated with 200 & 400 Series Meters is unlikely to occur before 30 years of age. First cut regulators were not historically replaced at the same time as second cut regulators, as per current installation standards. Sites not compliant with installation specifications are remediated.	The risks identified for Local First Cut Regulator Sets are the same as 200 & 400 Series Regulator Sets. However, these assets present a higher consequence than traditional single cut regulator sets due to the higher pressures managed by two pressure cuts.		
Regulation, Safety and Piping Systems: Remote First Cut Regulator Sets	Dependent on meter and regulator type: between 20 to 30 years old	Remote first cut regulator set sites older than 15 years were determined to have more significant condition issues. Remote First cut regulators are installed away from premises and near the property line, making them more susceptible to corrosion and third-party damage. First cut regulators were not historically replaced at the same time as second cut regulators.	The risks identified for Remote First Cut Regulators are the same as Local First Cut Regulator Sets. As Remote First Cut Regulators are installed away from the premises and near the property line, these assets are exposed to more elements originating from the roadway. Their placement can also make them susceptible to third-party damage from maintenance equipment and vehicles.		

Asset Subclass	Avg. Age (Year)	Condition	Risk / Opportunity	Maintenance Strategy	Replacement / Renewal Strategy
Underground/ Belowground/ Internal Piping Systems	N/A	<p>Service Extensions: A sample survey of Service Extensions showed that some subsets have a population that requires cathodic protection.</p> <p>Multi-Family Building Services: Generally, corrosion is found where the pipe intersects with the concrete wall; any severe corrosion that could affect safety is remediated.</p> <p>Bulk Meter Headers: Common issues include:</p> <ul style="list-style-type: none"> No clear demarcation points between EGI and customer assets Obsolete regulators 20 years and older Nonadherence to current installation and maintenance specifications Vent clearances and configurations not met, not all fittings located above ground and obsolete components 	<p>The risks identified include Financial, Environmental, Operational and Public Health and Safety Risk.</p> <p>Service Extensions: Since this piping enters the building below grade, gas leaks may have a higher chance of migration into the building, resulting in gas accumulation and a potential incident.</p> <ul style="list-style-type: none"> Multi-Family Building Services: Since this piping system category is located inside high-occupancy buildings, the potential consequence of failure is higher and a loss of containment will impact more people. Bulk Meter Headers: Since the buildings serviced are higher-occupancy units, there is potential for a higher consequence of failure. <p>EGI is obtaining further information on these assets to better understand and manage asset risk.</p>	<p>The maintenance strategy is to continue to conduct the Targeted Inspection and Remediation Program based on operating standards through the Distribution Integrity Management Program (DIMP).</p> <p>Reactive maintenance is on an as-needed basis to address customer leaks and/or emergency calls.</p> <p>Complete maintenance and inspections are performed based on operating standards.</p>	<p>EGI's replacement/renewal strategy for replacing is through:</p> <ul style="list-style-type: none"> Opportunistic Replacement: Replace Service Extensions when the gas service is replaced and during planned city sidewalk/road replacements. Targeted Inspection and Remediation Program: Sampling will be used to assess risks and validate the condition of the assets through the Leak Survey and Cathodic Protection surveys. Continue to review the feasibility of an aboveground inspection tool. Remediate high-priority condition issues identified through the Leak Survey and Cathodic Protection programs.
Customer-Owned Systems	N/A	<p>EGI inspects customer-owned assets at the time of initial installation and after conducting relights. Customers are issued A-tags if unacceptable conditions that present an immediate hazard are identified.</p>	<p>Failure of these components can cause loss of containment and appliance malfunction, resulting in public health and safety risk.</p>	<p>EGI inspects customer-owned assets at the time of initial installation and after conducting relights.</p> <p>Reactive maintenance is on an as-needed basis to address customer leaks and/or emergency calls.</p>	<p>The current strategy for customer-owned systems is to continue existing practices at initial installation.</p>

5.2.5.5 Measurement Systems

Meters represent the largest group of assets within the Utilization asset class. Meters measure gas flow to the customer premises. Different measurement devices are used to measure customer consumption, 200 & 400 Series Meters (<17 NCMH) have a capacity 17.0 m³/h or less and >400 Series Meters (>17 NCMH) have a capacity 17.0 m³/h or greater.

Certain meters have instruments (electronic volume correctors) that perform compensation to accurately measure gas flow.

Meters are managed through a well-established program detailing the performance testing, repair and replacement requirements of meters and instruments. All verified meters are approved by Measurement Canada with an issuance of a certificate identifying the meter as compliant with *Electricity and Gas Specification S-EG-02*, which specifies meter tolerance. EGI must ensure all measurement devices remain in compliance for annual Measurement Canada audits and must demonstrate all aspects of its meter sampling, maintenance and replacement activities are compliant to receive Measurement Canada accreditation as an authorized service provider and to adhere to Measurement Canada Accreditation Standard S-A-01.

The majority of EGI's customer base are residential and small commercial customers whose meter has been a 200 or 400 series diaphragm meter for many decades. Technological advances have introduced ultrasonic meters which are becoming available for the 200 & 400 series meters. EGI has an interest in upgrading its meters to ultrasonics as they offer enhanced safety features and can provide more insight back to the utility in real time when connected to a network. Diaphragm meters are becoming more difficult to procure as one of the major diaphragm meter manufacturers discontinued production of their line in 2021, in addition to other supply chain issues, therefore EGI is substituting small diaphragm meters with ultrasonic meters to continue to connect new customers and execute meter exchanges. EGI is also exploring an Advanced Metering Infrastructure (AMI) deployment to complement the introduction of ultrasonic meters to our system. Potential costs associated with AMI deployment have not been included in the capital expenditures of this AMP.

5.2.5.5.1 CONDITION METHODOLOGY

The replacement of the meter population is prescribed by Measurement Canada requirements and fulfilled by EGI's meter exchange program. Government Inspection Meter Exchange (MXGI) volumes are driven by a sampling program. Based on the failure rate of sampled meter groups, groups are either given in-Service Extensions or are fully replaced, ensuring the health and accuracy of the asset. Groups of meters that have short seal life extensions available to them are also replaced. This approach optimizes sampling and meter group replacement costs, to stabilize workload and meter purchases as some years have larger populations to survey. Sample results and corresponding extension durations are used to indicate meter group health.

The methodology for determining meter replacement is developed by Measurement Canada and varies by meter type:

200 & 400 Series Meters (<17 NCMH): The pace and methodology of diaphragm meter replacements is set by Measurement Canada's *S-S-06 Standard Sampling Plans*. Annual sampling is carried out on meter groups. Meters are due for replacement originally based on their initial life span (10 years for most 200 series meters, 7 years for 400 series meters). Meters are grouped homogeneously; in the year before first expiry (typically at Year 9 for 200 series meters), samples are pulled from each group for testing. If the sample meters pass, then a life extension of 8, 6, 4, or 2 years (based on the meters' initial life span) is given to the meter group. If the sample meters fail, the meters are removed from service. Meter groups that pass require further testing after their next extended life span expires (8, 6, 4, or 2 years).

>400 Series Meters (>17 NCMH): Rotary meters, ultrasonic, turbine meters and instruments do not qualify for sample inspection. The life-cycle management for these meters is to renew and replace prior to seal expiry. Rotary meters expire after 16 to 20 years, ultrasonic meters at 10 years, turbine meters at 6 years and instruments at 7 to 12 years.

Exchanged meters are processed at the meter shops on EGI premises, as EGI has a facility that has Measurement Canada accreditation. Processing includes labelling, cleaning and performance testing. Meters are also sent off site to accredited meter inspections facilities as required. Meters are also exchanged when malfunctioning, when customer load changes, or if involved in billing investigations.

5.2.5.5.2 CONDITION FINDINGS

The MXGI Program is designed to keep the in-service meter population healthy. The length of meter life extensions is dependent on sample group performance. In addition, the maximum achievable extension decreases as sampling of a group increases. For 200 & 400 Series Meters, the typical in-service life for meter groups is 18 to 24 years. As manufacturing and handling processes have evolved over time, meter groups frequently reach 24 years and beyond. The historical quantity of program-exchanged meters and non-program exchanged meters is shown in **Table 5.2.5-4**.

Table 5.2.5-4: Meter Replacements (Historical)

Year	MXGI Program Meter Exchanges	Non-Program Meter Exchanges	MXGI Program Meter Exchanges	Non-Program Meter Exchanges
	EGD Rate Zone		Union Rate Zones	
2016	63,425	17,222	54,900	12,501
2017	26,965	15,729	54,559	13,609
2018	46,651	17,796	55,603	13,240
2019	40,839	17,271	53,948	11,326
2020	36,263	19,735	31,323	13,559

Non-program meter exchanges are attributed to the reasons listed in **Figure 5.2-78** and **Figure 5.2-79**. As reporting and analytics for the asset class are integrated, naming conventions will be aligned to clearly identify the reasons for the meter exchange, which will allow for maintenance strategies to be refined.

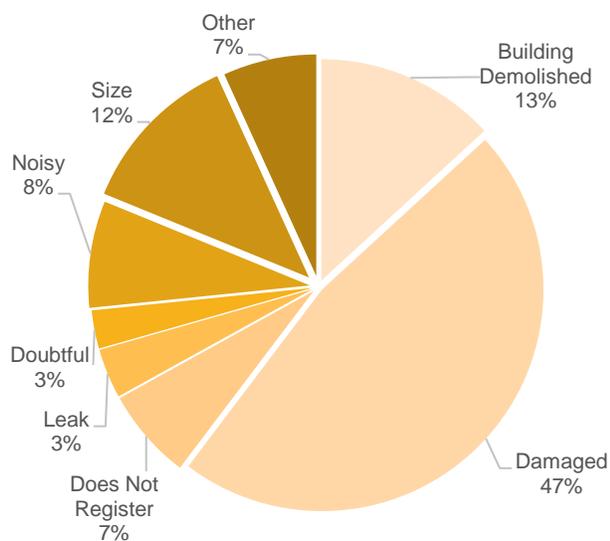


Figure 5.2-78: Typical Causes of Non-Program Meter Exchanges) – EGD Rate Zone

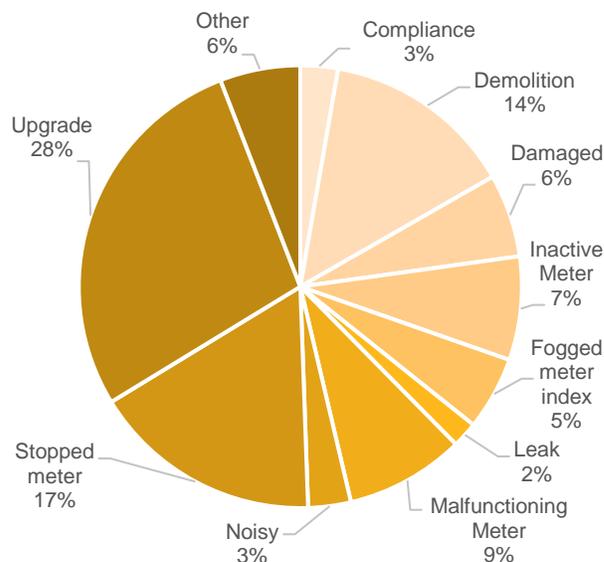


Figure 5.2-79: Typical Causes of Non-Program Meter Exchanges) – Union Rate Zones

5.2.5.5.3 RISK AND OPPORTUNITY

5.2.5.5.3.1 MXGI Risk

For detail on the risk and opportunity, see **Table 5.2.5-3**.

5.2.5.5.3.2 Non-MXGI Program Meter Exchange Risk

Non-MXGI Program meter exchanges target leaking meters, damaged meters and meters that do not flow gas. Hazards associated with leaks could result in migration and gas accumulation. However, the health and safety risk associated with meters is minimal, as meters leak very infrequently and the majority are located outside customer premises. Very few meters are returned due to leaks. The financial risk of failed or leaking meters may lead to financial loss due to repair costs, relighting customer gas appliances and any property damages. As well, EGI may lose revenue from stopped meters. These risks can result in damage to the EGI brand which promotes the core values of safety and reliability. In addition, there is a financial opportunity to remove groups of meters that have been sampled multiple times with the availability of short extensions remaining.

5.2.5.6 Pressure Regulation and Overpressure Protection Systems

EGI is accountable for managing over 3 million regulator sets that deliver low pressure natural gas to customers. These critical assets act as the last line of defence against overpressure. A regulator set is comprised of a regulator that reduces distribution gas pressure to delivery pressure, piping and overpressure protection devices. Proper performance of these assets is vital for the health and safety of customers, the public and employees. **Table 5.2.5-5** describes the four subsets of this asset subclass:

Table 5.2.5-5: Regulator Set Descriptions

Regulator Set	Description
200 & 400 Series Regulator Sets (< 17 NCMH)	These regulator sets provide low pressure delivery (typically 7" wc) to primarily residential customers. They are associated with meters having capacities of 17.0 m ³ /h or less.
>400 Series Regulator Sets (>17 NCMH)	These regulator sets provide low pressure delivery (typically 7" to 10" wc) to high-volume customers. They are associated with meters having capacities greater than 17.0 m ³ /h.
Local First Cut Regulator Sets	These regulator sets are associated with services connected to higher-pressure mains and have two regulators in series in close proximity at the same assembly. The first cut regulator reduces pressure from a higher pressure (>100 psig) to an intermediate pressure (typically 60 psig) and the service cut regulator reduces pressure from intermediate to low pressure (up to 7" wc).
Remote First Cut Regulator Sets	These regulator sets are the same as the Local First Cut Regulators, but the first cut is typically located close to the property line and the service continue below grade to the service cut regulator adjacent to the premises. Note: Remote First Cut Regulator Sets are also known as farm taps or Property Line Post Regulator Sets (PLPRs).

5.2.5.6.1 200 & 400 SERIES REGULATOR SETS (< 17 NCMH)

The 200 & 400 Series Regulator Sets account for the majority (approximately 95%) of all regulator sets. Currently, regulators with single meters are replaced at the same time as meters exchanged through the MXGI Program. Based on the MXGI Program requirements, replacements can happen as soon as after 10 years of service. EGI collects regulator data as part of the MXGI Program; a survey of 6,785 regulator sets in the EGD rate zone confirmed that most regulators have the same age as the meter set.

For the age distribution of the 200 & 400 Series Regulator Sets for each rate zone, see **Figure 5.2-80** and **Figure 5.2-81**.

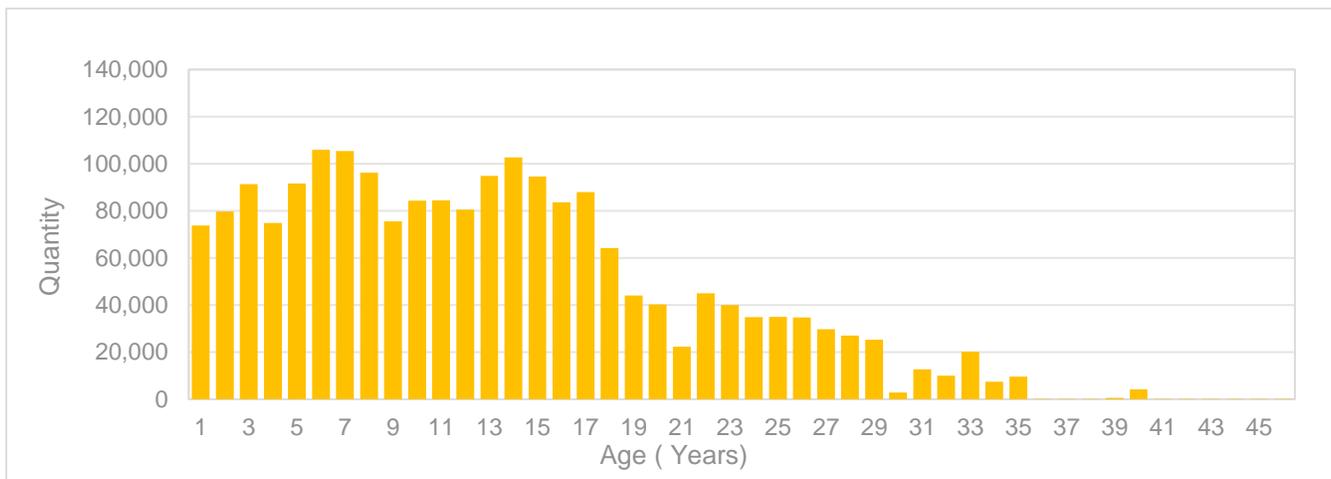


Figure 5.2-80: Age Distribution of 200 & 400 Series Regulator Sets – EGD Rate Zone

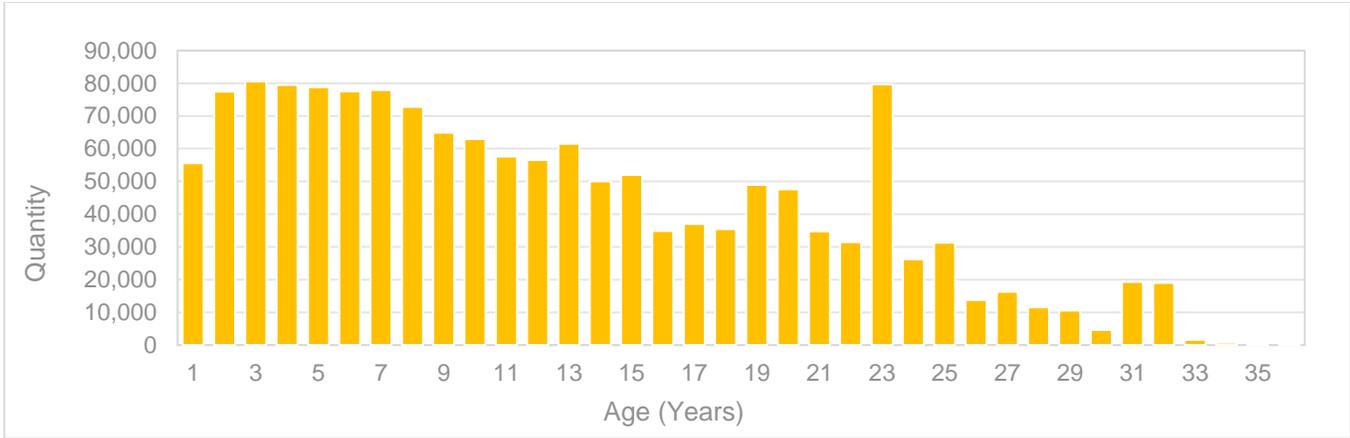


Figure 5.2-81: Age Distribution of 200 & 400 Series Regulator Sets – Union Rate Zones

5.2.5.6.1.1 Condition Methodology

Regulator set condition is determined by performance, corrosion of piping and regulators and adherence to installation specifications:

- **Regulator performance** is influenced by the age of the asset (mechanical wear and tear) and its physical environment, potentially affecting its ability to lock up in abnormal conditions (to prevent overpressure) and its ability to contain gas (absence of leaks). Assessment is determined through failure data, laboratory testing and age of the asset.
- **Corrosion of piping and regulators** can lead to loss of containment and faulty regulator performance. This is determined through an on-site visual assessment.
- **Adherence to installation specifications** is affected by a number of external factors which can affect failure rates and consequences. These include physical changes in site condition made by the customer after the initial installation of the set, such as new building openings/vents, increased grade and unreported damage, as well as regulatory specifications and codes that have changed since installation. This is determined by an on-site visual assessment.

Issues and outcomes affecting regulator sets, safety devices and piping systems are summarized in **Table 5.2.5-6**.

Table 5.2.5-6: Component Issues and Outcomes Summary

Component	Issue	Outcome
Regulator	Incorrect delivery pressure	Undesirable downstream effects can cause an emergency response and potentially higher severity consequences.
	Regulator touching customer supply lines	Regulators touching customer supply lines can cause electrical continuity of belowground and aboveground systems. This can promote migration of corrosion between belowground and aboveground piping.
	Regulator too close to ground	Regulators that touch the ground are more susceptible to corrosion.
External reliefs	External relief missing on downstream regulator	Absence or failure of this component removes overpressure protection, which is critical in the event of a regulator failure.
Regulator cap	Damaged or missing	A damaged or missing regulator cap can allow water or debris to enter the regulator housing, resulting in faulty performance and compromised pressure control.

Component	Issue	Outcome
Vent	Orientation not downwards	The vent must point downwards to reduce the probability of water or debris entering regulator control components and compromising pressure control.
	Missing or incorrectly sized vent screen	Missing or incorrectly sized regulator vent screens can allow insects and/or debris to block vent openings, impeding regulator diaphragm movement and compromising pressure control.
	Presence of vent shields	Vent shields are legacy components that were in place to protect vents. Debris or ice can build up on the vent shield, causing blockage and compromising pressure control.
	Vent too close to grade	Vents that are too close to grade can experience splashing and freeze-up of the opening, or can be covered with snow/ice, compromising pressure control.
	Insufficient vent clearance to building openings	Vents must comply with minimum distances to building openings to prevent gas migration.
Fittings Regulator, Piping, Fitting, External reliefs	Buried fittings	Fittings, typically shut-off valves, must be above ground to shut off gas in emergencies and avoid corrosion.
	Corrosion	Severe corrosion and pitting can lead to a loss of containment or abnormal operating condition.
All	Damaged by third party or environmental factors	Damages can lead to a loss of containment or abnormal operating condition.

These issues can contribute to failure of the regulation system and can cause overpressured gas to enter the customer’s supply piping, resulting in the potential failure of gas equipment, loss of containment, gas accumulation and/or potential incidents.

5.2.5.6.1.2 Condition Findings

Failure history and trending indicates that the wear-out phase for regulators associated with 200 & 400 series meters is unlikely to occur before 30 years of age. The current failure rate is very low relative to the total population. EGI replaces regulators proactively at the time of the meter exchange and before they fail.

Non-program regulators that fail before the manufacturer’s recommended maximum service life are discovered during emergency calls or customer-initiated work. In most years, the number of regulators exchanged outside of the program is very minimal.

Three condition categories evaluated for 200 & 400 Series Regulator Sets are regulator performance, corrosion and adherence to installation specifications:

Regulator Performance: Regulator performance is affected by wear-out due to a combination of internal mechanical cycling and field operating conditions such as the presence of debris in the gas or atmosphere, ice or snow load and regulator set location. Additional layers of protection that are part of EGI’s installation standard (e.g., overpressure protection) can mitigate regulator failure incidents. EGI uses actual regulator failure and exchange data where possible to establish failure modes and frequencies.

For regulators exchanged outside the MXGI Program, the historical data does not indicate the reasons for regulator exchanges. A conservative approach for the reliability study assumed that all exchanges were due to some type of failure. Failures may include a relieving regulator, regulator creeping, under-pressure, overpressure or gas escapes. Non-failure replacements may be due to handling issues, customer load changes, changes to building openings, obsolete regulators, corrosion and damages. The quantity of regulator exchanges independent of meter exchanges is relatively low. Analysis will continue to distinguish failure and non-failure exchanges within this group of assets.

Corrosion of piping and regulators: A survey to investigate corrosion on regulator sets was carried out across the EGD rate zone in 2016. Corrosion distribution by age is shown in **Figure 5.2-82**.

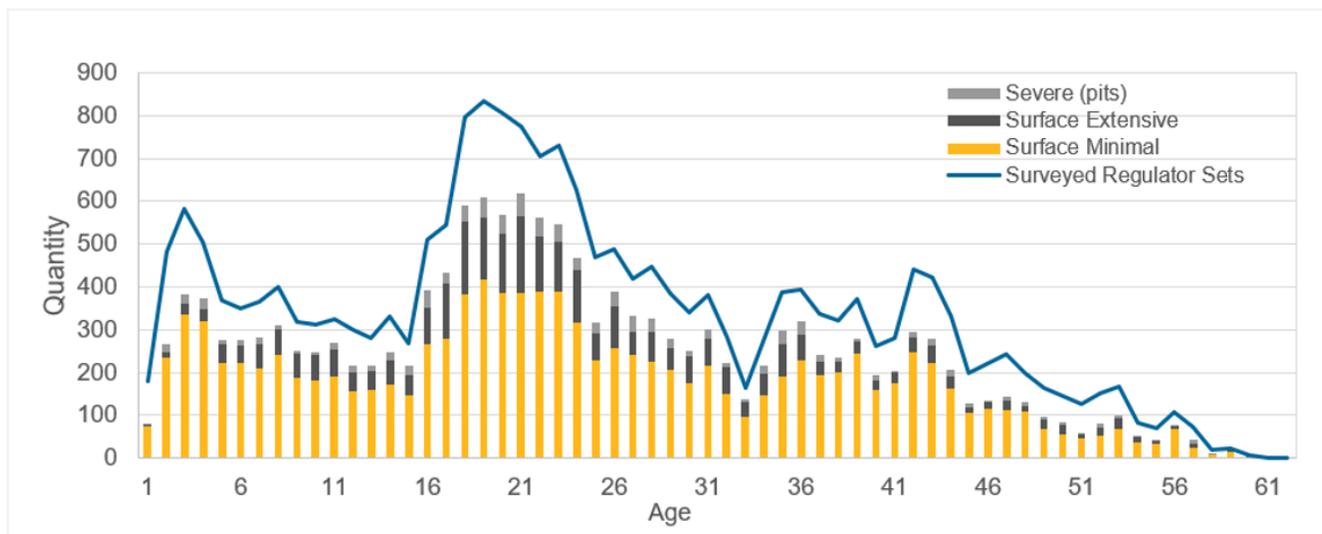


Figure 5.2-82: 200 & 400 Series Regulator Sets - Corrosion Distribution by Age – EGD Rate Zone

Results for the EGD rate zone show that 73% of the surveyed regulator sets have varying degrees of corrosion. Each vintage has at least 50% of the population of regulator sets with signs of corrosion. However, **Figure 5.2-82** shows that the majority of regulator sets have minimal surface corrosion and only 5% were categorized as severe. As part of integration activities, an initiative to obtain similar data for the Union rate zones is underway.

Adherence to Installation Specifications: It has been observed that regulator sets can have deviations from current installation specifications. This can occur when site conditions change over time, such as buildup of grade level, addition of new vents/building openings and building structures, as well as broken/missing components. In addition, installation specifications have changed over time and legacy specifications and components may still exist in some of these sets.

5.2.5.6.1.3 Risk and Opportunity

Any 200 & 400 Series Regulator Sets in poor condition expose EGI to Financial, Public Health and Safety, Operational and Environmental Risk.

The safety risk associated with regulator sets is associated with the loss of gas containment within the building (including gas migration). Regulators (and associated relief valves) control gas pressure to protect the customer’s piping and premises from overpressure. An overpressure event can result in damage to downstream equipment, loss of containment within the building, gas accumulation and a potential incident. The probability of a public health and safety risk is low due to the MXGI Program governing these assets.

Failure of these assets is most commonly linked to financial risk. Overpressure and loss of containment generates costs associated with emergency response calls, repairs, commodity loss, relighting customers’ gas appliances, property damage and/or other claims. The operational risk includes customer service disruptions and media coverage resulting from these events may result in reduced customer confidence in EGI.

Environmental risks include GHG emissions and environmental impact of a leak. EGI continues to take steps to gather necessary information and better manage these assets and their risks.

5.2.5.6.2 >400 SERIES REGULATOR SETS (> 17 NCMH)

The >400 Series Regulator Sets are primarily used by commercial, industrial and high-density residential customers. Failure of these regulator sets has the potential to cause overpressure to a customer’s supply line and appliances. Overpressure can result in a loss of containment within the building, potentially allowing gas migration. The current policy states commercial regulators are opportunistically exchanged if found to be 20 years or older. A risk assessment of this asset class is planned which will assist in the development of an integrated program.

Figure 5.2-83 and **Figure 5.2-84** show the age distribution of >400 Series Regulator Sets in EGD and Union rate zones respectively. Historically, >400 Series Regulator Sets have not been tracked as separate asset components in the EGD or Union systems of record, therefore, the installation date of the service they are associated with has been used as a proxy to determine the age.

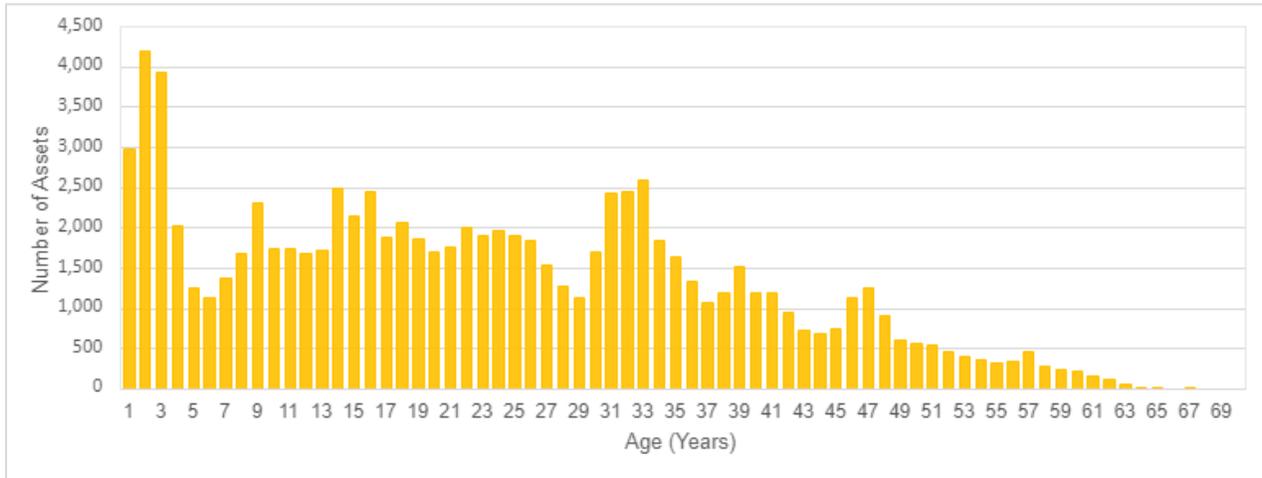


Figure 5.2-83: Age Distribution of >400 Series Regulator Sets – EGD Rate Zone

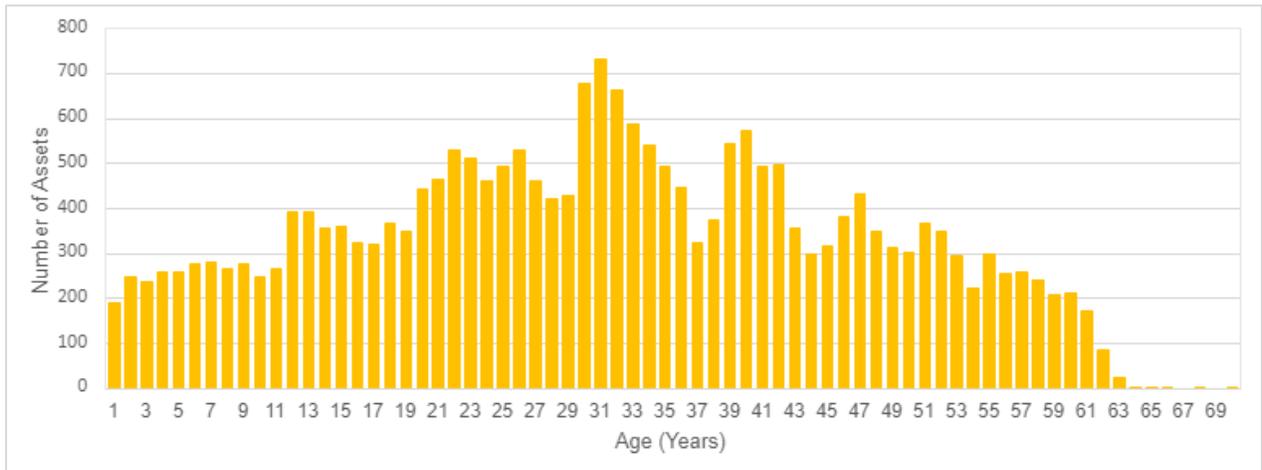


Figure 5.2-84: Age Distribution of >400 Series Regulator Sets – Union Rate Zones

Commercial Meter Manifolds are a subset of >400 Series Regulator Sets. These installations of multiple banked meters are typically located in commercial plazas. As EGI has not historically provided specifications on the addition of new meters to existing manifolds or criteria required for regulator set rebuilds, this configuration is more prone to condition issues and nonadherence to installation specifications. The population does not include all meter manifolds as this information is not available in any system of record.

5.2.5.6.2.1 Condition Methodology

The condition methodology for >400 Series Regulator Sets is the same as for the 200 & 400 Series Regulator Sets (see Section 5.2.5.6.1.1).

5.2.5.6.2.2 Condition Findings

In 2021, an inspection survey was performed on a statistically significant random sample (95% confidence level, 5% margin of error) of EGI's >400 Series Regulator Sets. As part of this survey, two main condition categories were evaluated for these regulator sets: corrosion of piping and regulators and adherence to installation specifications.

An integrity inspection work plan targeting the entire EGI population of the >400 Series Regulator Sets is currently being developed for this asset subclass including visual assessment of condition and degradation rating of components to be used

as an early indicator of failure resulting in a proactive remediation approach. Future replacement work will be used as an opportunity to evaluate the performance of pressure-controlling devices.

Corrosion of piping and regulators: The survey included a visual assessment of the condition including corrosion rating of service regulators, external relief valves, valving, and service piping for this asset subclass as well as risers (see **Figure 5.2-85**). Minimal and moderate external corrosion does not affect the engineering design and safe operation of the >400 regulator assets and does not present any immediate safety concerns. Sites with severe pitting corrosion are identified for remediation.

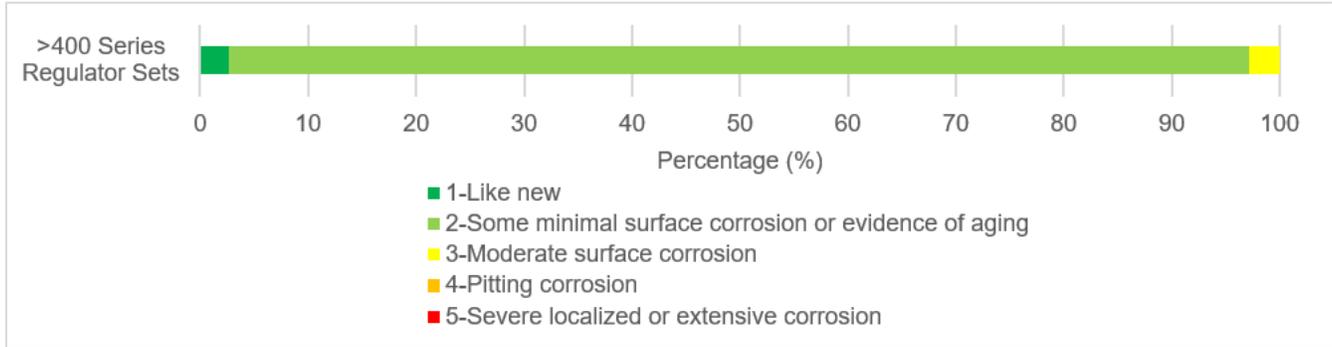


Figure 5.2-85: >400 Series Regulator Sets Corrosion Assessment – EGI

Adherence to installation specifications: The sample survey indicated that a small percentage of >400 Series Regulator Sets had issues related to adherence to current installation specifications. The most frequent issues identified were:

- Improper vent orientation
- Vent clearance issues
- Damage to the regulator cap
- Missing vent screen
- Presence of vent shields
- Regulator touching pipe
- Regulator within ½ inch of pipe
- Buried fitting
- Inadequate protection

Remediation plans have been created to address and mitigate all sites with identified issues. As the inspection program is expanded to target the entire population of the >400 Series Regulator Sets, additional locations requiring mitigation work will be identified and remediated in the future.

5.2.5.6.2.3 Risk and Opportunity

The risks associated with >400 Series Regulator Sets are the same as the 200 & 400 Series Regulator sets (see **Section 5.2.5.6.1.3**).

Historically, the probability of a >400 series regulator failure is low. These assets are predominantly used in commercial, industrial or higher-density residential premises, which typically serve a larger number of end-users than single-family residential premises, therefore, an abnormal operating condition for one of these assets puts a larger number of end users at risk. As well, >400 Series Regulators have higher delivery flow rates than residential (200 & 400 Series Regulators) services. This results in potentially more severe consequences for safety and financial risks when compared to smaller flow regulator sets.

The most likely risk for >400 Series Regulator Sets is financial, due to the likely outcome of a failure only requiring remediation. The probability of a safety risk is low due to engineering policies governing these assets, and Quality Assurance (QA) testing on commercial regulators at EGI’s Materials Evaluation Centre (MEC) where >400 Regulators are tested at the time of the meter exchange. Risk is further managed through proactive replacement of regulators if, during service calls, they are found to be older than 20 years.

5.2.5.6.3 LOCAL FIRST CUT REGULATOR SETS

When gas is delivered from a higher-pressure (>100 psig) gas main, the regulator set will have two regulators installed in series (i.e., two pressure cuts), as described in **Table 5.2.5-5**. This configuration is not common and represents an estimated 2% of the total EGI services. The regulator set may also include additional components, such as external relief valves.

Figure 5.2-86 and **Figure 5.2-87** shows the age distribution of local double cut regulator sets in EGD and Union rate zones respectively. For the Union rate zones, the distribution includes both local and Remote First Cut Regulator Sets as there is no asset attribute available in the current system of record to distinguish between the two subpopulations. An integrity inspection program targeting the inspection of the entire double cut regulator set population in the Union rate zones is under development which will allow for identification and validation of each subpopulation.

Historically, Local First Cut Regulator Sets have not been tracked as separate asset components in the EGD or Union systems of record. Therefore, the installation date of the service they are associated with has been used as a proxy to determine the age.

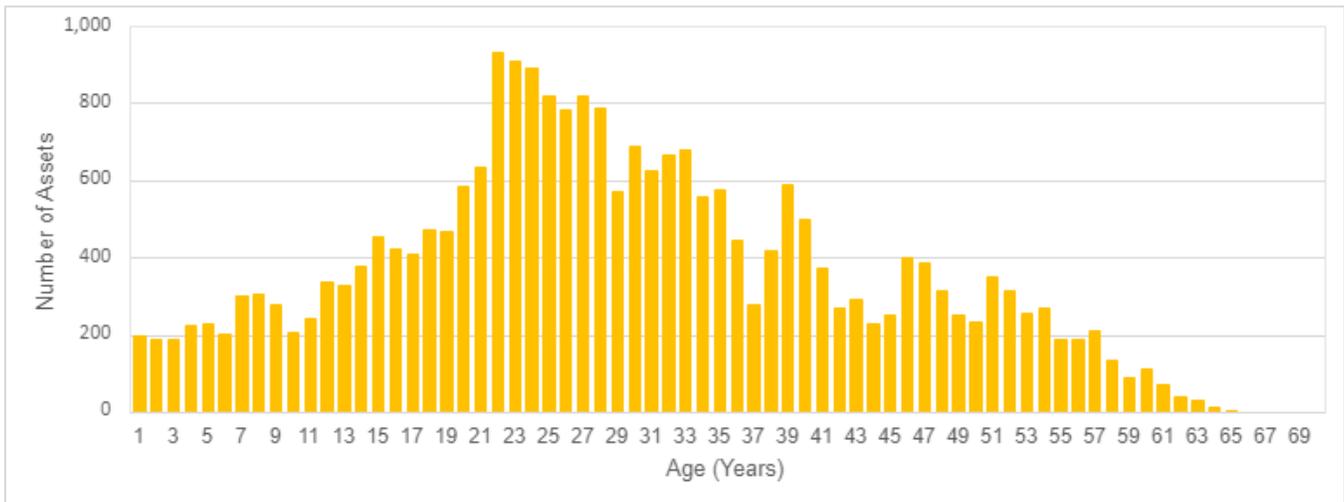


Figure 5.2-86: Age Distribution of Local First Cut Regulator Sets – EGD Rate Zone

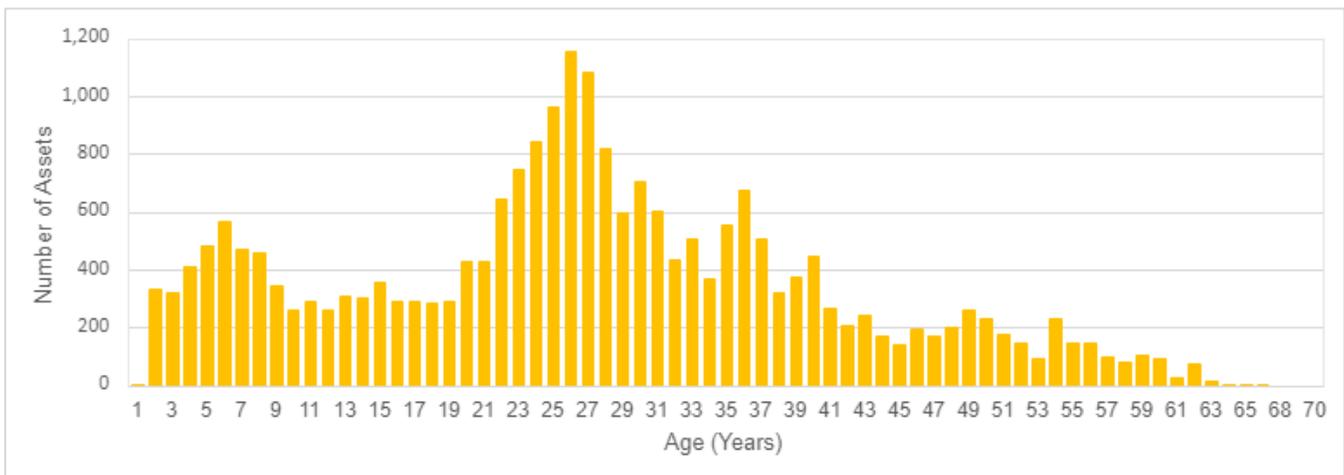


Figure 5.2-87: Age Distribution of Local and Remote First Cut Regulator Sets – Union Rate Zones

5.2.5.6.3.1 Condition Methodology

The condition methodology for Local First Cut Regulator Sets is the same as for the 200 & 400 Series Regulator Sets (see **Section 5.2.5.6.1.1**).

5.2.5.6.3.2 Condition Findings

For more detail on the 2021 inspection survey, see **Section 5.2.5.6.2.2**. The results of the inspection survey for EGI's Local First Cut Regulator Sets are shown in **Figure 5.2-88**.

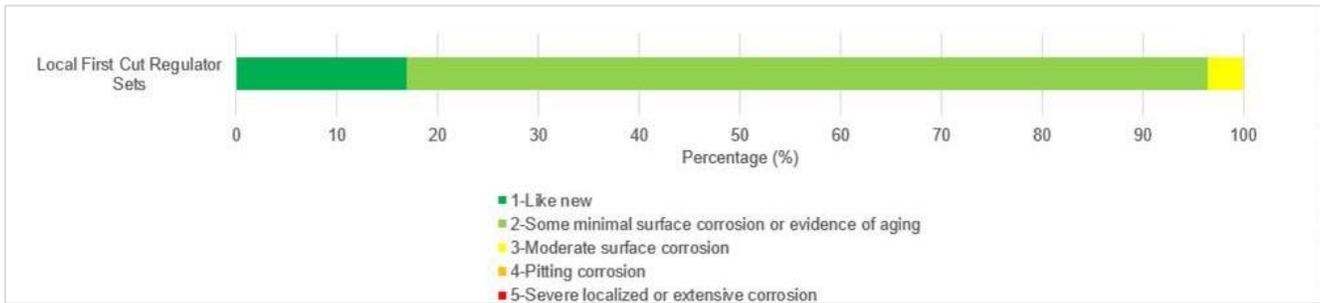


Figure 5.2-88: Corrosion Assessment of Local First Cut Regulator Sets – EGI

Adherence to Installation Specifications: The issues identified from the sample survey are the same as those described in the >400 Series Regulator Sets in the 2021 inspection survey (see **Section 5.2.5.6.2.2**). Remediation plans have been created to address and mitigate all sites with identified issues. As the inspection program is expanded to target the entire population of Local First Cut Regulator Sets, additional locations requiring mitigation work will be identified and remediated in the future.

5.2.5.6.3.3 Risk and Opportunity

The risks associated with Local First Cut Regulator Sets are the same as the 200 & 400 Series Regulator Sets (see **Section 5.2.5.6.1.3**). Local First Cut Regulator Sets present a higher consequence than traditional single cut regulator sets due to the higher pressures managed by two pressure cuts. The failure rate of Local First Cut Regulator Sets is very low due to the presence of multiple pressure regulators and multiple overpressure protection devices installed in series.

5.2.5.6.4 REMOTE FIRST CUT REGULATOR SETS

Table 5.2.5-5 describes Remote First Cut Regulator Sets, the majority of these double cut regulator sets are found in rural areas. **Figure 5.2-89** shows the age distribution of Remote First Cut Regulator Sets for the EGD rate zone. For the Union rate zones' Local and Remote First Cut Regulator age distribution, see **Figure 5.2-87**. An Integrity inspection work plan targeting the entire population of the Remote First Cut Regulator Sets in the rate zones has been developed to include visual assessment of condition and degradation rating of components. This will be used as an early indicator of failure resulting in a proactive remediation approach.

Historically, Remote First Cut Regulator Sets have not been tracked as separate asset components in the EGD or Union systems of record; therefore, the installation date of the service they are associated with has been used as a proxy to determine the age.

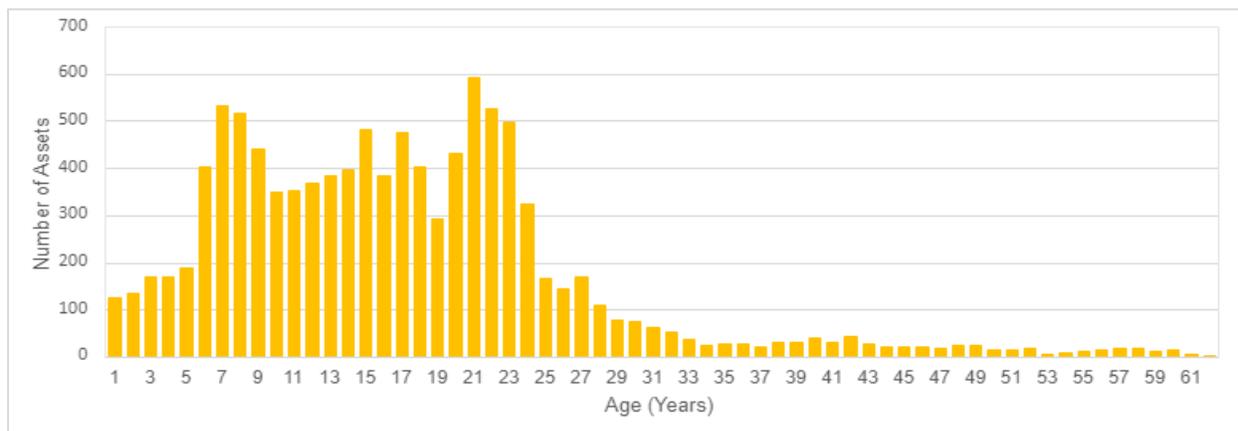


Figure 5.2-89: Age Distribution of Remote First Cut Regulator Sets – EGD Rate Zone

5.2.5.6.4.1 Condition Methodology

For the condition methodology, see **Section 5.2.5.6.1.1**. In addition, a component-based Failure Mode and Effect Analysis (FMEA) was performed through subject matter advisor (SMA) reviews to identify the critical components of all Remote First Cut Regulator Sets, their failure modes, causes and effects, required safeguards and potential consequences if safeguards fail.

Based on the FMEA, the main critical components for Remote First Cut Regulators Sets are regulators, inlet and outlet shutoff valves, inlet and outlet risers, external relief valves and piping and fittings. A review of the potential consequences of these component failures reveals potential health and safety risks. The FMEA identified the lack of maintenance as one of the main causes of failures on these critical components.

5.2.5.6.4.2 Condition Findings

For more detail on the 2021 inspection survey, see **Section 5.2.5.6.2.2**. The results of the inspection survey for Remote First Cut sets are shown in **Figure 5.2-90**.

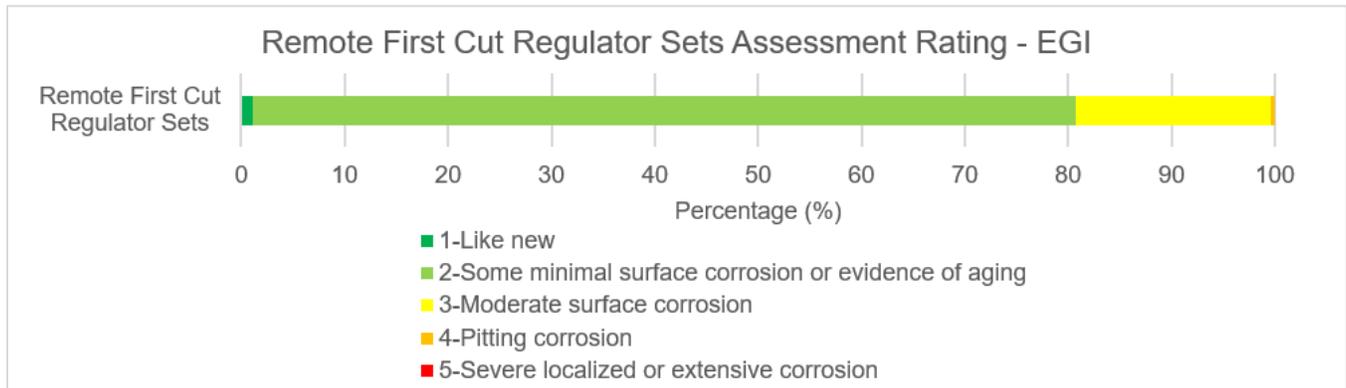


Figure 5.2-90: Remote First Cut Regulator Sets Assessment Rating – EGI

Adherence to Installation Specifications: The sample survey indicated that remote first cut regulator had issues related to adherence to installation specifications. The most frequent issues identified for Remote First Cut Regulator Sets were:

- Improper vent orientation
- Vent clearance issues
- Damage to the regulator cap
- Missing vent screen
- Obsolete regulators
- Buried fitting
- Inadequate protection

Most vintages had some level of nonadherence to installation specifications with an increasing trend as these assets approached 20 years of age. This is due to site conditions and installation specifications changing over time.

Remediation plans have been created to address and mitigate all sites with identified issues in both EGD and Union rate zones. As the Inspection Program is expanded to target the entire population of Remote First Cut Regulator Sets, additional locations requiring mitigation work will be identified and remediated in the future.

5.2.5.6.4.3 Risk and Opportunity

The risks associated with Remote First Cut Regulator Sets are the same as the 200 & 400 Series Regulator Sets (see **Section 5.2.5.6.1.3**). Remote First Cut Regulator Sets present a higher consequence than traditional single cut regulator sets due to the higher pressures managed by two pressure cuts. The failure rate of Remote First Cut Regulator Sets is very low due to the presence of multiple pressure regulators and multiple overpressure protection devices installed in series.

As most Remote First Cut Regulators are installed away from the premises and near the property line, these assets are exposed to more elements originating from the roadway. Their placement can also make them susceptible to third-party damage from maintenance equipment and vehicles.

5.2.5.7 Belowground and Internal Piping Systems

Belowground and Internal Piping Systems refer to piping running below grade and/or piping running inside a building, typically located upstream of inside meters. The Belowground & Internal Piping Systems subclass is categorized into:

Service Extensions: Refer to service piping installed between the regulator (outside of the building) and the meter (inside the building) where the pipe enters the building belowground.

Multi-Family Building Services: Refer to gas distribution networks within multi-unit buildings. Each may consist of a garage header, vertical headers, off-garage service pipes and/or vertical headers supplying meters for individual units. There are two main metering configurations:

- **Ensuite Metering:** Internal piping leading to meters inside individual units.
- **Banked Metering:** Internal piping leading to meters grouped together in the garage or basement instead of each individual level of the building.

Bulk Meter Headers: Refer to gas distribution networks consisting of underground piping downstream of a meter feeding multiple individual customer buildings; regulation occurs downstream of the meter.

5.2.5.7.1 SERVICE EXTENSIONS

Service Extensions, as described in **Section 5.2.5.7**, enter building walls below grade. Service Extensions are commonly found at urban wall-to-wall premises. Due to lack of frontage space at these locations, the riser, regulator and Service Extension are outside the building and the meter is located inside the basement. EGD currently has 12,457 Service Extensions. A study is planned in 2022 to determine the number of Service Extensions for the Union rate zones.

Figure 5.2-91 shows the age distribution for Service Extensions. The majority of the population is younger than 25 years, some of the contributing factors to installations within this timeframe include the renewal of cast iron systems in downtown Toronto and a program moving regulators from inside to outside customer premises.

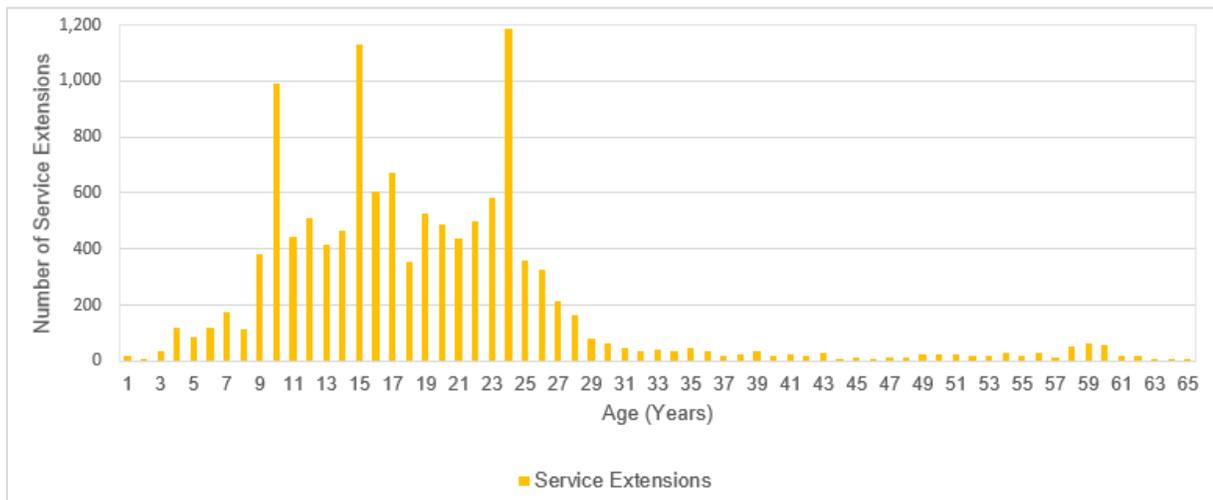


Figure 5.2-91: EGD Demographics – Service Extensions

5.2.5.7.1.1 Condition Methodology

All Service Extensions are isolated from cathodically protected steel services. Service Extensions with depleted anodes are unprotected and more susceptible to corrosion, ultimately resulting in a loss of containment. Cathodic protection and coating types are two parameters influencing corrosion rate. In 2021, a sample of Service Extensions over 25 years of age in the Toronto area were inspected through the DIMP. The inspection consisted of testing the cathodic protection as well as

assessing the corrosion and coating condition of the Service Extensions. The inspection is planned to be expanded for the remaining population in EGD and Union rate zones.

The effectiveness of cathodic protection on Service Extensions in the EGI rate zone is estimated by conducting pipe-to-soil inspections on a statistically representative sample; over time, all known services will be inspected. In addition, samples of unprotected Service Extensions are removed to determine wall loss. The sample sites are also inspected prior to removal with nondestructive guided wave testing, designed to detect the magnitude and location of wall loss on buried pipe. Removed samples are inspected for condition and to validate the effectiveness of this technology. Installations are upgraded at all sample sites. The initial sample of Union Service Extensions is expected to occur in 2022. Through integration efforts, the size and condition of the Service Extension population in each rate zone will be established by inspecting all known locations over five years.

5.2.5.7.1.2 Condition Findings

Cathodic protection surveys determine some correlation between age and cathodic protection status (see **Figure 5.2-92**). Newer installations are more likely to be cathodically protected while older Service Extensions are more likely to fail than newer Service Extensions. The results of the sample surveys are used to refine a mechanical model that will determine the degradation rate of unprotected Service Extensions. Sampling validates the functionality of non-destructive guided wave technology for use in future inspections. This population is to be monitored and at this time no proactive program is planned.

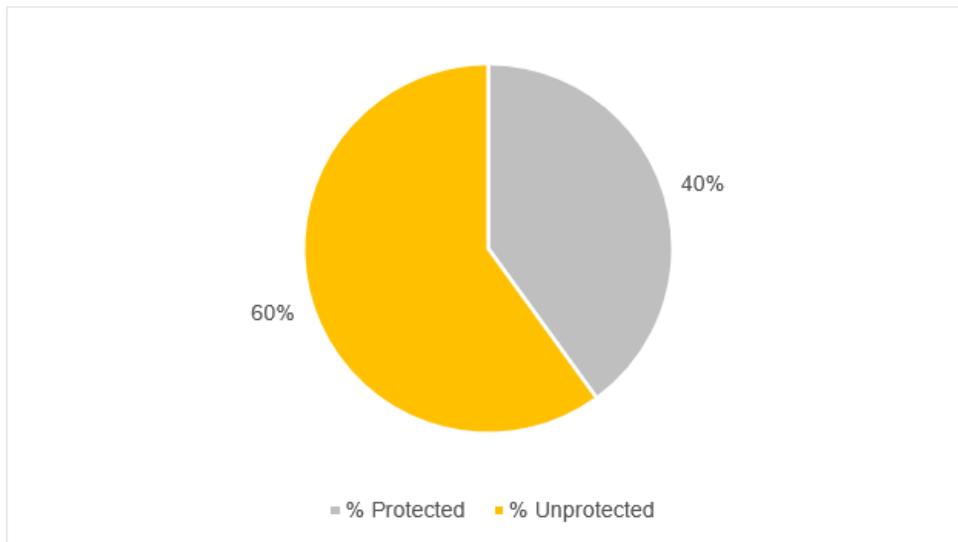


Figure 5.2-92 Percentage of Cathodic Protected/Unprotected Service Extensions

Results of the sample inspection show that the majority of the Service Extensions do not have an active cathodic protection. Approximately 10% of Service Extensions identified with inactive cathodic protection were found to have evidence of corrosion at grade level. The other 90% are operating within the operably tolerable range. The corrosion condition of all the sample survey is classified in **Figure 5.2-93**.

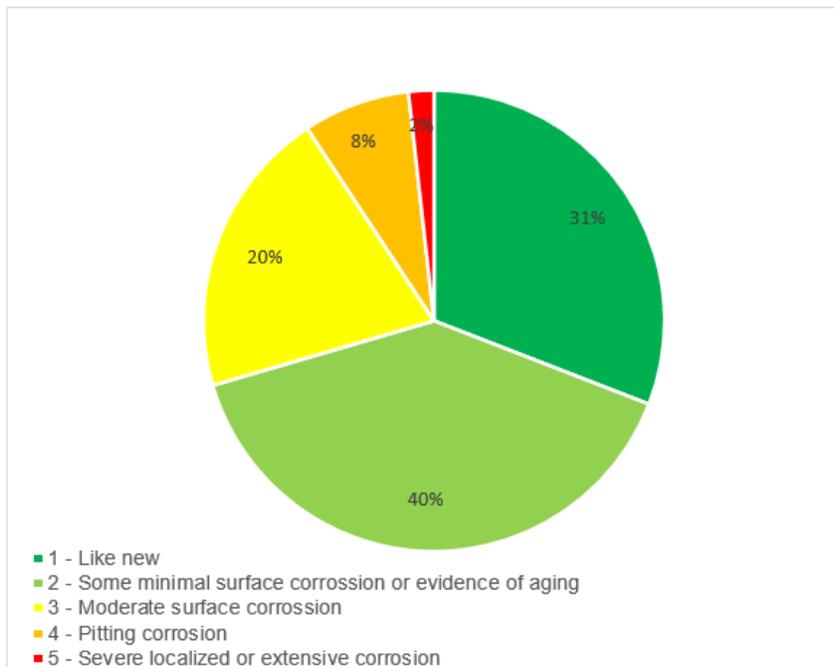


Figure 5.2-93: Corrosion Condition of Unprotected Service Extensions

5.2.5.7.1.3 Risk and Opportunity

If Service Extensions are not cathodically protected and properly coated, they can corrode at a higher rate, eventually leading to a loss of containment if not remediated. Since this piping enters the building below grade, gas leaks may have a higher chance of migration into the building, resulting in gas accumulation and a potential incident. Previous sample surveys show that the proportion of Service Extensions without cathodic protection increases with age. This may be due to old installation practices and depleted anodes over time.

Historical frequencies of failures for Service Extensions are low relative to the total population. Failure consequences can be high; they include the potential for underground gas migrating into a building. The safety risks identified for Service Extensions are gas leaks and gas migration. Identified financial risks include unplanned repair and relight costs, commodity loss and property damage caused by gas leaks. The operational risk includes customer service disruptions and media coverage resulting from these events may result in reduced customer confidence in EGI. Environmental risks include GHG emissions and environmental impact of a leak. EGI continues to take steps to gather necessary information and better manage these assets and their risks.

5.2.5.7.2 MULTI-FAMILY BUILDING SERVICES

Multi-family Building Services differ from typical installations significantly by having company-owned pipe within a building. The buildings are typically multiple-storied and contain many independent premises, each with their own meter installed either ensuite or in a rack of meters within the building. These buildings can also be multi-family occupied town housing or row housing.

This piping can contain pressure regulated by a customer station or a low pressure delivery regulation set. With ensuite configurations, the network of EGI-owned piping is extensive, as it includes all of the piping leading to each meter on different floors of the building. With banked metering configurations, company-owned piping typically terminates in a common area (such as a garage) where individual customer meters are grouped together.

5.2.5.7.2.1 Condition Methodology

Multi-family building installations have several additional challenges:

- Piping location creates challenges for leak and cathodic protection surveys.
- Some units may have isolated steel pipe upstream of the meter. EGI is working to ensure that all buildings that have this piping configuration are identified in appropriate systems and placed on a regular maintenance program. As

these locations are added to the survey, there is the possibility that their internal piping will be found to be in poor condition – given that they may not have been previously surveyed.

Figure 5.2-94 shows the distribution of vintages for this asset subclass in the EGD rate zone, as well as the quantity of inside meters per building at these locations. An inventory investigation will determine how many of these configurations are in the Union rate zones. Once known, a survey of each site will be conducted and the assets will be included in the Targeted Inspection and Remediation Program.

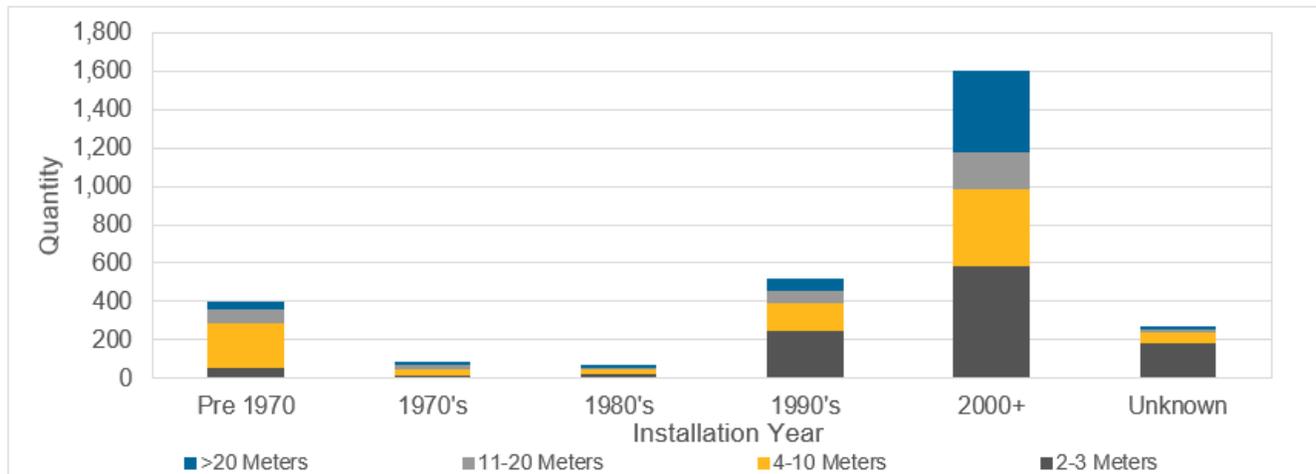


Figure 5.2-94: Multi-Family Installations Vintage Distribution and Meter Quantity at Each Site – EGD Rate Zone

This inspection program focuses on two main condition categories which were evaluated for multi-family building services:

Adherence to Installation Specifications

- Proper support for piping by approved bracketing and minimum spacing
- Proper support and spacing of meters
- Meter location: fit for purpose, vulnerability to damage, ventilation grille if enclosed
- Identification markings per code
- Pipe penetration through walls and floors and the provision of insulating fittings
- Valve location and accessibility
- Physical barriers: existence, location and condition

Corrosion

- Presence of corrosion on piping
- Presence of corrosion on joints
- Pipe penetration through walls, floors and into the building
- Presence of corrosion on valves
- Adequate corrosion protection

5.2.5.7.2.2 Condition Findings

EGI’s Leak Survey Program provides insight into the condition of multi-family building services assets. Generally, corrosion is found where the pipe intersects with the concrete wall; any severe corrosion that could affect safety is remediated. Any leaks found on these assets are remediated immediately. Given the nature of these systems, leaks that do occur are very minor. Any safety concerns are reviewed with the resident or landlord; instances such as encroaching on EGI assets have been found. The inventory investigation will give further insight to the population and will be monitored as part of EGI’s Integrity Program.

5.2.5.7.2.3 Risk and Opportunity

The risks associated with Multi-Family Buildings Services are the same as the Service Extensions (see **Section 5.2.5.7.1.3**).

Additional risks associated with Multi-Family Buildings include:

- Installation standards allow for these buildings to have higher-pressure gas than a single-family residential unit.
- Unit density means potential incidents can have a greater impact. Loss of containment will impact more people, resulting in a greater probability of personal injury.
- If internal piping is in poor condition, improper physical support or damaged, there could be a loss of containment and gas accumulation within the building, making an incident possible. Buried piping from outdoor regulators to indoor meters is also at risk of leaking and migrating gas indoors.

The historical frequency of incidents related to multi-family building services is low. To ensure the safety risk remains low, programs are in place to identify these assets and to include them in programs that monitor condition, prevent failure and minimize failure impacts. The operational risk includes customer service disruptions and media coverage which may result in reduced customer confidence in EGI. Environmental risks include GHG emissions and environmental impact of a leak. EGI continues to take steps to gather necessary information and better manage these assets and their risks.

5.2.5.7.3 BULK METER HEADERS

Properties that may include many premises utilizing natural gas that are served through a common meter, where the meter measures the consumption of all premises collectively are considered Bulk-Metered sites. A bulk meter header is a configuration consisting of one Sales Meter Only (SMO) or a Sales Station and its associated piping, that provides one measured gas consumption to a property that has several civic addresses within its boundary. Gas pressure may be reduced at either the same location as the bulk meter, or it may be regulated elsewhere downstream in the system, possibly even at each premises. Examples include:

- Residential Social Housing Development
- Farms equipped with multiple crop-dryers
- Academic, assembly, industrial and military campuses

An example of this type of configuration is shown in **Figure 5.2-95**. Note that the piping downstream of the bulk meter operates at intermediate pressure, the same pressure as the gas main serving the bulk meter and can be EGI-owned or customer-owned.

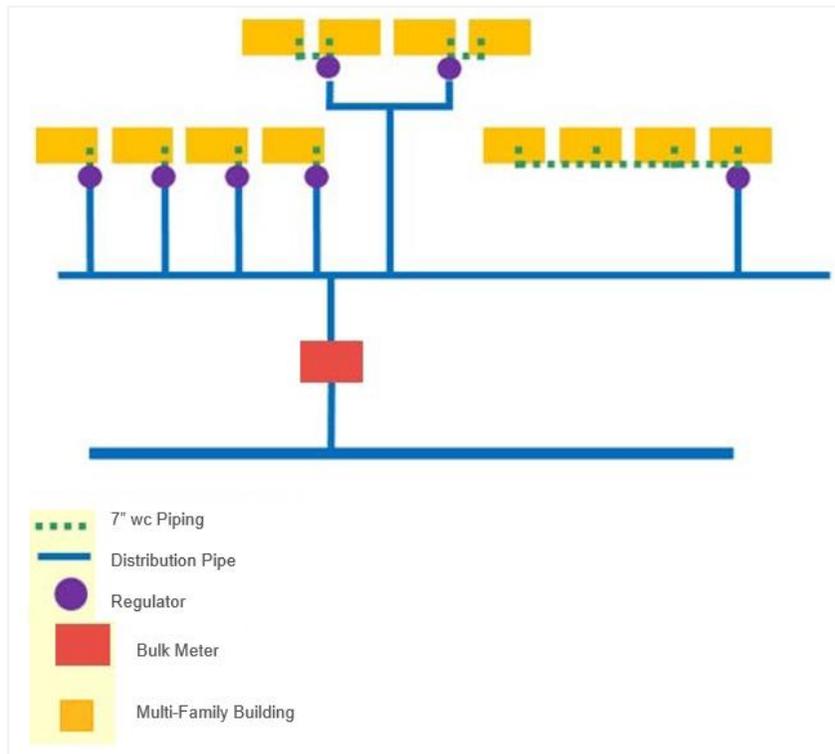


Figure 5.2-95: Bulk Meter Header Sample Configuration

5.2.5.7.3.1 Condition Methodology

An EGD rate zone survey in 2019 found no remediations required at any sites where the downstream piping was owned by EGI. EGI's DIMP is planning to identify and survey the Union rate zones' Bulk Meter Heaters.

5.2.5.7.3.2 Condition Findings

Previous surveys indicate the most common condition issues found on bulk meter headers are:

- Lack of a clear demarcation point between company and customer assets
- Presence of obsolete regulators 20 years and older
- Nonadherence to current installation and maintenance specifications (records, leak and corrosion surveys)
- Vent clearances and configurations not consistent with current standards, not all fittings above ground and evidence of obsolete components

5.2.5.7.3.3 Risk and Opportunity

Historically, the probability of failure is low for these assets. However, bulk meter sites can have higher consequences if failure does occur since the buildings serviced are higher-density units. Safety risks are related to gas leaks and migration through underground infrastructure into buildings, resulting in gas accumulation and potential incidents, as well as the additional risk of unclear demarcation between EGI and customer assets to identify who is responsible for maintenance and repairs. Financial risks identified are losses due to repair costs, commodity loss, relighting customer gas appliances, property damages and personal injury caused by a gas leak. The operational risk includes customer service disruptions and media coverage resulting from these events may result in reduced customer confidence in EGI. Environmental risks include GHG emissions and environmental impact of a leak. EGI continues to take steps to gather necessary information and better manage these assets and their risks.

As noted above, there is ongoing work to identify bulk meter sites, assess their condition, and remediate as required; ensuring these locations are safe and provide reliable service to customers. Compliance with existing EGI policies on these assets keeps the safety risk low. The current process for assessing and remediating bulk meter sites provides continuous improvements and ensures the risk remains low.

5.2.5.8 Customer-Owned Systems

Customer-owned systems, as described in **Section 5.2.5.1**, may consist of:

- **Customer-owned piping** refers to the gas piping or tubing downstream of the meter outlet tailpiece and extending from the meter outlet to customer appliances.
- **Service jumpers** refer to a specific type of customer-owned pipe installed from an outside meter to inside the building, entering the building belowground.
- **Customer appliances** refer to gas appliances using gas delivered by EGI and include furnaces, water heaters, gas ranges and fireplaces.
- **Private downstream gas piping and sub-metering** refers to multi-use buildings with retail, condominium corporation-owned boiler rooms and emergency generators and residential vertical occupancies where the gas piping is owned by the condo corporation. EGI supplies a customer station with a bulk meter to supply gas to all the facilities of the multi-use building.

Customer-owned piping and appliances are designed to carry and operate on pressures ranging from pounds delivery to low-pressure gas. Failure of these components can cause loss of containment and appliance malfunction, resulting in safety risk to customers and the public.

Regarding supply of gas, EGI must comply with *Gaseous Fuels O. Reg. 212/01, s. 16*, which states:

No distributor shall supply gas to a premises unless the distributor is satisfied that the installation and use of the appliance or work comply with this Regulation and,

- (a) unless the distributor has inspected the appliance or work at least once within the previous 10 years; or

- (b) unless the distributor has inspected the appliance or work in accordance with a quality assurance inspection program. O. Reg. 212/01, s. 16.

EGI inspects customer-owned assets at the time of initial installation and after conducting relights. This includes inspection of appliances, supply piping, venting and combustion air systems from the customer's transfer point. EGI ensures proper installation, correct appliance operation and no system leaks. Warning tags and reject tags are issued to ensure that no gas-fired appliance, accessory, or equipment is left in an unsafe operating condition.

5.2.5.9 Utilization Strategy Outcomes

5.2.5.9.1 METER PURCHASES

The maintenance strategy for meters is to continue with the current MXGI Program and managing non-program meter exchanges. The joint Measurement Canada accreditation for EGD and Union rate zones is targeted for 2022. The renewal strategy for measurement assets are as follows:

- For 200, 400 and >400 series meters covered under the MXGI Program.
- For >400 Series Meters, meter exchanges will be conducted in the year of expiry or one year prior to expiry (if warranted) as there is no sampling program in place. The typical lifespan of >1000 series meters vary by type:
 - Rotary meters: 16 to 20 years
 - Modules: 10 to 12 years
 - Turbine meters: 6 years
 - Instruments: 7 to 12 years
- EGI reactively responds to customer leak or other service interruption calls for non-program related meter exchanges.

5.2.5.9.2 MXGI PROGRAM (METERS)

The **Meter Exchange Government Inspection (MXGI) Program** is designed to replace meters before they fail. Meter seal life and extensions are based on sampling and testing to ensure Measurement Canada specifications are maintained. EGI continues to use data to project Out Of Date (OOD) replacement volumes with a focus on leveling volumes over future years. Meters have a complete set of data that includes quantity, age, make, size, location and historical performance. The completeness of this data enhances the optimization of the life-cycle strategy.

This replacement program is mandated by Measurement Canada, which maximizes asset life through sampling and testing (MXGIs), to ensure the required level of metering accuracy. The projections for 2023 to 2032 are shown in **Table 5.2.5-7** and **Table 5.2.5-8** for the EGD and Union rate zones respectively.

Table 5.2.5-7: Meter Replacements (Projected) – EGD Rate Zone

Year	Meter Exchanges (Program)	Non-Program Meter Exchanges
2023	88,474	18,776
2024	89,359	18,964
2025	90,252	19,153
2026	91,155	19,345
2027	92,066	19,538
2028	92,987	19,734
2029	93,917	19,931
2030	94,856	20,130
2031	95,805	20,332
2032	96,763	20,535

Note: Meter Exchanges (Program) include both OOD and MXGS.

Table 5.2.5-8: Meter Replacements (Projected) – Union Rate Zones

Year	Meter Exchanges (Program)	Non-Program Meter Exchanges
2023	53,582	8,769
2024	54,278	8,883
2025	54,984	8,998
2026	55,699	9,115
2027	56,423	9,233
2028	57,156	9,353
2029	57,899	9,475
2030	58,652	9,598
2031	59,414	9,723
2032	60,187	9,849

Note: Meter Exchanges (Program) include both OOD and MXGS.

MXGI quantities are influenced by historical customer addition patterns and group performance of sampled meters. Previous year sampling results inform a given year’s budget. An average of the meter exchanges over the past 10 years was used to project averages for the next 10 years. To further refine longer term forecasting of MXGI quantities, a predictive failure model is being built based on historical extension and failure results of meter groups.

5.2.5.9.3 ADVANCED METER INFRASTRUCTURE PILOT

EGI is considering the deployment of Advanced Metering Infrastructure (AMI), which would modernize customer meters and allow two-way communication. AMI is expected to provide significant benefits to customers, reducing meter reading and call centre costs and eliminating estimated bills, while providing customers insight into their gas usage so they can make informed decisions. In the 2024 Rate Rebasing Customer Engagement, the majority of customers support the installation of AMI in order to achieve the enhanced benefits, even at an impact to their rates as a result of the implementation. With access to granular usage information, EGI gains needed insights into peak consumption and usage patterns. This will support EGI’s implementation of an Integrated Resource Planning (IRP) alternative program and may allow the deferral of reinforcement projects and promote carbon reduction. An AMI pilot project is currently underway; as results are received from the pilot, the scope of the AMI Program will be clearly defined and incorporated into future Asset Management Plans as required. For more detail on EGI’s AMI strategy, refer to Exhibit 2, Tab 7, Schedule 2.

5.2.5.9.4 MXGI PROGRAM (REGULATION)

The strategy is to continue exchanging assets identified with 200 & 400 Series Meters in conjunction with the MXGI Program (Meters). The strategy corrects other compliance issues as part of the MXGI Program, as these critical assets serve the majority of customers in the EGI franchise area. This strategy applies a planned and controlled spend of capital dollars, while maintaining the current level of operational reliability.

The continuous improvement strategy for this program is made possible through data collection. Data will continue to be collected on regulator sets that become part of the MXGI Program through the Regulator and External Relief Valve Information Gathering Program. Data such as condition, adherence to installation specifications, regulator attributes and failure classifications will be collected to iterate data models. Refinements include validating criteria that assist in prioritizing high-risk locations, analyzing asset life cycle, and assessing risk.

5.2.5.9.5 TARGETED INSPECTION AND REMEDIATION STRATEGY

The Targeted Inspection and Remediation Strategy is used to remediate high-priority condition issues identified through EGI’s DIMP. Through the DIMP, surveys collect information on the failure rates of assets, informing future policy decisions on replacement frequency.

This proactive strategy manages safety risk by remediating all discovered compliance and integrity issues before they turn into failures, minimizing the risk to the safety of customers, employees and the public. The planned and controlled spend of capital dollars minimizes the financial impact of responding to emergency calls. The strategy supports operational reliability by ensuring that failures continue to be very minimal, minimizing customer outages and maintaining high customer confidence in EGI as a gas provider. This aligns with the feedback from the 2024 Rate Rebasing Customer Engagement Survey on replacing pipelines and equipment as the majority of customers indicated a preference for EGI to assess the long term health of the system and to spread out costs over time (even if that means higher rates now).

5.2.5.9.6 CONTINUE EXISTING PRACTICES AT INSTALLATION (CUSTOMER-OWNED SYSTEMS)

The current strategy for customer-owned systems is to continue existing practices at initial installation. For any subsequent issues, the customer is responsible to take corrective action. A sub-metering initiative with the Technical Standards & Safety Authority (TSSA) and the Sub-Metering Council of Ontario is also underway to formalize EGI's policy and requirements on private gas piping installations with measurement systems.

5.2.5.9.7 OPPORTUNISTIC REPLACEMENT

The opportunistic replacement strategy looks to replace regulator sets, internal piping configurations and Service Extensions in conjunction with planned and unplanned adjacent work scheduled, such as planned city sidewalk/road replacements. Regulator sets are opportunistically replaced if found to be 20 years or older. This strategy will minimize safety risk by remediating integrity issues before they turn into failures and will also minimize the financial impact of responding to related emergency calls. This opportunistic approach minimizes costs associated with proactively renewing these assets.

5.2.5.10 Utilization Capital Expenditure Summary

The total average capital spend is forecast to be \$163M (EGI) as summarized in **Table 5.2.5-9**. The Utilization capital is further summarized as part of EGI's total 10-year capital plan in **Section 6**.

Table 5.2.5-9: Utilization Capital Summary (\$ Millions) – EGI¹⁸

Asset Class Strategy	Program Name	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Forecast
Meter Purchases	Meters (growth)	11.9M	12.2M	12.3M	12.2M	12.7M	12.2M	11.8M	11.8M	11.3M	10.6M	119.0M
	Meters (mtc)	58.6M	66.8M	66.2M	68.3M	74.2M	75.3M	76.5M	80.7M	81.7M	81.1M	729.3M
AMI Pilot	Monitoring Systems	1.9M	-	-	-	-	-	-	-	-	-	1.9M
MXGI Program	Regulator Refit	62.7M	66.1M	68.2M	70.7M	77.0M	78.2M	79.6M	84.2M	85.3M	84.8M	756.8M
Targeted Inspection and Remediation Program	Remediation	1.0M	1.0M	1.4M	1.5M	1.7M	1.9M	1.9M	2.0M	1.4M	1.3M	15.0M
Total		136.5 M	146.5 M	148.5 M	153.2 M	166.3 M	168.4 M	170.5 M	179.5 M	180.4 M	178.6 M	1628.3 M

¹⁸ Includes overhead allocation

5.3 Storage and Transmission Operations

EGI's Storage and Transmission Operations (STO) asset classes consist of a system of natural gas assets that serve to receive, store and transport natural gas. STO assets found at EGI include compressor stations, underground storage, transmission pipelines, dehydration and liquefied natural gas (LNG) storage.

EGI's storage and transmission assets are categorized in the following asset classes:

- Compressor Stations (includes Compression and Dehydration)
- Transmission Pipelines and Underground Storage
- Liquefied Natural Gas (LNG)

EGI owns and operates 35 underground storage pools located at Dawn and nearby Tecumseh, as well as approximately 1,500 km of transmission and storage pipelines. EGI has storage and transmission assets that serve to receive, store and transport natural gas to major demand markets in Ontario, Québec, Maritimes, Michigan, and the U.S. Northeast. EGI's Dawn Hub, located in southwestern Ontario, is connected to most of North America's major natural gas basins, including abundant and affordable gas supplies in the Western Canadian Sedimentary Basin and the Utica and Marcellus producing regions.

EGI's storage and transmission system is highly integrated, making it very attractive to customers. They can purchase gas across North America when prices are lower, transport it to and store it at Dawn, and have it withdrawn and delivered when and where needed. Dawn is one of the most physically traded natural gas hubs in North America. Much like a stock exchange, more than 100 companies buy and sell natural gas at Dawn.

EGI uses compressors to move natural gas in and out of underground storage reservoirs and into and through the transmission systems. Gas compressors are used to transport gas into and through the transmission systems and can be configured for the high flow rates required. Gas compressors are also used to move gas in and out of underground storage reservoirs by providing the high-pressure differential required to fill and empty the pools. The use of subsurface facilities for natural gas storage enables increased operations efficiency, conservation of produced natural gas, and more effective, reliable and economic delivery to markets. These facilities are usually natural geological reservoirs such as depleted oil or natural gas fields sealed on top by an impermeable cap rock. Natural gas demand for EGI's in-franchise and ex-franchise customers varies seasonally and is greatly affected by residential heating requirements. Underground storage provides seasonal balancing for the gas supply capability versus demand requirements of EGI's customers.

The storage capability of each reservoir is determined by the reservoir's maximum operating pressure (MOP), cushion pressure and the size of the pool. Through EGI's reservoirs, the total storage working inventory is approximately 311 petajoules (PJ) (199 PJ regulated and 112 PJ unregulated). Each reservoir is protected by a Designated Storage Area (DSA) which is determined by EGI and approved by the Ontario Energy Board to protect the reservoir from exploratory drilling. The land above each reservoir is leased from landowners with storage leases.

EGI's STO assets are mainly located in southwestern Ontario and employ over 800,000 horsepower of combined centrifugal and reciprocating compression. The majority of compression capacity is split between the Corunna and Dawn compressor stations. Dawn is the largest underground storage facility in Canada and a key natural gas trading hub that has interconnections to various transmission pipeline systems including Vector, TC Energy, Tecumseh Gas Storage and Panhandle Eastern Pipeline through the EGI Panhandle Transmission System. The stations include 20 compressors with a combined total of 290,000 ISO horsepower, a major natural gas dehydration plant, station piping, large diameter valves, electrical components and other equipment required to support operations.

Integral to Storage and Transmission, dehydration facilities remove moisture from natural gas as it is taken from underground storage. This ensures that gas entering the transmission and distribution system meets the contractual standard of moisture content and avoids operational problems related to high moisture content. Natural gas in combination with water, when cooled, can form methane hydrates that can plug valves, fittings or even pipelines. The dehydration process involves contact between the natural gas and liquid glycol streams to remove excessive moisture from the natural gas stream. The resultant output natural gas helps to ensure pipelines are dry and customer quality specifications for moisture content are met. EGI is obligated to meet a gas quality specification as set out in *General Terms and Conditions*. While dehydration units can be found at various sites, the Dawn compressor station houses a major dehydration plant and associated piping, large diameter valves, electrical components and other equipment required to support operations.

EGI operates one LNG facility, the Hagar station, located near Sudbury, Ontario. The Hagar station has been in operation since 1968. It is interconnected with the Sudbury Lateral System, which is served from the TC Energy Canadian Mainline. As an integrated storage and transmission system operator, EGI requires reserve capacity to support the integrity of the system and the provision of service to all customers. The Hagar facility provides this reserve capacity that ensures reliable supply through EGI's storage, transmission and distribution systems during peak demand periods. The Hagar station is used to support the Sudbury Lateral System during peak demand periods, supply shortfall, unplanned low system pressures or

pipeline outages. The station served this purpose in 2011 during a TC Energy Canadian Mainline pipeline rupture near Beardmore, Ontario.

5.3.1 Storage and Transmission Objectives

The objectives for the STO asset classes are set at the system level (transmission, underground storage and LNG) to specify objectives independent for each system, as all three systems work interdependently. For example, identical compressors in the storage and transmission systems serve a different purpose but are aligned with each system’s objectives. Performance measures are identified for all system objectives. The objectives in **Table 5.3.1-1** are in addition to the system integrity, reliability and compliance objectives for the Distribution Pipe, Distribution Stations and Utilization asset classes.

5.3.1.1 Transmission System Objectives

Dawn Parkway Transmission System

The Dawn Parkway Transmission System is composed of up to four parallel 26-, 34-, 42- and 48-NPS pipelines and compressor, metering and regulating stations running from the Dawn Hub easterly toward the Greater Toronto Area (GTA), terminating at the Parkway compressor station, Lisgar gate station and Albion custody transfer station. This system has four major compressor stations (Dawn, Lobo, Bright and Parkway) to facilitate transport as shown in **Figure 5.3-1**.

The primary purpose of this system is to transport natural gas easterly from Dawn to Parkway and to Albion. The system serves both in-franchise regions along the route (GTA West, Southeast and portions of the Southwest regions) and ex-franchise transportation customers (gas moving between receipt and delivery points on the system).

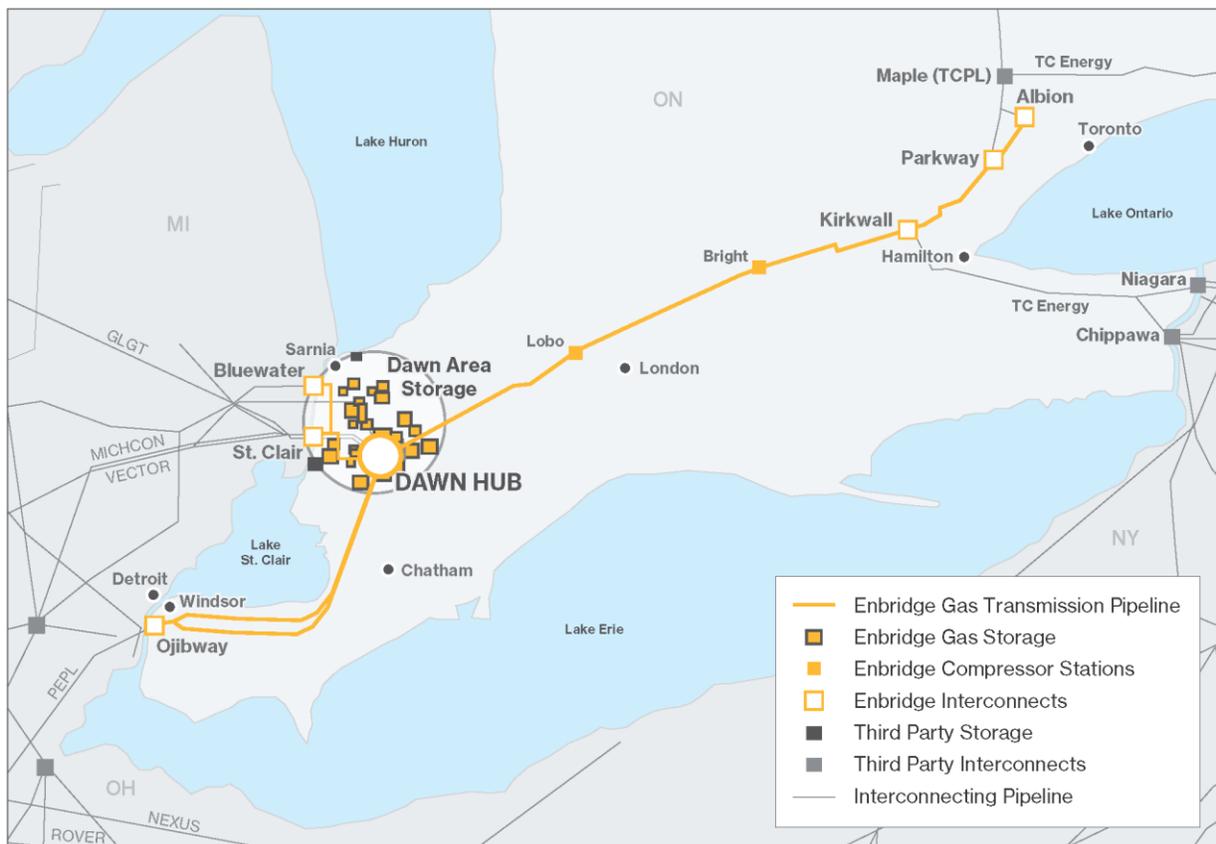


Figure 5.3-1: EGI Dawn to Parkway System

Panhandle Transmission System

The Panhandle Transmission System is composed of two 16-, a 36-, and a 20-NPS pipelines and metering and regulating stations running westerly from the Dawn Hub towards Windsor, terminating at the Ojibway River crossing where it interconnects with the Panhandle Eastern Pipeline system located in Michigan. Laterals which carry transmission system pressure into the Leamington/Kingsville market area also form part of the system. One compressor station is used to facilitate gas movement easterly.

The primary purpose of this system is to transport natural gas from Dawn and the Panhandle Eastern Pipeline to serve in-franchise markets in a portion of the Southwest region including the Windsor/Essex, Chatham-Kent and southern Lambton County. It also transports gas for ex-franchise transportation customers from the Panhandle Eastern Pipeline to the Dawn Hub.

Sarnia Industrial Line Transmission System

The Sarnia Industrial Line (SIL) Transmission System is composed of a series of parallel 12- to 20-NPS pipelines and metering and regulating stations running northerly from the Courtright stations to the City of Sarnia. An NPS 8 pipeline runs from the Dawn Hub to the SIL and NPS 20 pipelines run from Payne Pool to the SIL.

The primary purpose of this system is to transport natural gas from the Vector and Great Lakes Gas Transmission pipelines at the Courtright Stations, DTE Energy (via St. Clair Pipelines L.P.) at St. Clair Line station, Bluewater pipeline (via St. Clair Pipelines L.P.) at Bluewater Interconnect and Dow A Pool and Dawn to the gas distribution system, serving a portion of the Southwest region located in the northwest portion of Lambton County. It also transports gas for ex-franchise transportation customers from the DTE Energy (St. Clair) and Bluewater pipelines to the Dawn Hub.

Table 5.3.1-1 shows a summary of transmission system requirements and the objectives for each system.

Table 5.3.1-1: Transmission System Objectives Summary

Requirement	Dawn Parkway	Panhandle	Sarnia Industrial Line
Design Day Requirements	Serve the design day demand requirements of all firm in-franchise and transportation customers as modelled on design day and other days as required.	Serve the design day demand requirements of all firm in-franchise customers as modelled on design day and other days as required.	Serve the design day demand requirements of all firm and interruptible in-franchise customers as modelled on design day and other days as required.
Transportation Requirements	Serve the transportation market between Dawn, Kirkwall and Parkway in both easterly and westerly directions as required.	Serve the Ojibway to Dawn transportation requirements as required.	Serve the transportation market between St. Clair and Dawn and Bluewater and Dawn as required.
Loss of Critical Unit (LCU)	Maintain the required LCU capability at the Dawn, Lobo/Bright and Parkway systems.	No LCU at Sandwich Transmission Station. Maintain the required LCU capability at Dawn station to support Panhandle.	N/A
Measurement	Measure accurately all flow in and out.	Measure accurately all flow in and flow out at major stations.	Measure accurately all flow in and flow out at major customers and pipeline interconnects.
Monitoring, Control and Operation	Monitor, operate and control transmission systems from remote control rooms at all times and in emergencies.		
Shutdowns and Outage Management	<ul style="list-style-type: none"> Minimize customer outage impacts during integrity work, construction activities and emergency situations. Allow for ongoing inspection with minimal customer disruptions. 		
System Growth	<ul style="list-style-type: none"> System design and maintenance must consider future system growth implications. Screen transmission system projects using the IRP Assessment Process; for those that pass, determine if there are IRPAs that are economically and technically feasible. Ensure EGI provides new or upgraded natural gas services to residential, apartment, commercial, industrial and transmission customers – safely, and reliably while evaluating all energy solution alternatives as part of the IRP Assessment process. 		

Requirement	Dawn Parkway	Panhandle	Sarnia Industrial Line
Integrated Resource Planning	<ul style="list-style-type: none"> Screen projects using EGI's IRP Assessment Process; for those that pass, determine if there are IRPAs that are economically and technically feasible. 		

5.3.1.2 Underground Storage Objectives

The Underground Storage System is largely situated in the area surrounding the Dawn Hub in Lambton County in Southwestern Ontario. Storage is split into regulated and unregulated businesses, with a total working inventory of approximately 311 PJ. The annual injection and withdrawal cycle relies on compression at the Dawn and Corunna stations, on remote compression at a variety of individual storage pools and the Dawn dehydration plant. Maintenance work and capital projects are scheduled on an annual basis to meet design day and contractually firm requirements throughout the season. The objectives for the Underground Storage System are as follows:

- Operate and maintain 311 PJ of natural gas storage (199PJ regulated and 112 PJ unregulated).
- Develop the storage system to ensure storage space is effectively and efficiently cycled. Each storage pool is designed to be filled and emptied within a prescribed timeframe to achieve the following:
 - Maximize design day deliverability to serve regulated and unregulated businesses.
 - Integrate legacy storage system operations to fill and empty the storage system more efficiently and increasing design day deliverability.
 - Position EGI for future growth opportunities through added storage capacity and deliverability.
- Provide natural gas supply to the transmission system that meets required quality standards.

5.3.1.3 Liquefied Natural Gas System Objectives

The Liquefied Natural Gas (LNG) System's primary purpose is to supply natural gas to support the Sudbury Lateral System during peak demand periods and for system integrity requirements during the winter season, providing ongoing availability to meet potential shortfalls. Natural gas feedstock is converted to liquid and pumped into a tank during the off-peak summer and fall seasons. The stored LNG is vapourized back into natural gas as required during the winter season. Under full load demand, the tank carries enough inventory to supply the Sudbury lateral system market for approximately five to seven days. The objectives of the LNG System are as follows:

- Targeted full nominal capacity of 658 TJ by December 1 annually
- Provide up to 10 TJ of Peak Day supply in the Union Northern Delivery Area which reduces EGI's need for other services
- Targeted daily tank vapourization capability up to 100 TJ deliverability (for injection into the Sudbury Lateral System) to meet system integrity requirements
- 100% availability of any LNG balances during the winter season (typically until the end of March) net of any system integrity withdrawals and gas boil-off

5.3.1.4 Performance Measures

The performance measures for the STO asset classes are as follows:

- Greenhouse gas (GHG) emissions reduction (measured in fugitive emissions and fuel consumption reporting)
- Damages – first-, second-, and third-party line breaks per 1,000 locates
- Compliance rate of Inspections and Maintenance
- Work management process conformance
- Capital portfolio management delivery to plan
- Reliability percentage for transmission compression
- Percentage of successful compressor starts

- Compressor availability

To achieve the STO asset class objectives, asset investment decisions are governed by the life-cycle management strategies outlined in **Table 4.1-1**.

5.3.2 Storage and Transmission Asset Class Hierarchy

The subclass breakdown for STO is organized by system and illustrated in **Figure 5.3-2**.

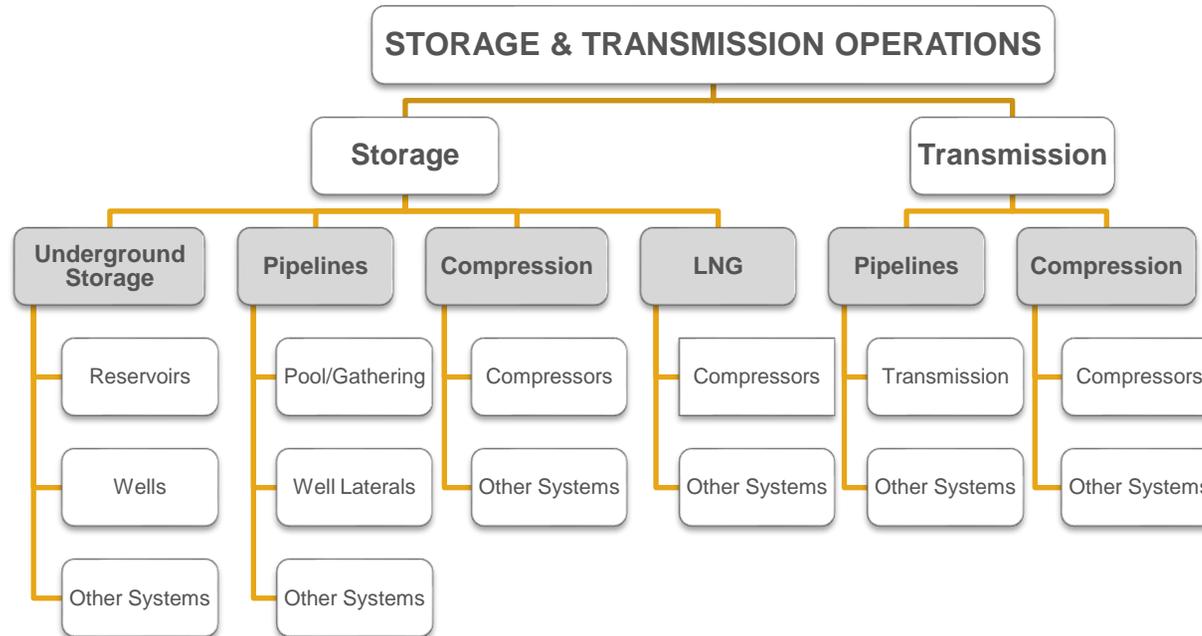


Figure 5.3-2: STO Hierarchy

Notes:

- **Compression systems** include engine assemblies, centrifugal and reciprocating compressor assemblies, gas aftercoolers, heating and cooling systems and valve systems.
- **Other systems** consist of the following:
 - Mechanical systems include components such as dehydration systems, filters, separators, heat exchangers, fans and pumps.
 - Electrical systems include components such as breakers, switchgear, motor control centres and lighting.
 - Safety and Controls systems include components such as control valves, regulation, telemetry, PLCs, instrumentation, relief valves and fire and gas detection systems.
- **Pipelines** and **Underground Storage** assets include pipe, well casings and valves

5.3.3 Storage and Transmission Asset Inventory

The asset inventory for STO is listed in **Table 5.3.3-1**.

Table 5.3.3-1: STO Asset Inventory

Asset Subclass	EGD Rate Zone	Union Rate Zones
Compression (#)¹⁹		
Compressors	14	39
Dehydration (#)²⁰		
Dehydration Systems	1	3
Underground Storage (#)²¹		
Reservoirs	11	25
Wells	129	230
Pipelines (km) ²²		
Transmission	120	1282
Storage	22	30
LNG (#)²³		
Compressors	N/A	3

Note: Pipe inventory is also accounted for in the Distribution Pipe asset class (see **Section 5.2.3**).

¹⁹ As of December 2021.

²⁰ As of December 2021.

²¹ As of December 2021.

²² As of Q1 2022.

²³ As of December 2021.

5.3.4 Storage and Transmission Operations Condition and Strategy Overview

Table 5.3.4-1: STO Operations Condition and Strategy Overview

Asset Subclass	Ave. Age (Year)	Condition	Risk / Opportunity	Maintenance Strategy	Replacement / Renewal Strategy
Compression Dehydration Liquefied Natural Gas (LNG)	32 30 54	<p>Asset condition is primarily assessed based on a preventive maintenance (PM) program comprised of rigorous inspections. For engines and compressors, operating hours since the previous overhaul are the primary indicator of condition.</p> <p>Age is also considered as a condition indicator in terms of reliability and obsolescence. A reliability assessment through the Asset Health Review (AHR) was conducted on all Storage Corunna (SCOR) compressors in the EGD rate zone to determine asset condition.</p>	<p>Not maintaining compression, dehydration and LNG assets pose the following risks:</p> <p>Operational Risk: Potential failure can lead to equipment damage or reliability concerns. Unplanned unit failures, especially during late season withdrawal, can negatively impact customers' gas supply costs.</p> <p>Employee and Contractor Health and Safety Risk / Public Health and Safety Risk: The safety risk related to loss of containment from the compressor units is considered. Safety systems reduce the chance of an escalation even further.</p> <p>Financial Risk: Compressor failures result in unexpected repair costs and frequently involve collateral damage.</p> <p>New regulatory requirements could potentially limit the use of compression equipment until compliance is achieved.</p> <p>Reputational Risk: Failure to comply with new or changing regulatory requirements could potentially limit the use of compression equipment until compliance is achieved. Restricted use of compression equipment could reduce deliverability and trigger the need to secure gas from alternate sources, at additional gas supply cost.</p> <p>Carbon Reduction Opportunity: EGI continues to evaluate and implement facility emission reduction opportunities contributing to EGI's carbon reduction targets. The enterprise-wide carbon reduction targets are based on the Pan-Canadian Framework on Clean Growth and Climate Change.</p>	<p>The maintenance strategy for compressor, dehydration and LNG is based on a combination of original equipment manufacturer (OEM) recommendations as well as the output of techniques such as Reliability-Centered Maintenance (RCM) and subject matter advisor (SMA) expertise:</p> <ul style="list-style-type: none"> Condition-based maintenance is used in many cases. A detailed inspection routine at set frequencies is established specific to a particular unit (components replaced as required). Preventive maintenance activities are scheduled on a set frequency to restore asset performance. <p>Condition monitoring of auxiliary equipment (pumps/motors) and control systems is ongoing.</p>	<p>The renewal strategies for compressors, dehydration units and LNG assets are as follows:</p> <ul style="list-style-type: none"> Overhauls as recommended by the OEM (hour-based) Overhauls recommended by SMAs based on condition findings Planned obsolescence based on design life, industry intelligence and historical obsolescence (largely dependent on vendor equipment support) Risk- and compliance-driven replacement
Underground Storage	35.5	<p>Well condition is assessed directly by the Storage Downhole Integrity Management Program (SDIMP) using casing inspection logs. Condition assessments for wells are based on abandonment criteria prescribed by <i>CSA Z341</i> and the <i>Oil, Gas and Salt Resources (OGSR) Act</i>.</p> <p>Condition assessment is based on directly measured casing inspection data. Reliability modelling estimates well-wall loss growth rate by extrapolating historical measured growth rate and predicting when the wall loss will exceed tolerances.</p>	<p>Not maintaining EGI gas wells poses the following risks:</p> <p>Employee and Contractor Health and Safety Risk / Public Health and Safety Risk: Loss of containment can pose a risk to public and worker safety.</p> <p>Financial Risk: Wells represent significant financial risk to EGI and regulated customers. Unexpected well failures carry a large replacement cost and incur product loss and reduced reservoir performance may drive up gas supply costs.</p> <p>Carbon Reduction Opportunity: EGI continues to evaluate and implement facility emission reduction opportunities contributing to EGI's carbon reduction targets. The enterprise-wide carbon reduction targets are based on the Pan-Canadian Framework on Clean Growth and Climate Change.</p>	<p>The maintenance strategy for gas wells is as follows:</p> <ul style="list-style-type: none"> Monitor surface and downhole well conditions to ensure the continued integrity of the Storage Well System including the emergency shutdown valves (where applicable), master valve, wellhead and casings. If a problem is identified, the well is repaired or abandoned. Continue with transient pressure testing to identify wells that could benefit from acid stimulation to maintain deliverability. Continue well inspection as per <i>CSA Z341</i> and the <i>OGSR Act</i> 	<p>The renewal strategies for wells are as follows:</p> <ul style="list-style-type: none"> Relining of wells based on condition findings Drilling new wells to replace lost deliverability of abandoned wells Wellhead and emergency shutdown valves replacement based on condition Risk- and compliance-driven replacement
Pipelines	The overview of asset condition and strategy for transmission pipelines is discussed in Section 5.2.3.2 . The overview of strategy for transmission pipelines reinforcement is discussed in Section 5.1.4 .				

5.3.5 Compression Stations

Compressors are used in both transmission and storage systems, along with the liquefied natural gas process. Compression in the transmission system supports the function of transmission pipelines which require high flow rates; while in underground storage compression, it provides the high pressure differential required.

To support the transmission systems, four critical compressor stations are strategically located along the Dawn to Parkway Transmission System: Dawn, Lobo, Bright and Parkway (see **Figure 5.3-3**). Multiple independent compressor units are located at each station and used in various combinations to manage seasonal and weather-dependent system flow demands.

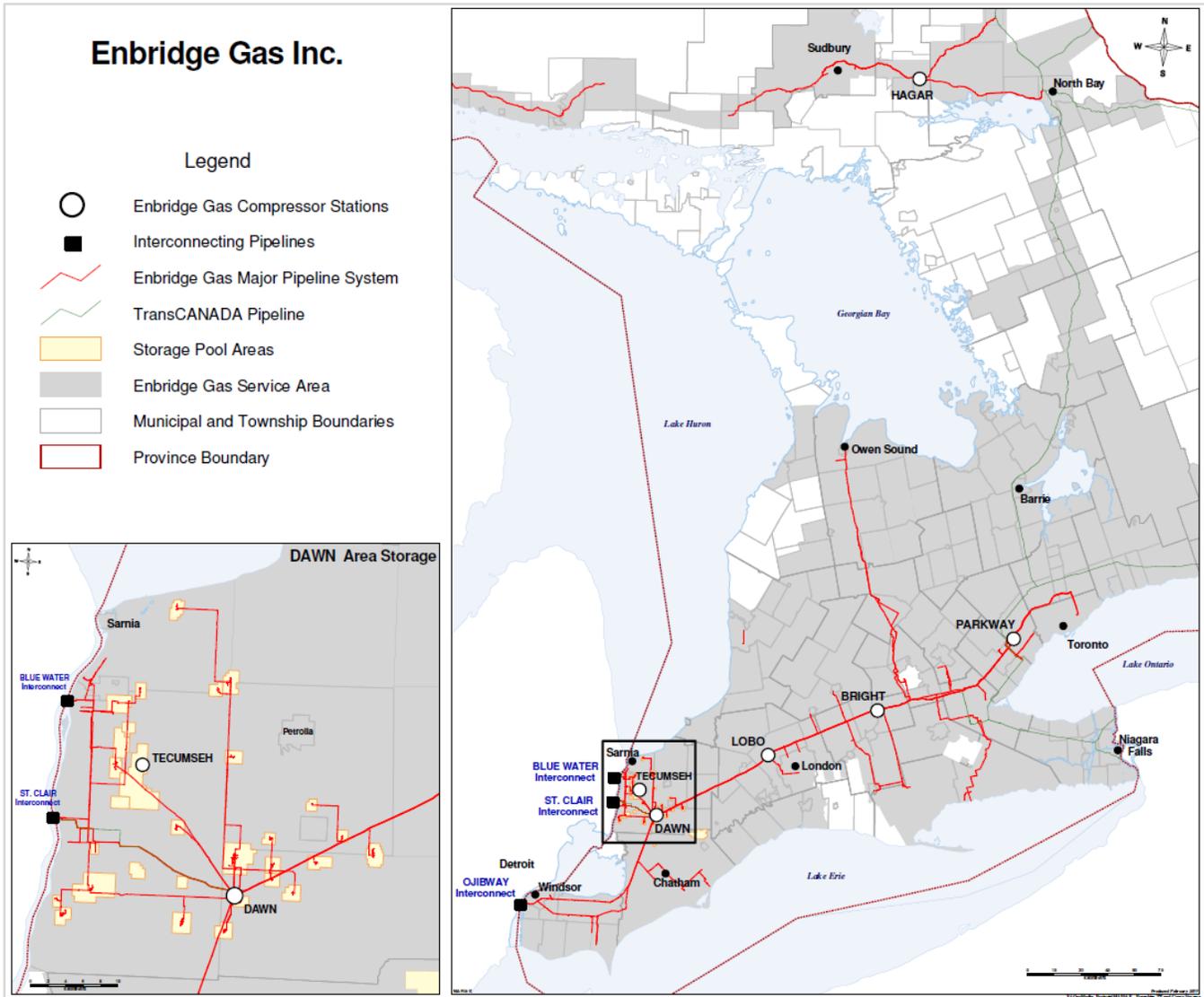


Figure 5.3-3: Compressor Stations in the Dawn to Parkway Transmission System

The hub-and-spoke style storage system consists of two primary hub locations containing multiple compressor units, with the majority of compression capacity located between the Corunna and Dawn compressor stations.

All of EGI’s compressors are natural gas-fueled and are comprised of both centrifugal and reciprocating (both integral and separable models) compressors with each one designed to support a specific function. Compressors vary in horsepower and consist of different vintages, makes and models. Gas compressors are designed for continuous operation but are operated based on daily fluctuating system demands. Failures are influenced by service conditions (operating hours) and the design life

expectancy of components. Some key components are wear items which require regular inspection to establish wear tolerances and are replaced as needed.

Compressor packages are comprised of several subsystems, such as engine assemblies, compressor assemblies, valve and piping, heating and cooling, gas conditioning and ancillary equipment (such as lube oil, fuel supply and electronic control systems) which are required for the compressor to operate. Compressor packages are located throughout EGI's operating regions, including major underground storage facilities and in remote geographic areas. **Table 5.3.5-1** lists the inventory at each compressor station.

Table 5.3.5-1: Compressor Inventory and General Information

Location	Number of Compressors	Notes
Dawn Compressor Station	8	Interconnects with pipelines from a number of other companies and EGI's storage system. Provides supply to the EGI transmission systems and loss-of-critical-unit coverage for the Dawn Parkway System and the Panhandle System.
Lobo Compressor Station	5	Supports gas transmission from London towards Woodstock and provides loss-of-critical-unit coverage for the Dawn Parkway System.
Bright Compressor Station	4	Supports gas transmission from Woodstock towards Toronto (Parkway) on the Dawn Parkway System.
Parkway Compressor Station	2	Provides required delivery pressure and acts as a custody transfer station to TC Energy Canadian Mainline.
Parkway West Compressor Station	2	Provides required delivery pressure and acts as a custody transfer station to TC Energy Canadian Mainline as well as loss-of-critical-unit coverage for the Dawn Parkway System.
Sandwich Compressor Station	1	Supports movement of gas from the Panhandle Eastern Pipeline System towards the Dawn Compressor Station.
Corunna Compressor Station	11	Supports storage injections and withdrawals. Note: Daily winter flows are transported to market via the Dawn Parkway System. Gas is received from and delivered to Dawn and Vector pipeline systems.
Remote Storage Pool Compressor Stations	13	Supports storage injections and withdrawals. Note: Daily winter flows are transported to market via the Dawn Parkway System, Sarnia and Panhandle.
Hagar Liquefied Natural Gas Station	2	Supports the Sudbury Lateral System during peak period demand and provides additional compression as required to maintain system pressure.
Iroquois Falls Compressor Station	1	Supports required delivery pressure for an industrial plant in Iroquois Falls.
Blowdown Recovery Compressors (Dawn, Lobo, Bright and Parkway West)	4	These units reduce the volumes of gas vented to atmosphere during planned compressor and yard blowdowns.

5.3.5.1 Condition Methodology

Engine and compressor condition is primarily maintained through a preventive maintenance (PM) program comprised of rigorous inspections and renewals via overhauls based on manufacturer recommended intervals. As it relates to compressors, condition refers to the ability of an asset to perform its intended function reliably and cost-effectively. Gas compressors are repairable assets; asset condition can be improved through component repair or replacement, restoring asset reliability.

Between overhaul intervals, an understanding of asset condition is obtained through an inspection and maintenance program. Compressors are high-speed, rotating equipment that require constant monitoring based on rapid condition changes and failure occurrences. Online monitoring provides protection via control systems and is supported by control room operators responsible for recognizing changing conditions and reacting in near real time. Activities in response to the component condition or operational performance are captured in the Work and Asset Management System. Component condition is determined using the experience and recommendations of SMAs. As asset condition and performance degrade, risks are raised through the risk management process.

For components managed via an overhaul strategy, condition is viewed as a sawtooth function (see **Figure 5.3-4**). Condition degrades over the recommended overhaul interval and increases suddenly after an overhaul. **Figure 5.3-4** is a simplified illustration of the degradation of asset condition over the course of each interval and the function of an overhaul to restore condition to 100%. In reality, some degradation in condition occurs over the entire life of the asset that cannot be restored through overhaul activities.



Figure 5.3-4: Condition Based on Overhauls

The overhaul schedule for compressors is based on operating hours, using the average annual usage to forecast the timing of the next maintenance activity. As weather is a factor for compression requirements during an operating season, the overhaul forecast is updated annually to reflect current operating hours and any changes to predicted annual usage. Operating hours provide the basis for planning overhaul activities, but the results of inspections may lead to the advancement or delay of an overhaul.

An Asset Health Review (AHR) was initiated for the compressors located at the Corunna Compressor Station. Assets were assessed based on reliability, combined with a multiplier-based, apparent condition modelling approach. Using historical maintenance data, a recurrent data analysis using statistical modelling was performed to determine the relationship between failure frequency and gas compressor operating hours. Subject matter advisors were then consulted to define and quantify the effect of failure-influencing factors. A condition status was assigned to 7 key reciprocating gas compressor sub-assets, based on a conditional reliability metric (at least one sub-asset failure will occur within a 2,000-hour mission time).

Condition findings are expected to be directionally informative at this time. New reliability relationship information is needed for separable compressors to apply the reliability model to reciprocating gas compressors at remote storage pool compressor stations in EGD and Union rate zones. Expanding the AHR methodology to other assets such as centrifugal compressors will enhance asset health understanding for compression facilities.

Aside from scheduled preventive maintenance programs, age is also considered as a condition indicator for reliability and obsolescence. As the asset ages, vendor support declines until the risk requires mitigation; obsolescence poses a risk as repairs become progressively more challenging to complete. As service providers reduce support for products reaching end-of-life, the duration of an equipment outage may become extended. Asset failure under these circumstances may be unrepairable, which poses the risk of price volatility, especially during peak operation. In the 2024 Rate Rebasement Customer Engagement, the majority of customers indicated that EGI should replace compressor stations to reduce the risk of price volatility and avoid reliability and gas quality problems, with the understanding that there would be an associated increase to their bill.

Compressor stations also include yard auxiliary systems to support the primary function of the facility. Yard auxiliary systems include all piping elements (pipe, fittings, valves, regulators, boilers, pumps, and air compressors) as they relate to systems like fuel gas, low point drains, atmospheric vents, compressed air, glycol supply/return, power gas, lube oil supply, potable water and fire water. The condition of yard auxiliary systems is determined using the experience and recommendations of SMAs and is assessed through routine PM inspections as prescribed by the manufacturer, through internally-developed standards, or through opportunistic inspections presented during construction activities. As asset condition and performance degrade, risks are raised through the risk management process.

Dehydration systems are subsystems within compression stations comprised of mechanical, rotating, electrical and control system equipment similar to compression auxiliary equipment. The maintenance strategies for dehydration facilities are based on the same inspection methodologies as compression.

Instrumentation, controls and electrical assets support many other sub-asset types and systems within compression facilities and are primarily affected by obsolescence. As condition assessment for many of these assets is not practical, the methodology for establishing condition is to consider the expected life cycle of equipment and systems and plan to proactively replace.

Federal methane regulations are a compliance requirement that came into effect January 1, 2020, with the purpose of reducing methane emissions from the oil and gas industry through leak detection and repair (LDAR) requirements, venting limits and equipment level emission limits. Targeted leak inspections at compressor stations, storage measurement stations and transmission receipt/metering stations are completed three times per year. Any required leak repairs are to be completed within 30 days or during the next planned shutdown. The shutdown must be scheduled prior to the point where the volume of gas saved by repairing the leak exceeds the volume of gas that must be vented from the pipeline in order to safely repair the leak.

Additionally, annual direct measurement or continuous monitoring of compressor seal and rod packing emissions is required, with similar repair timelines requirements. Corrective action must be completed within 90 days or the next shutdown, with the shutdown scheduled prior to the point where the volume of gas saved by repairing the leak exceeds the volume of gas that must be vented from the pipeline in order to safely repair the leak.

As of January 1, 2023, federal methane regulations will also require any continuous or high bleed pneumatic device be replaced with a Low or No-bleed device. An application for an exemption from the limit may be made for individual pneumatic devices based on safety or operational needs.

Facility venting limits will also come into effect on January 1, 2023 and will apply to designated stations within EGI's storage and transmission operations. All venting volumes will have a requirement to be calculated and tracked on a monthly basis, regardless of whether the venting activity is exempt from the venting limit. Vented activities exempted from the facility venting limit include blowdowns, glycol dehydration, pneumatics, start-ups/shutdowns, and emergency venting.

5.3.5.2 Condition Findings

Overhauls are based on current run hours, annual usage forecast and manufacturer recommended overhauls. Asset age is considered as a condition indicator in terms of obsolescence. The age range for compressor units based on their date of installation from 2023 is shown in **Figure 5.3-5**.

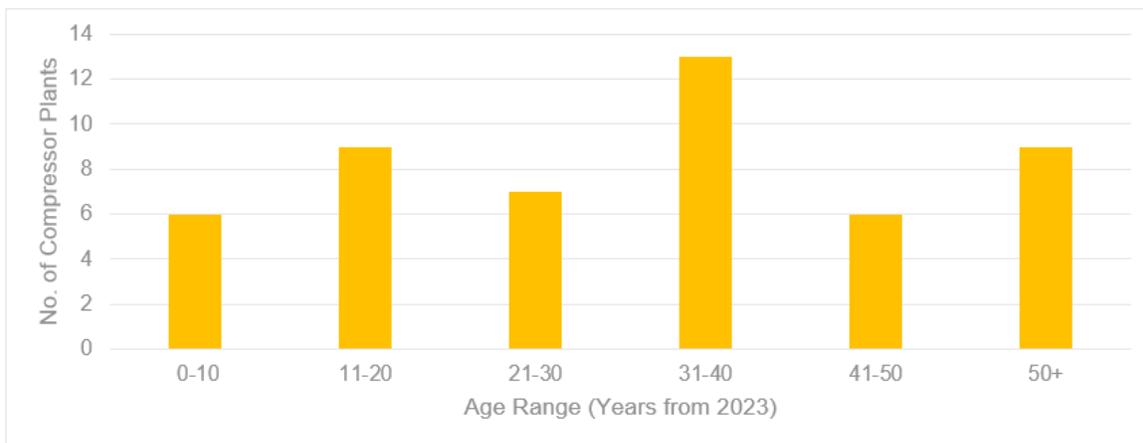


Figure 5.3-5: Age Range of Compressor Plant Installation

Asset age is used as a guideline to trigger detailed discussions with the OEM regarding their plan to support assets is critical in understanding the risk associated with continued operation of aging machinery. Discussions with the OEM and aftermarket suppliers for compressor units have indicated the components for various models are becoming obsolete. As the global inventory of spare parts is depleted, failures will need to be addressed with custom manufactured components.

Several compressors may become exposed to obsolescence risk over the next 10 years. With 15 compressor units exceeding 50 years of age within the next 10 years the risk of declining reliability and parts availability issues that the K701, K702, K703, and Waubuno compressors are experiencing today is increasing.

Table 5.3.5-2 shows the findings from the AHR assessment for compressors at the Corunna Compressor Station.

Table 5.3.5-2: 2021 Storage Asset Health Index (over a 2,000-hour mission time)

Unit#	2021 Storage Asset Health Index (over a 2000 hr mission time)						
	Foundation	Crankshaft	Engine	Compressor	AfterCooler	Heating & Cooling System	Valving System
K701	SHI2 (5000-10000hrs)	SHI2 (5000-10000hrs)	SHI5 (<=2200hrs)	SHI5 (<=2200hrs)	SHI3 (3000-5000hrs)	SHI4 (2200-3000hrs)	SHI4 (2200-3000hrs)
K702	SHI1 (>10000hrs)	SHI2 (5000-10000hrs)	SHI5 (<=2200hrs)	SHI5 (<=2200hrs)	SHI3 (3000-5000hrs)	SHI4 (2200-3000hrs)	SHI4 (2200-3000hrs)
K703	SHI1 (>10000hrs)	SHI2 (5000-10000hrs)	SHI5 (<=2200hrs)	SHI5 (<=2200hrs)	SHI3 (3000-5000hrs)	SHI4 (2200-3000hrs)	SHI4 (2200-3000hrs)
K704	SHI3 (3000-5000hrs)	SHI2 (5000-10000hrs)	SHI3 (3000-5000hrs)	SHI4 (2200-3000hrs)	SHI3 (3000-5000hrs)	SHI4 (2200-3000hrs)	SHI4 (2200-3000hrs)
K705	SHI1 (>10000hrs)	SHI1 (>10000hrs)	SHI4 (2200-3000hrs)	SHI5 (<=2200hrs)	SHI3 (3000-5000hrs)	SHI4 (2200-3000hrs)	SHI4 (2200-3000hrs)
K706	SHI1 (>10000hrs)	SHI1 (>10000hrs)	SHI4 (2200-3000hrs)	SHI5 (<=2200hrs)	SHI3 (3000-5000hrs)	SHI4 (2200-3000hrs)	SHI4 (2200-3000hrs)
K707	SHI1 (>10000hrs)	SHI1 (>10000hrs)	SHI4 (2200-3000hrs)	SHI5 (<=2200hrs)	SHI3 (3000-5000hrs)	SHI4 (2200-3000hrs)	SHI4 (2200-3000hrs)
K708	SHI1 (>10000hrs)	SHI1 (>10000hrs)	SHI4 (2200-3000hrs)	SHI5 (<=2200hrs)	SHI3 (3000-5000hrs)	SHI4 (2200-3000hrs)	SHI4 (2200-3000hrs)
K709	SHI1 (>10000hrs)	SHI1 (>10000hrs)	SHI4 (2200-3000hrs)	SHI5 (<=2200hrs)	SHI3 (3000-5000hrs)	SHI4 (2200-3000hrs)	SHI3 (3000-5000hrs)
K710	SHI1 (>10000hrs)	SHI1 (>10000hrs)	SHI4 (2200-3000hrs)	SHI5 (<=2200hrs)	SHI3 (3000-5000hrs)	SHI4 (2200-3000hrs)	SHI4 (2200-3000hrs)
K711	SHI1 (>10000hrs)	SHI2 (5000-10000hrs)	SHI3 (3000-5000hrs)	SHI4 (2200-3000hrs)	SHI3 (3000-5000hrs)	SHI4 (2200-3000hrs)	SHI4 (2200-3000hrs)

- Crank assemblies experience an increasing misalignment rate over time. Foundation issues have been identified as a degradation factor for crankshaft misalignment. Based on historical failures, the K705 crankshaft was found cracked after its foundation replacement in 2017.
- Engines on units K701, K702 and K703 have the lowest reliability and asset health and should be prioritized over other engine units if a replacement strategy is developed.
- In general, compressors have the lowest reliability and asset health compared to other asset subclasses within compressor stations. As a result, compressor overhauls are required to maintain a required level of reliability.
- According to failure intensity results, glycol leaks (which seem to be a random type of event in heating and cooling systems) are the major failure modes in these systems as heating and cooling systems showed low-asset health conditions in compressor stations within the EGD rate zone.

EGI continues to enhance its understanding of the asset health and life-cycle cost for compression facilities through the development of its Facilities Integrity Management Program (FIMP) and through the analysis of asset data captured in the Work and Asset Management System which informs future capital investment requirements. The FIMP is currently focused on the assessment of assets within compressor facilities, not inclusive of the compressors themselves.

5.3.5.3 Risk and Opportunity

The risks and opportunities are considered below in the Risk Categories that are relevant to EGI.

Operational Risk: The reliability of gas compressors is integral to managing operational risk and customer impact. Unplanned failures, especially during peak demand times, can have a highly disproportionate impact on gas supply costs.

Gas compressor reliability risk changes continuously during annual inventory turnover. In the early stages of the injection or withdrawal phases, compression is not required at all times to meet delivery requirements. The demand on units, both in terms of individual units as well as the number of units, increases steadily and reaches a maximum during late injection or late withdrawal. There is a reduced probability, in the shoulder seasons, that a single, repairable compressor failure will yield a significant consequence. Individually, each compressor asset creates a moderate, operational reliability risk. Compressor outages can be managed by securing gas from alternative sources at higher prices. The longer the outage, the greater the direct cost to customers. Long-term outages of multiple compressors during a harsh winter can incur higher costs to customers because of the inability to meet nominations and the resulting need to purchase gas at less-favourable market conditions. Short duration outages can happen regularly; however, long-term outages are much less frequent.

The inability to maintain EGI obligation of 4 lb H₂O/MMscf under the *General Terms and Conditions* can impact firm service to all distribution customers, the storage and transmission system and third-party storage providers. Through assessment of contractual moisture-content obligations of interconnecting pipelines and modelled moisture content, if EGI experiences increased demand on the transmission system, incremental dehydration facilities would be required to ensure EGI is able to reliably serve firm customer demands. In meeting current supply obligations, the following is considered:

- EGI's ability to operationally blend multiple sources of supply from upstream pipelines and the storage system to ensure the safe and reliable delivery of natural gas and meet contractual obligations
- Assessment of contractual moisture content obligations of upstream supply sources to the Dawn Hub (e.g., DTE Energy, Bluewater, Panhandle Eastern Pipeline, Vector and Great Lakes pipeline systems)
- Design day storage inventory levels by pool and the expected moisture content of the pools on design day

Environmental Risk: Dehydration systems can experience a failure that would result in a spill of triethylene glycol (TEG) to the environment. The likelihood is greater at manually operated locations and in systems containing single-walled tanks.

Employee and Contractor Health and Safety Risk / Public Health and Safety Risk: The current risk due to the potential accidental release of natural gas at the Corunna Compressor Station (CCS) is exposing individuals to risks above EGI's individual upper threshold for workers. The maximally exposed individual at the site is Operations – Op. 2 Plant. The following individuals are exposed to risks above EGI's individual upper threshold for workers:

- Operations – Op. 2 Plant
- Mechanics
- Instrumentation
- Electrical
- Chief Mechanic

The greatest potential for loss of life at the CCS is concentrated in compressor buildings 1, 2 and 3. The greatest contributing scenarios to the results of the Quantitative Risk Assessment (QRA) include: (1) potential leaks from compressors and associated indoor piping finding a potential source of ignition and resulting in a potential flash fire or explosion and fatal accident, and (2) potential leaks from outdoor compressor header piping finding a potential source of ignition and resulting in a fire.

Financial Risk: Financial risk is significantly mitigated by regular inspections, which then inform the necessary preventive maintenance work. A preventive maintenance program mitigates financial risk by reducing the chance of unexpected failures. Compressor failures (unplanned outages) result in unexpected repair costs (both materials and labour) and frequently involve collateral damage. The likelihood for a compressor failure to cause an event affecting non-company property and experience commodity loss is low due to mitigations within a compressor building (i.e., gas/flame detection and emergency shutdown systems).

Compressor failure introduces the risk of price volatility as it could require EGI to buy more gas on the market, rather than drawing gas from its storage. Furthermore, in the case of failure, construction could take multiple years to complete, extending the risks for longer.

Inability to maintain EGI's obligation of 4 lb H₂O/MMscf under the *General Terms and Conditions* may result in financial consequences if market supply needs to be replaced in a limited market or in the event of potential revenue loss, as well as damage claims from customers.

Reputational Risk Failure to comply with new or changing regulatory requirements could potentially limit the use of compression equipment until compliance is achieved. Restricted use of compression equipment could reduce deliverability and trigger the need to secure gas from alternate sources, at additional gas supply cost. Examples of changing regulatory requirements include:

- New federal GHG emission regulations focused on methane reductions impose new restrictions on specified fugitive and vented emission sources within EGI's storage and transmission operations, including but not limited to compressor stations. This will include repair timelines for leaks, limits on facility venting, compressor seals / rod packing and pneumatic devices.
- There is increasing pressure to further mitigate noise levels to meet permitting requirements (such as environmental compliance approval) due to encroachment of new residential developments.

5.3.5.4 Compression Stations Strategy Outcomes

Detailed inspections at set frequencies, subsequent remedial activities and constant condition monitoring help identify abnormal equipment conditions, reducing the likelihood of compressor failure and large-scale outages.

The renewal strategy for compression assets targets the overhaul of compressor components based on run time, inspection, condition, OEM recommendations and SMA review. Full replacement is generally based on design life, historical obsolescence and OEM equipment support.

The FIMP Strategy is described in the Distribution Stations asset class (see **Section 5.2.4.6.1.6**). The detailed strategies for compression include:

5.3.5.4.1 COMPRESSOR MODERNIZATION

As compressor units increase in age, they may no longer be supported by the OEM and the risk of not being able to find parts or expertise to repair the units increases significantly. If available, refurbished or custom parts can be used for repairs but may have reduced life expectancy. Custom components create a risk of the introduction of performance and functional issues when compared to those provided by the OEM if material composition or tolerances differ. Further, the cost of custom components can be more expensive and lead times for locating refurbished parts or machining custom pieces can lead to extensive increases in unit downtime and are reactive in nature.

The Compression Modernization Strategy aims to identify the top-risk compressor units both from a likelihood of failure (how soon) and consequence (how significant an outage is) perspective. End of life, driven by the risk of obsolescence, has highlighted that several units of the same vintage, make and model may become obsolete in a similar timeframe. Widespread replacement of multiple compressors at multiple sites in a short duration is not feasible based on operational and resource requirements.

In order to pace capital expenditures, resources and obsolescence risk over several years, EGI's approach is to stagger the related investments based on risk, location, model and OEM support. Customers indicated they support the pacing of EGIs compressor projects in the 2024 Rate Rebasement Customer Engagement.

The K701, K702 and K703 Ingersoll Rand, KVT model compressors were installed at the Corunna Compressor Station (CCS) in 1964. These 3 units account for 20% of the available compressor power at site. The lean-burn (low emissions) systems installed on the KVT compressor model (units K701 through K703) in the 1990s are rare as they represent a small number of units in the world of the particular model with the retrofit (KVTR). With the units having been in service for more than 50 years, the operational risks due to obsolescence and reliability are increasing.

The Joy Compressor (manufactured in 1985) was a used compressor package installed at Waubuno in 1988. The Joy Compressor Company changed ownership approximately 20 years ago whereupon OEM support for the compressor was discontinued. Although normal wear components are still available in the marketplace, replacement of critical items such as cylinders, crankshafts and rods are no longer available.

The recently abandoned reciprocating compressor unit at the Crowland Station was installed in 1970 and is comprised of a Waukesha engine and Ingersoll Rand compressor. The compression supported the Crowland Storage Pool on both injection and withdrawal. Due to the age of the facility, the compressor station did not conform to modern design standards and code requirements. The antiquated site design introduced risks related to process safety and obsolescence and there was limited ability to monitor and operate the site remotely.

There are 19 Siemens gas turbine-driven compressor units in the Gas Distribution and Storage (GDS) Dawn to Parkway compressor fleet. By continuing to follow the OEM-recommended maintenance schedules the units are expected to meet their seasonal operating requirements. Since the compressors are operated based on seasonal demand rather than a 24/7x365 continuous operation, they are expected to become obsolete before they come to end of life due to functional failure. Through discussions with the OEM, the engine models to consider as investments to manage obsolescence are the RB211-24A, RB211-24C and Avon.

- Siemens RB211 24A (1 unit) – There is one remaining RB211-24A gas turbine located at Dawn that was installed in 1982. The OEM of the Dawn C unit has indicated that due to a limited number of the RB211-24A model remaining in their global fleet, they will not be developing a long-term strategy to support obsolete components. As the inventory of engine parts required to recover from a critical engine failure or to complete recommended overhauls is decreasing and has been depleted for some components, the recommendation from the OEM is replacement.
- Siemens RB211 24C (5 units) – These units were installed over a period of several years, starting in 1989 and are located at Dawn, Lobo and Bright. EGI does not currently own a spare RB211 24C engine that can be employed in the event of an engine failure. As a result, a failed unit would have to be removed for offsite repair. In such cases, the use of the loss of critical unit (LCU) may be extended for more than the advised timeframe posing increased reliability

risk associated with the overall system demand. The OEM has communicated their recommendation is to upgrade to a newer model via component replacements at the next scheduled overhaul.

- Siemens Avon (3 units) – These units were installed over a period of several years, starting in 1971 and are located at the Lobo and Parkway compressor stations. Lobo A1 was installed in 1971 and Lobo A2 was installed in 1972. Bright A1 was installed in 1973 and Bright A2 was installed in 1975. Parkway A was installed in 1989. These units were interchanged between Lobo, Bright and Parkway depending on the system requirements (import, export and system load). As system loads grew, the output of an Avon plant (13.4 MW – 15.7 MW) was no longer adequate to support design day requirements and the Bright plants were chosen to be replaced by RB211 24G plants in 2008. At this time, a spare Avon engine has been purchased and can be exchanged with any of the three remaining units in operation. The indication from the OEM and aftermarket vendors is that support will continue until a new engine model with pollution controls is available. The strategy is to continue to overhaul the units as per their current schedule until such time the OEM informs that support will no longer be available.

The following investments have been identified to modernize the compressor fleet and address risks related to obsolescence, reliability, and process safety.

Dawn to Corunna

The K701, K702 and K703 compressor units account for 20% of the available compressor power at the Corunna Compressor Station (CCS) and their operating reliability is declining. Many of the reliability concerns stem from lean-burn conversions. During the mid-1990s, EGI embarked on an emissions abatement program, which retrofitted all units with low nitrogen oxide (NOx) combustion systems. The lean-burn (low emissions) systems installed on the KVT compressor model (units K701 through K703) are rare as they represent a small number of units in the world of that particular model with the retrofit. Indications from SMAs suggest there are only four lean-burn KVT units in the world, and EGI owns three of them. The KVT lean-burn conversion kits were not designed for mass production and have experienced a variety of problems.

With the units having been in service for more than 50 years, preventive maintenance and noncontinuous operation has maintained units; but reliability continues to decline. As failures become more frequent, technical support for existing compressors continues to decline as the industry has moved to different units resulting in higher costs and downtime to analyze, repair or modify compressors.

In addition to the obsolescence and reliability concerns associated with units K701, K702 and K703, the layout of the Corunna Compressor Station is comprised of 11 reciprocating compressors within 3 buildings adjacent to an above-ground header system.

The current risk due to the potential accidental release of natural gas at Corunna is exposing individuals to risks above EGI's individual upper threshold for workers. The greatest contributing scenarios to the result of this assessment include:

- Potential leaks from compressors and associated indoor piping finding a potential source of ignition and resulting in a potential flash fire or explosion fatal accident.
- Potential leaks from outdoor compressor header piping finding a potential source of ignition and resulting in a fire.

As environmental regulations become more stringent, the ability to meet standards with existing equipment specifications is becoming a challenge as environmental regulations were not accounted for as part of the original design. Modifying existing units for new emission targets with reduced technical support can be costly, success is uncertain and introduces risk of performance and functional issues associated with custom components that differ from those designed by the OEM if material composition or tolerances vary. Further, the cost of custom components can be more expensive and lead times for locating refurbished parts or machining custom pieces can lead to extensive increases in unit down time.

In review of the system requirements in their entirety, mitigation of the safety risk to individuals can be achieved by a single investment that also addresses the risks associated with compressor obsolescence and reliability. The recommended solution is to install 20 km of NPS 36 pipeline from Dawn to Corunna Compressor Station which includes the retirement and abandonment of compressor units K701, K702, K703, K705, K706, K707 and K708 while replacing the equivalent system design day storage capacity.

Life-cycle retirement of the seven compressor units creates the opportunity to avoid planned maintenance capital expenditures required to address risks associated with the following: pressure control and overpressure protection, foundation repairs, vibration detection equipment, valve replacements, glycol system upgrades, replacement of jacket water coolers, overhauls and cam upgrades. In addition to avoided capital expenditures, the abandonment of units K705 to K708 allows for critical spares to be retained to reduce the risk of extended downtime for the remaining compressor units associated with extended OEM lead times.

Appendix A, Pg. 1 provides additional detail on this investment.

Dawn to Corunna (Dawn Tie-In)

This portion of the project is specific to the Union Rate Zones to tie in the NPS 36 pipeline into the Dawn Yard. **Appendix A, Pg. 5** provides additional detail on this investment.

Crowland Station Renewal

Due to the age of the facility, the station experienced process safety concerns (lack of automation, unit valves, electrostatic discharge, dehydration and incinerator systems), obsolescence issues (compressor, building, and electrical), code concerns (location of recycle valve/line), lack of auxiliary power, inability to support site security devices (such as cameras) and setback concerns related to neighbouring occupied buildings and the nearby rail line.

The recommended alternative is to rebuild Crowland to allow remote operation and offset the need for compression. The decommissioning/removal of compression and the resultant distribution station investment can be found in **Section 5.2.4.6.1**.

Waubuno Compression Life Cycle

The Waubuno compressor elevates available pipeline pressure to the Waubuno Pool MOP. The compressor is operated approximately 45 days per year in late summer to early fall to top off the pool. The consequence of compressor failure is dominated by customer impact. Risk associated with failure of the Waubuno compressor is heavily influenced by the level of the pool at which the failure occurs and time to mitigate the failure.

The Joy Compressor (manufactured in 1985) was a previously owned compressor package and installed at Waubuno in 1988. The Joy Compressor Company changed ownership approximately 20 years ago whereupon OEM support for the compressor was discontinued. Although normal wear components are still available in the marketplace, replacement of major compressor items such as cylinders, crankshafts and rods required to support a critical failure are no longer available. In the event of a critical failure, sourcing used parts (which are rare) or aftermarket custom machining services would be only repair options. This was the case in 2007 when a discharge valve seat failed resulting in catastrophic damage to Cylinder 611. An extensive search across the used-parts dealers was required to secure a viable used cylinder head, the other internal damage was repaired through custom machining services.

In order to meet life-cycle needs for the Waubuno storage facility, it is recommended to construct a new NPS 20 pipeline from Waubuno to the Dawn to Corunna pipeline (~1.5 km). The new pipeline will eliminate the requirement for a remote compressor at Waubuno resulting in the abandonment of the compressor unit and supporting assets. The station modifications required for this solution include new control and measurement building, meter upgrades, new valves, and a filter/separator with a launcher and associated piping. The scope of the compressor abandonment includes removal of the compressor and associated equipment in the Compressor Building; removal of the NPS 8 compressor suction and discharge piping; removal of the aftercooler, filter and silencer; removal of all electrical wiring, control wiring and Supervisory Control and Data Acquisition (SCADA) communication wiring and panels associated with the compressor. The compressor building and foundation will also be removed. See **Appendix A, Pg. 7** for additional detail on this investment.

Dawn C Compression Life Cycle

Dawn C is one of the nine centrifugal compressors located at the Dawn Compressor Station. It is a multi-cased unit and can operate in a series or parallel configuration. The unit is designed to allow for intermediate pressure lift in the single case configuration and high pressure lift in the series configuration. In the later part of the withdrawal season, Dawn C is primarily used in the series configuration to lift from low-storage pressure levels to intermediate pressures. The intermediate pressure level is typically elevated further by other compression to reach the desired Dawn outlet pressure. Dawn C and Dawn D have a suction pressure rating of 195 psig, the lowest rating of the compressor fleet at Dawn. Considering the other compressors at Dawn have higher minimum inlet rating, Dawn C and D become very critical when reservoir pressure falls below 400 psig as it typically does late in the operational season.

Siemens, the OEM of the Dawn C compressor, has indicated that due to a limited number of the RB211-24A model remaining in the global fleet that they will not be developing a long-term support strategy for obsolete components. The availability of components required to recover from a critical engine failure or to complete recommended overhauls is essential in managing risk. Reliability risk is managed by following OEM-recommended Preventive Maintenance (PM) schedules and overhauls. It is controlled to moderate levels, but the risk increases gradually over the 25,000-hour recommended interval between overhauls.

Notably, the RB211-24A in Dawn C has dimensions which limit interchangeability with more modern editions of the RB211 without significant plant retrofits. The recommendation to address the obsolescence is replacement.

The recommended solution is to replace Dawn C with a combination of compressors with equivalent horsepower and operating range. This solution will resolve the obsolescence concern and will also support reductions in emissions and improvements in reliability. There are currently operational fit issues at Dawn in the winter and upsizing C-Plant will

increase the problem. Based on the critical horsepower gap, the recommendation per the storage planning model is to address operational flexibility while still meeting design day requirements with the installation of two smaller plants. **Appendix A, Pg. 3** provides additional detail on this investment.

Obsolete Engine - RB211-24C Model

In the event of a failure to an RB211-24C unit, the engine would need to be removed from the berth for repair. The downtime of the unit is increased due to the lack of a spare engine. An outage extends the reliance on the LCU at the particular site for the duration of the repair.

The recommended solution is to modernize the engine at the time of scheduled overhaul to a model identified by the OEM that will be supported beyond the duration of the asset plan. This solution reduces the risk of extended downtime caused by a failure to a component that is no longer available. It reduces the obsolescence risk across the fleet by pacing the upgrades of the five RB211-24C units, improves system reliability and supports reductions in emissions obtained via new technology.

Four of the five remaining RB11-24C units are not scheduled for their overhaul within the next 10-years. In absence of a spare engine, EGI is investigating the market availability of a used RB211-24C to act as a spare that can be installed in the event of an unplanned outage requiring the unit to be removed from the berth for repair or upgrade. A spare engine or an engine exchange service is considered an appropriate control to manage the risk of extended downtime and is available for all other turbine models that support the Dawn to Parkway system. EGI will continue to engage with the OEM to understand the availability of components for the 24C and the risk associated with obsolescence.

5.3.5.4.2 OVERHAULS

These projects consist of the OEM-prescribed scheduled maintenance and overhauls for engines, power turbines and compressors. These overhauls satisfy the OEM recommendations to maintain equipment reliability and ensure continued asset and system reliability. All projects include full internal inspections and replacement of wear items to maintain reliability and reduce the risk of failure. If OEM-recommended maintenance intervals are exceeded, the risk of reduced reliability and performance increases. Regular scheduled inspections, preventive maintenance activities and machine monitoring may identify the need to perform an overhaul in advance of the OEM recommendation. Overhaul plans are based solely on operational hours and are reviewed and updated on an annual basis.

5.3.5.4.3 FOUNDATION BLOCK REPLACEMENTS

The foundation blocks for the reciprocating compressors require replacement due to age, operating hours, oil contamination and condition (the engine block foundations are deteriorating). Without remediation, failing foundations will allow unit settlement, creating bearing misalignments. As the frequency of bearing failures increases, the operational reliability of the unit decreases. There is also the potential for collateral crankshaft damage.

5.3.5.4.4 VALVE REPLACEMENTS

Leaking valve seals do not always lead to leaks to the atmosphere or pose a loss of containment threat. Leaking valve seats can allow gas to flow when in the closed position. This poses a process safety threat, a loss of system performance (by creating recycle loops) and a less safe work environment (reducing the inability to complete maintenance activities that require double block and bleed). These valves are sometimes used to separate piping with different MOPs. If these valve seals leak, there is an increased threat of an overpressure event in lower-pressure pipe as gas bleeds through the valve from higher-pressure pipe.

Valve replacements are required at compressor stations for isolation valves which do not provide sufficient seal quality or are otherwise inoperative. These valves are typically remotely operable and are installed in various locations within the stations, providing key isolation during normal maintenance activities and/or emergency shutdown. Valves are identified for replacement based on operating performance or condition found during routine inspection. Replacement of associated actuators may be required and is evaluated on an individual basis.

The multi-year Header Valve Replacement Program will replace all mode valves on the compressor suction and discharge headers within the Corunna Compressor Station. The approach is to address two compressor units per year, with multiple valves being replaced per compressor unit. As required, new actuators will be purchased to match new valves and will be installed in conjunction with valve replacements.

5.3.5.4.5 MAINTENANCE- AND INSPECTION-DRIVEN REPLACEMENTS

Maintenance and inspection routines are used to determine the condition of assets and inform the need for intervention (timing and activity). Replacements are planned based on general asset groupings, failure characteristics and the ability to determine the time of failure. Where inspection techniques are feasible and can provide indication in advance of functional failure, replacements are planned based on condition. For assets where the distribution of failures is primarily random, (i.e., electronics, instrumentation) replacements are planned based on age. Assets that fail and can be replaced in a timeframe that does not jeopardize safety or reliability are candidates for a run-to-failure replacement strategy.

5.3.5.4.6 CONDITION-BASED REPLACEMENTS

Condition-based replacements are identified by detailed inspections and condition monitoring. Asset issues are raised through the work management system and risk processes, through which the appropriate treatment is determined and may result in a maintenance expenditure. Many of the discrete investments within the portfolio are identified and planned using this approach.

As EGI develops its risk management and process safety management practices, EGI intends to perform periodic condition assessments at critical facilities. A more comprehensive understanding of the condition of these facilities will support risk management and the decision process. As the risk assessments are completed and the long-term needs for Storage and Transmission are assessed, EGI will develop maintenance and replacement strategies to balance performance, risk and cost.

5.3.5.4.7 TIME-BASED REPLACEMENT PROGRAMS

Time-based replacement is used when condition-based assessment is not comprehensive enough to identify the next failure interval. Time-based replacement is also used to proactively replace assets prior to failure, based on historical obsolescence timeframes. Targeted upgrades or replacements of control and communication assets is required to mitigate obsolescence, ensure adequate redundancy of critical systems and mitigation of emerging process safety risks. Due to the number of devices within the storage and transmission system, replacements are planned based on device types and volume.

Time-based replacement strategies are volume-driven and applied to the following groups based on obsolescence:

- Control systems (including Programmable Logic Controllers (PLCs), SCADA, Human Machine Interfaces [HMIs])
- Fire and gas detection instrumentation
- Uninterruptible Power Supply (UPS) and Motor Control Centres (MCCs)
- Instrumentation
- Electrical

5.3.5.4.8 RUN-TO-FAILURE BASED PROGRAMS

Several programmatic spend items are required to support operations and are planned for based on historical expenditures. Assets are identified during the year based on failures or indications that failure is imminent. Replacements are required to ensure site equipment reliability for the following:

- UPS batteries
- Lighting
- Safety and security upgrades
- Mechanical equipment

5.3.5.4.9 SIEMENS VALVE CONTROLLER REPLACEMENT

As of July 2020, Siemens no longer supports valve controllers required in the start sequence of their compressors. Three controllers service three valves on each engine skid. Each valve/controller combination is unique in operation with no redundancy. If one controller fails, it must be replaced, rendering the entire unit unavailable until replacement and set up is complete. Similar to the fuel valve controllers, the oil scheduling valve and controller on the gas generator lube oil skid have

been made obsolete. These valves and controllers have experienced several failures in recent years and cannot be rebuilt. The replacement program will replace valve controllers for two compressor plants per year through 2024.

5.3.5.4.10 HIGH PERFORMANCE COATING

High Performance Coating (HPC) is required on above-grade piping to reduce the chance of external corrosion. HPC has an expected life of approximately 15 years while standard coatings typically last 5 to 8 years. This annual program is centrally managed to apply high-performance paint to mitigate corrosion at remote sites, four compressor facilities and one LNG facility with above-grade piping. This program targets stations with deteriorating coating condition, ensuring safety and reliability by reducing the probability of leaks and piping/equipment failure due to significant corrosion.

5.3.5.4.11 GHG EMISSION REDUCTIONS

EGI continues to evaluate and implement facility emission reduction opportunities. Effort is given to ensure the initiatives effectively balance customer preferences, compliance obligations, anticipated future regulations, and other noteworthy benefits such as safety and operational reliability.

When evaluating system expansion alternatives, the cost of fuel and carbon is considered alongside operational requirements, and these opportunities are tracked through the GHG Scope 1 & 2 Working Group. Significant investment has been made in the emission testing programs for both the Multi-Sector Air Pollutants Regulations (MSAPR) and federal methane regulations, in addition to the capital investments outlined in this plan.

For further detail on EGI's GHG emissions and targets, refer to Exhibit 1, Tab 10, Schedule 3. The asset class strategies contained in this asset plan are tied closely to EGI's efforts to reduce its environmental footprint. These efforts are summarized below.

Multi-Sector Air Pollutants Regulations (MSAPR)

The Multi-Sector Air Pollutants Regulations (MSAPR) are a compliance requirement and came into effect in 2017. These regulations are enacted by Environment and Climate Change Canada (ECCC) and are dedicated to limiting nitrogen oxide (NOx) emissions from specific industries and equipment across Canada. Part 2 of the regulation, focused on stationary-spark-ignition gaseous-fuel-fired engines greater than 250 kW (pre-existing), specifically impacts large stationary reciprocating engines at EGI. As of 2026, NOx emissions for all pre-existing, regular-use engines will need to meet 4 g/kWh. Modern engines greater than 75 kW (regular use), and greater than 100 kW (low use), manufactured after September 2016, are required to meet a limit of 2.7 g/kWh.

Direct Leak Inspection Program Requirements

The federal methane regulations are also a compliance requirement. The regulations came into effect on January 1, 2020 with the purpose of reducing methane emissions from the oil and gas industry through leak detection and repair (LDAR) requirements, venting limits and equipment level emission limits. As of January 1, 2020, the regulation requires facilities to implement an LDAR program and for compressor seals and rod packing to meet equipment emissions limits.

Leak inspections are required to be completed at compressor stations, storage measurement stations and transmission receipt / metering stations three times per year, with prescribed repair timelines. Leak repairs must be completed within 30 days or the next shutdown, with the shutdown scheduled prior to the point where the volume of gas saved by repairing the leak exceeds the volume of gas that must be vented from the pipeline in order to safely repair the leak.

Annual direct measurement or continuous monitoring of compressor-seal and rod-packing emissions is now required, with prescribed timelines for corrective action if the venting exceeds the applicable emission limits. Similar to LDAR repair timelines, corrective action must be completed within 90 days or the next shutdown, with the shutdown scheduled prior to the point where the total volume of leaked gas exceeds the volume of gas that must be vented in order to safely perform the corrective action.

As of January 1, 2023, the methane regulation will also require any continuous or high-bleed pneumatic device be replaced with a low- or no-bleed device. An application for an exemption from the limit may be made for individual pneumatic devices based on safety or operational needs.

Facility venting limits come into effect on January 1, 2023 and will apply to designated stations within the storage and transmission operations. All venting volumes will have a requirement to be calculated and tracked on a monthly basis, regardless of whether the venting activity is exempt from the venting limit. Vented activities exempt from the facility venting limit include blowdowns, glycol dehydration, pneumatics, start-ups/shutdowns and emergency venting.

5.3.5.4.12 STRATEGIC LAND PURCHASES

Properties in proximity to a compressor station have the potential to expose the general public to risks in the rare event of hazardous events. Noise and vibration are identified in the *Environmental Protection Act* as **contaminants**. Any industry emitting noise or other contaminants must obtain an Environmental Compliance Approval (ECA) from the Ontario Ministry of Environment, Conservation and Parks (MECP) in order to operate legally. The current approved ECA encompasses the entire gas storage and transmission network. If compressor stations with neighbouring lots are developed to host a noise-sensitive use, they could jeopardize the compliance status of the station with respect to the applicable MECP sound level limits. Acquiring land in proximity to compressor stations provides additional setback and buffer to ensure properties do not become noise-sensitive and reduce risk related to public safety and encroachment. Property may also be purchased to support expansion or provide ease of access.

5.3.5.4.13 DEHYDRATION ASSESSMENT

A risk assessment of the Dawn Hub send-out gas quality and a Reliability, Availability and Maintainability (RAM) study are underway to determine the risk associated with having a single dehydration system support the Dawn-Parkway system. Outcomes of the risk assessment and RAM study will be factored into future iterations of the AMP.

5.3.5.5 Compressor Stations Capital Expenditure Summary

The total average capital spend is forecast to be \$56M (EGI) as summarized in **Table 5.3.5-3**. Storage and Transmission capital is further summarized as part of EGI's total 10-year capital plan in **Section 6**. See **Appendix B – IRP** for the status of the outcomes of the IRP assessment process, including the binary screen and the status evaluation of IRPAs.

Table 5.3.5-3: Compression Stations Asset Class Capital Summary (\$ Millions) – EGI^{24,25}

Asset Class Strategy/Investment Name	Asset Program	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Forecast
Dawn C Compression Lifecycle	Replacements	0.2M	16.0M	32.2M	97.6M	17.3M	-	-	-	-	-	163.4M
Dawn to Corunna		158.7M	6.4M	-	-	-	-	-	-	-	-	165.1M
Dawn to Corunna (Dawn Tie-in)		47.9M	-	-	-	-	-	-	-	-	-	47.9M
Waubuno Compression Lifecycle		0.3M	1.6M	18.1M	0.1M	-	-	-	-	-	-	20.1M
Foundation Block Replacements	Replacements	3.4M	-	-	-	-	-	-	-	-	3.0M	6.4M
Facilities Integrity Management Program	Integrity	1.0M	0.2M	0.2M	0.1M	0.1M	0.1M	0.1M	0.1M	0.1M	0.1M	1.9M
Overhauls	Overhauls	1.0M	2.8M	9.9M	7.0M	4.8M	6.7M	0.4M	0.5M	1.0M	4.2M	38.3M
Valve Replacements	Replacements	1.5M	-	-	-	-	-	-	-	-	-	1.5M
Condition-based Replacements	Improvements	0.4M	-	-	-	-	-	-	-	-	-	0.4M
	Replacements	6.8M	1.2M	3.2M	4.1M	1.8M	1.5M	1.1M	1.1M	1.1M	1.1M	22.9M
Time-Based Replacement	Improvements	3.7M	0.9M	0.5M	0.7M	0.6M	0.6M	0.6M	0.6M	0.6M	0.6M	9.4M
	Replacements	1.2M	0.7M	2.1M	2.3M	1.3M	3.2M	1.5M	1.0M	2.0M	1.1M	16.4M
Run-to-Failure Based Programs	Improvements	6.9M	2.9M	1.4M	0.7M	0.3M	0.6M	1.5M	0.6M	0.4M	0.4M	15.6M
	Land/Structures	1.3M	0.5M	0.3M	0.9M	0.2M	0.4M	0.2M	0.3M	0.2M	0.2M	4.7M
	Replacements	0.4M	2.5M	0.5M	-	0.3M	-	-	-	-	-	3.7M
Siemens Valve Controller Replacement	Improvements	1.0M	0.4M	0.4M	-	-	-	-	-	-	-	1.8M
	Replacements	1.7M	1.0M	0.6M	0.1M	-	-	-	-	-	-	3.4M
High Performance Coating	Improvements	0.7M	0.7M	0.7M	0.7M	0.8M	0.8M	0.8M	0.8M	0.8M	0.8M	7.5M
GHG Emissions Reductions	Replacements	0.3M	0.9M	1.3M	1.3M	1.4M	1.4M	1.4M	1.4M	1.4M	1.4M	12.1M
Strategic Land Purchases	Land/Structures	-	-	-	-	3.5M	3.4M	3.4M	3.5M	3.5M	3.4M	20.8M
Total		238.5M	38.6M	71.4M	115.6M	32.3M	18.7M	10.9M	9.9M	11.0M	16.2M	563.2M

²⁴ Includes overhead allocation.

²⁵ Includes regulated capital only. Exhibit 1, Tab 13, Schedule 2 outlines EGI's Unregulated Storage Cost Allocations and Eliminations.

5.3.6 Transmission Pipe and Underground Storage

5.3.6.1 Underground Storage

The use of subsurface facilities for natural gas storage allows for increased efficiency in operations, conservation of produced natural gas and more effective and economic delivery to markets. Natural gas is stored in depleted oil or natural gas fields sealed on the top by an impermeable cap rock.

Wells are used to inject into and withdraw natural gas from underground storage reservoirs and to monitor reservoir pressure. EGI well assets consist of 129 and 230 wells in the EGD and Union rate zones respectively. This includes natural gas storage wells and observation wells.

EGI’s storage wells are located primarily in agricultural areas. **Figure 5.3-6** displays the ages of EGI well assets by drilling date (the original well construction date). **Figure 5.3-7** shows well age based on production casing (the innermost casing) age. A well’s production casing age indicates a new casing was added to the well to improve its integrity, an effective method for extending its life.

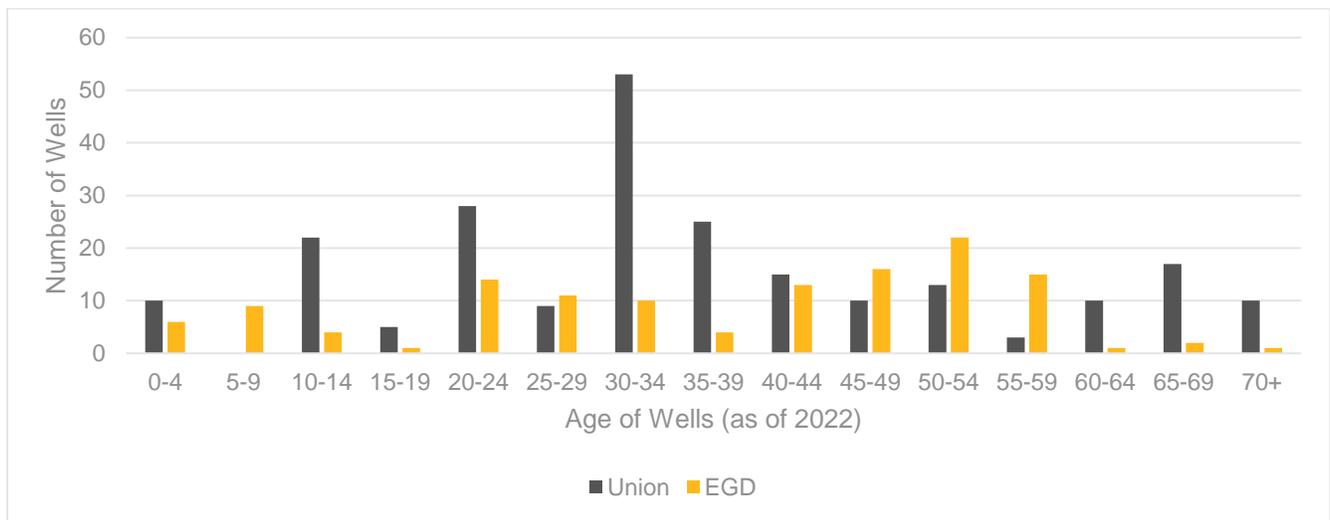


Figure 5.3-6: Age of Wells by Drilling Date

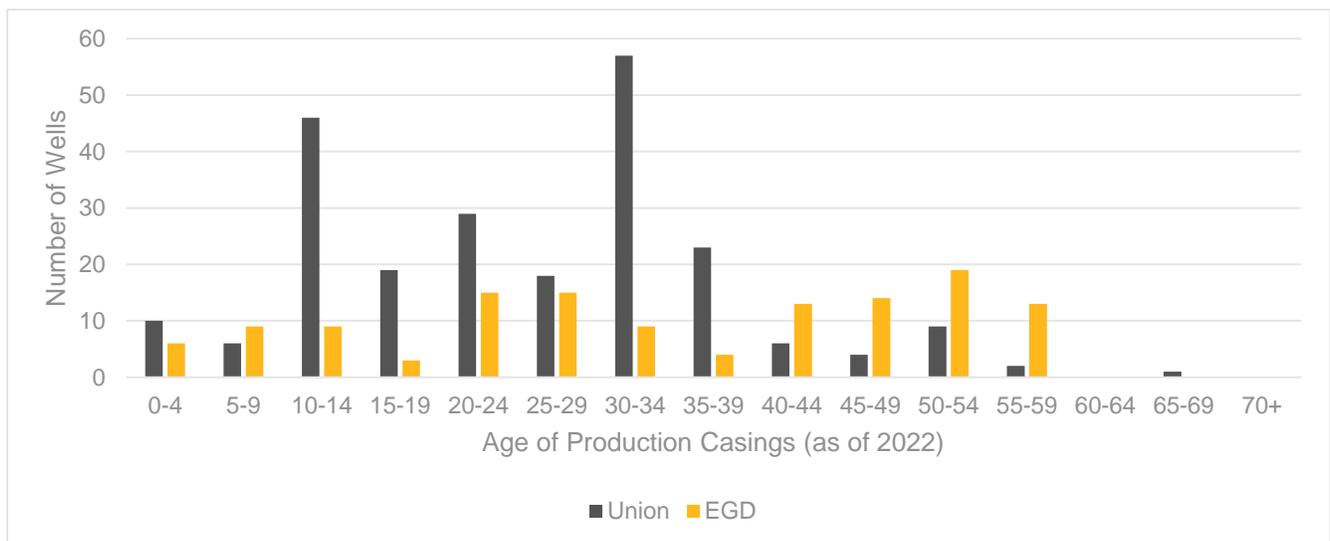


Figure 5.3-7: Age of Wells by Production Casing Age

Degradation of well assets is generally experienced as casing wall loss. Wall loss can be internal or external and can be caused by factors such as mechanically induced damage during drilling operations or corrosion influenced by various geological layers and subsurface fluids. As wall loss progresses, previously insignificant defects become more pronounced. For newer wells, the number of well casing defects requiring action is expected to be low.

The top two joints of well casing (approximately the top 20 m from the surface) can be repaired. These repairs, known as casing backoffs, result in the removal of a short section of old casing and replacement with new casing, extending the well's life expectancy.

Replacement of casing below the first 20 m becomes difficult - primary options are relining or abandonment. Relining is performed by inserting a new smaller diameter production casing inside the affected casing and filling the annular space with cement. Abandonment is performed by filling the wellbore with cement and removing it from service. Relining and abandonment may be followed by the drilling of new wells to restore lost deliverability.

5.3.6.1.1 CONDITION METHODOLOGY

Well condition is assessed by the Storage Downhole Integrity Management Program (SDIMP) using casing inspection logs (similar to in-line inspection tools used for pipelines). Well casing inspection logs are completed per CSA Z341. The logging tool is based on magnetic flux leakage (MFL) technology that infers changes in pipe wall thickness. As per code, a baseline casing inspection log is run on the production casing of all new wells drilled (and when a well is relined with a new production casing). CSA Z341 stipulates that wells receive their second casing inspection log five years after the baseline log. Subsequent inspection frequencies depend on wall loss and the growth rate of metal loss features.

Following each casing inspection log, the minimum yield pressure of the production casing and the corrosion growth rate (the percentage of metal loss per year) are calculated based on the maximum wall loss detected by the casing inspection log. Based on calculation results, the next inspection date is required in 5 or 10 years. However, if the minimum yield pressure of the production casing is less than maximum operating pressure of the storage zone (or if a pressure test fails), the well will either be relined to continue its operation or removed from service. New wells would be required to restore the lost deliverability from the well abandonment.

5.3.6.1.2 CONDITION FINDINGS

A condition model has been developed to predict the end-of-life for each storage well as shown in

Figure 5.3-8. Condition assessment is based on data collected from casing inspection logs. The model estimates the corrosion growth rate by extrapolating the historical measured growth rate and predicting when the corrosion will exceed an acceptable limit. The acceptable limit is defined by CSA Z341 and will trigger remediation or abandonment to ensure well integrity.

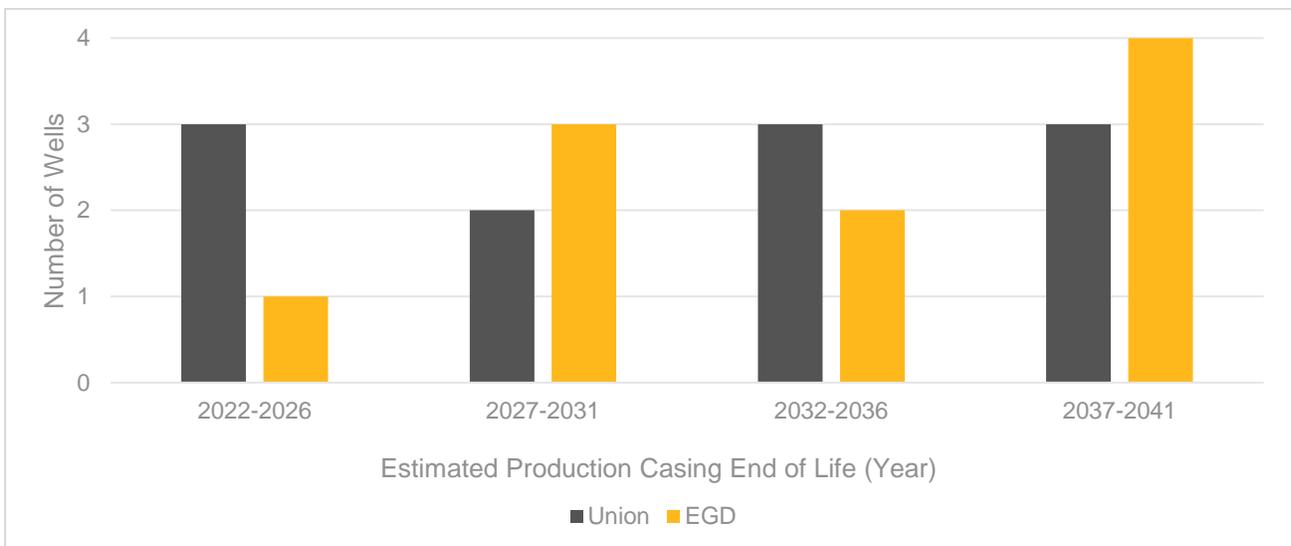


Figure 5.3-8: Estimated Production Casing End of Life for Wells

The condition model considers factors such as:

- Previous condition from the most recent casing inspection
- Rate of corrosion growth over multiple casing inspections
- Accuracy of casing inspection technology used during previous inspections. Note that inspection technology has become more accurate over time and may affect projections.

It should be noted that as more inspection data is obtained, these estimates are expected to change. EGI transitioned to high-resolution casing inspection log technology in 2009. The first high resolution well logs showed that previously reported metal loss features were reduced in many instances. Furthermore, as technology evolves and more field data is obtained, data quality interpretations continue to improve and metal loss features may differ over repeated logs. As new data is loaded into the model, end-of-life projections are expected to change. When a well's production casing reaches end-of-life, evaluations are conducted to determine whether the well should be relined or abandoned. Activities to restore lost system deliverability are also performed, which may include the drilling of a new natural gas storage well.

In addition to the above estimated casing mitigation actions, the following findings require investments that will support the safety and reliability expectations for underground storage assets:

Wellhead Upgrades

EGI inspects and evaluates the condition of its wellheads on an ongoing basis, including wells grandfathered under previous versions of CSA Z341. Through this work, several wellheads were identified to be updated based on CSA code changes. Since 2002, CSA Z341 specifies that all connections above the casing bowl shall have flanged connections, as threaded connections are more prone to leaks and have a higher failure rate. In addition, CSA Z341 no longer allows the pressure rating of the wellhead to be de-rated based on the pressure rating of the master valve. Five wellheads were identified as having threaded side-ports on the intermediate spool section. EGI has established that it will no longer allow threaded connections or pressure de-rating on any storage well.

Well Testing

The deliverability of natural gas storage wells declines over time, associated with the normal operation of the storage pools. Deliverability and transient pressure testing are conducted annually at selected storage wells to assess well deliverability, identify any decline in deliverability and to assess the likelihood of whether well stimulation can recover any deliverability losses.

Well deliverability and pressure transient testing is conducted on selected wells following the fall and spring stabilization period. Wells are individually tested over 72 hours with fixed flow rate and shut-in periods. Well pressures and flow rates are recorded; and, the data is used to determine reservoir properties, wellbore damage and well performance. Well performance is compared with previous tests to quantify any deliverability loss. Wells are also selected for acid stimulations. Retesting occurs approximately every 10 years depending on pool operational demands and maintenance requirements.

Well Security and Accessibility

Approximately 20% of wells are in areas where personnel access is limited. These wells are often in the middle of an agricultural field, and, at the request of the landowner, laneways were not installed. During normal maintenance activities, personnel are required to access these wells, exposing them to difficult physical conditions. Working with landowners, investments are required to install laneways and facilitate personnel access to these wells for essential maintenance activities.

The largest risk to storage wellheads is farm traffic. Each wellhead is surrounded by a chain link or metal post fenced area. Based on the results of a risk assessment, EGI is installing four pre-cast concrete blocks around each fenced area to reduce or eliminate any impact to the wellhead by farm equipment. This program will install pre-cast concrete blocks around all wellheads in agricultural areas where practical.

Cathodic Protection

Wells in the Union rate zones have cathodic protection installed at each storage field for protection; wells in the EGD rate zone are not similarly protected. In 2021, EGI completed a study to determine if there were appreciable benefits of adding cathodic protection to those wells without. The study determined that implementing a cathodic protection (CP) solution, as used in Union wells, limits external corrosion (EC) and extends the service life of the well.

Crowland Storage Pool

The Crowland Storage Pool in the Niagara region is used to balance natural gas demands in the local market. The pool has 16 natural gas storage wells and eight observation wells for pressure monitoring. Since amalgamation, the flow capability of the pool has been assessed through deliverability testing. Additionally, evaluations have been completed on local market options with the aim of simplifying the operation of the pool. The outcome of these evaluations resulted in the recommendation to eliminate compression. An integrity assessment for each well has also been completed to determine if existing wells can be

upgraded or will need to be abandoned. The findings of this assessment resulted in the requirement to replace eight observation wells and three storage wells as they do not meet standards and cannot be upgraded.

A1 Observation Wells

Observation wells are used to monitor the pressure in natural gas storage pools and do not cycle gas in and out of the reservoir. Each pool has an official Guelph observation well that monitors the pressure of the Guelph reef formation where gas is stored. However, many pools have a tighter secondary formation where gas can migrate, known as the A1 Carbonate formation. A1 observation wells are used to monitor the movement of gas in and out of the A1 Carbonate formation. The gas in the formation is contained within the reservoir but may not be accessible working gas that can be cycled on an annual basis. As gas is less accessible in this formation and requires the pool pressure to be lowered before migrating back to the Guelph reef, observation wells are required to be incorporated into the storage facility in accordance with CSA Z341.

The A1 observation wells are used as a tool in storage pool material balance studies. Biannually, storage pools are stabilized, and the Guelph pressure is used to calculate an inventory based on pressure. This is then compared with the pool's metered inventory and variances above a certain threshold are investigated. In some instances, gas movement into the A1 Carbonate formation contributes to these variances. An A1 observation well can confirm this issue and assist with explanations and potential adjustments to pool size and inventory. For effective inventory management, one or more A1 observation wells are required to monitor the gas in the A1 Carbonate formation. Pools that do not have A1 Carbonate wells will be targeted for the addition of an observation well.

5.3.6.1.3 RISK AND OPPORTUNITY

Currently, measured condition data is obtained through the Storage Downhole Integrity Management Program (SDIMP), which currently indicates that well abandonments will be required over the duration of the program.

Employee and Contractor Health and Safety Risk / Public Health and Safety Risk: If unmitigated, risks related to safety are generally expected to increase slowly due to continued corrosion. Wells exceeding corrosion tolerances will be abandoned as prescribed by code, proactively reducing significant safety risks. Risk modelling considers the possibility of injury to the public and personnel, as these assets have a major influence on public and employee safety risk. Wells have the potential to cause injury during a loss of containment event.

Financial Risk: If unmitigated, loss of containment risks are generally expected to increase slowly due to continued corrosion. Risk modelling considers loss of containment and damage to infrastructure. However, the probability of failure is generally very low. Wells represent significant financial risk to EGI and regulated customers. Unexpected well failures carry a large cost of replacement and lost product.

Well abandonment is a safety and financial risk mitigation of the existing wells. However, once an existing well is abandoned, the flow capacity of the associated reservoir is reduced. Reduced reservoir may reduce storage deliverability, which could require that gas supply be obtained from other potentially more expensive sources. Risk reduction is achieved by drilling new wells to replace those that have been abandoned. Well failures, especially during late season withdrawal, can have a highly disproportionate impact on gas supply, requiring gas to be obtained from other potentially more expensive sources. A single well failure can shut down an entire reservoir for a long duration.

Operational Risk: The operational reliability consequences of an unexpected well failure can be significant for regulated customers. Such a failure could cause a decrease in gas supply, requiring gas to be obtained from other potentially more expensive sources to regulated customers, as a portion of required gas would need to be sourced from other suppliers for the entire duration of the event. Consequences may be moderate because other reservoirs continue to operate if a single reservoir experiences an outage.

Well-related activities are targeted to reduce or explain unaccounted for gas (UFG). UFG is a contributor to gas supply costs to regulated customers. Activities intended to reduce UFG provide a positive benefit to EGI's customers.

5.3.6.2 Transmission Pipelines

Pipeline assets are a critical component of the storage and transmission operations and transport gas between custody transfer points, distribution networks, as well as storage gathering systems. Pipelines are categorized in three asset subclasses:

- **Transmission pipelines** connect compressor stations to custody transfer points or other transmission pipelines and distribution networks and generally operate at or above 30% Specified Minimum Yield Strength (SMYS).
- **Pool/Gathering pipelines** connect compressor stations to reservoirs. Multiple reservoirs can be connected to a single compressor station by individual pool pipelines. The central collection lines that interconnect wells within a reservoir, gathering lines, are generally larger diameter pipe – matching the size of the associated pool pipeline to collect and distribute gas to smaller well laterals.
- **Laterals** connect individual wells to a gathering pipeline. Laterals are generally NPS 10 pipe. In some cases, more than one well is connected to a single branch connection extending from the gathering pipeline.

The largest operational threat to the storage pipeline system is internal corrosion/erosion due to entrained reservoir liquids and solids. Third-party damage is also a significant threat due to annual installation of agricultural drain tile by landowners. Note that third-party damage potential has diminished with Ontario One Call legislation.

Pipelines are inspected regularly for leaks, depth of cover and effectiveness of the cathodic protection system. Aerial inspections are also performed. The system is monitored for changes in area class location due to encroachment.

Transmission System Reinforcement is described in the Growth Asset Class, refer to **Section 5.1.7**.

5.3.6.2.1 CONDITION METHODOLOGY

For the condition methodology of Pipe assets, see **Section 5.2.3.3.1**.

5.3.6.2.2 CONDITION FINDINGS

For the condition findings of Pipe assets, see **Section 5.2.3.3.2**. Specific findings for the following asset are also noted:

Panhandle Line Replacement

The two NPS12 river crossing pipelines cannot be inspected using in-line inspection (ILI), but their age and operating history infer that the pipe condition could be degrading. Other challenges related to the pipe construction method make it unlikely that current technologies can provide usable data to improve decision-making.

A Threat Assessment Report prepared by a third-party consultant in November 2021 concluded that while most of the threats evaluated were classified as **low** severity, the threats of external and internal corrosion were classified as **moderate** and **considerable** respectively.

5.3.6.2.3 RISK AND OPPORTUNITY

For risks and opportunities of Pipe assets, see **Section 5.2.3.3.3**. Specific risks and opportunities for the following asset are also noted:

Panhandle Line Replacement

The principal risk is the lack of ILI data needed to inform effective decision-making to mitigate a potential loss of pipeline containment (leak). Replacement of the river-crossing pipelines with a new single pipeline, designed, manufactured and constructed to current standards that is ILI-capable can address this risk.

The threats considered have the potential to cause a complete outage of one pipeline along with a curtailment (due to pressure reduction) in the other, following a hypothetical hydrostatic test failure or the discovery of a large defect.

The Panhandle Transmission System relies on the river-crossing pipelines to meet firm customer needs on design day. The loss of both lines or restricted use of one line may impact the ability to serve firm customer demands subject to market conditions.

5.3.6.3 Transmission Pipe and Underground Storage Strategy Outcomes

The asset class strategies that apply to both the Transmission Pipe and Underground Storage and the Compression Stations asset classes are outlined in **Section 5.3.5.4**.

5.3.6.3.1 UNDERGROUND STORAGE

The capital maintenance and renewal programs for underground storage wells are as follows:

5.3.6.3.1.1 Well Casing Inspection, Maintenance and Replacements

As part of the life cycle management strategy, well condition is continually assessed to determine condition and develop mitigation plans, as per *CSA Z341* and the *Oil, Gas and Salt Resources (OGSR) Act*. Projections of well life expectancy are updated as new inspections are completed and additional operational data is obtained. Remediation is performed on wells on a case-by-case basis through either relining or abandonment to ensure the safe and reliable operation of EGI's underground storage systems. This is aligned with 2024 Rate Rebasing Customer Engagement Survey results where customers are supportive of investing to maintain current levels of safety and reliability.

5.3.6.3.1.2 Wellhead Upgrades

A multi-year plan has been developed to replace wellheads with threaded connections and wellheads that have been de-rated based on their master valve rating. EGI is also planning to install emergency shutdown valves on all storage wells, a long-term goal supported through capital investment.

Crowland (PCRW) Wells Upgrade

The current scope of the Crowland Wells Upgrade project includes the abandonment and replacement of the eight observation wells. It also includes the abandonment of three storage wells to be replaced with two new wells. Upgrades to the remaining storage wells will include the installation of new wellheads and master valves. See **Appendix A, Pg. 51** for additional detail on this investment.

A1 Observation Wells

The Corunna and Ladysmith storage pools do not currently have A1 observation wells. The Coveny Storage Pool also requires a new A1 observation well. Regional geology and past studies suggest there is a potential for gas to be migrating into the A1 Carbonate formation at these storage pools. A new A1 observation well will be drilled to confirm the movement of gas into the A1 and used to support inventory material balance studies in the future. This may result in adjustments to pool inventory or size.

EGI continues to enhance its understanding of asset health and life cycle cost for wells, which will inform future capital investment requirements.

5.3.6.3.1.3 Well Testing and Acid Stimulations

Based on the results of annual well testing program, wells are stimulated with acid to mitigate lost deliverability. Well testing can confirm the magnitude of lost deliverability and whether acid stimulation can recover deliverability.

An activity testing and stimulation program for wells has been in place for the Union rate zones over the past fifteen years. Most wells in the EGD rate zone have not been stimulated and additional well testing data is required. The program focus will shift to conducting initial acid stimulations for wells in the EGD rate zone, which will also need to be tested to determine current performance coefficients, lost deliverability and reservoir properties. The program will return to a system-wide focus once these activities have been completed.

5.3.6.3.1.4 Well Accessibility

Where EGI is able to come to an agreement with landowners, laneways will be constructed to improve access to wells that currently do not have laneways. Capital will be required to install proper laneways on these wells.

5.3.6.3.1.5 Cathodic Protection

A benefit analysis study, completed in 2021, determined that implementing a cathodic protection (CP) solution, as used in Union wells, limits external corrosion (EC) and extends the service life of the well. Overall, the results show that due to the relatively low cost of CP compared to well replacement, there is a cost benefit to installing CP at any stage of the well's service life. Based on the report, the recommendation is to install CP on wells that do not currently have Cathodic Protection.

5.3.6.3.2 TRANSMISSION PIPE

For more details on the TIMP strategy for pipe assets including Inspection Program Integrity Retrofits and Digs, Depth of Cover Program and Class Location Program, see **Section 5.2.3.6.1**. For the Transmission System Reinforcement System Growth strategy outcomes, see **Section 5.1.9.4**. The following project is also noted:

Panhandle Line Replacement

EGI plans on replacing the two NPS 12 river crossing pipelines installed in 1947 with a single pipeline that can provide equivalent capacity. The new pipeline would be designed, manufactured and constructed to current standards and in-line inspection (ILI) capable. See **Appendix A, Pg. 55** for additional detail on this investment.

5.3.6.4 Transmission Pipe and Underground Storage Asset Class Capital Expenditure Summary

The total average capital spend is forecast to be \$148M (EGI) as summarized in **Table 5.3.6-1**. Transmission Pipe and Underground Storage capital is further summarized as part of EGI’s total 10-year capital plan in **Section 6**. See **Appendix B – IRP** for the status of the outcomes of the IRP assessment process, including the binary screen and the status evaluation of IRPAs.

Table 5.3.6-1: Transmission Pipe and Underground Storage Capital Summary (\$ Millions) – EGI²⁶²⁷

Asset Class Strategy/ Investment Name	Program Name	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Foreca st
Well Casing Inspection, Maintenance & Replacements	Improvements	1.1M	1.2M	2.3M	0.7M	2.4M	0.8M	2.4M	0.8M	2.5M	0.8M	15.0M
	Integrity	0.3M	2.8M									
	Land/Structures	0.1M	1.0M									
	Replacements	5.1M	12.9M	3.5M	3.0M	3.2M	3.2M	3.2M	3.3M	3.2M	3.1M	43.7M
Wellhead Upgrades	Improvements	1.3M	1.2M	0.4M	2.3M	0.4M	2.0M	0.4M	2.0M	0.4M	1.9M	12.5M
	Integrity	0.3M	0.3M	0.3M	0.4M	0.5M	0.4M	0.4M	0.5M	0.5M	0.4M	3.9M
Crowland (PCRW): Wells-Upgrade	Replacements	10.6M	2.2M	-	-	-	-	-	-	-	-	12.8M
Well Testing and Acid Stimulations	Improvements	0.3M	3.3M									
Well Accessibility	Land/Structures	0.1M	0.9M									
TIMP Retrofits and Digs	Integrity	23.1M	24.7M	23.1M	21.4M	23.9M	16.0M	15.9M	16.4M	17.9M	15.8M	198.3M
Depth of Cover Program		6.4M	3.3M	3.6M	4.8M	5.1M	5.1M	5.1M	5.2M	5.2M	5.0M	48.8M
Class Location Program	Class Location	2.7M	2.6M	4.0M	5.5M	7.3M	7.2M	7.2M	7.4M	7.3M	7.1M	58.5M
MOP Verification Program	Replacements	-	-	2.6M	5.2M	5.6M	5.5M	5.5M	5.7M	5.6M	5.4M	41.0M
Panhandle Line Replacement		2.0M	31.1M	4.4M	-	-	-	-	-	-	-	37.5M
Time-Based Replacement		0.5M	2.2M	0.0M	2.9M							

²⁶ Includes overhead allocation.

²⁷ Includes regulated capital only. Exhibit 1, Tab 13, Schedule 2 outlines EGI’s Unregulated Storage Cost Allocations and Eliminations.

Asset Class Strategy/ Investment Name	Program Name	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Foreca st
Run-to-Failure Based Programs	Improvements	0.1M	0.1M	0.1M	-	-	-	-	-	-	-	0.2M
	Land/Structures	1.6M	0.3M	0.3M	0.3M	0.3M	-	-	-	-	-	2.6M
	Replacements	0.9M	0.7M	0.5M	0.5M	0.5M	0.5M	0.5M	0.5M	0.3M	0.3M	5.0M
Strategic Land Purchases	Land/Structures	-	-	-	-	2.8M	2.8M	2.7M	2.8M	2.8M	2.7M	16.6M
GHG Emissions Reductions	Improvements	0.6M	1.9M	0.1M	-	-	-	-	-	-	-	2.6M
Dawn Parkway Expansion Project (Dawn-Enniskillen NPS 48)	Growth ²⁸	-	-	-	-	34.2M	67.7M	202.5M	34.8M	-	-	339.2M
Dawn Parkway Expansion Project (Kirkwall-Hamilton NPS 48)		-	24.4M	49.4M	149.9M	22.2M	-	-	-	-	-	245.9M
Panhandle Regional Expansion Project		208.3M	11.0M	0.1M	-	-	-	-	-	-	-	219.4M
Panhandle Regional Expansion Project - Leamington Interconnect		15.2M	50.8M	3.9M	-	-	-	-	-	-	-	69.9M
PREP: NPS 36 looping to Comber Transmission		-	-	-	9.1M	19.4M	57.8M	9.6M	-	-	-	95.9M
Total		280.7 M	171.7 M	99.3 M	204.0 M	128.6 M	169.9 M	256.2 M	80.3 M	46.5 M	43.4 M	1480.5 M

²⁸ The Transmission System Reinforcement Strategy is outlined in **Section 5.1.9.4.**

5.3.7 Liquefied Natural Gas (LNG)

Hagar Station is EGI’s liquefied natural gas (LNG) storage facility, located near Sudbury, Ontario (see **Figure 5.3-9**). The station serves to provide reserve capacity and balance operational loads during peak periods throughout the storage, transmission and distribution systems, ensuring system integrity and gas supply reliability.



Figure 5.3-9: Hagar LNG Station Location

5.3.7.1 Condition Methodology

Liquefied natural gas system condition is determined primarily based on a preventive maintenance (PM) program comprised of rigorous inspections and renewals through component repair or replacement to improve system reliability.

Online monitoring provides protection via control systems and is supported by Control Room operators responsible for recognizing changing conditions and reacting in near real time. Activities, such as corrective maintenance in response to component condition or operational performance, are captured in the Work and Asset Management System. Component condition is determined using the experience and recommendations of both internal and external SMAs. As asset condition and performance degrade, risks are raised and assessed through the risk management process.

Aside from scheduled PM programs, age is also considered as a condition indicator for reliability and obsolescence, although it is generally insufficient on its own to use for replacement project decisions. As the asset ages, vendor support declines until the risk related to an extended outage becomes intolerable. Obsolescence poses a risk as repairs become progressively more challenging to complete. As service providers reduce support for products reaching end of life, the duration of an equipment

outage may become extended. Asset failure under these circumstances may be unreparable, which could pose a significant operational challenge to fulfil facility requirements.

To support its primary function, the LNG facility includes mechanical systems such as compressors, vapourizers, a cold box (a series of heat exchangers), pumps, a cryogenic tank, generators, pipe, fittings, valves, regulators, boilers and air compressors (see **Figure 5.3-10**). The refrigeration system uses a mixed refrigerant consisting of methane, ethane, propane, butane and pentane. The condition of mechanical systems is assessed through routine PM inspections as prescribed by the manufacturer, through internally-developed standards or through opportunistic inspections presented during construction activities.

Instrumentation, controls and electrical systems support many other asset types and systems within the LNG facility and are primarily affected by obsolescence. As condition assessment for many of these assets is not practical, the methodology for establishing condition is to consider the expected life cycle of equipment and systems and plan to proactively replace.

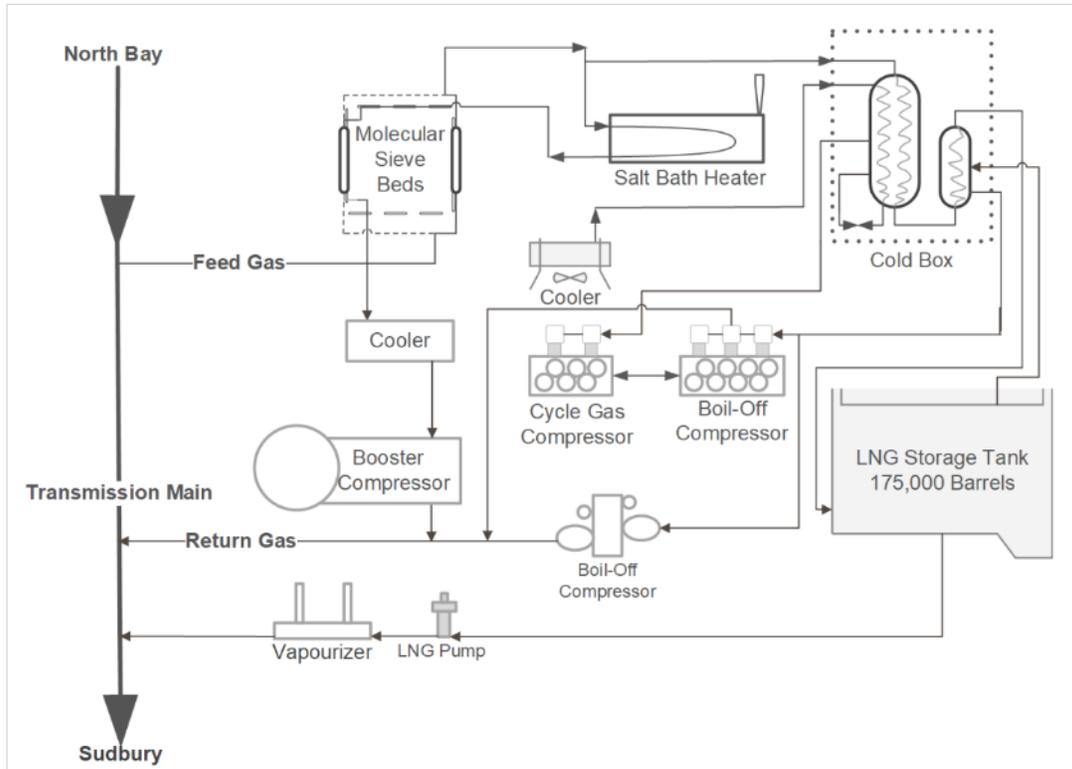


Figure 5.3-10: LNG Station

5.3.7.2 Condition Findings

EGI hired a third-party consultant to provide a condition assessment report for the Hagar LNG plant in 2017. The assessment focused on process performance limitations and equipment condition that could affect reliability and potentially lead to unplanned shutdowns. The report indicated that the Hagar boil-off gas (BOG) compressor has far exceeded its design life as the unit has approximately 40 years of operational hours. The BOG's original equipment has been in place since plant installation in 1968. A BOG compressor is a key LNG station component, and the typical lifespan is 20 years based on industry data and external SMA input. The report also indicated the cycle gas compressor has ~140,000 hours and the liquefaction system (composed of a cold box, cycle gas compressor, mixed refrigerant and auxiliary equipment) is considered to be approaching end of life.

Operating life is only one measure of plant condition, other factors to consider include plant cycling frequency (On/Off) and plant age (regardless of operation). On/Off operation, particularly in unplanned shutdowns or quick start-ups, can result in thermal stress leading to material fatigue, cracking and pump cavitation. Time-dependent failure modes include corrosion, embrittlement and stress corrosion cracking.

The cold box was observed to have wall ice formations and minor foundation cracks. The condition assessment report also suggested insulation has been degrading; frequent stops and starts accelerate crack growth and should be minimized. The cold box has also undergone a considerable number of thermal cycles over its 50-year operating life. Thermal cycling induces stress on piping and heat exchangers.

SMAs have confirmed the BOG and cycle gas compressors are no longer supported by the manufacturer and custom machining is required for parts other than typical wear items, rendering the equipment obsolete. A major concern is damage to the engine or compressor block due to a crankshaft, connecting rod or piston rod failure. Replacement components would need to be cast, cured and machined.

The areas around the LNG tank, near the LNG pipe supports and the LNG building, suffer from water pooling which can cause foundation settling. Differential settling between the tank and piping can cause stress in the piping and connections. Relative movement between the pipe, LNG pump and tank support foundations could result in internal tank nozzle loading and potential cracking.

In addition to the condition report, to better understand risk associated with the facility, a Reliability, Availability and Maintainability (RAM) study was completed to inform operational risk and Quantitative Risk Assessment (QRA) to help understand Employee and Contractor Health and Safety Risk / Public Health and Safety Risk.

An analysis was conducted to understand the Operational Risk of Hagar LNG plant failing to supply vaporized LNG to Sudbury market which is its primary mission. The RAM study was conducted by external consultants and provided availability and likelihood of failure for the main systems in the plant that would result in Hagar's inability to supply vapourized LNG. Further, an internal Fault Tree Analysis (FTA) was conducted to determine the likelihood of Hagar being called to supply vapourized LNG due to weather conditions and demand. These analyses were used to determine the likelihood of the top event – Hagar unable to supply vapourized LNG to Sudbury market when called to do so. EGI performed network modelling to determine the consequence of the top event. The consequence is highly dependent on delivery pressure at Marten River Station from TC Energy Canadian Mainline. Therefore, two scenarios of contractual pressure of 580 psig and historical pressure of 800 psig were considered. The results are described in **Section 5.3.7.3**.

As a result of the QRA done at Corunna Compressor which revealed Risk Region 1 for worker safety event due to loss of containment, EGI assessed the Hagar facility as it shares a similar layout and characteristics as Corunna Compressor (i.e., multiple compressors in a single building). External consultants conducted a QRA at Hagar to analyze the H&S Individual Specific Individual Risk (ISIR) and Societal Risk (SR). The QRA is based on design and industry data for various different leak sizes and outcomes to evaluate process safety risk for public and worker and compares against targets. All risks identified were medium (Region 2).

5.3.7.3 Risk and Opportunity

The Hagar LNG plant provides security of supply to the Sudbury industrial and distribution markets. In addition to security of supply, the plant has also been placed in service on occasion over the years to manage system demand. The consequence of LNG system failure is dominated by supply impacts to customers. System risk associated with failure is heavily influenced by the time of year, weather severity and time to mitigate the failure.

Operational Risk: The reliability and availability of the LNG system is integral to managing operational risk and customer impact. Unplanned failures especially during peak periods, supply shortfalls and unplanned pressure drops or outages can have a significant impact on the security of supply for the Sudbury area. In the event that Hagar is required and cannot fulfil its function, the impact is significant (7 on EGI's 7x7 Operational Risk Matrix see **Figure 4.2-4**). Based on the expected shortfall results for the liquefaction, vapourization and compression modes from the RAM study combined with the historical weather demand, the likelihood of this event is low leading to an overall evaluation of the Operational Reliability Risk as a Medium.

Concerns related to obsolescence and the market availability of components for critical assets within the liquefaction process (BOG compressor, KVGR cycle gas compressor and cold box) can translate to customer impacts if the failure is unrepairable. An unrepairable failure is likely to result in extended downtime as other assets in the process may require replacement or modification for compatibility reasons.

Employee and Contractor Health and Safety Risk / Public Health and Safety Risk: The following conclusions can be drawn from the QRA of the Hagar LNG facility. As per EGI's risk evaluation criteria described in **Section 4.2.2**, it is found that none of the workers on the Hagar LNG site experience Individual Specific Individual Risk (ISIR) levels that fall within Region 1. However, all the worker groups have ISIR levels that fall in Region 2, where risk mitigation measures should be considered.

The ISIR levels for all off-site occupied areas fall within Region 3. No additional risk mitigation measures need to be considered for off-site ISIR, providing those existing protective measures are kept in place and the risk is monitored.

Financial Risk: Financial risk is significantly mitigated by regular inspections, which then inform the necessary preventive maintenance work. A preventive maintenance program mitigates financial risk by reducing the chance of unexpected failures. Unplanned outages result in unexpected repair costs.

GHG Emissions Reduction Opportunity: EGI continues to evaluate and implement facility emission reduction opportunities. Effort is given to ensure the initiatives effectively balance customer preferences, compliance obligations, anticipated future regulations, and safety and operational reliability.

5.3.7.4 LNG Strategy Outcomes

Detailed inspections at set frequencies, subsequent remedial activities and control room condition monitoring help identify suspect equipment condition, reducing the likelihood of failure and large-scale outages. As identified in the RAM study, on-going maintenance is critical to ensuring the sustained reliability and availability of the facility.

The replacement strategy for the LNG asset subclass is proactive replacement that targets equipment based on condition and obsolescence and is generally dependent on OEM support. This strategy aims to proactively replace or rebuild station components before end of life to reduce risk and maintain a safe and reliable LNG system. To inform the remaining life of assets, there is a need to gather more condition and performance information to continue to enhance understanding of risk and inform timing of intervention.

It would be difficult and impractical to replace any one major component in isolation due to compatibility issues with the existing plant. In the liquefaction process, the replacement of any major component (i.e., cold box or compressor) would require significant modifications to the new asset to make compatible with the existing equipment.

EGI will continue to re-evaluate new technology to support a holistic plan that considers the future demand and requirements for the distribution system, efficient production of LNG and environmental impacts.

The asset class strategies that apply to both the LNG and the Compression Stations asset classes are outlined in **Section 5.3.5.4**.

5.3.7.4.1 JVG BOIL-OFF GAS COMPRESSOR REPLACEMENT

This project involves replacement of the boil-off gas (BOG) compressor to mitigate the risk of a system failure due to a nonrepairable, critical compressor part. The BOG compressor is one of the two compressors used to power the refrigerant process which cools the natural gas feedstock to -160 °C (at which point the natural gas turns into a liquid). Over its more than 50 years of operation, the 240-horsepower Ingersoll Rand BOG compressor has amassed 325,000 operational hours and is deemed to be at the end of its design life. Although normal wear components are still available, core compressor replacement parts such as cylinders, crankshafts and pistons required to support a critical failure are no longer manufactured. In a critical failure, securing used parts (which are rare) or after-market custom machining services are the only options for repair. If custom machining services cannot repair the part, a custom-designed aftermarket casting option or complete replacement of the compressor will be required, rendering the LNG plant out of service for at least one operational season and unable to perform its regulated requirements. See **Appendix A, Pg. 30** for additional detail on this investment.

5.3.7.4.2 KVGR CYCLE GAS COMPRESSOR REPLACEMENT

This project involves replacement of the KVGR cycle gas compressor to mitigate the risk of a system failure due to a nonrepairable, critical compressor part. The KVGR compressor is one of two compressors used to power the refrigerant process (the other is the BOG compressor). Over its 50 years of operation, the 1500-horsepower Ingersoll Rand KVGR cycle gas compressor has amassed 140,000 operational hours and is deemed to be at the end of its design life. This replacement is required for the same reasons as the BOG compressor. See **Appendix A, Pg. 31** for additional detail on this investment.

5.3.7.4.3 COLD BOX REPLACEMENT

This project involves replacement of the cold box to address anticipated leaks that will impair the plant's ability to produce LNG. The cold box is a series of several heat exchangers used to cool natural gas, turning it into a liquid. Over its 50 years of operation, the cold box has amassed 140,000 operational hours. Significant failure modes include gas or refrigerant leaks out of the piping into the interior of the cold box shell and heat exchanger cross leaks that reduce refrigeration effectiveness. Both failure modes impair LNG production, leading to the plant missing its annual production requirements. Troubleshooting and

repair of these failure modes is extremely difficult and time-consuming, as cold box internal components are encased in very densely packed insulation and clad in an outer steel jacket. Considering the repair or replacement complexity, reactively responding to internal leakage will halt the liquefaction process, which could lead to customer outages. See **Appendix A, Pg. 29** for additional detail on this investment.

5.3.7.4.4 HAGAR LNG TANK BOIL-OFF GAS RECOVERY SYSTEM

During sudden atmospheric pressure changes, BOG venting from the LNG storage tank vents occurs frequently. The current BOG compressor is undersized for Hagar, which is one of GDS's largest emitters of unrecovered natural gas at approximately 590,000 m³/yr. Boil-off gas is a single point source of emissions that can be recovered by installing a single process within the existing LNG facility. The solution proposed is to add a BOG compressor with its main function to compress the excess BOG and return it to the transmission line. The compressor would also be used as an alternate compressor to the Arial BOG compressor in the event of maintenance or breakdown. The scope of work for this project includes installation of a 450 HP compressor with electric motor drive (EMD), hydro service upgrade with generator backup, NPS 6 pipe from the tank relief valves, heat exchanger, flare system, miscellaneous cable trays, foundations, and piping.

5.3.7.5 LNG Asset Class Capital Expenditure Summary

The total average capital spend is forecast to be \$8M as summarized in **Table 5.3.7-1**. Storage and Transmission capital is further summarized as part of EGI's total 10-year capital plan in **Section 6**. See **Appendix B – IRP** for the status of the outcomes of the IRP assessment process, including the binary screen and the status evaluation of IRPAs.

Table 5.3.7-1: Liquefied Natural Gas Capital Summary (\$ Millions) – EGI²⁹

Asset Class Strategy/Investment Name	Program Name	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Forecast
JVG Boil-off Gas (BOG) Compressor Replacement	Replacements	-	-	-	-	-	-	-	-	2.1M	19.8M	21.9M
KVGR Cycle Gas Compressor Replacement		-	-	-	-	-	-	-	-	2.1M	23.9M	26.0M
Cold Box Replacement	Integrity	-	-	-	-	-	-	-	-	3.5M	11.5M	15.0M
Valve Replacements	Replacements	0.0M	-	-	-	-	-	-	-	-	-	0.0M
Time-Based Replacement		-	0.1M	-	-	0.3M	0.3M	0.3M	0.3M	0.3M	0.3M	1.7M
Run-to-Failure Based Programs	Improvements	0.2M	-	-	-	-	-	-	-	-	-	0.2M
	Land/Structures	0.0M	0.2M	0.5M	-	-	-	-	-	-	-	0.8M
	Replacements	-	0.1M	-	-	0.1M	0.1M	0.1M	0.1M	0.1M	0.1M	0.9M
GHG Emissions Reductions	Improvements	0.5M	-	-	1.2M	12.4M	-	-	-	-	-	14.0M
Total		0.8 M	0.3 M	0.5 M	1.2 M	12.8 M	0.4 M	0.4 M	0.4 M	8.1 M	55.7 M	80.6 M

²⁹ Includes overhead allocation.

5.4 Real Estate and Workplace Services

The Real Estate and Workplace Services (REWS) asset class includes properties (buildings and land) and furnishings. Properties are categorized into regional operations and administrative centres, operations depots, land, operations micro-depots and head office. The requirements for these properties are primarily based on function and headcount.

5.4.1 Real Estate and Workplace Services Objectives

The objectives of the Real Estate and Workplace Services asset class are listed in **Table 5.4.1-1**.

Table 5.4.1-1: REWS Asset Class Objectives

Asset Class Objective	Description
<p>Create and support safe, efficient and collaborative environments across EGI</p>	<p>Sustain the integrity and adequacy of all facilities for safe and reliable use.</p> <p>Continuously evolve the understanding of condition and risk associated with real estate assets and use risk, cost and performance information to drive asset-related decisions.</p>

The performance measures for the Real Estate and Workplace Services asset class are:

- Physical Assessment: Facility Condition Index (FCI)
- Functional Assessment: Adequacy Index (AI)
- Cost per square foot (lease and building operating expenditures)
- Utilization rate

To achieve the Real Estate and Workplace Services asset class objectives listed in **Table 5.4.1-1**, asset investment decisions are governed by the life-cycle management strategies outlined in **Table 4.1-1**.

5.4.2 Real Estate and Workplace Services Hierarchy

The asset class hierarchy for Real Estate and Workplace Services is shown in **Figure 5.4-1**.

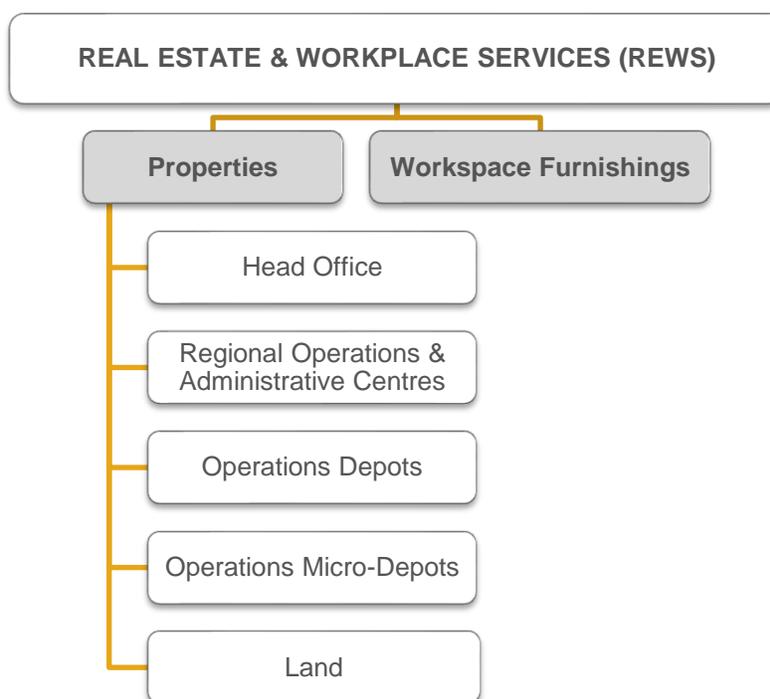


Figure 5.4-1: Real Estate and Workplace Services Hierarchy

5.4.3 Real Estate and Workplace Services Inventory

The inventory for Real Estate and Workplace Services assets is shown in **Table 5.4.3-1**.

Table 5.4.3-1: Real Estate and Workplace Services Asset Class Inventory³⁰

Asset Subclass	EGI Rate Zone	Union Rate Zones
Properties (Buildings/Land)	18	74
Head Office	1	0
Regional Operations and Administrative Centres	3	8
Operations Depots	12	42
Operations Micro-Depots	0	18
Land	2	6
Workspace Furniture	~2,400	~3,200

The total building square footage is 774,665 and 1,245,291 for the EGD and the Union rate zones respectively.

³⁰ As of December 31, 2021.

5.4.4 Real Estate and Workplace Services Condition and Strategy Overview

Table 5.4.4-1: Real Estate and Workplace Services Condition and Strategy Overview

Asset Subclass/Program	Ownership	Condition	Risk / Opportunity	Maintenance Strategy	Replacement / Renewal Strategy
Properties (Buildings / Land)	Owned and leased	<p>Facility assessments were conducted on EGI properties, based on a defined set of standards representing industry and EGI best practices relating to exterior site works, architectural elements, interiors, furniture and amenities.</p> <p>The assessments use both physical and functional criteria. The Functional Obsolescence or Adequacy Index (AI) is a condition index tool used to illustrate the functional condition of the asset. The Facility Condition Index (FCI), a generally-accepted industry benchmarking tool, is also used. All EGI properties were inspected for the purpose of calculating an FCI/AI in alignment with operational need to create a long-term capital plan. See Table 5.4.5-1 for the condition findings for each property.</p>	<p>Employee and Contractor Health and Safety Risk: Facilities with operational deficiencies pose a safety risk to employees and hinder execution of tasks. Some facilities have inadequate operations yard and administrative parking. The mix of industrial and employee vehicles is a potential contributor to motor vehicle incidents. Best practices dictate keeping industrial vehicles away from administration parking areas.</p> <p>Financial Risk: EGI faces financial risk if properties are not maintained, hindering operations and administrative functions. Some facilities use more energy than a comparable renovated facility (utilizing current Ontario Building Code [OBC] and energy standards). Inadequate site configuration and lack of office and support areas hinder operations and administrative functions.</p> <p>Environmental Opportunity: Older buildings have high greenhouse gas (GHG) emissions and use more energy than comparable new construction.</p>	A preventive maintenance strategy is in place to ensure asset performance and to reduce the risk of failure or degradation of performance in support of occupants.	<p>The strategies for the Properties asset subclass were developed to align with business requirements and the OBC as well as to correct deficiencies on site. Strategy options include</p> <ul style="list-style-type: none"> Renovating existing facilities Building new facilities Disposing of current site and relocating to a new site Continuing maintenance of the current site <p>Choosing the appropriate strategy is based on a combination of physical/functional assessments in support of the business strategy.</p>
Workplace Furnishings	Owned	<p>Workspaces at each site consist of workstations and office furniture. These furnishings are either considered current (meeting EGI standards) or legacy (not meeting current standard). Current EGI furniture standards provide:</p> <ul style="list-style-type: none"> Ergonomic support Daylight and views for building occupants through the use of mid-height panel systems Task seating to address a range of body types Consistent workstation configuration Lower operating costs by contributing to fixed environments that allow a broad range of administrative requirements without change. 	<p>Employee and Contractor Health and Safety Risk: Legacy furnishings do not meet current ergonomics standards; therefore, employees are more likely to suffer from repetitive strain injuries and other ailments stemming from the inability to adjust workstation configurations and decreased access to light.</p> <p>Financial Risk: Legacy furnishings is past 30 years old result in productivity reductions and increased maintenance costs.</p>	N/A	<p>The strategy for the Workplace Furnishings asset subclass is to replace office and meeting room furnishings as required.</p> <p>Remaining legacy office, meeting room and ancillary furnishings are replaced with current standard systems as building life-cycle renewal is executed. Ergonomic modifications and tools are issued as recommended to prevent repetitive strain injuries and accommodate return-to-work for employees.</p>
Building Systems Program	N/A	A third-party engineering consulting company was employed by EGI to analyze factors such as age of equipment, maintenance records, repair cost, building standards and compliance issues to determine overall risks and the replacement timing of heating, ventilation, air conditioning (HVAC) equipment; plumbing; electrical systems; building envelope; facilities equipment and exterior site improvements.	<p>Financial Risk: If building systems are not properly maintained, there is financial risk to EGI as the failure of these systems increases substantially, which can potentially lead to loss of use and decreased staff productivity.</p> <p>Environmental Opportunity: Older buildings have high GHG emissions and use more energy than a comparable new construction.</p>	N/A	The renewal/replacement strategy for building systems assets is to maximize equipment useful life and replace building systems before failure, including the replacement of the building envelope, HVAC and electrical systems to current environmental standards, ensuring interior comfort and overall security.
GHG Energy Reduction Program	N/A	EGI completed a third-party study on energy efficiency and emissions for its office buildings. The study identified potential opportunities for improvement to reduce GHG emissions and improve energy efficiencies.	<p>Existing facilities use more energy than a comparable new or renovated facility (using current OBC and energy standards).</p> <p>Energy Efficiency Opportunity: Reduction in operating costs and GHG emissions.</p>	N/A	Existing building GHG reduction strategies at locations not planned for improvements or replacement in the 10-year plan will be addressed with a mix of measures. The range of implementation costs and energy/GHG savings will include operational and capital improvements.
Micro-Operations Depot Revitalization Program	Owned and leased	There are 18 micro-operations depots located in the Northern region that are on average over 50 years old, consisting of 17 owned and 1 leased property. The sites are in aging physical condition and do not meet required functionality.	<p>Financial Risk: Risks include the financial impact of low utilization or functionally and physically deficient assets.</p> <p>Employee and Contractor Health and Safety Risk: Current physical conditions pose a hazard to employee safety.</p> <p>Environmental Opportunity: Legacy buildings with obsolete systems have high GHG emissions and use more energy than a comparable new construction.</p>	N/A	The strategy is to renovate or replace micro-operations depot sites that do not meet the functional requirements. Renovations or replacement will include the building envelope, HVAC and electrical systems. Compliance to environmental standards, building codes, accessibility and overall security are major considerations to ensure safe and reliable operation.

5.4.5 Properties

5.4.5.1 Pandemic Impacts on EGI Real Estate

During the pandemic, EGI's utilization of its facilities has been broken down into continued essential operations and administration activities.

- The essential operations occupancies consisting of critical and field personnel that directly support EGI's operations have remained in the workplace throughout the pandemic, ensuring that the uninterrupted supply of gas is safely delivered to the millions of customers that depend on EGI every day.
- Administrative occupancies distributed throughout the operational footprint and mostly dedicated administration facilities such as VPC in Toronto and 50 Keil Drive in Chatham, had been working from home during the pandemic due to stay-at-home orders. As stay-at-home orders lifted, a cautious gradual return to a hybrid model consisting of majority of weekdays in-office, is in progress. EGI will continue to monitor and adhere to Chief Medical Officer of Health instructions and implement measures and recommendations from the ongoing pandemic.

5.4.5.2 Future Office Utilization

EGI values in-person collaboration and intends to leverage the learnings acquired during the COVID-19 pandemic to pursue options supporting workplace flexibility. Working differently during the pandemic provided insights about the positive aspects and challenges experienced by employees and the business without day-to-day interaction. These lessons will guide EGI to provide the best possible working experience for employees, while continuing to serve EGI's customers. EGI will evaluate options to leverage flexibility, while sustaining the importance of in person collaboration. EGI will monitor and measure utilization while also watching the marketplace for broadly adopted practices to inform EGI's future of workplace strategies. This will ensure a pragmatic and cost-effective transition of the real estate footprint.

5.4.5.3 Condition Methodology

For the Properties (buildings/land) asset subclasses, a Facility Assessment is used to:

- Assess the physical condition of each facility
- Assess the operational functionality of each facility
- Identify potential gaps in service area coverage
- Create a long-term real estate portfolio strategy
- Create quality indoor environments with access to natural light and views which result in increased productivity, decreased absenteeism and improved morale

The Facility Assessment is based on a defined set of standards representing industry best practices relating to exterior site works, architectural elements, interiors, furniture and amenities.

The Functional Obsolescence or Adequacy Index (AI) is a condition index tool used to illustrate the functional condition of the asset expressed in a percentage ratio of required functional upgrade costs divided by the replacement value of the asset to meet functional needs. Based on EGI's standards, scores between 0% and 49% are considered good and scores of 50% and above are considered poor/critical. The AI is calculated as shown below:

5.4.5.3.1 ADEQUACY INDEX CALCULATION

$$AI = \frac{\text{Functional Upgrade Costs}}{\text{Cost to Replace the Building with its Functional Equivalent}}$$

An asset's physical condition is assessed based on the Facility Condition Index (FCI). The FCI is a generally-accepted industry benchmarking tool. It is a scoring mechanism comparing the relative physical condition of the existing components of a group of facilities. All EGI properties have been inspected for the purpose of calculating an FCI and creating a long-term capital plan. The FCI is calculated as follows:

5.4.5.3.2 FACILITY CONDITION INDEX CALCULATION

$$\text{FCI} = \frac{\text{Cost to Remediate Immediate or Short-term Maintenance Deficiencies}}{\text{Current Replacement Value of Facility}}$$

Site functionality and utilization are based on critical functional criteria (yard size, access, sufficient office area and tracked utilization) and are scored as Good, Challenged, or Obsolete. The typical yard size is 2.5 acres (the appropriateness is dependent on EGI site-specific requirements).

Properties are assessed based on multiple parameters such as: site and building functional obsolescence, physical obsolescence, Ontario Building Code (OBC) compliance and renewal/replacement strategy costs. Each property is assigned a priority rank from highest to lowest. To attain this rank, building functional obsolescence (AI), physical obsolescence index (FCI), site functional obsolescence index and the recommended strategy for correcting the deficiencies are considered. Higher priority is given to the facilities posing larger and more immediate financial and/or safety risk to the organization.

Compliance to current OBC requirements is factored, depending on the Part, Group and Division each property falls under. These include, but are not limited to, barrier-free path of travel and barrier-free and universal washroom facilities. Furthermore, compliance with fire code regulations on load-bearing structures, fire resistance ratings, sprinkler systems and combustible/noncombustible construction are also considered. It is important to note that major renovations to a structure may require that area to be brought up to current OBC compliance standards, potentially requiring a substantial investment.

5.4.5.4 Condition Findings

The facility assessment results for all EGI properties and the summary strategy for each property are shown in **Table 5.4.5-1**. Based on EGI's standards, FCI scores between 0% and 5% are considered good, 5% to 10% are fair, 10% to 30% are poor and greater than 30% are critical. AI scores between 0% and 49% are considered good and scores of 50% and above are considered poor/critical. Site functionality and utilization are based on critical functional criteria (yard size, access, sufficient office area and tracked utilization) and are scored as Good, Challenged, or Obsolete.

Table 5.4.5-1: EGI Facility Assessment Results

Property Name	Age (Years)	Physical Obsolescence (FCI)	Functional Obsolescence: Building (AI)	Functional Obsolescence: Site	Summary Strategy
50 Keil Drive	57	12.91%	45%	Obsolete	Renovation
555 Riverview Operations Centre	49	10.03%	24%	Good	Renovation
Lancaster Operations Centre	29	8.88%	63%	Obsolete	Expansion and Renovation
Arnprior Operations Centre	51	3.82%	58%	Obsolete	Renovation
Atikokan Micro-Operations Centre	54	11.37%	61%	Good	Revitalization Program
Barrie Operations Centre	16	1.61%	58%	Obsolete	Disposition
Black River Micro-Operations Centre	53	36.09%	46%	Good	Revitalization Program
Bloomfield Administration Centre	29	0.47%	0%	Good	Maintenance
Bracebridge Micro-Operations Centre	54	19.41%	32%	Good	Revitalization Program
Brampton Operations Centre	23	11.02%	49%	Obsolete	Renovation Interior/Exterior Alterations
Brantford Regional Operations Centre	26	2.77%	17%	Obsolete	Renovation
Brockville Operations Centre	51	7.53%	84%	Obsolete	New build and land
Burlington Operations Centre	13	1.77%	11%	Obsolete	Renovation
Cambridge Operations Centre	59	11.76%	16%	Obsolete	Disposition

Property Name	Age (Years)	Physical Obsolescence (FCI)	Functional Obsolescence: Building (AI)	Functional Obsolescence: Site	Summary Strategy
Cochrane Micro-Operations Centre	55	15.28%	50%	Good	Revitalization Program
Dawn Hub Operations Centre	51	16.95%	28%	Obsolete	New build on existing site
Dryden Operations Centre	42	11.33%	87%	Obsolete	New build on new site
Ear Falls Micro-Operations Centre	7	6.82%	56%	Good	Maintenance
Elliot Lake Micro-Operations Centre	42	29.09%	13%	Good	Revitalization Program
Engelhart Micro-Operations Centre	Unknown	25.42%	83%	Good	Revitalization Program
Geraldton Micro-Operations Centre	57	12.09%	68%	Good	Revitalization Program
Guelph Operations Centre	64	14.97%	46%	Obsolete	Disposition
Haileybury Micro-Operations Centre	56	22.60%	18%	Good	Revitalization Program
Hamilton Operations Centre (Park Street)	61	26.86%	100%	Obsolete	Disposition
Hamilton Operations Centre (Pritchard Road)	14	7.91%	21%	Obsolete	Renovation
Hearst Micro-Operations Centre	48	6.76%	79%	Good	Revitalization Program
Huntsville Micro-Operations Centre	52	24.34%	52%	Good	Revitalization Program
Huron Park Micro-Operations Centre	81	42.40%	22%	Good	Disposition
Iroquois Falls Micro-Operations Centre	55	28.84%	16%	Good	Revitalization Program
Kapuskasing Micro-Operations Centre	31	7.156%	61%	Good	Maintenance
Kelfield Operations Centre	61	10.47%	71%	Obsolete	New build and land
Kennedy Road Operations Centre	61	6.51%	95%	Obsolete	New build and land
Kingston Operations Centre	12	0.32%	15%	Good	Maintenance

Property Name	Age (Years)	Physical Obsolescence (FCI)	Functional Obsolescence: Building (AI)	Functional Obsolescence: Site	Summary Strategy
Kirkland Lake Micro-Operations Centre	57	11.38%	69%	Good	Revitalization Program
Leamington Operations Centre	60	9.85%	65%	Good	Renovation
London Operations Centre	53	6.48%	14%	Good	Disposition
Milton Operations Centre	27	14.09%	63%	Obsolete	Disposition
Nipigon Micro-Operations Centre	58	10.27%	57%	Good	Revitalization Program
North Bay Operations Centre	57	16.87%	8%	Good	New build on new site
Orillia Operations Centre	47	18.07%	15%	Obsolete	Disposition
Oshawa Operations Centre	32	14.92%	30%	Obsolete	Renovation
Ottawa Regional Operations and Admin. Centre	60	4.65%	43%	Obsolete	Consolidation
Owen Sound Operations Centre	15	4.52%	32%	Obsolete	Expansion and Renovation
Palmerston Micro-Operations Centre	Unknown	9.56%	89%	Good	Revitalization Program
Parry Sound Micro-Operations Centre	8	3.75%	19%	Good	Maintenance
Peterborough Operations Centre	40	10.38%	32%	Obsolete	Disposition
Sault Ste. Marie Operations Centre	43	13.90%	24%	Good	Renovation
Simcoe Operations Centre	65	8.42%	100%	Good	Demolish and New Build
SMOC (operations centre)	26	2.04%	24%	Obsolete	Disposition
St. Thomas Operations Centre	42	12.59%	22%	Obsolete	Disposition
Station B Operations Centre	53	12.28%	49%	Obsolete	New build
Stratford Operations Centre	54	11.96%	22%	Good	Expand on current land Disposition

Property Name	Age (Years)	Physical Obsolescence (FCI)	Functional Obsolescence: Building (AI)	Functional Obsolescence: Site	Summary Strategy
Sudbury Operations Centre	37	8.49%	13%	Obsolete	Renovation
Tecumseh (Engineering)	12	0.28%	0%	Good	Maintenance
Tecumseh (Gas Storage)	5	0.81%	0%	Good	Maintenance
Thorold Regional Operations and Admin. Centre	29	3.09%	59%	Obsolete	Renovation
Thunder Bay Regional Operations Centre	25	2.57%	41%	Obsolete	Renovation
Timmins Operations Centre	62	2.88%	25%	Good	Renovation
TOC Regional Operations and Admin. Centre	10	0.08%	5%	Good	MEC and Telemetry Expansion
VPC Head Office	53	5.59%	11%	Good	Renovation, new build
Woodstock Operations Centre	39	13.87%	26%	Obsolete	Renovation

5.4.5.5 Risk and Opportunity

Examples of deficiencies observed at EGI sites were as follows:

- Inadequate building or yard size leads to unfulfilled operational requirements.
- Buildings do not conform to current OBC life safety, barrier-free and universal design standards.
- Site area constraints hinder vehicular circulation and increase the probability of motor vehicle incidents.
- Configuration of site functions and circulation is inefficient.

These deficiencies pose the following risks:

Employee and Contractor Health and Safety Risk: Facilities with operational deficiencies pose a health and safety risk to employees and hinder execution of tasks. Some facilities have inadequate operations yard and administrative parking. The mix of industrial and employee vehicles is a potential contributor to motor vehicle incidents. Best practices dictate keeping industrial vehicles away from administration parking areas.

Financial Risk: EGI faces financial risk if properties are not maintained, hindering operations and administrative functions. Inadequate site configuration and lack of office and support areas hinder operations and administrative functions.

Environmental Opportunity: Some facilities use more energy than a comparable renovated facility (utilizing current OBC and applicable municipal energy standards). Older buildings have high GHG emissions and use more energy than comparable new construction.

5.4.6 Workplace Furnishings

5.4.6.1 Condition Methodology

Workspaces at each site consist of workstations and office furniture. These furnishings are either considered current (meeting EGI standards) or legacy (not meeting current standard). Current EGI furniture standards provide:

- Ergonomic support
- Day lighting and views for building occupants through use of mid-height workspace systems and perimeter placement
- Task seating required to address a range of body types
- Consistent workstation configuration, contributing to lower operating costs by creating fixed environments and allowing a broad range of administrative requirements without change
- Designs using materials and features reducing the cubicle feel
- Designs supporting power and network wiring

Legacy furniture (30-plus years old) does not meet EGI's current condition standards. Legacy furniture is comprised of furniture systems purchased in the mid-1980s when the concept of systems furniture was first implemented. Office environment and related standards have evolved over the past 30 years. The systems still in use are high-paneled, impeding daylight into the office environments. Legacy furniture has surpassed its 10-year warranty period (the anticipated use length) and is past 30 years of age.

In addition, ergonomic requirements have changed to support EGI's goal of zero injuries in the office. The height of the existing fixed workstation at 29 inches is a contributing factor of repetitive strain injury. Current standard workstations allow for adjustable height work surfaces, allowing employees to adjust their work surface to the appropriate height or to stand if desired.

Ancillary furnishings refer to all support furnishings, including (but not limited to) guest seating, informal and collaborative areas, conference room and common space furniture, filing cabinets and bookcases. The condition of ancillary furnishings is based on an assessment of age, physical condition and utilization and is also evaluated as either meeting or not meeting EGI standards.

5.4.6.2 Condition Findings

The facility assessment results for all EGI properties included an assessment of workplace furnishings. Results indicate that except for the Victoria Park Centre (VPC), Technology and Operations Centre (TOC) properties and 50 Keil Drive, all other EGI's workplace furnishings are rated as legacy based on EGI standards.

5.4.6.3 Risk and Opportunity

Without adequate furniture and ergonomics in place, there is financial risk as productivity can potentially suffer due to inefficient space allocation and unnecessary workstation reconfiguration costs. Improper ergonomics support can pose a safety risk as lack of task seating that addresses a range of body types can potentially cause repetitive strain injuries.

The risks and opportunities are described in **Table 5.4.4-1**.

5.4.7 Real Estate and Workplace Services Strategy Outcomes

5.4.7.1 Property Upgrade Strategy

The strategies for the Properties asset subclass were developed to align with business requirements and the OBC as well as correct deficiencies on site:

- Renovating existing facilities
- Building new facilities
- Disposing of current site and relocating to a new site
- Continuing maintenance of the current site

Choosing the appropriate strategy is based on a combination of business requirements and physical/functional assessments described in **Section 5.4.5.3** and support of the business strategy.

Major investments for this asset class were identified through a facility assessment of the properties' physical condition and operational function and gaps in service area coverage, to allow for a standardized look and feel to all EGI facilities. Major projects include the following:

Kelfield Operations Centre

The Kelfield office, owned by EGI, is in poor physical condition and is considered obsolete in its functionality and utilization. It is an old facility with an approximate age of 61 years. The office and operational areas no longer meet the needs of the business.

The strategy for Kelfield Operations Centre is to sell the existing property, purchase a new property (approximately 5 acres) and build a new facility on the new site. This strategy will ensure adequate yard space for operational activities. A new building also corrects the identified deficiencies, eliminating the identified risks.

Kelfield is primarily an operations facility with an administrative component; and as such, future office occupancy strategies will have limited impact on use and design. Learnings about future ways of working will be incorporated for the administrative portion of the design. See **Appendix A, Pg. 32** for additional detail on this investment.

Kennedy Road Expansion

The facility does not meet functional and physical requirements. The existing building at the Kennedy Road facility is too small to meet requirements. The separation of offices and warehouse into two separate buildings causes operational and workplace difficulties and inefficiencies. The configuration of site functions and circulation is inefficient. The yard area is too small to meet current EGI standards. The office and operational areas no longer meet the needs of the business.

The strategy for the Kennedy Road facility is to purchase the adjacent property (approximately 2 acres), demolish the existing buildings on site, and build a new facility on the combined site. This strategy will leverage current site improvements and keep land acquisition cost to a minimum by joining the currently vacant neighbouring property. Kennedy Road is primarily an operations and warehousing facility with an administrative component; and as such, future office occupancy strategies will have limited impact on use and design. Learnings about future ways of working will be incorporated for the administrative portion of the design. See **Appendix A, Pg. 34** for additional detail on this investment.

SMOC/Coventry Facility Consolidation

The office building in Ottawa is an owned facility that is in fair physical condition. The functional requirement is marginal and the large facility is underutilized. The two facilities overlap in coverage area. The current site area at either facility cannot satisfy the combined yard and parking requirement. The office and operational areas no longer meet the needs of the business.

The strategy is to sell both existing properties and purchase a property suitable in size to accommodate the combined program of South Merivale Operations Centre (SMOC) and Coventry Road. The required size of the new property is approximately 7-plus acres. This option ensures that the site footprint is adequate for current activities, building deficiencies are corrected, and combines the SMOC and Coventry locations to correct the service coverage duplication currently existing between the two facilities and is in close proximity to major highways to ensure optimal operational travel time. The Ottawa facilities are primarily operations facilities with an administrative component; and as such, future office occupancy strategies will have limited impact on use and design. Learnings about future ways of working will be incorporated for the administrative portion of the design. See **Appendix A, Pg. 36** for additional detail on this investment.

VPC Core and Shell

The building shell and core for the Victoria Park Centre (VPC) facility is over 50 years old. The tower building was constructed in 1968 as a two-storey building with an addition in 1978 that included floors 3 to 5. The VPC facility houses over 1,200 employees. It is an owned facility that is currently undergoing renovations. The building envelope is deemed safe but can no longer maintain a reliable wind and rain screen and is nearing end of life. EGI will maintain and have periodic third-party inspections of structural integrity.

The strategy is to correct physical and functional deficiencies by replacing the envelope and renovating and renewing the existing core building systems on the existing site. This is the preferred strategy as the FCI and AI indices show the building and site deficiencies are correctable on the existing property. See **Appendix A, Pg. 41** for additional detail on this investment.

Station B New Building

The Station B office on Eastern Avenue is an owned property in a good location but does not meet current building standards or operational requirements. The physical and functional condition does not meet requirements and the office and operational areas no longer meet the needs of the business.

The strategy is to demolish the existing facility and build a new building while maintaining the area of the existing yard. This will ensure adequate yard space for operational activities. A new building also corrects the identified deficiencies, eliminating the identified risks. EGI requires a downtown site in support of operational activities. Alternate site availability is unavailable due to required outside storage and industrial use. A proposed neighbouring development reduces EGI's opportunities for expansion. On the current site, EGI's uses are grandfathered with enough yard area to accommodate requirements and continued use. The site's proximity to the future Ontario line multi-modal station will help reduce GHGs by encouraging staff to utilize public transit. Station B is primarily an operations facility with an administrative component; and as such, future office occupancy strategies will have limited impact on use and design. Learnings about future ways of working will be incorporated for the administrative portion of the design. See **Appendix A, Pg. 38** for additional detail on this investment.

New London Site

The London depot on 109 Commissioners Rd. W. is an owned property in a good location but does not meet current building standards or operational requirements. The physical and functional condition does not meet requirements. This project will allow for consolidation of operational sites in the Union rate zones into a single facility.

The Huron Park depot on 420 Quebec Ave. is an owned property in a good location but does not meet current building standards or operational requirements. The physical and functional condition does not meet requirements. This project will allow for consolidation of operational sites in the Union rate zones into a single facility.

The St. Thomas depot on 25 Sparling Rd. is an owned property in a good location but does not meet current building standards or operational requirements. The physical and functional condition does not meet requirements. This project will allow for consolidation of operational sites in the Union rate zones into a single facility.

The Simcoe depot on 54 Hillcrest Rd. is an owned property in a good location but does not meet current building standards or operational requirements. The physical and functional condition does not meet requirements. This project will allow for consolidation of operational sites in the Union rate zones into a single facility. The office and operational areas no longer meet the needs of the business.

The Huron Park, Simcoe, St. Thomas and London sites overlap in coverage area.

The strategy for the new London site is to correct physical and functional deficiencies by purchasing a new site and build a single, combined facility on the new site which will correct operational coverage overlap and is in close proximity to major highways to ensure optimal operational travel time. London is primarily an operations facility with critical functions,

warehousing, and an administrative component; and as such, future office occupancy strategies will have limited impact on use and design. Learnings about future ways of working will be incorporated for the administrative portion of the design. See **Appendix A, Pg. 43** for additional detail on this investment.

North Bay Regional Operations Centre

The North Bay depot on Charles Street is an owned property in an inappropriate residential location and does not meet current building standards and operational requirements. The physical and functional condition does not meet requirements. The office and operational areas no longer meet the needs of the business.

The strategy is to purchase a new property in North Bay (approximately 10 acres) and build a new facility on the new site. North Bay is primarily an operations depot; and as such, future office occupancy strategies will have limited impact on use and design.

Dawn Hub

The Dawn Hub on Bentpath Line is an owned property that does not meet current building standards or operational requirements. The physical and functional condition does not meet requirements. The office space no longer sufficiently accommodates current and future needs of the business.

The strategy is to construct a new facility elsewhere on the Dawn campus. This presents the safest, most cost-effective solution. Dawn Hub is primarily an operations facility with critical functions and a small administrative component; and as such, future office occupancy strategies will have limited impact on use and design. See **Appendix A, Pg. 45** for additional detail on this investment.

5.4.7.2 Building Systems Program

A third-party engineering consultant analyzed factors such as age of equipment, maintenance records, repair cost, building standards and compliance issues to determine overall risks and timing of replacement for HVAC equipment, plumbing, electrical equipment and exterior site improvement. The property assessment report identifies equipment at end of life and recommends a replacement plan over a 25-year span. The report focused on the design, installation, operation and monitoring of building systems required for a safe, comfortable and environmentally-friendly environment for employees. Unplanned failures occur occasionally which require immediate action. A review of each cost determines the decision to repair or replace the defective equipment. The service life of new assets is 15 to 20 years. If building systems are not properly maintained, there is a financial risk to EGI as failure of these systems increase substantially year over year, which can potentially lead to loss of productivity.

The strategy for building systems assets is to maximize the equipment's useful life and replace systems before failure can cause business interruptions. The replacement of equipment is targeted but not solely specific to the building envelope, HVAC, and electrical systems. Compliance to environmental standards, interior comfort, and overall security are major considerations to ensure safe and reliable operations. The annual program for these initiatives is determined based on historical spend as well as building assessments and condition analysis.

5.4.7.3 GHG and Energy Reductions Program

EGI has begun work on energy efficiency and emissions from office buildings. These improvements ensure current building systems are operated in an efficient manner that reduces carbon fuel use. The strategy on energy efficiency and emissions from office buildings identifies natural-gas air-sourced heat pumps and other opportunities as a potential abatement opportunity at EGI's office facilities.

Some existing EGI facilities use more energy than a comparable new or renovated facility (utilizing current OBC and energy standards), increasing operating costs. This program will offer EGI the opportunity to reduce these costs by implementing energy-efficiency measures in its office buildings, reducing GHG emissions. Where work is not already a part of the 10-year plan, improvements will still be reviewed to see if they can be accommodated, leading to further reduction in GHG and energy usage. The process will identify a mix of measures with a range of implementation costs and energy/GHG savings. On completion, measures, findings and an action plan to measure energy conservation implementation will be developed, as well as verification and ongoing commissioning, which will include operational and capital improvements. Lessons learned from each activity will be implemented on future initiatives. This is a recurring yearly program for 10 years, based on building assessments and condition analysis.

5.4.7.4 Micro-Operations Depot Revitalization Program

This program covers the renovation or replacement of micro-operations depots located in the Northern region that are on average over 50 years old. The sites are in aging physical condition and do not meet required functionality. Risks include the financial impact of low utilization or functionally- and physically-deficient assets. Current physical conditions pose a hazard to employee and contractor health and safety. Legacy buildings with obsolete systems have high GHG emissions and use more energy than a comparable new construction.

The strategy is to renovate or replace the micro-operations depots. Renovations or replacement will include the building envelope, HVAC and electrical systems. Compliance to environmental standards, building codes, accessibility and overall security are major considerations to ensure safe and reliable operations.

5.4.7.5 Workplace Furnishings Replacement Program

The strategy for furniture and ergonomics assets is to replace office and meeting room furnishings as required due to failure. Ergonomic modifications and tools are issued as recommended to prevent repetitive strain injuries and accommodate return-to-work employees. The annual program is based on historical spend.

Remaining legacy office, meeting room and ancillary furnishings are replaced with current standard systems as building life cycle renewal is executed.

5.4.8 Real Estate and Workplace Services Capital Expenditure Summary

The total average capital spend is forecast to be \$52M (EGI) as summarized in **Table 5.4.8-1**. REWS capital is further summarized as part of EGI's total 10-year capital plan in **Section 6**.

Table 5.4.8-1: REWS Capital Summary (\$ Millions) – EGI³¹

Asset Class Strategy/Investment Name	Asset Program	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Forecast	
Property Upgrade Strategy		5.6M	1.3M	8.3M	9.4M	22.3M	15.9M	13.0M	15.5M	11.7M	2.4M	105.5M	
Kennedy Road Expansion		0.3M	25.3M	23.3M	-	-	-	-	-	-	-	48.9M	
SMOC/Coventry Facility Consolidation		13.7M	6.4M	-	-	-	-	-	-	-	-	20.1M	
Station B New Building		24.9M	11.5M	-	-	-	-	-	-	-	-	36.5M	
VPC Core and Shell		-	-	-	-	-	-	-	14.1M	13.9M	8.1M	36.2M	
New London Site	Furniture/Structures & Improvements	-	1.9M	23.9M	26.1M	-	-	-	-	-	-	51.9M	
Kelfield Operations Centre - Land Purchase		-	-	-	32.7M	-	-	-	-	-	-	-	32.7M
Kelfield Operations Centre - New Building		-	-	-	-	16.7M	13.8M	-	-	-	-	-	30.5M
Thorold Regional Office - Building & Site		0.3M	0.3M	6.5M	10.5M	4.2M	0.0M	-	-	-	-	-	21.7M
Dawn Administrative Centre		-	-	-	-	1.4M	16.5M	-	-	-	-	-	17.9M
Sudbury Regional Operations Centre		-	-	2.1M	13.0M	-	-	-	-	-	-	-	15.1M

³¹ Includes overhead allocation.

Asset Class Strategy/Investment Name	Asset Program	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Forecast
Building Systems Program		5.6M	5.8M	7.5M	7.7M	8.3M	8.5M	8.5M	9.0M	8.9M	8.8M	78.6M
GHG and Energy Reductions Program		0.9M	0.9M	0.9M	0.9M	1.0M	1.0M	1.0M	1.0M	1.0M	0.9M	9.4M
Micro-Operations Depot Revitalization Program		0.3M	2.6M	2.6M	2.6M	0.0M	0.0M	0.0M	0.0M	0.0M	0.0M	8.1M
Workplace Furnishings Replacement Program		0.5M	0.5M	0.7M	0.7M	0.7M	0.7M	0.7M	0.8M	0.9M	0.8M	7.0M
Total		52.1 M	56.6 M	75.6 M	103.5 M	54.6 M	56.4 M	23.3 M	40.4 M	36.4 M	21.0 M	519.9 M

5.5 Fleet and Equipment

The Fleet and Equipment asset class provides EGI with the necessary vehicles, equipment and tools to run regulated business operations safely and efficiently. EGI sustains the integrity of the fleet through a strong maintenance program and uses risk, cost and performance information to drive asset-related decisions.

The Fleet and Equipment asset class consists of three asset subclasses: Fleet, Heavy Equipment and Tools. Fleet includes light-duty vehicles (LDVs), medium-duty vehicles (MDVs) and heavy-duty vehicles (HDVs). LDVs include cars, vans and pickup trucks. MDVs include vehicles which range from mechanic repair trucks to utility service trucks. Heavy-duty vehicles are comprised of large vehicles with a Gross Vehicular Weight (GVW) between 26,001 lb. to 150,000 lb. Heavy equipment assets consist of backhoes, trailers, compressors, forklifts, welders and boring equipment. The Tools asset subclass consists of all tools that support EGI’s business operations, ranging from gas surveyors and concrete saws to fusion machines, pipe squeeze-off tools and stop/tap tooling equipment.

The Fleet and Equipment asset class supports the organization’s energy transition priority through the diversification of EGI’s fleet fuels. Built into EGI’s strategy is the continued pursuit of natural gas, electric and renewable fueled vehicles as they become available in the market.

5.5.1 Fleet and Equipment Objectives

Table 5.5.1-1 describes the asset class objectives for Fleet and Equipment.

Table 5.5.1-1: Fleet and Equipment Asset Class Objectives

Asset Class Objectives	Description
Supportability	Provide the business with the necessary vehicles, equipment and tools to run regulated business operations safely and efficiently, based on fit-for-purpose analysis.
Integrity and Reliability	Sustain the safety and reliability of all vehicles, equipment and tools.
	Combine risk, life-cycle costs and performance information to drive asset-related decisions.
Energy Transition	Support the organization’s energy transition by sourcing vehicles with lower carbon fuels.

The performance measures for the Fleet and Equipment asset class are:

- 100% completion of end-user requirements
- Preventive maintenance activities completed on schedule
- Fleet Management system reporting and qualitative reviews completed

To achieve Fleet and Equipment asset class objectives listed in **Table 5.5.1-1**, asset investment decisions are governed by the life-cycle management strategies outlined in **Table 4.1-1**. For this asset class, specific life-cycle activities include:

- Convert LDVs where applicable to operate on other fuel sources, including but not limited to natural gas and electric, reducing overall greenhouse gas (GHG) emissions.
- Optimize natural gas and electric as fuel sources for LDVs to reduce overall GHG emissions.
- Install Auxiliary Power Units (APUs) on MDVs. An APU is an anti-idling device that reduces overall GHG emissions and prevents premature engine wear and tear.
- Install telematics/GPS technology to optimize asset utilization.
- Use telematics/GPS technology to create a proactive approach to vehicle maintenance and reduce downtime.

5.5.2 Fleet and Equipment Hierarchy

The asset subclass breakdown for the Fleet and Equipment asset class is illustrated in **Figure 5.5-1**.

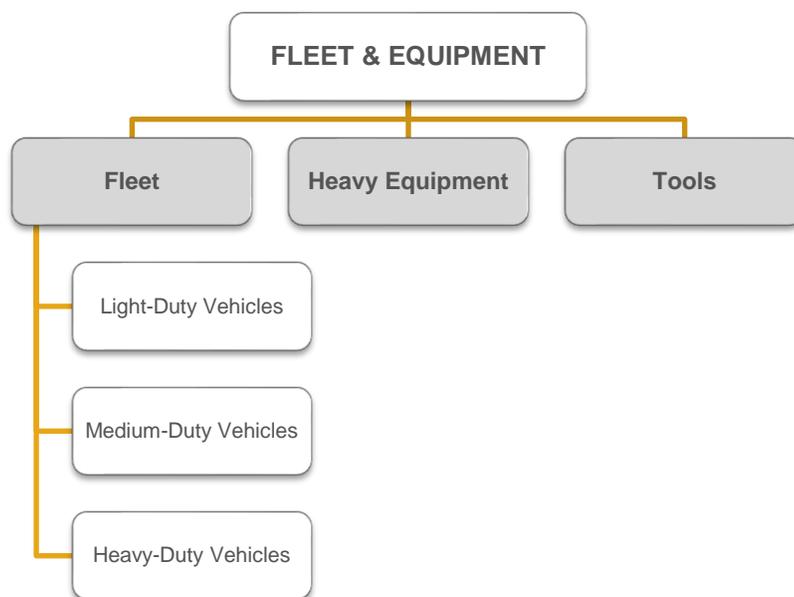


Figure 5.5-1: Fleet and Equipment Asset Class Hierarchy

5.5.3 Fleet and Equipment Inventory

The Fleet and Equipment asset class inventory is shown in **Table 5.5.3-1**.

Table 5.5.3-1: Fleet and Equipment Inventory³²

Asset Subclass	EGD Rate Zone	Union Rate Zones
Fleet	1,069	826
Light-Duty Vehicles	880	550
Medium-Duty Vehicles	6	233
Heavy-Duty Vehicles	183	43
Heavy Equipment	689	510
Tools	~5,000	~6,000

³² As of November 15, 2021.

5.5.4 Fleet and Equipment Condition and Strategy Overview

Table 5.5.4-1: Fleet and Equipment Condition and Strategy Overview

Asset Subclass		Max Age (Year)	Current Condition	Risk / Opportunity	Maintenance Strategy	Replacement / Renewal Strategy	
Fleet	Light-Duty Vehicles	10.6 (EGD RZ) 9.0 (Union RZ)	Analysis indicates that average maintenance costs exceed the market value of a light-duty vehicle at approximately 72 months old or 145,000 km, depending on the vehicle's weight class.	Financial Risk: Aging fleet vehicles primarily pose a financial risk to EGI if they are not maintained or replaced as needed. Maintenance costs increase beyond the vehicle value and productivity may be impacted due to increased downtime as a result of more frequent unplanned maintenance activities.	Vehicle maintenance every 8,000 km (approximately every 6 months)	Light-Duty Vehicle (LDV) Replacement Strategy: This proactive program replaces vehicles based on weight class, mileage and assessed condition. The average replacement age for LDVs is 72 months.	
	Medium-Duty Vehicles	18.6 (EGD RZ) 10.4 (Union RZ)	Analysis indicates that average maintenance costs exceed the market value of a medium-duty vehicle at approximately 144 months old or 175,000 km, depending on the vehicle's weight class.		Vehicle maintenance every 10,000 km or 500 engine hours (approximately every 6 months)		Medium-Duty Vehicle (MDV) Replacement Strategy: This proactive program replaces vehicles based on weight class, mileage and assessed condition. The average replacement age for MDVs is 144 months.
	Heavy-Duty Vehicles	15.2 (EGD RZ) 16.2 (Union RZ)	Analysis indicates that average maintenance costs exceed the market value of a heavy-duty vehicle at 144 months old or 350,000 km, depending on the vehicle's weight class.		Vehicle maintenance every 10,000 km or 500 engine hours (approximately every 6 months)		Heavy-Duty Vehicle (HDV) Replacement Strategy: This proactive program replaces vehicles based on weight class, mileage and assessed condition. The average replacement age for HDVs is 144 months.
Heavy Equipment		21.4 (EGD RZ) 15.8 (Union RZ)	Analysis indicates that average maintenance costs exceed the market value of heavy equipment at approximately 144 months old.		Equipment maintenance is conducted on a scheduled basis, ranging from 3 to 12 months, depending on the type of equipment.	Heavy Equipment Replacement Program: This proactive program is based on average historical spending and is driven by: <ul style="list-style-type: none"> Proactively replacing assets based on a detailed physical condition assessment Acquiring net new equipment based on business needs 	
Tools		N/A	The general condition and functionality of tools are assessed by the operator prior to use and during scheduled inspections and calibrations.	Aging, broken, or inadequate tools pose the following risks: Financial Risk: Increased maintenance costs and lower productivity. Employee and Contractor Health and Safety Risk / Public Health and Safety Risk: Increased employee, contractor and customer safety and health risks if tools are not in good condition. Operational Risk: Service and/or emergency response reliability	N/A	Tools Replacement Program: This reactive program is in place to address tools that are: <ul style="list-style-type: none"> Showing signs of wear and tear, broken and/or unrepairable Stolen or lost Declared obsolete by the manufacturer or supplier No longer approved for use due to updated Engineering standards and practices Needed and requested by EGI operating departments to perform their business functions 	

5.5.5 Fleet

5.5.5.1 Condition Methodology

EGL continues to harmonize and optimize its Fleet and Equipment processes and procedures. In 2020, fleet data was migrated to an enterprise-wide fleet management service provider to leverage fleet management software (i.e., Element). This system stores asset records and analyzes vehicle condition over its life cycle, including all maintenance costs, fuel consumption, mileage, age and hours of use.

Fleet management software provides data to analyze a vehicle's cumulative maintenance cost against the asset class's average cost and the asset condition. An asset is assessed and considered for replacement once the average maintenance cost surpasses market value, unless there are conditions observed that justify shortening or prolonging asset life. If a vehicle exhibits higher maintenance costs than average, the vehicle is considered for earlier replacement. On the other hand, if a vehicle exhibits lower maintenance costs and assessed to be in good condition, it is considered for later replacement. This approach is guided by risk analysis, operating expense and asset performance to sustain asset integrity.

Retaining vehicles and heavy equipment for periods longer than optimal, increases operating and maintenance costs. Furthermore, retiring these assets too early results in the partial loss of their useful life, impacting capital replacement requirements. For vehicles, the population's average point at which maintenance costs exceed the market value of the vehicle is used as a guide, as it helps identify vehicles approaching end of life. These vehicles require a detailed condition assessment to determine their fitness for service, which consists of appraising vehicle attributes such as engine, transmission, body and interior condition. For heavy equipment, the standard used to determine the optimal replacement point is when maintenance costs begin to exceed the market value of the asset.

In addition to reports, detailed condition assessments are conducted on vehicles and heavy equipment assets every three to six months. This assessment includes a physical and visual evaluation of the asset's physical and functional condition, a comparison of hours of service and an assessment of the maintenance history of the asset relative to its class. If the asset is assessed to be in good working condition, it is kept in service and refurbished to extend its useful life. If the asset is assessed to be in poor condition and not fit for continued service, it is replaced.

To understand how company vehicles are being used, fleet vehicles are equipped with Global Positioning System (GPS) / Telematics tracking devices, managed by fleet management software (i.e., Geotab). The Geotab system also provides real-time vehicle diagnostics, giving EGL the ability to be proactive with fleet vehicle assessments and repairs.

5.5.5.2 Condition Findings

Figure 5.5-2 shows the average age for fleet assets across EGL.

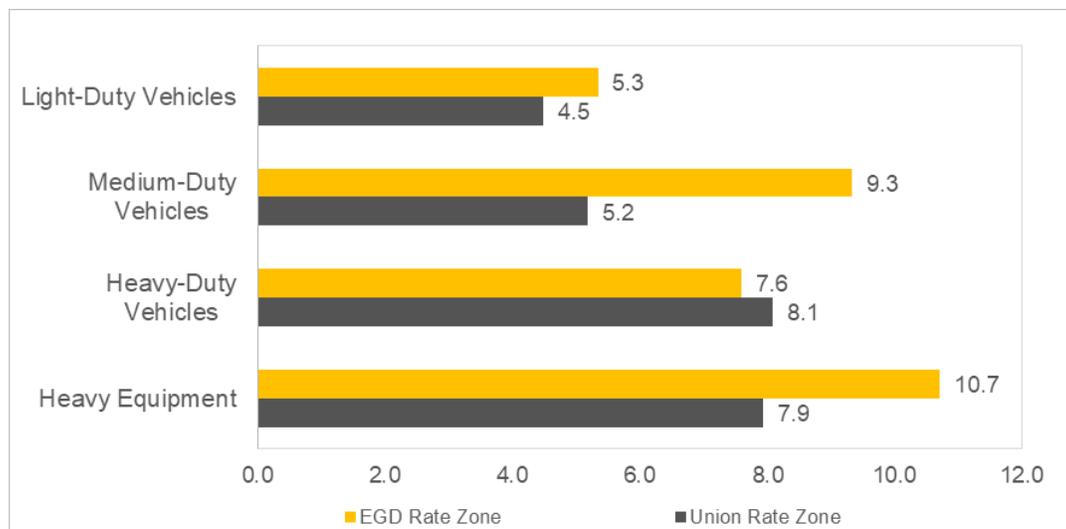


Figure 5.5-2: EGL Current Average Vehicle Age (Years)

As **Figure 5.5-2** shows, the current average age of fleet assets for the rate zones are higher than what would be ideal based on the condition methodology described above. This highlights the need for increased investments to ensure that fleet replacements continue to occur as per the replacement strategy.

5.5.5.3 Risk and Opportunity

Fleet vehicles and heavy equipment assets (see **Section 5.5.6**) have similar risks and opportunities. There are a number of consequences to EGI when vehicles and equipment exceed their useful life:

- Aging asset condition, resulting in decreased safety and reliability
- Increased maintenance costs
- Increased downtime (vehicles are more frequently in the shop for maintenance), decreasing employee productivity and can affect EGI's ability to serve its customers.
- Decreased resale value

Based on the value assessment analysis, fleet vehicles primarily pose a financial risk to EGI if they are not maintained or replaced as needed. Maintenance costs increase after the vehicle warranty expires and productivity is reduced due to increased downtime as a result of more frequent maintenance activities. On-road failure would also impact public safety and decrease productivity. Decreased productivity can affect the ability to serve EGI's customers, potentially creating a risk to customer satisfaction.

5.5.6 Heavy Equipment

Heavy equipment is described as off-road building equipment; at EGI this asset subclass primarily consists of backhoes, trailers, compressors, forklifts, welding machines and directional drilling equipment. These assets are grouped together due to similarities in condition methodology and approach.

5.5.6.1 Condition Methodology

The analysis of heavy equipment assets used the same condition methodology for fleet vehicles (see **Section 5.5.5.1**).

5.5.6.2 Condition Findings

The average age for heavy equipment is 128 months for the EGD rate zone and 95 months for the Union rate zones. Analysis indicates that average maintenance costs exceed the market value of heavy equipment at approximately 144 months old (see **Figure 5.5-2**).

Based on Fleet Management system reporting, industry standards and asset assessment trends, the typical average useful life threshold for heavy equipment is at approximately 144 months of age (or approximately 7,000 service hours). This threshold is used as a guide for further detailed inspections. The condition of these units is thoroughly assessed when they reach their useful life threshold to make an informed decision to replace or refurbish the asset for continued service.

As shown in **Figure 5.5-2**, the average age of heavy equipment assets for EGD and Union rate zones are higher than the optimal age, highlighting the need for increased investments to ensure that heavy equipment replacements continue to occur as per the replacement strategy.

5.5.6.3 Risk and Opportunity

Fleet vehicles and heavy equipment assets have similar risks and opportunities (see **Section 5.5.5.3**).

5.5.7 Tools

EGI uses a wide variety of tools, including electric air movers, drills, concrete saws, clay spades, gas surveyors, personal gas monitors, pipe locators, pipe squeeze-off tools, shoring boxes, torpedoes and grease guns. In total, there are approximately 11,000 tools currently in use.

Due to the variety of tools and equipment, several inspection and calibration frequencies are in place. The general condition and functionality of tools are assessed by the operator prior to use and during scheduled inspections and calibrations. Deficiencies identified are reported where an assessment of the repair and replacement costs is completed to determine the appropriate course of action.

5.5.7.1 Risk and Opportunity

Not maintaining EGI’s tool population presents both a safety risk to employees and customers during operation. In addition, productivity will decline due to increased downtime as a result of using inadequate tools, posing both a financial risk to EGI as well as impacting customer satisfaction.

5.5.8 Fleet and Equipment Strategy Outcomes

5.5.8.1 Vehicle Replacement Strategy

EGI’s strategy is to source and purchase all vehicle and equipment assets to support business operations and objectives, including the conversion to other fuel sources allowing EGI to continue to reduce overall GHG emissions.

As part of integration activities, a comparison of EGD and Union rate zones’ assets was conducted. Analysis shows the asset hierarchy is very similar for both. Variances are explained by differences in work procedures. As utility integration efforts continue to align workforce and work processes/procedures, the Fleet and Equipment department will adapt inventories to support this change. The impacts of such changes may result in a new approach to vehicle standards, as well as equipment and tool use. Regardless of change initiatives in flight, transformation of the Fleet and Equipment asset base will likely require many years to complete.

The optimal replacement strategy for all fleet vehicles is determined by the lowest cost of a vehicle or equipment’s lifetime. The lowest cost is determined by analyzing cost curves for maintenance. Asset replacement decisions are evaluated against the optimal replacement analysis plus age, mileage, hours of use, condition, risk of failure and functional requirements. Each asset is ranked and evaluated annually. In general, the optimal replacement point is determined when the maintenance costs begin to exceed the market value of the asset. The replacement cycles for the various vehicle classes are shown in **Table 5.5.8-1**.

Table 5.5.8-1: Vehicle Replacement Cycle

Class	Replacement Cycle (months)	Replacement Cycle (km)
Light-Duty	72	145,000
Medium-Duty	144	175,000
Heavy-Duty	144	350,000

5.5.8.2 Heavy Equipment Replacement Program

EGI’s replacement strategy is driven by proactively replacing assets based on detailed physical condition assessments and reactively acquiring new equipment based on business needs. Depending on evaluation results, there could be a decision to refurbish the asset instead of replacement. The current replacement cycle for heavy equipment is 144 months (12 years).

5.5.8.3 Tools Replacement Program

The strategy for tools is to establish an annual replacement program based on average historical spend. The program is reactive in nature and driven by replacing/acquiring tools that are:

- Showing signs of wear and tear, or are broken and not repairable
- Stolen or lost
- Deemed obsolete by the manufacturer

- No longer approved for use due to evolving engineering standards and practices
- Required by EGI Operations departments for business function

Tools and equipment deemed obsolete and/or are no longer approved for use are removed from service, decommissioned and approved replacement assets are acquired.

5.5.9 Fleet and Equipment Capital Expenditure Summary

The total average capital spend is forecast to be \$46M (EGI) as summarized in **Table 5.5.9-1**. Fleet and Equipment capital is further summarized as part of EGI's total 10-year capital plan in **Section 6**.

Table 5.5.9-1: Fleet and Equipment Capital Summary (\$ Millions) – EGI³³

Asset Class Strategy	Program Name	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Forecast
Heavy Equipment Replacement Program	Equipment & Materials	8.6 M	9.8 M	10.8 M	11.9 M	15.6 M	15.9 M	16.0 M	16.8 M	17.2 M	15.0 M	137.7 M
Tools Replacement Program	Tools	3.2 M	3.4 M	3.5 M	3.6 M	3.9 M	3.9 M	4.0 M	4.2 M	4.2 M	4.2 M	38.2 M
Vehicle Replacement Strategy	Vehicles	13.7 M	21.9 M	22.1 M	25.0 M	34.0 M	32.4 M	32.6 M	34.2 M	35.0 M	30.5 M	281.4 M
Total		25.5 M	35.0 M	36.4 M	40.5 M	53.6 M	52.3 M	52.6 M	55.2 M	56.5 M	49.7 M	457.2 M

³³ Includes overhead allocation.

5.6 Technology and Information Services

The Technology and Information Services (TIS) asset class includes the Infrastructure, Software and Communications subclasses. TIS continues to support process and system integration while in parallel reducing EGI operational and cybersecurity risks. EGI continues to align systems, processes and procedures, prioritized based on business value (customer experience, efficiency, safety/reliability, and compliance) while adopting industry best practices regarding cloud computing where feasible.

The infrastructure asset subclass has three types of assets: (1) laptops/desktops, (2) desktop sustainment equipment and (3) network and security infrastructure hardware. Desktop sustainment equipment includes the additional components that equip the end user such as keyboards, telephone headsets, computer monitors, audio/visual equipment, telephony, printers, scanners and ergonomic equipment.

Network and security infrastructure hardware assets include network components, security appliances and telephony equipment. Network hardware consists of routers, switches, hubs, firewalls, devices required to maintain voice communication and video-conferencing networks. Security hardware refers to equipment used to protect control systems, business applications, computer infrastructure and data networks. Telephony equipment includes routers, switches and desk telephones.

The lifespans of infrastructure assets typically range between four and seven years depending on the device. As the devices within each group vary in age, a portion of all the infrastructure assets are upgraded each year to ensure ongoing operational reliability.

Software assets consist of packaged applications (purchased from and generally supported by a vendor), developed applications (custom-built in-house) and application infrastructure software (foundational infrastructure software and tools for applications).

Communications assets include mobile phones and field devices (such as GPS devices, push-to-talk radios, leak survey field technology and truck modems).

TIS applications and related technology work activities are driven by a combination of enhancement projects and life-cycle upgrades and/or replacements. The overarching objective is to ensure that TIS applications and related technologies provide desired functionality, adapt with evolving customer expectations, perform efficiently and are usable, reliable, maintainable and compatible with other applications and technologies, while ensuring the required standard of security.

Effort is made to ensure the needs of each business area are met, including considerations related to legislative compliance, regulatory orders, and financial accounting and reporting requirements. Investments are developed for each TIS investment and are prioritized using compliance, life cycle, financial and strategic drivers. During the TIS application life cycle, technology and design reviews are held to ensure new systems are implemented in the most cost-effective manner, using standard tools and proper security coding practices.

5.6.1 Technology and Information Services Objectives

The overall goal of the TIS asset class is to meet EGI's information technology needs, established in response to asset, process and system objectives and concerns. The response to these needs and the decision to undertake a solution is guided by the TIS asset class objectives listed in **Table 5.6.1-1**.

Table 5.6.1-1: TIS Asset Class Objectives

Asset Class Objectives	Description
Functionality	Ensure solutions provided are fit for purpose based on business requirements and value.
Reliability	Maintain the ability of the asset to perform its required function over its useful life.
Security	Ensure controls and checks are in place for applications/software/data that protect the asset against threats and vulnerabilities.
Availability	Ensure that infrastructure, devices and/or applications/software are readily available for use when required and will work as intended.

Asset Class Objectives	Description
Supportability	Maintain the ability of support and service staff to install, configure and monitor assets, identify exceptions and faults, isolate defects/issues preventing the asset from functioning as expected and provide maintenance services.
Maintainability	Continually ensure that assets are maintainable to isolate and correct defects, prevent unexpected breakdowns, maximize their useful life, meet new business requirements and simplify future maintenance procedures.
Continuous Improvement	Continuously evolve the understanding of condition and risk for TIS assets and use risk, cost and performance information to drive asset-related decisions.

The performance measures for the TIS asset class are as follows:

- Number of application/system outages
- Number of defects
- Number of vulnerabilities and security-related incidents
- Adherence to security policies and scorecard objectives
- Security patching levels
- Overall system and application availability metrics
- Number of infrastructure incidents
- Number of change and enhancement requests
- Incident response time and resolution time met

To achieve the TIS asset class objectives listed in **Table 5.6.1-1**, asset investment decisions are governed by the life-cycle management strategies outlined in **Table 4.1-1**.

5.6.2 Technology and Information Services Hierarchy

The asset subclass hierarchy for the TIS asset class is shown in **Figure 5.6-1**.

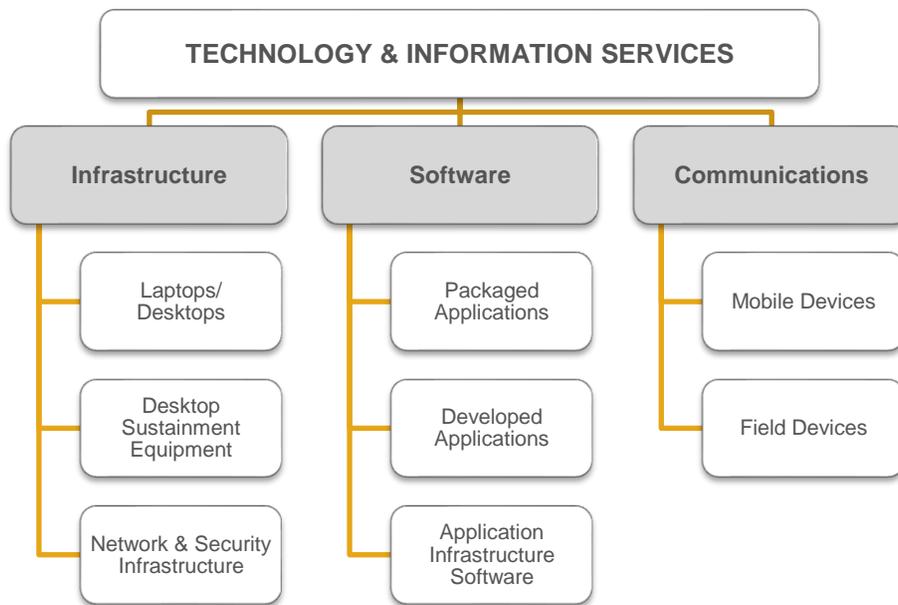


Figure 5.6-1: Technology and Information Services Hierarchy

5.6.3 Technology and Information Services Inventory

The TIS asset class inventory is shown in **Table 5.6.3-1**.

Table 5.6.3-1: TIS Asset Class Inventory³⁴

Asset	EGD Rate Zone	Union Rate Zones	Integrated
Infrastructure			
Laptops and Desktops	1,958	2,207	-
Desktop Sustainment Equipment	N/A*	N/A*	-
Network and Security Infrastructure	2,240	3,201	-
Software			
Packaged Applications	125	113	6
Developed Applications	44	47	3
Application Infrastructure Software	25	22	-
External Service	11	5	-
Communications			
Mobile Phones	4,310	1,505	-
Field Devices	1,281	607	-

Note: Desktop Sustainment Equipment assets are not recorded in inventory.

³⁴ As of December 13, 2021.

5.6.4 Technology and Information Services Condition and Strategy Overview

Table 5.6.4-1: TIS Condition and Strategy Overview

Asset Subclass	Avg. Age (Year)	Condition	Risk / Opportunity	Maintenance Strategy	Replacement / Renewal Strategy
Laptops and Desktops	2	Laptops and desktops tend to experience performance issues and failures in their fourth year of operation (constituting approximately 30% of these assets). The condition of laptops and desktops is not proactively monitored.	Financial Risk: Aging assets result in a reduction in productivity and increase in maintenance costs. Cyber & Security Risk: Aging assets can go unsupported with no patches available by vendors resulting in higher likelihood of successful cyberattack.	Laptops are replaced proactively based on age and warranty status.	Laptop/Desktop Renewal Strategy: EGI's strategy is to replace laptops and desktops every four years. For the majority of their life (three years), these assets are under warranty. This strategy allows for a short extended use of the asset past warranty expiration (one additional year) prior to replacement.
Desktop Sustainment Equipment	N/A	The condition and health of desktop sustainment equipment is not proactively monitored.	Employee and Contractor Health and Safety Risk: Inadequate desktop sustainment equipment compromises the health and safety of employees who require specific equipment for ergonomic purposes. Financial Risks: Inability to meet business needs and requirements, reducing overall productivity. Operational Risk: Inadequate or lack of desktop sustainment equipment required for new and existing employees. Cyber & Security Risk: Aging assets can go unsupported with no patches available by vendors resulting in higher likelihood of successful cyberattack.	Reactive maintenance as required through service requests.	Desktop Sustainment Equipment Strategy: Desktop sustainment equipment is provided on an as-needed basis. The replacement of desktop sustainment equipment is based on the following circumstances: <ul style="list-style-type: none"> • Equipment is damaged, broken or malfunctioning. • Equipment is required based on employee ergonomic assessments. • Equipment is required for new employee and contractor hires.
Network and Security Infrastructure	3	Network and appliances tend to experience performance issues and failures in their fifth year of operation (constituting approximately 30% of these assets).	Financial Risk: Aging assets result in a reduction in productivity, a risk of increase in infrastructure incidents and outages and an increase in maintenance costs.	Servers and appliances are replaced proactively based on age, compliance and warranty status.	Network Infrastructure and Security Renewal Strategy: EGI's strategy is to replace network infrastructure and security every five years. For the majority of their life (four years), these assets are under warranty and this strategy allows for a short extended use of the asset past warranty expiration (one additional year) prior to replacement.
Packaged and Developed Applications	10	The condition of packaged and developed applications is evaluated on the following: <ul style="list-style-type: none"> • Ability to meet business requirements • Infrastructure to meet vendor support requirements • Software to meet vendor support life cycle (for packaged applications) • Ability to enhance and support existing applications For the condition findings for this subclass, see Table 5.6.6-1 and Table 5.6.6-2 .	Financial Risks: <ul style="list-style-type: none"> • Inability to meet business needs and requirements, reducing overall productivity • Inability to meet financial and reporting compliance requirements • Increased maintenance costs due to reactively addressing required software and infrastructure repairs Operational Risk: Extended application and system outages, inadequate (or the lack of) applications required for employees to complete assigned tasks, contributing to difficulties in meeting customer needs	Maintenance releases and software defect fixes are rolled out regularly as a means of reactively maintaining the performance of packaged and developed applications.	Developed and Packaged Applications Renewal Strategy: The replacement of developed and packaged applications is dependent on changing business requirements or due to an application solution becoming unsupported by its vendor.
Application Infrastructure Software	12	The condition of application infrastructure software is evaluated on the following: <ul style="list-style-type: none"> • Software to meet vendor support refresh life cycles • Ability to support the key foundational software required for in-use/predicted applications For the condition findings for this subclass, see Table 5.6.6-3 .	Reputational Risk: Cybersecurity exposure due to the inability to apply required security patches potentially leading to negative reputational impacts for EGI if any breaches occur. Cyber & Security Risk: Aging assets can go unsupported with no patches available by vendors resulting in higher likelihood of successful cyberattack.	Maintenance is reactive - performance issues or software defects are addressed as they are identified.	Application Infrastructure Renewal Strategy: A proactive replacement/refresh strategy is in place, driven by forecast changes to existing software products and business requirements.
Mobile Devices	2	The condition of mobile devices is not proactively monitored.	Employee and Contractor Health and Safety Risk / Public Health and Safety Risk: Inadequate (or the lack of) mobile devices hinder	Mobile devices are maintained internally to address performance issues.	Mobile Device Renewal Strategy: EGI follows industry best practices for replacing

Asset Subclass	Avg. Age (Year)	Condition	Risk / Opportunity	Maintenance Strategy	Replacement / Renewal Strategy
			<p>the ability of employees to respond to emergency field situations, which may contribute to the severity of an incident and potentially endanger lives of the public.</p> <p>Operational Risk: Inadequate (or the lack of) mobile devices hinder the ability of employees to resolve off-hours, on-call situations, which may affect the reliable and safe operations of EGI's systems and networks.</p>	<p>Damaged devices are repaired/replaced on an as-needed basis within the three-year replacement window.</p>	<p>mobile devices at two to three years, which aligns with the smartphone manufacturers' release cycles and typical data plan contracts.</p>
<p>Field Devices</p>	<p>4</p>	<p>The condition of field devices is not proactively monitored. Due to exposure to tough working conditions, field devices experience significant wear and tear. (Breakage and performance issues generally occur in their fourth year of use).</p>	<p>Employee and Contractor Health and Safety Risk / Public Health and Safety Risk: Inadequate (or the lack of) field devices hinder the ability of employees to respond to emergency field situations due to device unavailability.</p> <p>Operational Risk: Inadequate (or the lack of) field devices may result in increased time travelling between office and job sites; impacting response to customer needs.</p> <p>Cyber & Security Risk: Aging assets can go unsupported with no patches available by vendors resulting in higher likelihood of successful cyberattack.</p>	<p>Maintenance repairs and replacements are performed as needed through service requests.</p>	<p>Field Device Renewal Strategy: Most field devices, such as ruggedized laptops, Toughbooks and Toughpads, have a four-year proactive replacement strategy driven by industry best practices. Some assets, such as truck modems, are replaced as needed.</p>

5.6.5 Infrastructure

5.6.5.1 Laptops and Desktops

This TIS asset subclass includes over 4,000 laptops and desktops. The majority of employees and contractors rely heavily on the day-to-day performance of their laptops and desktops to perform daily tasks and to access company communications, applications and resources on EGI's networks and systems.

Laptops and desktops are covered by the manufacturer's warranty for three years.

5.6.5.1.1 CONDITION METHODOLOGY

The condition of laptops and desktops is not proactively monitored. If these assets experience failures or signs of operating issues, a request for support and resolution is logged through ServiceNow, the TIS Service Management system. All laptops and desktops are labelled with a unique asset tag number to identify the asset for tracking purposes. The ServiceNow request is mapped to the user's unique asset tag number, which ensures the necessary remediation work is completed on the appropriate asset.

5.6.5.1.2 CONDITION FINDINGS

Laptops and desktops tend to experience performance issues and failures in their fourth year of operation, a year after their warranty expires. Laptop failures can occur for a variety of reasons, including complete hard drive failures, processor board failures, memory failures and significantly degraded performance.

In 2019, 80% of laptops and desktops were replaced in a significant initiative to move to the Windows 10 operating system due to Windows 7 being at end of life. This resulted in an almost 40% reduction in total logged incidents by users, demonstrating that replacing these assets before problems start to occur reduces the number of incidents reported.

5.6.5.1.3 RISK AND OPPORTUNITY

The major risk identified for laptops and desktops is financial risk; aging assets result in a reduction in productivity and increase in maintenance costs. There are a number of consequences if these assets are not replaced soon after warranty expiry:

- Replacement parts for existing infrastructure become obsolete, resulting in an asset that is more expensive to repair.
- Existing infrastructure is not compatible with newer operating systems and applications, resulting in an asset with reduced functionality.
- Maintenance costs can become excessive after warranty expiry.
- There is an overall reduction in productivity due to aging assets.

5.6.5.2 Desktop Sustainment Equipment

Desktop sustainment assets include all TIS infrastructure equipment required for business operations. Audio/visual equipment, printers, monitors, keyboards, mice, privacy screens and headsets are some examples of desktop sustainment equipment.

5.6.5.2.1 CONDITION METHODOLOGY

The condition of desktop sustainment equipment is evaluated on the following:

- New hire onboarding information
- Infrastructure incident requests
- Feedback and requests from ergonomic specialists and business users

The condition and health of desktop sustainment equipment is not proactively monitored.

5.6.5.2.2 CONDITION FINDINGS

Annually, there are approximately:

- 4,055 ergonomic-related requests requiring ergonomic equipment
- 1,455 onboarding requests requiring desktop sustainment equipment to support new employees/contractors
- 2,995 infrastructure incidents

5.6.5.2.3 RISK AND OPPORTUNITY

The major risks identified for desktop sustainment equipment are captured in **Table 5.6.4-1**.

5.6.5.3 Network Infrastructure and Security

5.6.5.3.1 CONDITION METHODOLOGY

Network and appliances tend to experience performance issues and failures in their fifth year of operation (constituting approximately 30% of these assets). The physical condition of network and security hardware is not proactively monitored. If these assets experience failures or signs of operating issues, the hardware vendor is contacted for support and an incident ticket is logged through ServiceNow.

5.6.5.3.2 CONDITION FINDINGS

Core and security infrastructure asset failures can occur for a variety of reasons, including hard drive failures, processor failures, memory failures and significantly degraded performance.

5.6.5.3.3 RISK AND OPPORTUNITY

The major risk identified for network and security infrastructure failures is financial risk; aging assets result in a reduction in productivity due to incidents and outages and increase in maintenance costs. There are a number of consequences if these assets are not replaced soon after warranty expiry:

- Existing infrastructure is not compatible with newer operating systems and applications, resulting in an asset with reduced functionality.
- Maintenance costs can become excessive after warranty expiry.

5.6.6 Software

5.6.6.1 Packaged and Developed Applications

TIS assets include a number of key applications that provide critical functionality to EGI employees and customers, contributing to the support and growth of its natural gas storage, transmission and distribution businesses. Key TIS applications also rely on ancillary systems that have been added over time to provide additional functionality as business needs change and grow.

Packaged applications, also known as Commercial-off-the-Shelf (COTS) software, are solutions purchased from and primarily supported by a vendor; support includes software version upgrades. Software upgrades are required for the application to stay current and supported. For some solutions, EGI provides functionality and enhancement requests, and the vendor provides additional software releases to address these requests.

Developed applications are custom-built solutions by EGI to meet business requirements. This generally occurs when no packaged solutions are available to support business requirements. The age range for developed applications can extend out as far as 20 years before a life-cycle replacement or significant upgrade occurs. Technology upgrades and enhancements may occur regularly for internally developed solutions.

As software license assets reach end of life, EGI is adopting a cloud-based model, as described in **Section 5.6.8.1**.

5.6.6.1.1 CONDITION METHODOLOGY

The condition of packaged and developed applications is evaluated on the following:

- Ability to meet business requirements
- Infrastructure to meet vendor support requirements
- Software to meet vendor support life cycle (for packaged applications)
- Ability to enhance and support existing applications

5.6.6.1.2 CONDITION FINDINGS

Table 5.6.6-1 summarizes the key packaged applications used at EGI and outlines their current state and condition. Each rate zone continues to operate some systems. Over time, most systems will be integrated. After the systems are integrated, their maintenance costs will be allocated to the rate zones.

Table 5.6.6-1: Application State – Key Packaged Applications³⁵

Application	Application Overview	Age (Years)	Application State
AutoSol Communication Manager (UG)	Polling engine application for reading measurement information	16	Hardware is currently under warranty. Software is current and supported.
Corrosion Survey Management System (CSMS)	Application for leak survey inspection-related work	5	The solution is built on eGIS, the application software will be upgraded in 2022.
Corrosion Survey (DNV GL SynerGi Pipeline)	Pipeline integrity software used in the Union rate zones for scheduling, tracking and field collection of pipeline risk management data	8	Software update completed in 2018.
Customer Information System (CIS)	Customer care and billing applications (SAP, CIS and Banner)	1	CIS applications used in EGD and Union rate zones migrated to an SAP cloud-based solution in 2021 as part of EGI integration. Future upgrades are planned in 2023 and 2028.
EGI Extranet	EGI external website for the EGD rate zone with self-service capabilities	4	Hardware was replaced in 2017/2018. Rewrite and foundational software upgrade occurred in 2017/2018. This application was integrated with the uniongas.com extranet in 2021.
Geographic Information System (ESRI eGIS)	Application for developing geographic views of EGD rate zone asset data	8	Hardware was replaced in 2020. Software was upgraded in 2020.
GIS Suite - G/Technology (Hexagon)	Application for developing geographic views of Union rate zone asset data	7	Application was upgraded in 2020 to maintain supportability.
GMAS	Collection and validation system for measurement information in the Union rate zones	21	Hardware is currently under warranty. Software is current and supported.

³⁵ Copperleaf is not listed as it is managed by Corporate Services.

Application	Application Overview	Age (Years)	Application State
ITRONFCS	Used to facilitate the meter reading process in EGD and Union rate zones	2	Software was upgraded in 2019. Consolidation of services completed to single platform in 2021.
Leak Survey Management System (LSMS)	Application for leak survey inspection-related work	6	The solution is built on eGIS, which was upgraded in 2020. The application software will be upgraded in 2022.
PIMSlider	Application for analyzing asset condition data and the optimal lifespan of assets	5	Hardware is currently under warranty. Software is current and supported.
Powerspring (formerly Metretek)	Application providing automated meter readings for large volume customers in the EGD rate zone	4	Hardware and software were upgraded to current and supported versions in 2017.
ProjectWise	Managed environment for EGI employees in the Union rate zones to deposit, store, retrieve and allow for the disposition of engineering records	5	Application upgraded in 2020 to maintain support.
PureConnect	Call centre application for call management in EGD and Union rate zones	2	Software and hardware upgraded in 2021.
SCADA	Supervisory control and data acquisition systems that monitor and control underground transmission pipelines	2	Hardware was upgraded in 2019 as part of the GDS control centre migration and SCADA consolidation. Software upgraded in 2020.
Teldig	Locate-tracking application used through Ontario One Call	8	Hardware was upgraded in 2019. Application software was upgraded in 2019.
Work and Asset Management (WAMS)	Application to manage work and assets	5	Functional changes and technical upgrades planned for 2023.

Table 5.6.6-2 summarizes the key developed applications used at EGI and outlines their current state and condition.

Table 5.6.6-2: Application State – Key Developed Applications

Application	Application Overview	Age (Years)	Application State
Capital and O&M Management (COMMS)	Application suite for managing EGI capital investments	11	Hardware is currently under warranty. Software was upgraded in 2018.
Classify Allocation Report and Exchange (CARE and CARE.Net)	Nominations and scheduling system for gas storage, transportation and capacity planning. Includes direct purchase and unbundled in the Union rate zone	26	Application is aging, replacement is needed in order to ensure business continuity, mitigate risk of service outages, degraded performance and cyber security risks.
Construction Administration Records System (CARS)	Application managing construction work orders for new customer service lateral attachments	21	This application is to be replaced by the Asset Work Management System in 2022.

Application	Application Overview	Age (Years)	Application State
Contrax	Application used to create, renew, manage and bill non-cycle large volume customers. Includes direct purchase and storage & transmission in the Union rate zone	3	Hardware is currently under warranty. Software is current and supported.
Cross Bore Risk Mitigation	Analytics tool used to assess the probability of cross bores	3	Hardware is currently under warranty. Software is current and supported.
Customer Connections Worksuite	Application for managing Customer Connections information	5	This application is to be replaced by the Asset Work Management System in 2022.
eApp	Tool used to submit natural gas services requests online	11	This application is being integrated with the GetConnected application used in the Union rate zones in 2022 as part of EGI integration.
Energy Cost Reporting (EnCore)	Application used to develop cost models for energy supply	7	Hardware is currently under warranty. Software is current and supported.
EnTrac	Management software for large volume and direct purchase contracts in the EGD rate zone	17	Hardware was out of warranty in 2021 and moving to Cloud platform. Software is current and supported.
Field Record Access (FRA)	Application used to locate asset information	2	Application is aging, replacement is needed in order to ensure business continuity, mitigate risk of service outages, degraded performance and cyber security risks.
Finance Business Analysis (FBA)	Data warehouse for reconciliation of customer consumption	6	Hardware is currently under warranty. Software is current and supported.
GetConnected	Tool used to submit natural gas services requests online	11	This application is being integrated with the eApp application used in the EGD rate zone in 2022 as part of EGI integration.
iViewer	Image repository for as-laid drawings, scans of service tickets and field notes	11	Hardware is currently under warranty. Application software upgraded in 2020 to maintain support.
Land Management (rowAMPS)	Application to manage land/property and municipal taxation work	4	Cloud solution as a service offering; implemented in 2017.
Revenue Analysis and Volume Estimation (RAVE)	Application for volumetric analysis, estimation and budgeting	17	Hardware is currently under warranty. Software is current and supported.

Application	Application Overview	Age (Years)	Application State
Unbundled Rate Compliance (URICA)	Application to request and track unbundled services as per Natural Gas Electricity Interface Review (NGEIR) direction in the EGD rate zone	14	Application is aging, replacement is needed in order to ensure business continuity, mitigate risk of service outages, degraded performance and cyber security risks.
Enerline (Formerly Unionline)	Secure web-based tool providing online services to contract customers	21	Application is aging, replacement is needed in order to ensure business continuity, mitigate risk of service outages, degraded performance and cyber security risks.

5.6.6.1.3 RISK AND OPPORTUNITY

The major risks identified for packaged and developed applications captured in **Table 5.6.4-1**.

5.6.6.2 Application Infrastructure Software

The Application Infrastructure Software asset subclass encompasses software products and tools that support and serve as the platform environment for TIS solutions. Some of the key components of this asset subclass include database software used to store data for various applications, application deployment and execution software, integration software used for interfacing between applications and services and reporting tools.

5.6.6.2.1 CONDITION METHODOLOGY

The condition of application infrastructure software is evaluated on the following:

- Ability to meet the vendor’s support life-cycle strategy
- Ability to support key foundational software required for business applications

5.6.6.2.2 CONDITION FINDINGS

The current age and state of key application infrastructure software used at EGI is shown in **Table 5.6.6-3**.

Table 5.6.6-3: State of Application Infrastructure Software

Application	Application Overview	Age (Years)	Year(s) since last refresh	Application State
DataStage	Extract, transform and load (ETL) integration tool	19	2	Software is current and supported.
Harvest	Source code management software	21	9	Software is supported.
Quality Assurance and Testing Suite	Testing and quality assurance tool suite	18	1	Software is supported.
Microsoft SQL Server	Database management software	21	1	Software is current and supported.
Oracle Database	Database management software	22	1	Upgraded to current version in 2021.

Application	Application Overview	Age (Years)	Year(s) since last refresh	Application State
Oracle Fusion	Integration suite providing interfacing capabilities between applications	8	1	Software is current and supported.
Oracle Golden Gate	Data replication software	6	1	Software is current and supported.
Oracle WebLogix Application Server	Management software for deployment and execution of applications	18	4	Software is current and supported.
SAP Business Objects Reporting Suite	Suite of reporting tools for business reporting and analytics	13	1	Upgraded to current version in 2021.
Team Foundation Server	Foundational software used for .Net application development	16	9	Software is supported.

5.6.6.2.3 RISK AND OPPORTUNITY

The risks identified for application infrastructure software are the same as for packaged and developed applications (see Table 5.6.4-1).

5.6.7 Communications

5.6.7.1 Mobile Devices

Mobile devices consist of smartphones, cell phones and Push-to-Talk radios. The industry best practice to replace mobile devices is two to three years, which aligns with smartphone manufacturers' release cycles as well as the typical data plan contract.

5.6.7.1.1 CONDITION METHODOLOGY

The condition of mobile devices is not proactively monitored. If these assets experience failures or signs of operating issues, the user contacts the TIS Service Desk to log a ticket through ServiceNow. In addition, the TIS asset class relies on new hire and business needs requests for equipping new mobile device users.

5.6.7.1.2 CONDITION FINDINGS

Annually, there are approximately 1,230 mobile device requests, including both normal life-cycle replacement and mobile device replacement due to hardware issues.

5.6.7.1.3 RISK AND OPPORTUNITY

The major risks identified for mobile device assets are:

- **Employee and Contractor Health and Safety Risk / Public Health and Safety Risk:** Inadequate (or the lack of) mobile devices hinder the ability of employees to respond to emergency field situations, which may contribute to the severity of an incident and potentially endanger lives of the public.
- **Financial Risk:** Inability of employees to be productive through inaccessibility of mobile devices
- **Operational Risk:** Inadequate (or the lack of) mobile devices hinder the ability of employees to resolve off-hours, on-call situations, which may affect the reliable and safe operations of EGI's systems and networks and lead to loss of supply or extended outages for customers.

5.6.7.2 Field Devices

Field devices include ruggedized laptops, Toughpads and Toughbooks, printers, plotters and multi-function devices, GPS devices and truck modems for signal strengthening.

5.6.7.2.1 CONDITION METHODOLOGY

The following inputs are used to assess the condition and suitability of field devices:

- Incident requests logged in ServiceNow
- Feedback from end users on field device performance
- Business needs driving field devices requirements

5.6.7.2.2 CONDITION FINDINGS

Typically, field devices experience an elevated level of breakage and performance issues by the fourth year of use. Due to exposure to tough working conditions, field devices experience significant wear and tear, requiring maintenance on a frequent and reactive basis.

5.6.7.2.3 RISK AND OPPORTUNITY

The major risks identified for field devices are:

- **Employee and Contractor Health and Safety Risk / Public Health and Safety Risk:** Inadequate (or the lack of) field devices hinder the ability of employees to respond to emergency field situations due to device unavailability.
- **Financial Risk:** Lack of availability of field devices impacts productivity for employees
- **Operational Risk:** Inadequate (or the lack of) field devices may result in productivity loss due to increased time travelling between office and job sites, missed appointment windows, and extended service outages.

5.6.8 Technology and Information Services Strategy Outcomes

5.6.8.1 Cloud Computing Services Adoption

EGI has adopted cloud computing services to reduce outages from infrastructure failures, reduce cyber-attack exposure, leverage a scalable core infrastructure, reduce technical debt and improve business reliability, as assets reaching end of life create material operational risk for hosted systems. In addition, on-premise license models are no longer available within the software industry.

Historically, EGI purchased its software licenses and IT infrastructure systems and would capitalize the costs and amortize them over time. In cloud computing, a cloud services user does not own the underlying assets, as the cloud subscription is expensed under the Operations and Maintenance (O&M) budget. The transition to cloud computing services results in higher O&M costs as spending shifts away from capital.

5.6.8.1.1 TYPES OF CLOUD SERVICES

EGI uses three types of cloud services:

Software as a Service (SaaS)

- SaaS refers to software applications that are delivered over the Internet, on demand and usually via subscription.
- Cloud providers host and manage the software and associated infrastructure and handle maintenance (i.e., upgrades).
- Users connect to applications over the Internet (via web browser on smart devices or via personal computers (PCs)).
- Using this cloud delivery model, IT productivity costs, such as Microsoft Office 365, are charged back as O&M via Cost Allocation Methodology (CAM) and are no longer regarded as an Asset Management Plan (AMP) capital expenditure.

Platform as a Service (PaaS)

- PaaS refers to cloud computing services that provide an on-demand environment that developers use to develop, test, deliver and manage software applications.
- PaaS allows developers to create web or mobile apps without the need to set up or manage the underlying infrastructure (i.e., servers, storage, networks and databases).
- SAP Canada is the external service provider administering the Customer Information System (CIS) application using this cloud delivery model.

Infrastructure as a Service (IaaS)

- EGI pays for scalable IT infrastructure from a cloud provider on a pay-as-you-go basis. Infrastructure components include servers, storage and operating systems.
- IaaS can be at a fixed or scalable capacity.
- Using this cloud delivery model, core infrastructure, server and storage costs are charged back as O&M via CAM and are no longer regarded as capital expenditure.

5.6.8.2 Infrastructure Strategy Outcomes

5.6.8.2.1 LAPTOPS AND DESKTOP RENEWAL STRATEGY

EGI's renewal strategy is to replace laptops and desktops every four years. Industry best practice suggests replacing laptops and desktops every three years, in line with its warranty (also three years). EGI's strategy allows for one additional year past warranty expiration prior to replacement, reducing the overall capital cost of the laptop refresh cycle.

Defective or poorly performing laptops that are out of warranty are repaired if the problem is quickly determined and if the repair can be done cost-effectively. Otherwise, the device is replaced. The impact of repairing an out-of-warranty device includes productivity loss to the end user, technician repair time and the cost of unbudgeted parts for repair. As more and more out-of-warranty devices fail over time, EGI's replacement strategy is most effective at balancing risk, cost and performance for this group of assets.

The four-year replacement policy for laptops and desktops has been in place for the last 20 years and has proven to be sufficient and manageable from a resourcing perspective.

EGI follows both a proactive and reactive maintenance strategy for these assets, managed through ServiceNow.

5.6.8.2.2 DESKTOP SUSTAINMENT EQUIPMENT STRATEGY

Desktop sustainment equipment is provided on an as-needed, reactive basis. Desktop sustainment equipment is issued based on the following:

- Equipment is damaged, broken or malfunctioning.
- Equipment is required based on an ergonomic assessment.
- Equipment is required for new employee and contractor hires.

EGI uses historical spend to project the capital requirements for the replacement of desktop sustainment equipment.

5.6.8.2.3 CORE INFRASTRUCTURE AND SECURITY RENEWAL STRATEGY

EGI's strategy is to replace servers and appliances for core infrastructure and security infrastructure every five years. For most of their life (four years), these assets are under warranty. This strategy allows for a short-extended use of the asset past warranty expiration (one additional year) prior to replacement.

Defective or poorly performing servers and appliances that are out of warranty are repaired by the vendor through infrastructure maintenance contracts following warranty expiry. The impact of repairing an out-of-warranty device includes potential productivity loss to the end user due to applications being unavailable and the costs required for the infrastructure maintenance contracts. As more and more devices fail over time, EGI's replacement strategy is most effective at balancing performance, cost and risk for this group of assets.

EGI follows both a proactive and reactive maintenance strategy for these assets, managed through ServiceNow and the hardware vendors.

5.6.8.3 Software Strategy Outcomes

5.6.8.3.1 PACKAGED AND DEVELOPED APPLICATIONS RENEWAL STRATEGY

The replacement strategy for packaged applications is driven by vendor release schedules specific to each application and changes in business requirements. A replacement and/or upgrade can also occur due to the vendor discontinuing software support or application enhancements.

The replacement strategy for developed applications is driven by forecast requirements for the business. Maintenance releases and software defect fixes are rolled out regularly to reactively maintain the performance of the application. Major enhancements and renewals are implemented for projected new or changing business requirements.

Applications are replaced when business requirements change or when a vendor ceases support for the application. As applications are developed or replaced, an increasingly important aspect of this work is the development of appropriate measures to address cyber security risk. EGI integration will drive a number of application replacements and migrations during the 2023 to 2032 timeline.

The following packaged and developed applications have been identified for the next 10 years:

- **Records Management:** This technology obsolescence investment aligns records management processes, data, asset structure, systems of record and drafting practices for gas carrying asset records which is used to support Operations in performing maintenance and construction work and Engineering to conduct analysis. See **Appendix A, Pg. 49** for additional detail on this investment.
- **Contract Market Harmonization and Contract Market Systems – Technology Obsolescence:** This obsolescence investment addresses technology that is or will become unsupported soon and requires upgrading to reduce technology complexity and cyber risk, and to enable integration, rate and service harmonization, and further enhance the customer experience. The harmonization investment is envisioned to deliver system enablement of processes and reliability for contract markets to ensure consistent, reliable operations from contract to cash (payment) including a consistent, technology-enabled customer experience. This project is also required to implement the harmonized services proposed for this market, detailed in Exhibit 8, Schedule 4, Tab 1. See **Appendix A, Pg. 45 & 46** for additional detail on these investments.
- **General Service Rebasing Changes:** This project will harmonize the existing EGI rate zones and customer classes into a single rate zone with common customer classes. EGI will assess the rate harmonization while considering the Ontario Energy Board's (OEB's) Mergers, Amalgamations, Acquisitions and Divestitures (MAADs) requirement to file a proposal for rate harmonization as part of the rebasing application. This project is also required to implement the general service rate design, detailed in Exhibit 8, Schedule 2, Tab 3. See **Appendix A, Pg. 48** for additional detail on this investment.
- **SCADA:** This initiative is to modernize and standardize EGI SCADA solution.

5.6.8.3.2 APPLICATION INFRASTRUCTURE RENEWAL STRATEGY

A proactive replacement strategy is in place for application infrastructure software, driven by forecast changes of existing software applications business requirements.

The maintenance strategy is reactive; performance issues or software defects are addressed as they are identified.

5.6.8.4 Communications Strategy Outcomes

5.6.8.4.1 MOBILE DEVICE RENEWAL STRATEGY

The TIS asset class strategy for mobile devices is to stay one release cycle behind manufacturer releases as mobile devices are available at a much lower cost. As such, mobile devices have a proactive replacement strategy of every three years driven by industry best practice and release cycles.

Mobile devices are reactively maintained to address performance issues and damaged/broken devices on an as-needed basis within the three-year replacement window. Approximately 500 devices are replaced annually as per the refresh strategy.

EGI uses historical spend to project the capital requirements for the replacement of mobile devices.

5.6.8.4.2 FIELD DEVICES RENEWAL STRATEGY

The majority of field devices, such as ruggedized laptops, Toughbooks and Toughpads, have a four-year replacement strategy, based on industry best practices and EGI's condition experiences. Some assets (such as truck modems) do not have an industry-directed replacement cycle and are reactively replaced as they fail. TIS uses historical spend to project the capital requirements for the replacement of field devices.

5.6.9 Technology and Information Services Capital Expenditure Summary

The total average capital spend is forecast to be \$63M (EGI), as summarized in **Table 5.6.9-1**. The TIS capital is further summarized as part of EGI's total 10-year capital plan in **Section 6**.

Table 5.6.9-1: TIS Capital Summary (\$ Millions) – EGI³⁶

Asset Class Strategy/Investment Name	Program Name	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Forecast
Laptop/Desktop Renewal Strategy	TIS Infrastructure	1.7M	6.7M	4.3M	4.5M	4.9M	8.3M	5.0M	5.2M	5.3M	8.5M	54.4M
Desktop Sustainment Equipment Strategy		1.0M	1.1M	1.1M	1.2M	1.3M	1.3M	1.3M	1.4M	1.4M	1.4M	12.6M
Core Infrastructure and Security Renewal Strategy		4.5M	3.3M	3.1M	3.9M	3.6M	3.4M	3.2M	4.2M	4.1M	3.7M	37.0M
Developed and Packaged Applications Renewal Strategy	TIS Business Solutions	40.2M	38.9M	35.1M	32.5M	30.9M	34.0M	31.9M	30.4M	30.6M	27.2M	331.7M
Application Infrastructure Renewal Strategy		1.6M	2.6M	1.0M	1.2M	1.3M	1.1M	1.3M	1.5M	1.0M	1.2M	13.7M
Contract Market Harmonization		2.5M	6.4M	6.5M	3.6M	-	-	-	-	-	-	19.0M
Contract Market Systems - Technology Obsolescence		9.3M	22.8M	23.0M	13.2M	-	-	-	-	-	-	68.4M

³⁶ Includes overhead allocation.

Asset Class Strategy/Investment Name	Program Name	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Forecast
General Service Rebasing Changes		-	17.9M	2.6M	-	-	-	-	-	-	-	20.5M
Records Management Upgrade		-	5.4M	11.2M	11.3M	-	-	-	-	-	-	27.9M
Mobile Device Renewal Strategy	TIS Infrastructure	0.4M	0.4M	0.5M	0.6M	0.6M	0.6M	0.6M	0.7M	0.7M	0.7M	5.7M
Field Device Renewal Strategy	TIS Business Solutions	2.5M	-	-	4.9M	-	-	-	-	2.8M	-	10.2M
	TIS Infrastructure	-	6.8M	0.3M	-	5.6M	5.3M	2.1M	-	-	11.3M	31.3M
Total		63.7 M	112.4 M	88.7 M	76.9 M	48.1 M	54.1 M	45.3 M	43.4 M	45.9 M	53.9 M	632.6 M

6 Summary of Capital Expenditure

6.1 Portfolio Optimization

Using the methodology for optimization outlined in **Section 4.3.3**, this section describes the summary of the capital expenditures required to meet EGI's asset management goals and to balance risk, cost and performance. Through careful consideration of the key inputs to the asset investment planning and management process (risk, opportunity, customer engagement feedback, and resource constraints), this plan provides critical direction for the baseline facility need over the next 10 years.

6.1.1 Investment Criteria

In preparation for optimization, comprehensive governance reviews were completed on proposed investments using the following criteria:

- Investment scope met EGI's capitalization policy.
- Investments presented a well-articulated purpose; need and timing aligned with asset class objectives and life cycle management strategies.
- Investment scope definition and alternatives adequately addressed project risks and/or opportunities.
- Investments supported the asset management principles of balancing risk/opportunity, cost and performance.
- Execution risks were reasonable (resource capacity).
- Initiatives identified as mandatory were justified, based on:
 - Exceeding an established risk threshold
 - Third-party relocation
 - Program work with sufficient history and risk to warrant continuation
 - Projects that meet the economic feasibility tests in EBO 188 and EBO 134
 - Compliance requirements
 - Investments that were already executing with costs continuing into 2023 to 2032 and the remaining work could not be shifted.

In total, 1,500 EGD rate zone (RZ) investments and 1,901 Union RZ investments were included in the initial pre-optimized request for capital. The initial pre-optimized request is illustrated in **Figure 6.1-1** and **Figure 6.1-2**, generated from the asset investment planning tool (Copperleaf).

6.1.2 Capital Considerations

The optimization process is based on EGI management setting a capital constraint or threshold from which a portfolio of work driven by asset needs is defined. The capital constraint is determined based on the asset needs and financial considerations. Determining the capital constraint involves EGI's Asset Management, Finance and Regulatory departments. To complete EGI's latest portfolio optimization, EGI considered optimization constraints for 2023 and for the remainder of the 10-year plan separately.

For 2023, the assets for the EGD RZ and Union North and South RZs, were maintained separately for capital planning purposes as 2023 is the final year of the approved five-year (2019 to 2023) deferred rebasing term from the MAADS Decision (*EB-2017-0306/EB-2017-0307*). For the 2024 to 2032 optimization constraint, EGI considered historical spend levels, inflation, smoothing the impact to ratepayers and the capital to meet asset class strategy needs.

EGI's optimization constraints were determined through the following efforts:

- For 2023, EGI recognized that two significant projects are expected to go into service in that year - Dawn to Corunna Project (see **Appendix A, Pg. 1**) and the Panhandle Regional Expansion Project (see **Appendix A, Pg. 55**). EGI first attempted to leverage the materiality threshold as the constraint for 2023 but was unable to accommodate the significant volume of compliance, must-do, and in-flight work. In the end, the 2023 Budget was constrained to \$1.5B, the amount that had previously been included in the long-range plan created in 2022.

- To set a constraint for the remainder of the 10-year plan, EGI looked at scenarios between the 2023 Materiality Threshold of ~1.4B and the historical average spend of ~\$1.17B³⁷. In each case an escalation of 2% for inflation was applied (see **Table 6.4-1** for inflation assumptions). Through the process of moving the optimization constraint line downwards from \$1.4B to \$1.1B, EGI examined:
 - Implications to asset class strategies
 - Implications to in-service capital (as a proxy for impact to ratepayers)
 - Implications for the management of identified risk
 - Ability to complete mandatory work
 - Ability to complete work that supports the energy transition
 - Ability to complete work that is in keeping with customers' stated preferences
 - Organizational capacity to complete work

Through consultation with a wide range of internal stakeholders, EGI determined that the 2024-2032 optimization constraint of \$1.2B with an annual escalation of 2% for inflation allowed for safe and reliable outcomes through execution of EGI's asset class strategies. EGI had to treat specific significant investments (Dawn C Compression Lifecycle in 2026 [see **Appendix A, Pg. 3**] and Dawn-Parkway Expansion [Dawn-Enniskillen NPS 48 in 2029 [see **Appendix A, Pg. 53**]]) as exceptions to the optimization constraint in order to obtain the optimized result in those years.

The increase in capital for 2024 relative to the historical average is attributed to the following:

- +\$129M in market driven growth with several large growth investments identified with spend in 2024 including: Panhandle Regional Expansion Project (PREP), PREP: Leamington Interconnect, Wheatley 1B PREP Reinforcement, East Kingston Creekford Road Reinforcement and the Dawn Parkway Expansion Project (Kirkwall-Hamilton NPS 48). The timing for these investments is based on the market requirements, EGI will evaluate the market driven investments for technically and economically feasible IRPAs.
- +\$107M in planned replacements have shifted into 2024 to provide additional time for EGI to assess and adequately demonstrate the condition of the pipelines as an outcome of the St. Laurent LTC Decision.
- +\$95M in compliance related investments including increases to meter and regulator exchanges due to increased costs for meters and large numbers of meters reaching expected end of seal life. In addition, updated hazard assessments completed under EGI's Transmission Integrity Management Program have identified the need to review and mitigate high and moderate uncertainties in the fitness-for-service conclusions of the review.

Optimization constraints lower than \$1.2B (i.e., \$1.1B) caused the optimization to fail as they do not accommodate all investments with fixed timing. Examples of investments with fixed timing that must be executed in a given year include:

- Compliance work must be completed in accordance with rules and regulations, deferring this work could result in EGI being out of compliance.
- Relocations must be completed in a given year order to ensure that the work triggering the relocation is completed. Relocation projects are subject to the timing of the work triggering the relocation and as such timing of these projects is fixed.
- Reinforcements have fixed timing because absent the reinforcement, EGI would not be able to attach customers to its system after the reinforcement is required.
- Executing work has fixed timing as these projects have already commenced and therefore cannot be deferred.

Lowering the capital constraint would require EGI to reduce programs that directly maintain EGI's safe and reliable operations, for example:

- Compliance driven work, including integrity management work and meter exchanges.
- Program work with sufficient history and risk to warrant continuation, including AMP fitting replacements, inside regulator and ERR programs, distribution station replacement work, vehicle replacements and TIS infrastructure.
- Investments prioritized through EGI's Risk Management Process (**Section 4.2**).
- Copperleaf was used to optimize the 1,500 EGD RZ investments and 1,901 Union RZ investments in the initial pre-optimized ask. Using the optimization constraint values, the optimal capital timing was determined for proposed investments, as described in **Section 4.3.3**.
- The Decision with Reasons in the St. Laurent Ottawa North Replacement Project (EB 2020-0293) led to two subsequent changes to this AMP to ensure that there was adequate time to collect condition information and consider risk implications – St. Laurent Phases 3 and 4 (see **Appendix A, Pg. 13 & 14**), and Wilson Avenue Vintage Steel Replacement (see **Appendix A, Pg. 10**). Investments in the 10-year plan that had sufficient timing for further, cost

³⁷ Historical average spend was calculated using the average of the 2019-2021 actuals and 2022 forecast.

effective and prudent evaluation will continue to be assessed without prejudice to support the resultant investments. The LTC decision for St. Laurent is not expected to impact the Vintage Steel Replacement Program as this program and the associated selection of pipe replacements are based off of predictive analytics (condition and risk from the DIMP Risk Model as described in **Section 5.2.3.6.3.2**).

- The resultant capital plan was reviewed with internal stakeholders and endorsed by the Asset Management Steering Committee.

6.1.3 Optimization Results

The initial spend profile is reflective of the forecasted needs of the assets as identified through asset managers and investment owners. Copperleaf factors in both asset needs and capital optimization constraints to find an optimal capital portfolio.

The initial pre-optimized request for capital was \$14.3B (see **Figure 6.1-1** and **Figure 6.1-2**). Because investments can shift in time during optimization, while overheads remain fixed, the annual capitalized overheads are treated as a separate investment during optimization. Once optimization is complete, overheads are applied to all investments and are reflected as such throughout this section. Overhead amounts are approximated based on the most recent approved plan at the time of optimization and then refined at the investment level once project timing is confirmed and the plan approved.

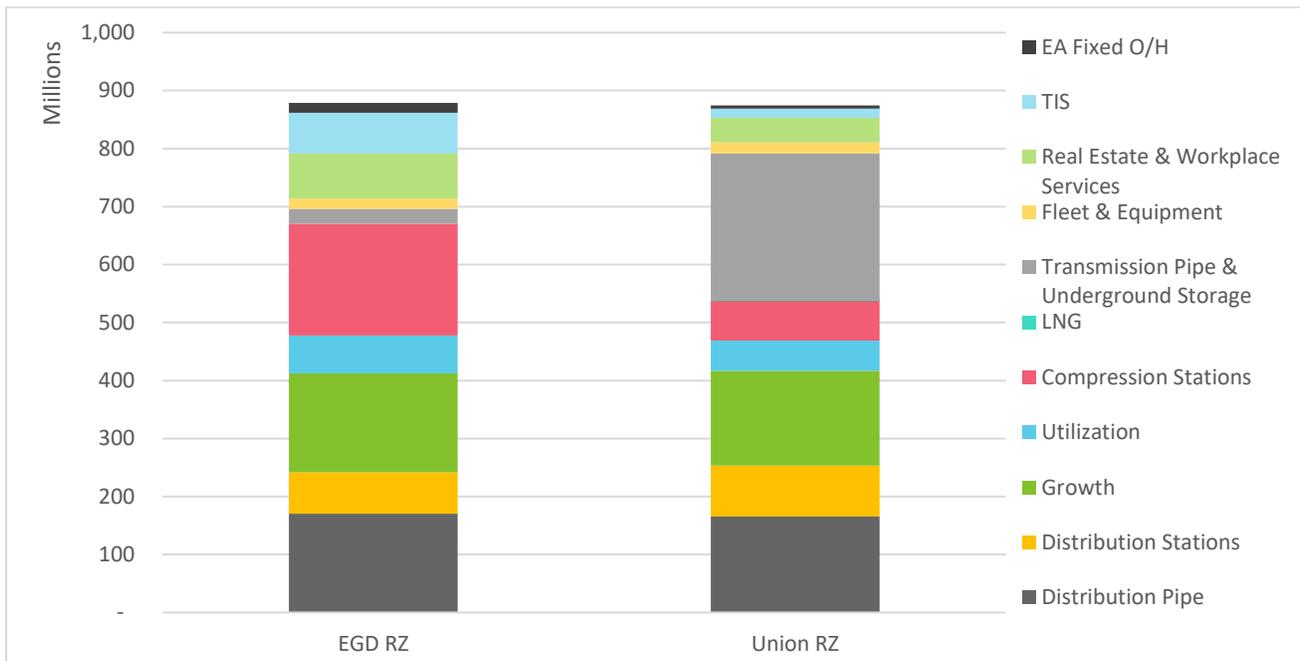


Figure 6.1-1: 2023 Pre-Optimized Spend Profile by Rate Zone (Capital Expenditure)

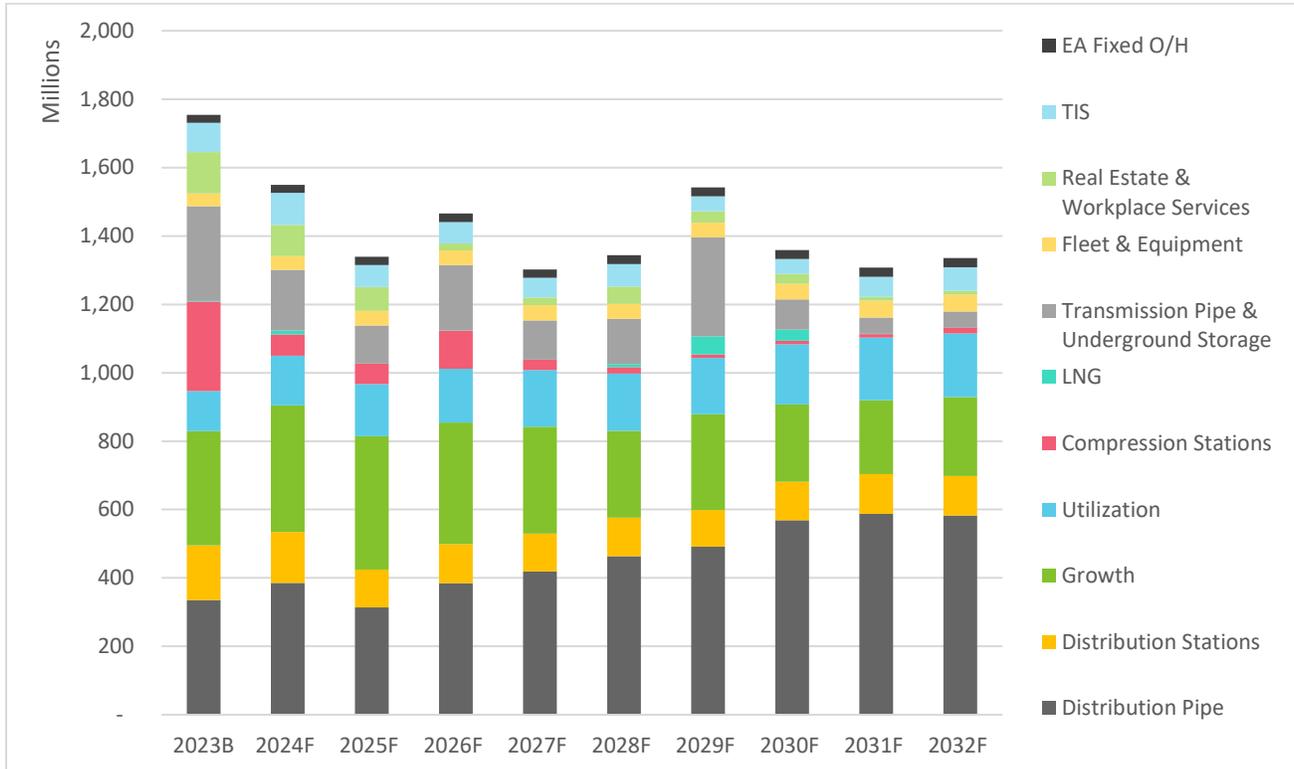


Figure 6.1-2: 2024-2032 Pre-Optimized Spend Profile – EGI (Capital Expenditure)

Prior to optimization, investments were categorized into planning groups (see Table 6.1-1) in Copperleaf based on asset management principles. This supported optimization activities where a different treatment (fixed or variable timing) could be applied to the investment groups at the time of optimization. For 2023, 92% of the capital had fixed timing, while approximately 8% had variable timing. For the remaining years, the capital with fixed timing ranged from 76%-92%.

Table 6.1-1: Planning Groups

Planning Group	Description	Optimization Treatment
Compliance – Fixed Timing	Investment meets criteria for compliance treatment (see Table 4.1-2)	Fixed timing
Mandatory – Fixed Timing	Investment meets criteria for mandatory treatment (see Table 4.1-2)	Fixed timing
Executing – Fixed Timing	Investment is in execution based on previously approved timing	Fixed timing
Compliance – Optimize	Investment meets criteria for compliance treatment but has flexibility in timing (see Table 4.1-2)	Optimized based timing constraint
Mandatory – Optimize	Investment meets criteria for mandatory treatment but has flexibility in timing (see Table 4.1-2)	Optimized based timing constraint
Executing Flagged for Optimize	Executing investments that could potentially have the remainder of the work shifted in timing	Timing optimized based on value
Value Driven – Value Framework	Value framework completed on the investment and not compliance, mandatory nor executing	Timing optimized based on value
Value Driven – Fixed Timing	Value framework completed on the investment and fixed timing required. Fixed timing for value driven investments may be required for multi-year	Fixed timing

Planning Group	Description	Optimization Treatment
	investments as it prevents Copperleaf from shifting all years into a single execution year.	
Overheads	Overheads	Fixed timing
Significant Investments (>\$10M) – Value Driven	Investment is greater than \$10M (net base capex). Value framework has been completed on the investment and not compliance, mandatory nor executing	Timing optimized based on value
Significant Investments (>\$10M) – Fixed Timing	Investment is greater than \$10M (net base capex). Compliance/mandatory requirements validated or executing.	Fixed timing

The capital plan was optimized from 2023 to 2032 using the Optimize Portfolio of Solutions step of the AIPM process (outlined in **Section 4.3.3**). While running the optimization at the defined capital constraints, an optimized solution could not be obtained. This was due to the capital profile of specific fixed and mandatory projects. To resolve this, investments that were likely to be causing the optimization runs to fail were removed from optimization (Dawn C Compression Lifecycle in 2026 [see **Appendix A, Pg. 3**] and the Dawn-Parkway Expansion [Dawn-Enniskillen] Project in 2029 [see **Appendix A, Pg. 53**]), providing EGI with the best understanding of an optimized typical base spend profile. These significant investments were brought back into the plan after optimization was rerun.

As described in **Section 4.3.3**, the optimized result and significant projects (Net Base Capex >\$10M) were reviewed with all asset managers and business stakeholders. Adjustments were proposed to better align the plan to life-cycle strategies, opportunities to pursue integrated resource planning, resource balancing requirements, other external project dependencies (moratoriums), and the capital optimization constraint. Investments that were not properly time constrained in Copperleaf were adjusted to reflect more appropriate timing to support long term resource management. Updates for any significant projects were also reviewed and adjusted (for example St Laurent Phase 3/4 and Wilson Avenue). Adjustments were incorporated as necessary through consultation with asset managers and using the value framework for project comparison.

Overall, EGI removed an average of ~\$100M/year over the 10-year plan. This reduction was achieved through using optimization to assign timing to investments in order to maximize the value of the portfolio and through reductions EGI made in consultation with internal stakeholders. The value-driven investments that were assigned timing outside of the 10-year window were primarily REWS property upgrades and replacements in the Distribution Pipe and LNG asset classes. The remaining reductions were achieved through review of the proposed capital for each asset class and comparing for alignment with the asset class strategy and to historical spend levels. EGI targeted programmatic spends that had flexibility in the number of years they could be executed over, some of the specific programs that were reduced include: STO Strategic land purchases, class location, corrosion, real estate and delaying the start of the vintage steel replacement program.

The portfolio of solutions exceeded the optimization constraint in years 2024, 2025 and 2026. In 2024, the optimization constraint was exceeded due to the following drivers: the updated timing of St. Laurent and Wilson Avenue to allow for further condition evaluation in response to the May 2022 LTC decision, the Dawn C Compression Lifecycle and the Dawn-Parkway Expansion (Kirkwall to Hamilton) projects started spending in 2024 (Dawn C Compression Lifecycle was treated as a significant investment); and the TIS investments required in 2024 to support EGI’s rebasing. The optimization constraint was exceeded in 2025 due to the Dawn C Compression Lifecycle and the Dawn to Parkway Expansion (Hamilton-Kirkwall) projects, the customer-driven Hamilton Industrial Reinforcement project, and the timing of the Kelfield and Kennedy Road REWS investments. The optimization constraint in 2026 was exceeded due to the Dawn C Compression Lifecycle and the Dawn to Parkway Expansion (Hamilton-Kirkwall) projects and the timing of the Kelfield and New London Site REWS investments. **Figure 6.1-3** presents the 10-year capital requirements by asset class and the significant investments >\$50M.

The result addresses the organization’s baseline facility needs and includes known risks and opportunities requiring action over the next 10 years, the optimized 10-year request for capital was \$13.3B. The optimized 10-year request includes 1,384 EGD RZ investments and 1,703 Union RZ investments, which relates to a reduction of 314 investments from the initial pre-optimized request.

The final 10-year portfolio of spend was reviewed and approved by the Vice President of Engineering and the Asset Management Steering Committee. The final 10-year capital plan reflects the current facility needs, as EGI completes the evaluation of investments through the IRP Assessment process, investments will be removed, reduced, or deferred where economically and technically feasible IRPAs are identified.

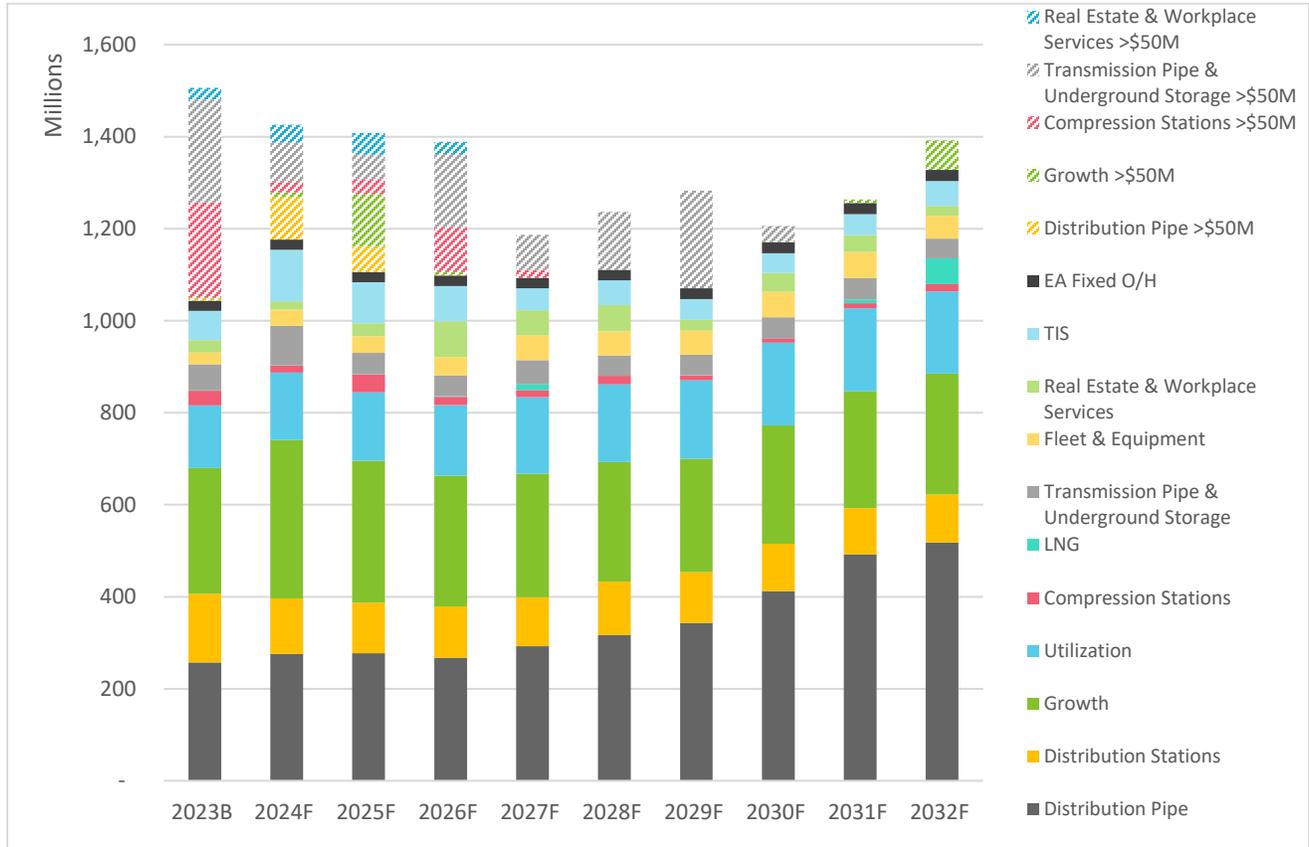


Figure 6.1-3: 10-Year Plan by Asset Class – EGI

6.2 Summary of Capital Expenditure

The capital profile is presented at an EGI level for 2023 to 2032 (see **Figure 6.2-1**). The direct 10-year capital profile for EGI from 2023 to 2032, totals approximately \$13.3B in proposed asset expenditures. For 2023, the assets for the two RZs, EGD RZ and Union North and South RZs, were maintained separately for capital planning purposes. **Section 6.2.1** and **Section 6.2.2** show the 2023 capital profile and variance explanations for EGD and Union RZs respectively.

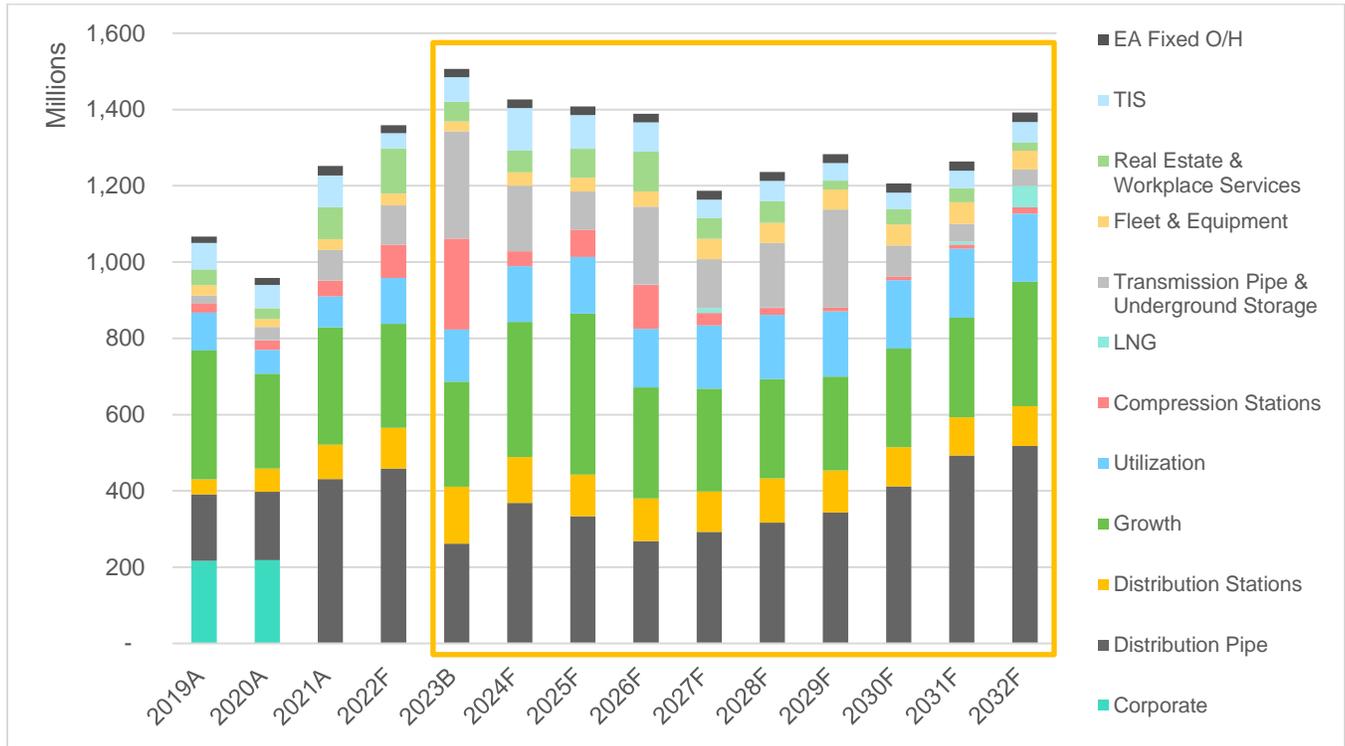


Figure 6.2-1: Capital Profile by Asset Class – EGI

Note: Historical actuals include Capital Pass Through (CPT) Mechanism, ICM projects and integration capital. The total forecasted capital expenditures categorized by asset class depicted in **Figure 6.2-1** are comprised of each investment’s direct costs and the associated overheads. Asset class historical spend profiles in 2019 and 2020 do not include associated overheads; for this reason, overheads are identified as a separate category historically. Due to the timing of the 2022 Forecast data, the 2023 Budget and 2024 Forecast include investments that have shifted out of 2022 that are also captured in the 2022 Forecast, for example St. Laurent Ph 3/4.

6.2.1 Summary of 2023 Capital – EGD Rate Zone

Figure 6.2-2 shows the 2023 capital budget for EGD Rate Zone presented by asset class.

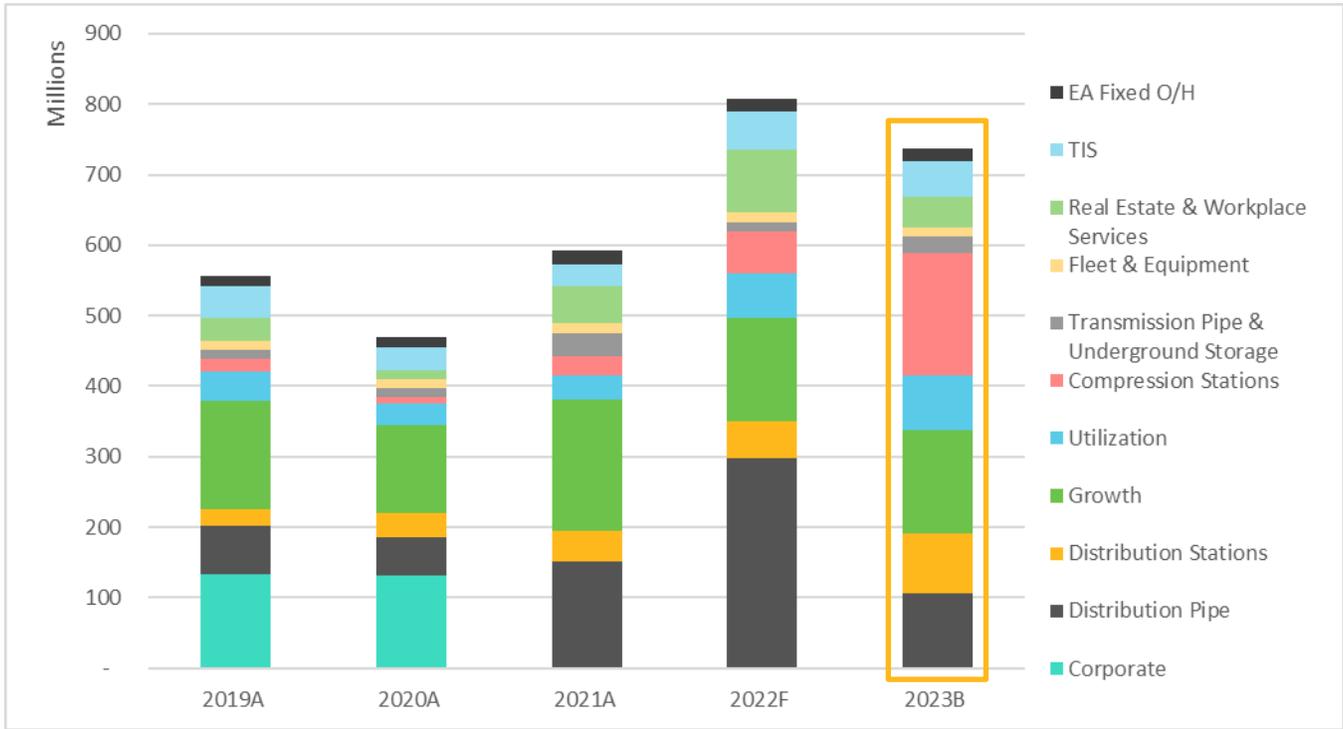


Figure 6.2-2: Capital Profile by Asset Class (2023) – EGD Rate Zone

Note: Historical actuals include Capital Pass Through (CPT) Mechanism, ICM projects and integration capital. The 2023B capital expenditures categorized by asset class depicted in Figure 6.2-2 are comprised of each investment’s direct costs and the associated overheads. Asset class historical spend profiles in 2019 and 2020 do not include associated overheads; for this reason, overheads are identified as a separate category historically. The 2022 Forecast Data was produced before EGI’s 2023-2032 capital plan was created and before the St. Laurent LTC Decision (EB-2020-0293) was received, therefore, the St. Laurent Ph 3/4 projects are also shown in the 2022 Forecast.

Table 6.2-1 shows the 2023 forecast published in the 2021 – 2025 AMP (EB-2019-0194, Exhibit C, Tab 2, Schedule 1) and the proposed 2023 capital budget for the EGD RZ and lists any variance explanations. As discussed in **Section 4.3**, emerging and revised projects were identified and evaluated based on the existing 2023 portfolio. Updated cost estimates were prepared for new or revised 2023 projects.

Table 6.2-1: 2023 EGD Capital Budget and Variance Explanations (Includes Overheads)

Asset Class	2023 AMP	2023 Budget	Variance	Variance Explanation*
Growth	\$159.8M	\$147.0M	-\$12.8M	<ul style="list-style-type: none"> • -\$4.5M – Decreased customer connections forecast • -\$8.4M – Changes in reinforcement timing and scope due to changes in the growth forecast: <ul style="list-style-type: none"> • -\$9.3M – Thornton XP Reinforcement • -\$2.8M – Brockville Gate Station • +\$3.6M – Huntmar Drive
Distribution Pipe	\$109.9M	\$106.5M	-\$3.4M	<ul style="list-style-type: none"> • +2.4M – New integrity programs driven by third-party assessment results: Independent Asset Integrity Review (IAIR) and TIMP Geohazard Mitigation • +\$6.1M – Increase to relocation program due to additional information available on relocations and adjustments to regional forecasts • -\$9.0M – Various changes in cost, scope and timing in main replacements. The updated DIMP Risk Model shifted project timing for the Vintage Steel Replacements. • -\$3.0M – Due to an increase in the AMP fitting program countered by a decrease in Service Relays anticipated by Regional workload forecasts
Distribution Stations	\$40.2M	\$84.1M	+\$43.9M	<ul style="list-style-type: none"> • -\$600K – ERR program complete • -\$3.1M – Various changes to Station Rebuilds and B and C as project scope develops and projects are defined from programs • +\$47.0M – Overall increase in Gate, Feeder and A Stations station due to: <ul style="list-style-type: none"> • +\$23.4M – Reclassification of Crowland Storage from Compression Station Asset Class to Distribution Stations Asset Class • +\$15.6M – Updated scope of Lisgar Station to address integrity and compliance concerns • +\$10.6M – Updated scope and cost for GTAW Parkway Gate Station Rebuild Ph 2 • +\$7.0M – Successfully purchased land for relocation of St. John Sideroad Feeder Station • -\$4.9M – Change in scope and timing for Keele and Finch Feeder due to land availability • -\$3.7M – Bathurst Gate Station timing changed to 2025 to allow for permit acquisition
Utilization	\$56.8M	\$77.7M	+\$20.9M	<ul style="list-style-type: none"> • +\$12.8M – Increase in meters (maintenance) due to proactive meter replacement to smooth workload and increased cost of substitute meter due to supply chain delays • -\$3.2M – Reduction in meters (growth) due to decrease in the growth forecast and a small adjustment to the allocation of meters growth/maintenance • +\$1.9M – AMI Pilot project

Asset Class	2023 AMP	2023 Budget	Variance	Variance Explanation*
				<ul style="list-style-type: none"> • +\$9.2M – Increase in regulator refit program driven by refinement of cost calculation.
Compression Stations	\$59.3M	\$174.0M	+\$114.7M	<ul style="list-style-type: none"> • -\$16.4M – Dehydration expansion project not required in 2023 • -\$18.5M – Reclassification of Crowland Station Renewal to Distribution Stations asset class as preferred alternative operates without compression • +\$146.8M – Dawn to Corunna (previously SCOR: K701/2/3 Reliability) pulled forward to 2023. • +\$3.4M – SCOR:60004-Fdn Blk-Replace timing shifted from 2022 to 2023 execution
Transmission Pipe & Underground Storage	\$10.1M	\$22.7M	+\$12.5M	<ul style="list-style-type: none"> • +\$2.5M – New Independent Asset Integrity Review (IAIR) integrity remediation program • +\$1.9M – NPS 20 Seckerton Gathering ECDA to ILI retrofit identified • +\$10.6M – PCRW: Wells Upgrade advanced for construction efficiencies with Distribution Stations project • -\$2.6M – No MOP-driven replacements identified for 2023
Fleet & Equipment	\$11.8M	\$12.5M	+\$0.7M	<ul style="list-style-type: none"> • +\$0.7M – Increase in fleet to meet vehicle replacement strategy
Real Estate & Workplace Services	\$21.6M	\$43.6M	+\$22.0M	<ul style="list-style-type: none"> • +\$24.9M – Variance due to tendered construction cost and delayed start for Station B with large portion of construction in 2023 • -\$2.3M – Kennedy Rd. start date deferred to meet evolving business facility requirements
TIS	\$30.8M	\$50.7M	+\$19.9M	<ul style="list-style-type: none"> • +\$23.1M – Variance in TIS Business Solutions reflects evolving business needs including: <ul style="list-style-type: none"> • +\$2.5M – Contract Market Harmonization • +\$5.6M – Gas Recovery Harmonization • +\$9.3M – Contract Market Systems - Technology Obsolescence • +\$2.5M – Green Button • +\$2.5M – ESRI GIS Version Upgrade 2023 • -\$2.7M – Microsoft Enterprise Agreement due to transition to cloud services (OPEX)
EA Fixed Overheads (O/H)	\$15.5M	\$17.6M	+\$2.1M	<ul style="list-style-type: none"> • The variance reflects increases to alliance partner Fixed Overheads that began in 2020 but would not have been captured at the time the AMP 2021 – 2025 was developed.
Total	\$515.9M	\$736.4M	\$220.5M	

*Instances where discrepancies exist between the Variance column and Variance Explanations are due to multiple immaterial changes (e.g., cost, scope, and timing) across the asset class.

Table 6.2-2 shows the 2022 Forecast compared to the proposed 2023 Capital Budget for the EGD Rate Zone Portfolio. Due to the timing of the 2022 Forecast data, the 2023 Budget may include investments that have shifted out of 2022 that are captured in the 2022 Forecast.

Table 6.2-2: 2022 Forecast vs 2023 EGD Capital Budget and Variance Explanations (Includes Overheads)

Asset Class	2022 Forecast	2023 Budget	Variance	Variance Explanation
Growth	\$146.4	\$147.0M	\$0.6M	<ul style="list-style-type: none"> Minor fluctuation in Customer Connections year over year 2022 Hydrogen Powered CHP TOC project Change in reinforcement timing and scope due to changes in the growth forecast
Distribution Pipe	\$297.9M	\$106.5M	-\$191.5M	<ul style="list-style-type: none"> Decrease in main replacements in 2023 due to large ICM-projects planned in 2022 including NPS 20 Lakeshore Replacement (Cherry to Bathurst), St. Laurent Ph 3 and timing of smaller investments Variance in integrity due to project pacing and New Independent Asset Integrity Review (IAIR) integrity program Increase in relocation projects based on adjustments to regional forecasts as scope was defined Proactive service relay volumes increased as COVID-19 work restrictions return to normal
Distribution Stations	\$53.0M	\$84.1M	\$31.1M	<ul style="list-style-type: none"> Variance in Gate, Feeder and A stations due to large 2023 projects including Crowland Storage Transfer (\$23.7M), Lisgar Station (\$19.3) and GTAW Parkway Gate (\$10.6M) and an overall increase in contractor and material costs
Utilization	\$62.0M	\$77.7M	\$15.7M	<ul style="list-style-type: none"> Increase due to proactive meter replacement to smooth workload and increased cost of substitute meter due to supply chain delays Variance due to multiyear spend profile of AMI pilot project Adjustments in regulator refits and meter installations due to alliance partner resource availability
Compression Stations	\$60.2M	\$174.0M	\$113.8M	<ul style="list-style-type: none"> Increased spend in 2023 primarily driven by Dawn to Corunna (\$159.4M) Decrease in 2023 due to 2022 timing of SCOR Meter Area Upgrade Ph 2 Decrease in improvements compared to 2022, where 2022 investments include Crowland Station Renewal In Place and Corunna iBalance Upgrades and PSV upgrades

	2022 Forecast	2023 Budget	Variance	Variance Explanation
Transmission Pipe & Underground Storage	\$12.8M	\$22.7M	\$9.8M	<ul style="list-style-type: none"> Variance due to project pacing and scope of improvement projects Increase in 2023 replacement projects due to Crowland Wells Upgrade project (\$10.6M) Increase in integrity due to New Independent Asset Integrity Review (IAIR) integrity program
Fleet & Equipment	\$14.5M	\$12.5M	-\$2.0M	<ul style="list-style-type: none"> Variance from 2022 tools program due to 2022 purchase tools including service abandonment tools and the ProStopp T.D. Williamson isolation tool which improves safety for workers during construction activities
Real Estate & Workplace Services	\$78.0M	\$43.6M	-34.4M	<ul style="list-style-type: none"> Year over year variance is due to market availability of land and project scope variation to meet evolving business facility requirements A specific example was the anticipated purchase of land to replace the Kelfield facility in 2022
TIS	\$28.3M	\$50.7M	\$22.4M	<ul style="list-style-type: none"> +\$23.3M - Variance in TIS Business Solutions reflects evolving business needs including: <ul style="list-style-type: none"> +\$9.3M - Contract Market Harmonization +\$5.7M - Gas Recovery Harmonization +\$9.3M - Contract Market Systems - Technology Obsolescence +\$2.5M - Green Button +\$2.5M - ESRI GIS Version Upgrade 2023
EA Fixed O/H	\$16.9M	\$17.6M	+\$0.7M	<ul style="list-style-type: none"> Variable based on workload and performance
Total	\$770.1M	\$736.4M	-\$33.7M	

6.2.2 Summary of 2023 Capital – Union Rate Zones

Figure 6.2-3 shows the 2023 capital budget for Union RZs presented by asset class.

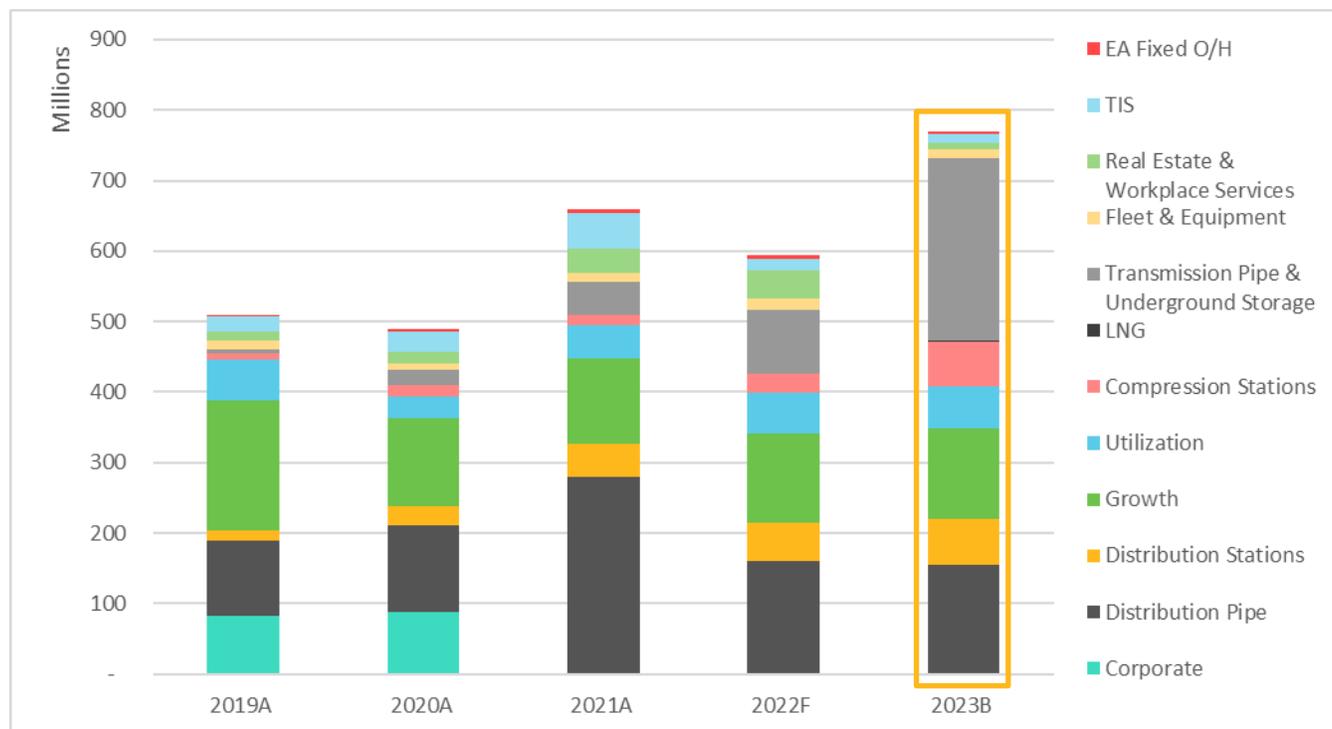


Figure 6.2-3: Capital Profile by Asset Class (2023) – Union Rate Zones

Note: Historical actuals include Capital Pass Through (CPT) Mechanism, ICM projects and integration capital. The 2023B capital expenditures categorized by asset class depicted in Figure 6.2-3 are comprised of each investment’s direct costs and the associated overheads. Asset class historical spend profiles in 2019 and 2020 do not include associated overheads; for this reason, overheads are identified as a separate category historically.

Table 6.2-3 shows the 2023 forecast published in the 2021 – 2025 AMP (EB-2019-0194, Exhibit C, Tab 2, Schedule 1) and the proposed 2023 capital budget for the Union RZs and lists any variance explanations. As discussed in **Section 4.3**, emerging and revised projects were identified and evaluated based on the existing 2023 portfolio. Updated cost estimates were prepared for new or revised 2023 projects.

Table 6.2-3: 2023 Union Capital Budget and Variance Explanations (Includes Overheads)

Asset Class	2023 AMP	2023 Budget	Variance	Variance Explanation*
Growth	\$207.4M	\$128.3M	-\$79.1M	<ul style="list-style-type: none"> Minor fluctuation in customer connections to better reflect actual costs -\$86.6M – Changes in reinforcement timing and scope due to changes in the growth forecast including: <ul style="list-style-type: none"> +6.1M - Staples 1A Panhandle Distribution Reinforcement +5.7M – Hensall Trans Station Rebuild +4.2M – Kingston Creekford Rd Reinforcement -\$66.3M – SRP North Sudbury Marten River Compressor Station -\$19.3M – Parry Sound Lateral Reinforcement (12.5 km of NPS 6) -\$10.5M – Cambridge Reinforcement -\$8.0M – Oxford Phase 2, Delhi Reinforcement +\$2.1M – New EGI Hydrogen blending feasibility investments
Distribution Pipe	\$122.2M	\$155.5M	+\$33.2M	<ul style="list-style-type: none"> -\$9.0M - Class Location work previously classified under main replacements; decrease aligns with sustainment workloads of program. -\$2.6M – Decrease driven by updated anode program workload forecast +\$45.8M – Variance in integrity management projects and programs including: <ul style="list-style-type: none"> +\$15.6M – New integrity programs driven by 3rd party assessment results: Independent Asset Integrity Review (IAIR) +\$7.5M – Depth of Cover Mitigation Program +3.0M – TIMP Geohazard Mitigation \$12.5M – Sudbury lateral integrity digs -\$0.8M – Decrease to relocation program due to additional information available on relocations and adjustments to regional forecasts. +\$7.0M – Various changes in cost, scope and timing for main replacements and new cost for Private Sewer Lateral Locates (\$1.2M) -\$2.8M – Decrease in Service Relays based on adjustments to regional forecasts -\$6.4M – No MOP-replacements have been identified for 2023.

Asset Class	2023 AMP	2023 Budget	Variance	Variance Explanation*
Distribution Stations	\$25.2M	\$64.4M	+\$39.2M	<ul style="list-style-type: none"> • +\$2.1M – Variance in CNG projects due to scope and cost definition • +\$11.8M – Overall increase in Gate, Feeder and A Stations due to: <ul style="list-style-type: none"> • +\$3.1M – Port Stanley Gate Station in plan due to operational and integrity concerns • +\$2.5M – New Fire Suppressions and Auto Transfer Generator program driven by compliance requirements • +\$2.5M – Hamilton Gate 3 in plan due to operational and integrity concerns • +\$1.0M – Bryanston Gate in plan due to operational and integrity concerns • +3.8M – New Inside Regulator & ERR Program • +\$22.3M – Overall increase in Station Rebuilds & B and C Stations due to project scope and timing including: <ul style="list-style-type: none"> • +\$9.2M – 16U-601 Brantford Gate Station • +\$2.1M – Goldcorp Dome Mine SMS Rebuild • +\$1.5M – Sandwich Station reclassified to distribution stations from compression stations asset class • +2.1M – Dryden TBS, Glycol and Odourant Upgrades • +\$1.4M – New Pressure Factor Measurement (PFM) compliance program • Various investments to address integrity and operational concerns.
Utilization	\$61.0M	\$58.8M	-\$2.2M	<ul style="list-style-type: none"> • No significant variance
Compression Stations	\$98.2M	\$64.5M	-\$33.7M	<ul style="list-style-type: none"> • +7.2M – Variance in improvement projects timing and scope including: <ul style="list-style-type: none"> • +\$2.3M – 5985 CV & Piping- pipe modifications and inclusion filtration in design • +\$1.2M – Parkway East Generator Control Upgrade due to unforeseen obsolescence • +\$1.0M – Siemen’s valve controller replacements • -\$2.9M – Timing of Bright B Generator overhaul shifted to 2025 based on operating hours • +47.9M – Dawn to Corunna (Dawn Tie-in), Union Rate Zone component of Dawn to Corunna Pipeline project • -\$89.2M – Timing of Dawn C Compression Lifecycle shifted to 2026
LNG	\$16.0M	\$0.8M	-\$15.3M	<ul style="list-style-type: none"> • -\$16.0M – Variance due to timing shift of Hagar replacement projects: JVG Compressor Upgrade and KVGR/Cycle Mix Cooler based on condition and risk

Asset Class	2023 AMP	2023 Budget	Variance	Variance Explanation*
Transmission Pipe & Underground Storage	\$61.1M	\$255.0M	+\$193.9M	<ul style="list-style-type: none"> • +\$3.9M – Class Location increase due to timing of execution • +\$223.6M – Panhandle Regional Expansion Project driven by Panhandle Transmission System demand • +\$3.6M – New Independent Asset Integrity Review (IAIR) integrity remediation program • +\$6.4M – Due to the cost of replacing and remediating shallow depth of cover in six sections on the Trafalgar NPS 26 • +\$2.5M – Due to the cost of retrofitting the NPS 24 Trafalgar Bypass Retrofit from ECDA to ILI inspection • -\$29.8M – Panhandle Line Replacement in-service date shifted to 2024
Fleet & Equipment	\$12.8M	\$13.0M	+\$0.2M	<ul style="list-style-type: none"> • No significant variance
Real Estate & Workplace Services	\$26.3M	\$8.5M	-\$17.7M	<ul style="list-style-type: none"> • -\$17.3M – New London Site and 50 Keil Drive Renovations Phase 4 start date deferred to meet evolving business facility requirements
TIS	\$14.2M	\$13.0M	-\$1.1M	<ul style="list-style-type: none"> • No significant variance
EA Fixed O/H	\$3.1M	\$4.1M	+\$0.9M	<ul style="list-style-type: none"> • Variable based on workload and performance
Total	\$647.5M	\$769.7M	\$122.1M	

*Instances where discrepancies exist between the Variance column and Variance Explanations are due to multiple immaterial changes (e.g., cost, scope, and timing) across the asset class.

Table 6.2-2 shows the 2022 Forecast compared to the proposed 2023 Capital Budget for the Union Rate Zones Portfolio. Due to the timing of the 2022 Forecast data, the 2023 Budget may include investments that have shifted out of 2022 that are captured in the 2022 Forecast.

Table 6.2-4: 2022 vs 2023 Union Capital Budget and Variance Explanations (Includes Overheads)

Asset Class	2022	2023 Budget	Variance	Variance Explanation
Growth	\$126.9M	\$128.3M	\$1.3M	<ul style="list-style-type: none"> New EGI Hydrogen blending feasibility investments (\$2.1M) partially offset by variance in customer connections (600K) Minor fluctuation in Customer Connections year over year
Distribution Pipe	\$160.6M	\$155.5M	-\$5.1M	<ul style="list-style-type: none"> Overall increase due to the uptick in integrity programs driven by new IAIR program, new TIMP Geohazard Mitigation program and increase in integrity dig mitigation costs to address ILI results Increase in relocations based on adjustments to regional forecasts as scope was defined Decrease in main replacement program due to larger ICM projects executed in 2022 including London Lines, Kirkland Lake and timing and scope of smaller investments Class Location program lower than 2022 due to initial ramp up of class location program entering sustainment phase Decrease in corrosion program due to adjusted timing of rectifier groundbed program and forecast updates
Distribution Stations	\$53.6M	\$65.2M	\$11.6M	<ul style="list-style-type: none"> Net increase due to Inside Regulator & ERR Program and uptick in Station Rebuilds & B and C Stations due to new PFM Compliance Program, LP Station rebuilds and operational integrity concerns Overall increase in contractor and material costs
Utilization	\$58.3M	\$58.8M	\$0.5M	<ul style="list-style-type: none"> No significant variance
Compression Stations	\$26.9M	\$64.5M	\$37.6M	<ul style="list-style-type: none"> Overall increase driven primarily by 2023 Dawn to Corunna (Dawn Tie In) project. Decreases due to no major overhauls scheduled in 2023
LNG	\$600K	\$750K	\$150K	<ul style="list-style-type: none"> No change to the number of projects, minor variation in project cost
Transmission Pipe & Underground Storage	\$89.7M	\$258.0M	\$168.4M	<ul style="list-style-type: none"> Increase in 2023 due to Panhandle Regional Expansion Project (\$205.6M) and Leamington Interconnect (\$15M) Decrease from 2022 integrity spend due to 2022 Dawn to Cuthbert (NPS 42, 34, 26) integrity investments
Fleet & Equipment	\$16.1M	\$13.0M	-\$3.1M	<ul style="list-style-type: none"> Fewer vehicle purchases planned in 2023 due to delays in supply chain

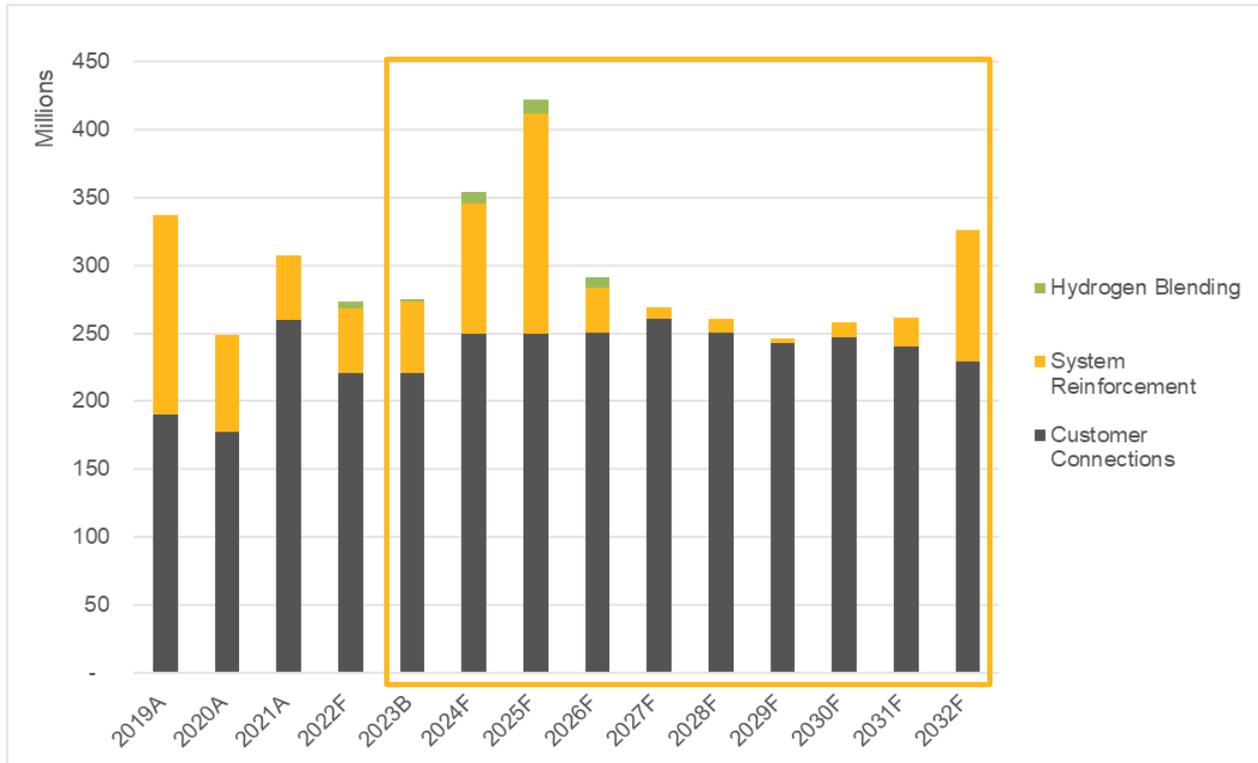
Asset Class	2022	2023 Budget	Variance	Variance Explanation
Real Estate & Workplace Services	\$40.7M	\$8.5M	-\$32.1M	<ul style="list-style-type: none"> Variance due to market availability and project scope variation to meet business facility requirements Development timing of large projects such as New London Site and interior renovations at 50 Keil Drive
TIS	\$11.1M	\$13.0M	\$1.9M	<ul style="list-style-type: none"> Variance due to changing business requirements/timing
EA Fixed O/H	\$4.5M	\$4.1M	-\$0.4M	<ul style="list-style-type: none"> Variable based on workload and performance
Total	\$588.9M	\$769.7M	\$180.8M	

6.2.3 Asset Class Capital Summaries

Variations in spend profiles are tied to the Asset Class Strategies described in **Section 5** and the variance explanations noted in **Sections 6.2.1 and 6.2.2**. The 2022 Forecast Data was produced before EGI's 2023-2032 capital plan was created; therefore, some investments are captured in both the 2022 Forecast Data and the subsequent years' budget.

6.2.3.1 Growth

The total average capital spend for the Growth asset class is forecast to be \$296M over the 10 years identified. **Figure 6.2-4** presents 4 years of historical spend and the projected 10-year EGI spend profile.



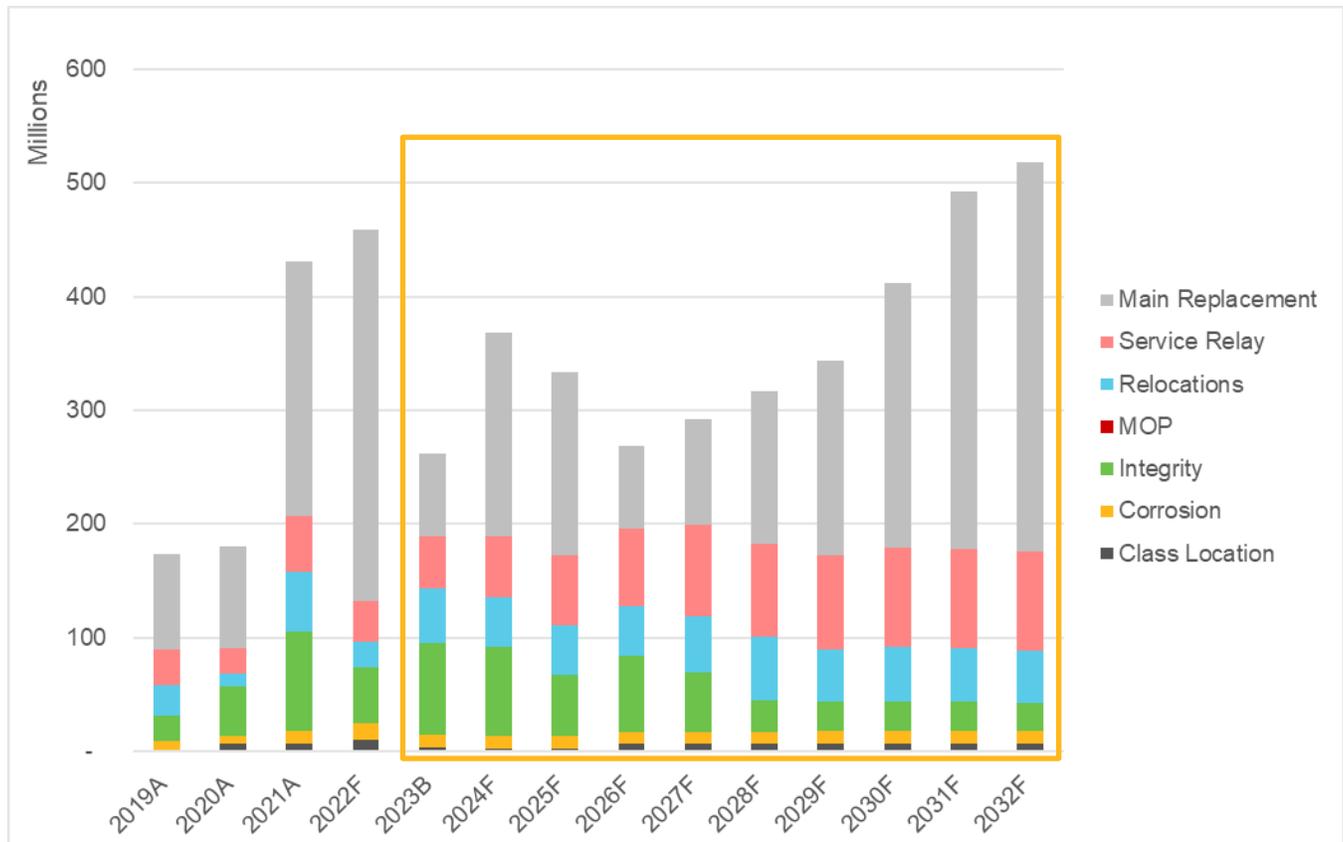
Note: Overheads excluded in 2019 – 2020.

Figure 6.2-4: Capital Expenditure over Time for Growth – EGI

For further details on the Growth asset class, refer to **Section 5.1**.

6.2.3.2 Distribution Pipe

The total average capital spend for the Distribution Pipe asset class is forecast to be \$361M over the 10 years identified. **Figure 6.2-5** presents 4 years of historical spend and the projected 10-year spend profile. The 2022 Forecast Data was produced before EGI's 2023-2032 capital plan was created and before the St. Laurent LTC Decision (EB-2020-0293) was received, therefore, the St. Laurent Ph 3/4 projects are also shown in the 2022 Forecast.



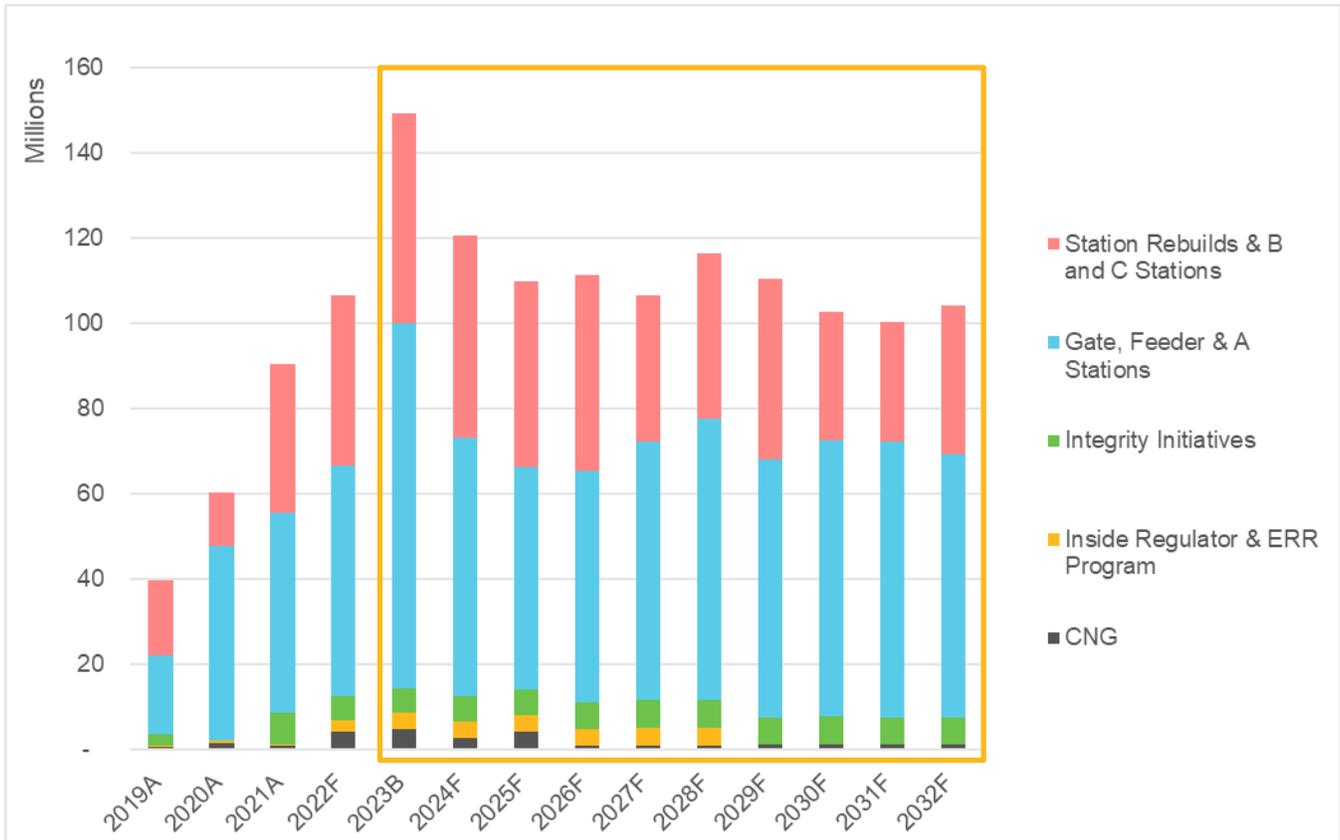
Note: Overheads excluded in 2019 – 2020.

Figure 6.2-5: Capital Expenditure over Time for Distribution Pipe – EGI

For further details on the Pipe asset class, refer to **Section 5.2.3**.

6.2.3.3 Distribution Stations

The total average capital spend for the Distribution Stations asset class is forecast to be \$113M over the 10 years identified. **Figure 6.2-6** presents 4 years of historical spend and the projected 10-year spend profile.



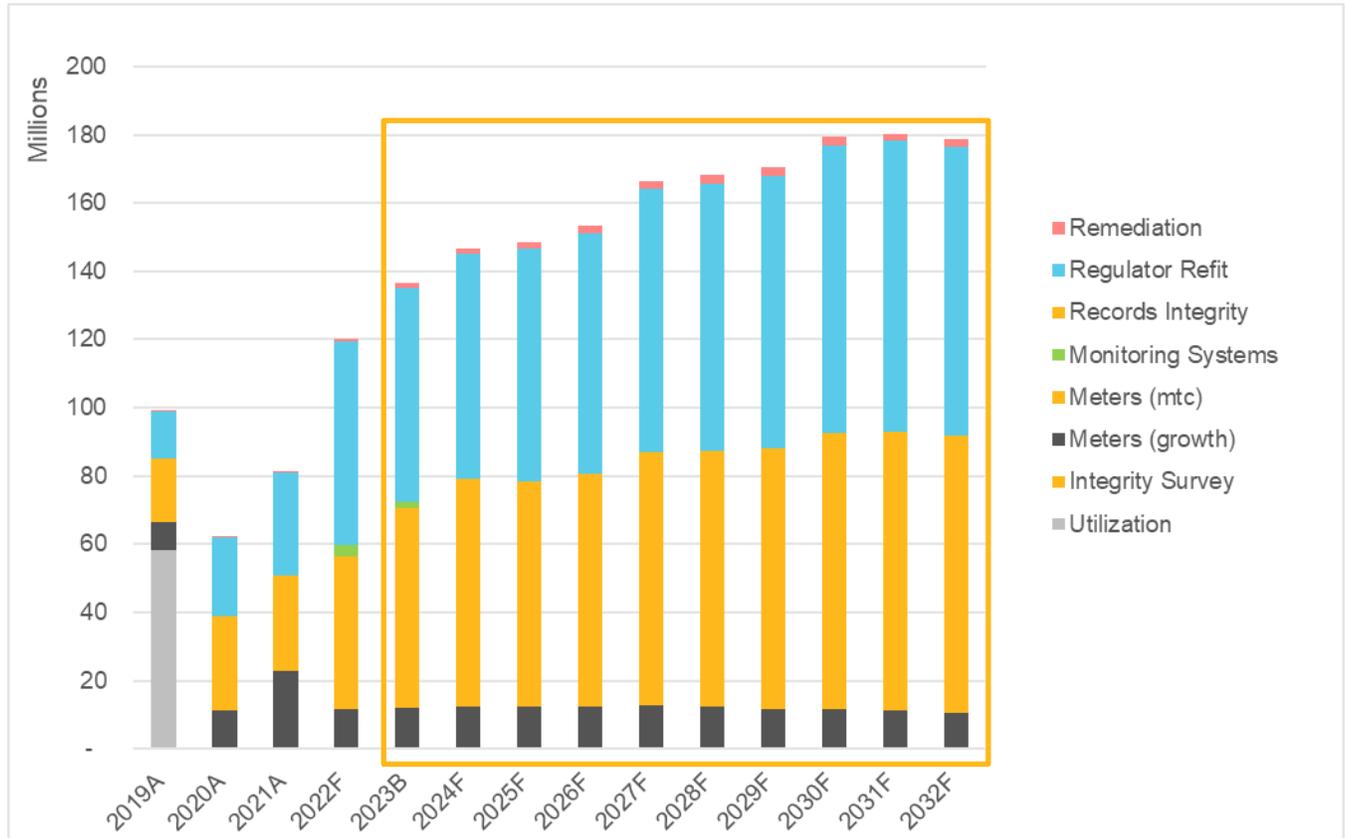
Note: Overheads excluded in 2019 – 2020.

Figure 6.2-6: Capital Expenditure over Time for Distribution Stations – EGI

For further details on the Distribution Stations asset class, refer to **Section 5.2.4**.

6.2.3.4 Utilization

The total average capital spend for the Utilization asset class is forecast to be \$163M over the 10 years identified. **Figure 6.2-7** presents 4 years of historical spend and the projected 10-year spend profile.



Note: Overheads excluded in 2019 – 2020.

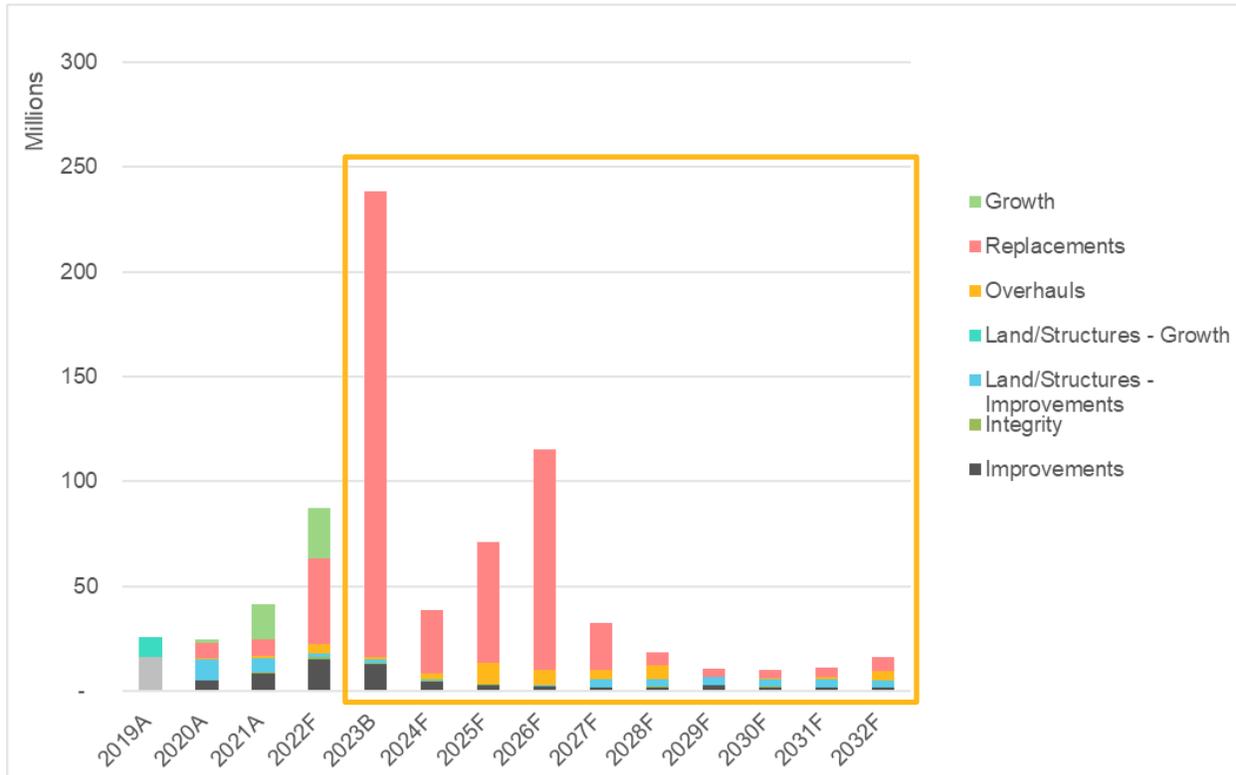
Figure 6.2-7: Capital Expenditure over Time for Utilization – EGI Rate Zone

For further details on the Utilization asset class and life cycle strategies, refer to **Section 5.2.5**.

6.2.3.5 Compression Stations

The total average capital spend for the Compression Stations asset class is forecast to be \$56M over the 10 years identified.

Figure 6.2-8 presents 4 years of historical spend and the projected 10-year spend profile.



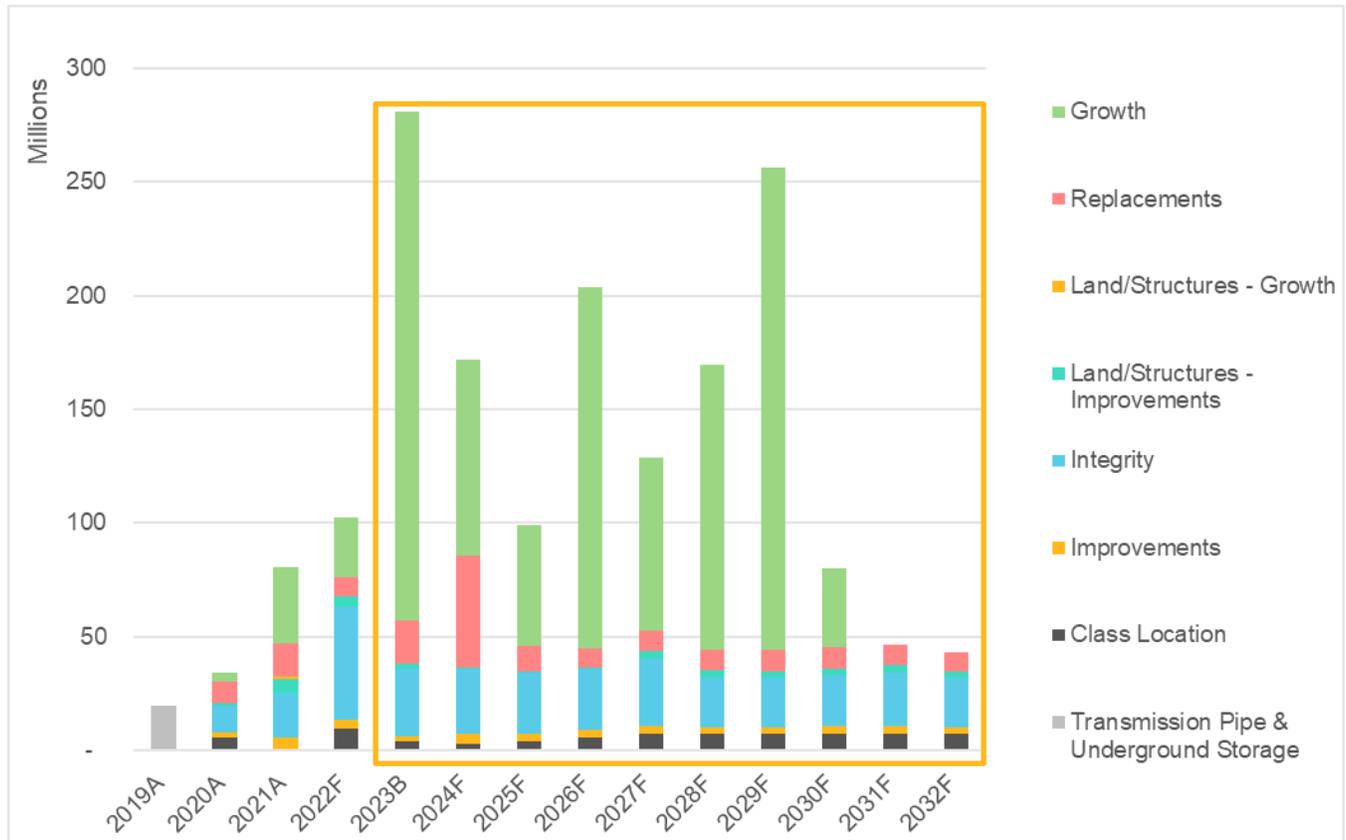
Note: Overheads excluded in 2019 – 2020.

Figure 6.2-8: Capital Expenditure over Time for Compression Stations – EGI

For further details on the Compression Stations asset class, refer to **Section 5.3.5**.

6.2.3.6 Transmission Pipe and Underground Storage

The total average capital spend for the Transmission Pipe and Underground Storage asset class is forecast to be \$149M over the 10 years identified. The Transmission Pipe and Underground Storage class includes transmission reinforcement investments. **Figure 6.2-9** presents 4 years of historical spend and the projected 10-year spend profile.



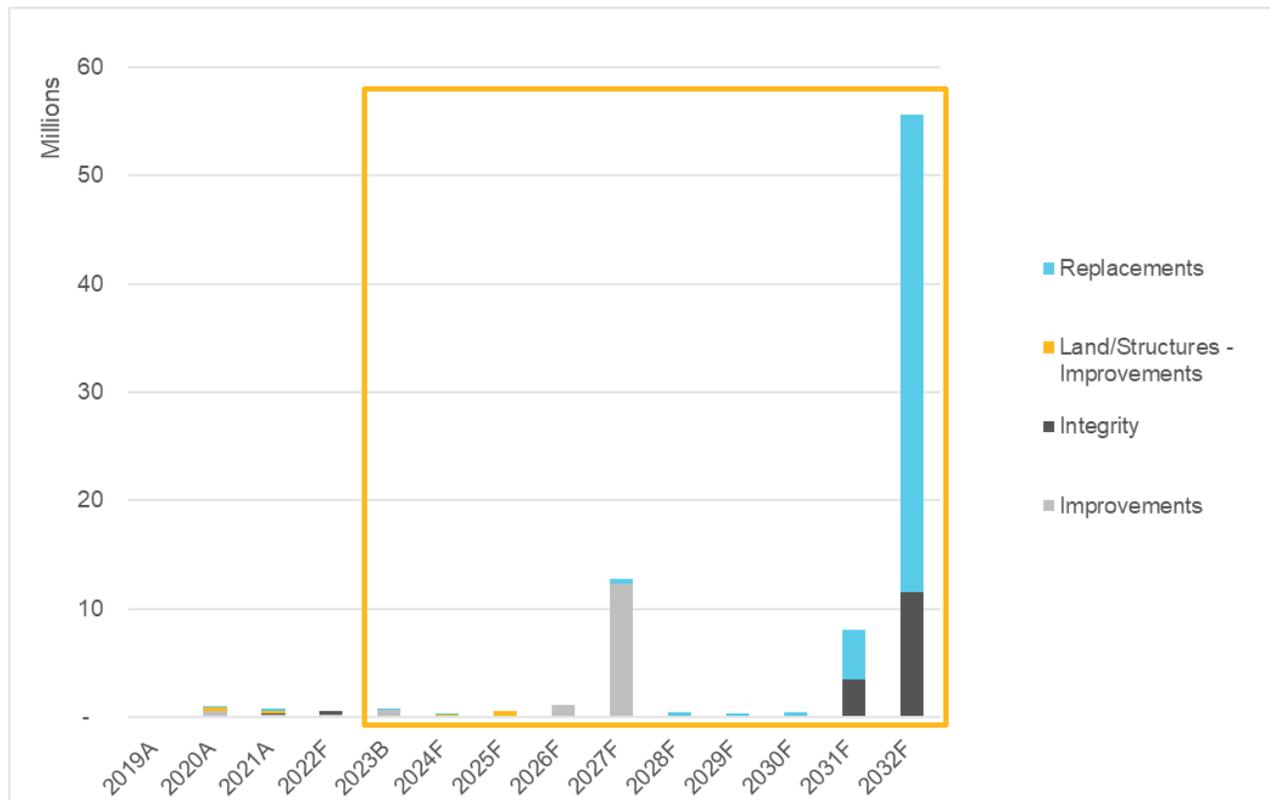
Note: Overheads excluded in 2019 – 2020.

Figure 6.2-9: Capital Expenditure over Time for Transmission Pipe and Underground Storage – EGI

For further details on the Transmission Pipe and Underground Storage asset class, refer to **Section 5.3.6**.

6.2.3.7 Liquefied Natural Gas

The total average capital spend for the Liquefied Natural Gas (LNG) asset class is forecast to be \$8M over the 10 years identified. **Figure 6.2-10** presents 4 years of historical spend and the projected 10-year spend profile. LNG assets are in the Union RZ only.



Note: Overheads excluded in 2019 – 2020.

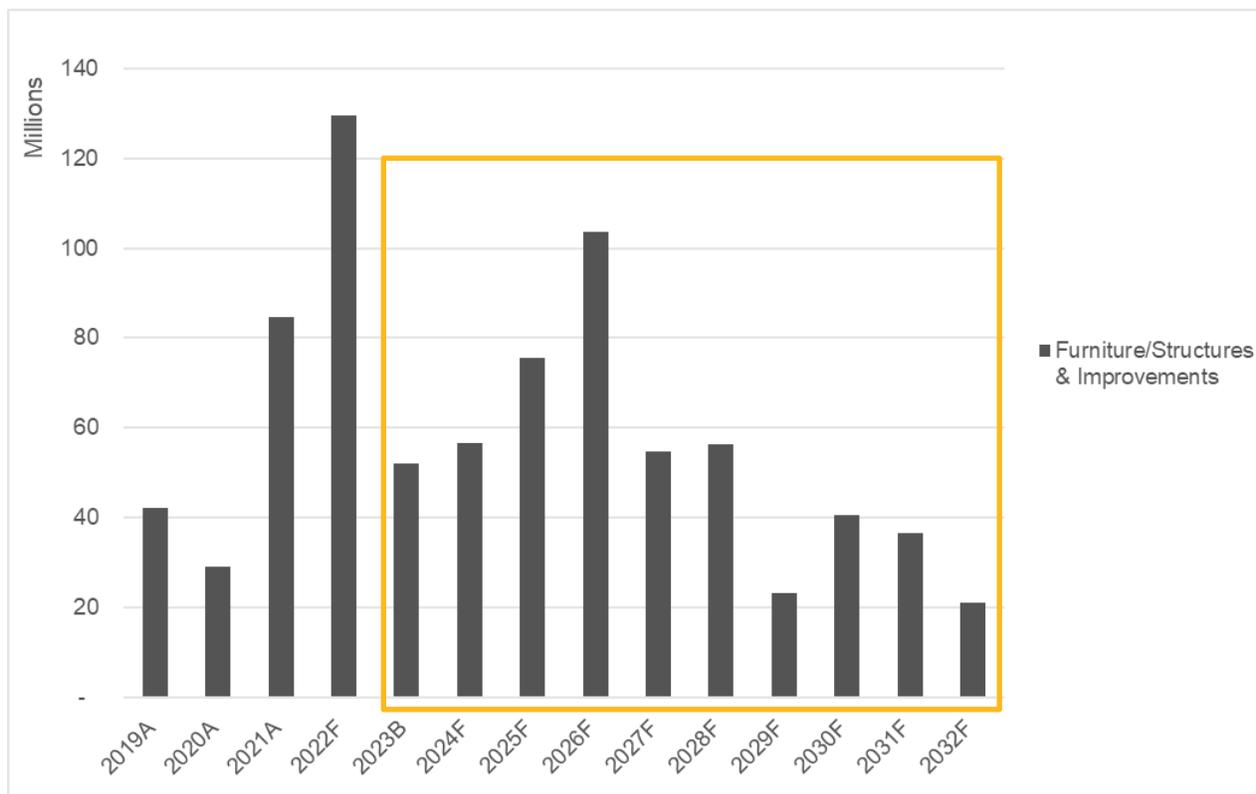
Figure 6.2-10: Capital Expenditure over Time for Liquefied Natural Gas – EGI

For further details on the LNG asset class, refer to **Section 5.3.7**.

6.2.3.8 Real Estate and Workplace Services

The total average capital spend for the Real Estate and Workplace Services (REWS) asset class is forecast to be \$52M over the 10 years identified.

Figure 6.2-11 presents 4 years of historical spend and the projected 10-year spend profile.



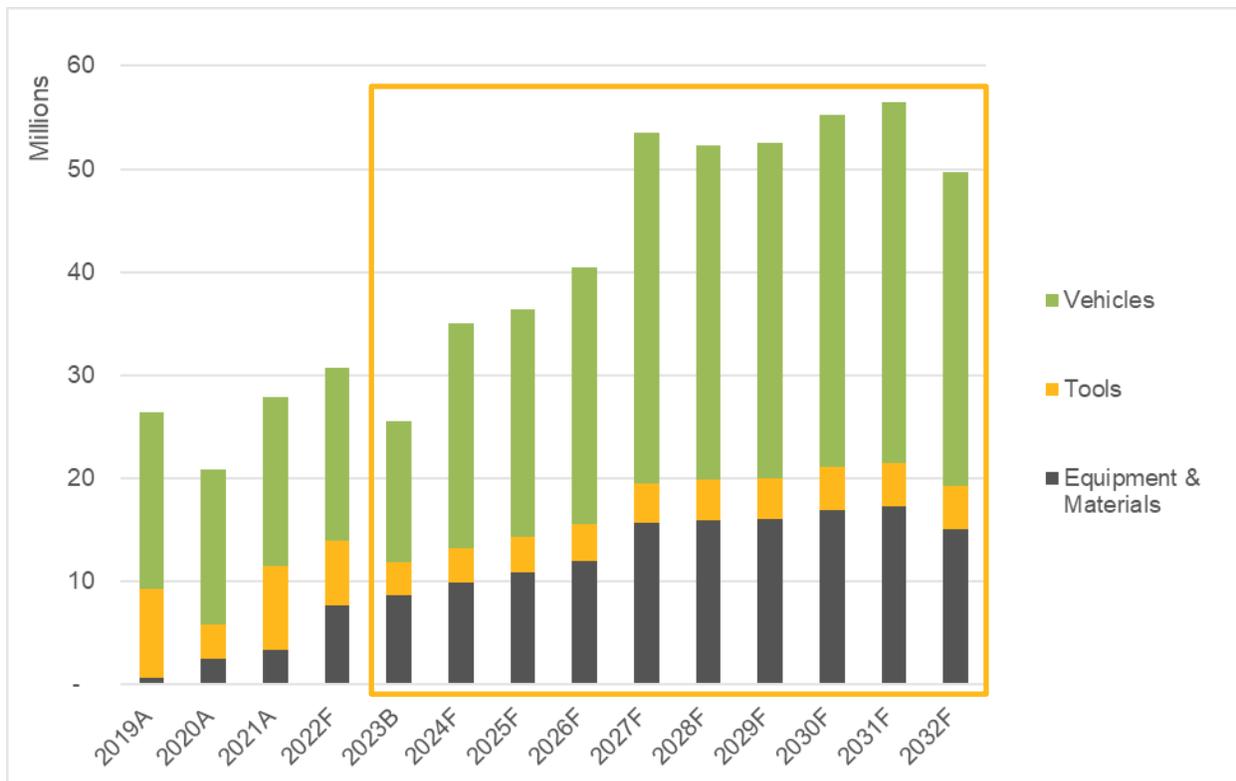
Note: Overheads excluded in 2019 – 2020.

Figure 6.2-11: Capital Expenditure over Time for REWS – EGI

For further details on the REWS asset class, refer to Section 5.4.

6.2.3.9 Fleet and Equipment

The total average capital spend for the Fleet and Equipment asset class is forecast to be \$46M over the 10 years identified. **Figure 6.2-12** presents 4 years of historical spend and the projected 10-year spend profile.



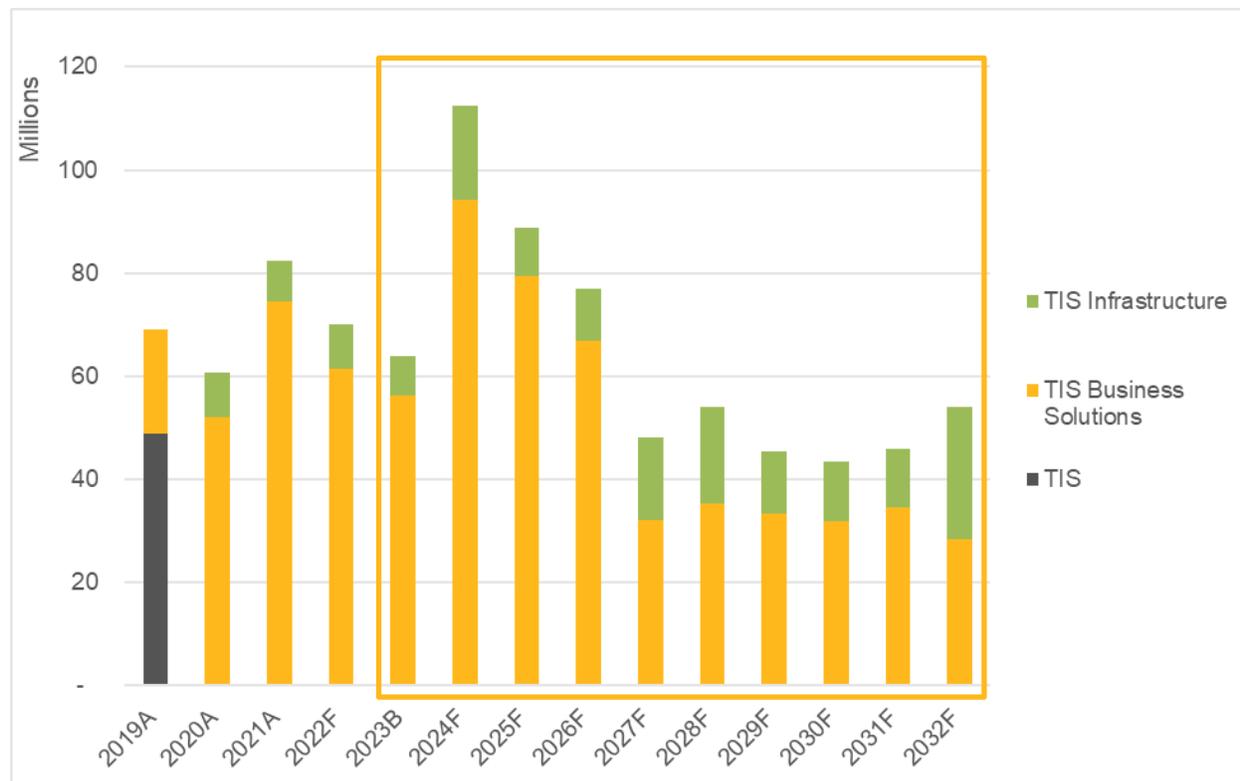
Note: Overheads excluded in 2019 – 2020.

Figure 6.2-12: Capital Expenditure over Time for Fleet and Equipment – EGI

For further details on the Fleet and Equipment asset class, refer to **Section 5.5**.

6.2.3.10 Technology and Information Services

The total average capital spend for the Technology and Information Services (TIS) asset class is forecasted to be \$63M over the 10 years identified. **Figure 6.2-13** presents 4 years of historical spend and the projected 10-year spend profile.



Note: Overheads excluded in 2019 – 2020.

Figure 6.2-13: Capital Expenditure over Time for TIS – EGI

For further details on the TIS asset class, refer to **Section 5.6**.

6.3 Summary of IRP Assessment

This section provides detail on the methodologies and process used for IRP evaluation, the evaluation status and next steps. **Appendix B** provides additional detail on the scope and the current status of EGI's IRP assessment process, including the binary screen and IRPA evaluation status at the time of filing this AMP.

6.3.1 IRP Assessment Results

The 2023 – 2032 capital plan contains 3087 investments. For each investment included within **Appendix B**, the following sequence of steps are followed; where an investment is classified as either pass or fail at each stage. When an investment fails, it does not proceed to the next stage of evaluation as it is determined that an investment is not applicable for an IRPA.

Identification of Constraints - EGI implements a wide range of investments over a 10-year period, they are split between gas carrying asset investments and non-gas carrying asset investments. IRPAs are focused on gas carrying assets, therefore the initial step applied in the review of the 2023-2032 capital plan for IRP purposes, is to remove non-gas carrying assets.

Binary Screening – The binary screening criteria are then applied to all remaining projects. This step allows EGI to focus on investments where there is potential that an IRPA could technically and economically meet the system need. The binary screening was performed in accordance with the criteria outlined in the OEB's IRP Decision (EB-2020-0091).

Technical Evaluation – A technical evaluation is then performed on all projects that pass the binary screening. This step evaluates the technical viability of potential IRPAs to reduce peak demand to the degree required to meet the identified system need.

Economic Evaluation – An economic evaluation is then performed on all projects that pass the technical evaluation. This three-phase DCF+ evaluation compares the IRP Plan(s) to the facility alternative to determine which alternative is optimal. (See the OEB's IRP Decision [EB-2020-0091] for more details)

IRP Plan Application – When EGI determines that an IRPA (alone, in combination with other IRPAs, or in combination with a facility project) is the best option to address a system need, an application for approval of an IRP Plan will be submitted. Appendix B will indicate which investments have an associated IRP Plan and the status of the plan.

6.3.2 Identification of Constraints

Of the 3087 projects within the 2023-2032 capital plan, there were 809 non-gas carrying investments and 2278 gas carrying investments. **Figure 6.3-1** shows the associated costs for Gas Carrying and Non-Gas Carrying asset investments for the 2023 – 2032 period.

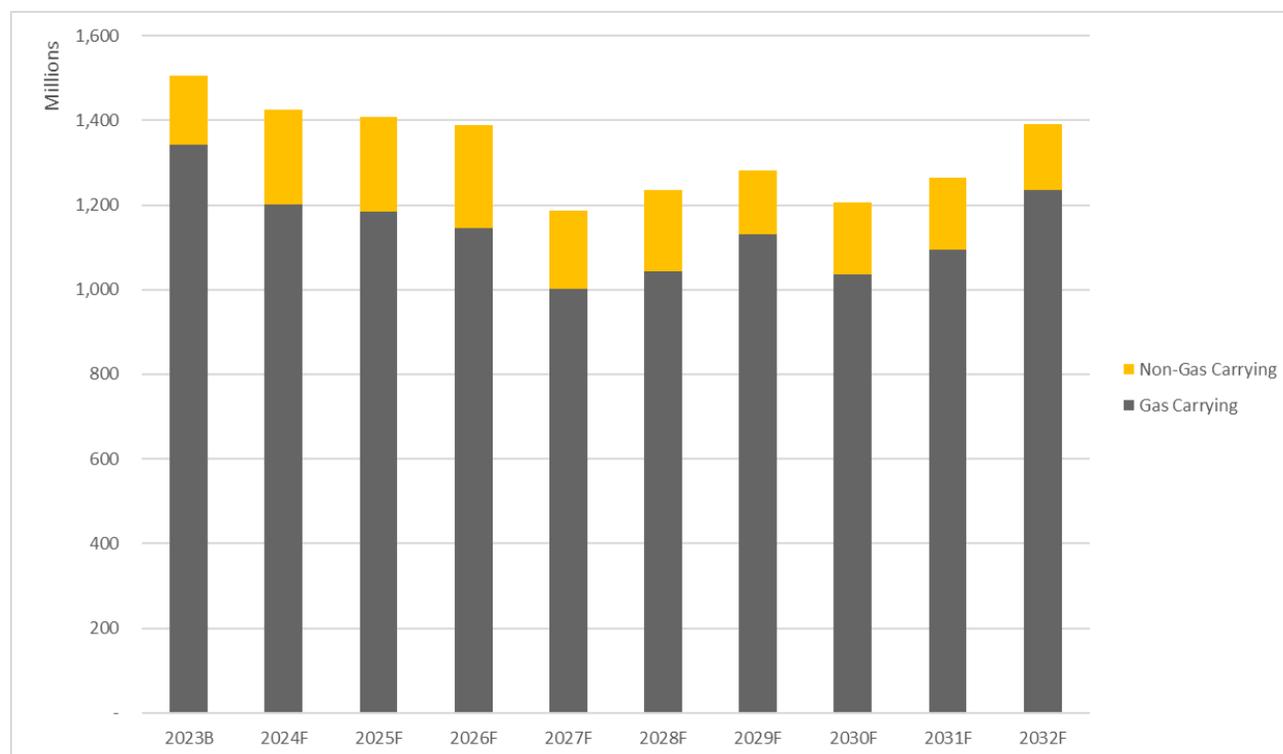


Figure 6.3-1: Gas Carrying vs. Non-Gas Carrying Categorization

There were 809 non-gas carrying investments within the 2023-2032 capital plan, none of the 809 investments were binary screened, as each fell within one of the following groupings that do not allow for IRP principles to be applied:

- Fleet & Equipment
- Real Estate and Workplace Services
- Technology and Information Services
- Extended Alliance
- Hydrogen investments
- Land/Structure investments in the Compression Stations and Transmission Pipe & Underground Storage asset classes have not been binary screened as they are focused on buildings, roadways and utilities or properties in proximity to other assets.

6.3.3 Binary Screening

Following **Section 6.3.2** above, EGI applied the binary screening to all remaining projects. This binary screening was completed in accordance with the criteria outlined in the OEB's IRP Decision (EB 2020-0091), and includes the following:

- **Timing:** If an identified system constraint/need must be met in under three years, an IRP Plan could not likely be implemented and its ability to resolve the identified system constraint could not be verified in time; therefore, an IRP evaluation is not required. Exceptions to this criterion could include consideration of supply-side IRPAs and bridging or market-based alternatives where such IRPAs can address a more imminent need.
The timing criteria resulted in binary screen fails for projects within three years where supply-side alternatives were not viable. Investments within three years, where it was unclear if a supply side solution would be viable or not passed binary screening to allow for further assessment in the technical evaluation.
- **Customer-Specific Builds:** If an identified system need has been underpinned by a specific customer's (or group of customers') request for a facility project and either the choice to pay a Contribution in Aid of Construction (CIAC) or to contract for long-term firm services delivered by such facilities, then an IRP evaluation is not required.

This screening criteria did not result in the failing of any investments, as customer specific builds all appear to have rate impacts because they are not 100% covered by CIAC.

- **Community Expansion & Economic Development:** If a facility project has been driven by government legislation or policy with related funding explicitly aimed at delivering natural gas into communities, then an IRP evaluation is not required.
Capital expenditures associated with Community Expansion projects and Economic Development projects are not included in the 2023-2032 AMP and, therefore, will not receive an IRP evaluation.
- **Pipeline Replacement and Relocation Projects:** If a facility project is being advanced for replacement or relocation of a pipeline and the cost is less than the minimum project cost that would necessitate a Leave to Construct approval, then an IRP evaluation is not required.
The current LTC threshold was applied to the 2023-2032 capital plan and projects that fell under this threshold, in asset classes other than Growth System Reinforcement, failed the binary screening.
- **Emergent Safety Issues:** If an identified system constraint/need is determined to require a facility project for EGI to offer safe and reliable service or to meet an applicable law, an IRP evaluation is not required. An example of such a system constraint/need, and an emergent safety issue, would be if an existing pipeline sustained unanticipated damage and needed to be replaced as quickly as possible to ensure the safety of local communities and EGI broader transmission and distribution systems. Longer-term safety related system constraints/needs may be appropriate for an IRP Plan and should be considered on a case-by-case basis.
This screening criteria caused a binary screen fail for investments that have been created for emergency replacements. Appendix B also includes program items, programs consist of multiple years of work that are forecast in one investment. Within programs, the specific investments are typically identified in the year of execution or when an emergency occurs. Investments within these programs may align with the emergent safety criteria, which was applied cautiously by EGI in response to the concerns in the IRP filing that this could be applied too broadly to the projects being assessed.

Applying the above criteria to the AMP in the binary screening step resulted in 886 projects passing the binary screening and 1392 failing. **Figure 6.3-2** provides the values associated with the binary screening results.

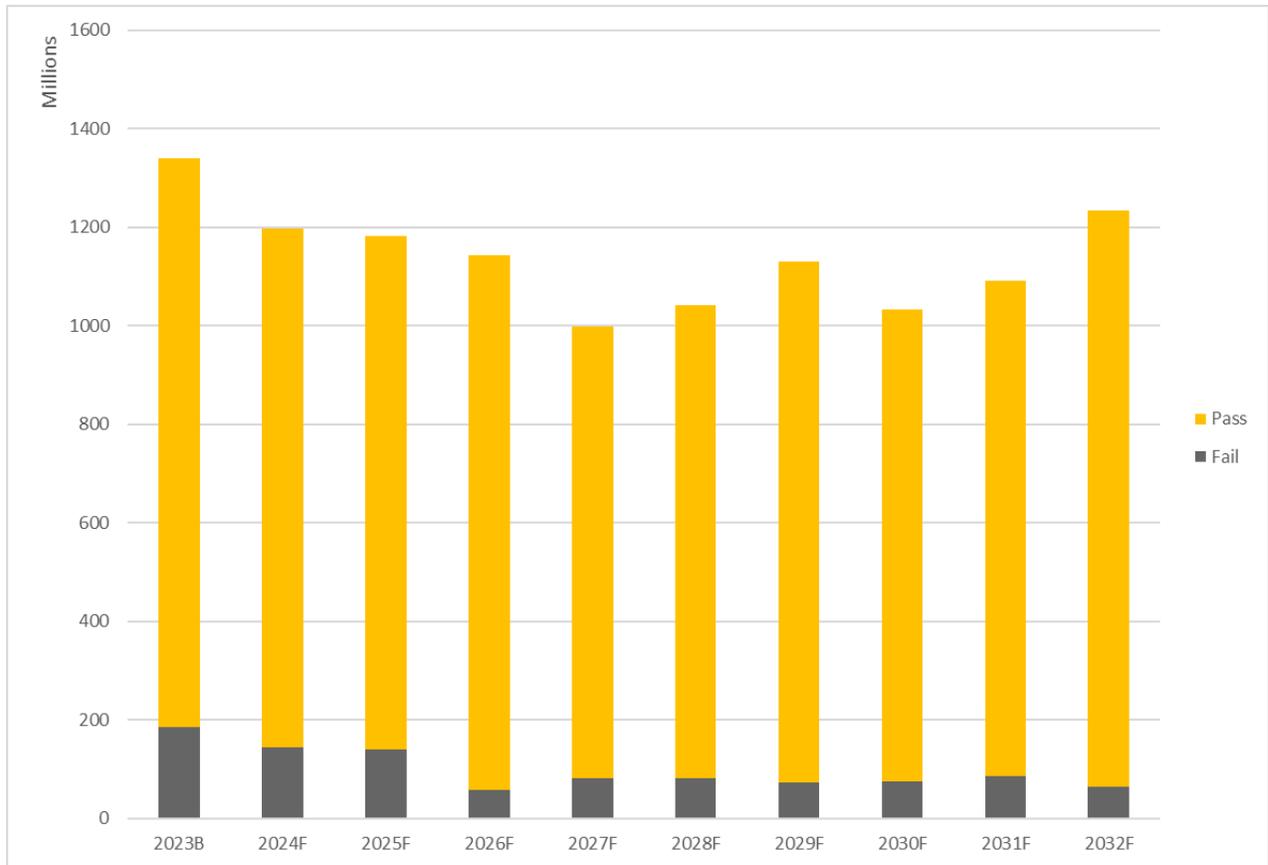


Figure 6.3-2: Binary Screening Results

Figure 6.3-3 provides a forecast breakdown of projects passing binary screening by asset program type. Transmission System Reinforcement and Distribution System Reinforcement have been shown individually as they largely represent growth opportunities. The “Other” category consists primarily of maintenance, replacement, and compliance driven activities.

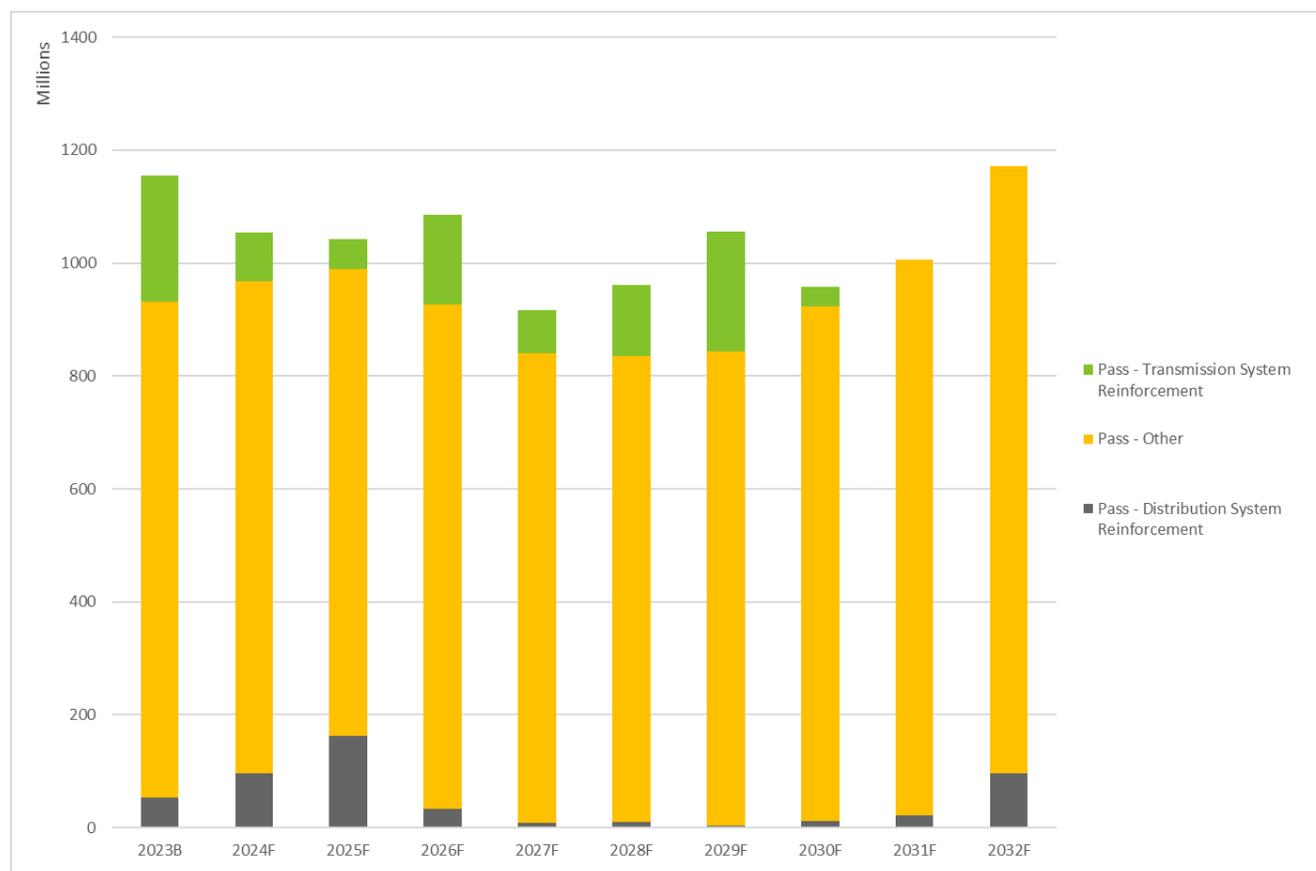


Figure 6.3-3: Binary Screening Pass by Asset Program

6.3.4 Technical Evaluation Project Review

Projects passing the binary screening are currently being reviewed in detail to verify that the forecast needs haven't changed, the project costs are sufficient, the project drivers haven't changed and to assess whether multiple projects can be addressed as part of the same IRPA Plan. To evaluate projects for IRPAs, both technically and economically, the identified needs and facility projects must be reviewed and updated where necessary. This project review step is time and resource intensive to complete, and, at the time of filing, is the step that EGI is actively engaged in. EGI is reviewing and assessing the following for each project:

- **Project Need:** The project need is reviewed to determine if any factors or forecasts have changed since the project was included in the 2023-2032 capital plan. Ensuring the facility project needs reflect the latest forecasts and information will allow for a more accurate comparison to IRPAs.
- **Project Cost:** Project costs are estimated when projects are identified for consideration in the 2023-2032 capital plan; however, since projects may be forecast up to ten years in advance, the cost estimates need to be reviewed and updated as required. Greater certainty of the project costs will provide a more accurate IRPA cost comparison.
- **Project Driver:** There are instances where one project is addressing more than one identified need (i.e., class location and growth). EGI will review the project drivers to ensure that the potential IRPAs will address multiple project needs, i.e., growth and risk/compliance needs.
- **Project Groupings:** EGI will review the 2023-2032 capital plan to group projects by system where applicable, as IRPAs may be more effective in addressing multiple needs in one area. This is very time-intensive to copy information from one system to another. EGI is exploring if these location details can be entered with project details in a manner that allows for future sorting, to ease the time required for this work.

It is critical that this technical evaluation project review take place on a project-by-project basis to ensure that the project is properly defined and that all possible alternatives are properly considered. Once the project details have

been confirmed and updated as needed, the next step in the technical evaluation will commence. This will mean that, in tandem, some projects will be moving through a detailed project review while others are having the next step of the technical evaluation completed. This will advance the work in the timeliest manner possible.

6.3.5 IRP Next Steps

At the time of filing the 2023-2032 AMP, EGI has completed the identification of constraints, and the binary screening for all of the projects. The current technical review focus is on both completing technical evaluation project reviews and then the assessment of what IRPAs are technically feasible for the investment. **Appendix B** contains the status of the fully complete technical evaluations to date. Of the investments that have had a technical review completed, the majority of them have failed at this stage. This is because it was found that these investments do not have any technically feasible IRPAs, even though they passed the binary screening stage. Examples of these investments include those addressing meters and regulators, AMP fittings, integrity digs etc.

The remaining Investments that are now moving through the technical evaluation, are those expected to most likely have a technically feasible IRPA; this is where the team is currently focused. Specifically, the focus is now on the following areas:

- 1) Investments with in-services dates of 2028 and prior, with the highest costs
- 2) Investments with in-services dates of 2028 and prior, in the geographic areas with the highest forecast growth

EGI will provide an updated version of Appendix B in 2023 to document the progress to date.

Investments that pass the technical evaluation will have an IRP scope developed and it will then move onto an economic evaluation. Both technical and economic evaluations are part of the two-stage evaluation process noted in the OEB's IRP Decision (EB-2020-0091). When an IRPA is determined to be the optimal alternative, the IRP Plan will be filed with the OEB for approval. Lastly, periodic review of any IRP Plans and system needs will occur as outlined in the OEB's IRP Decision (EB-2020-0091).

6.3.5.1 Economic Evaluations

At the time of filing the 2023-2032 AMP, EGI is still engaging in discussions with the IRP TWG to refine the use of the DCF+ test in the context of IRP. The group is looking to improve the test to better list and define the costs and benefits of facility alternatives and IRPAs and to clarify how these costs and benefits should be considered within the DCF+ test. Additionally, individuals focused on this aspect of the IRP process are looking to better understand how other jurisdictions are handling non-pipeline alternatives and understand how different techniques can be applied as part of EGI's evaluation.

As the DCF+ test is defined and EGI gains practice looking at investments through this lens, it is believed additional insight will be obtained to that can be applied to future DCF+ analysis.

6.3.5.2 Pilot Project Design, Economic Evaluation & Implementation

The pilot projects are expected to provide learnings and a better understanding of the impact of IRPAs on avoiding, deferring, or reducing facility projects. They will also provide learnings on the DCF+ economic evaluation, IRPA program designs, implementation, and evaluation of IRPAs. The potential for scalability and transferability of the pilot learnings to other projects are a key consideration. In consultation with the IRP TWG, the two pilot options have been selected and the IRP team will work towards filing respective IRP Plans in the following months.

6.4 Assumptions

The 10-year capital plan is based on the best available information at the time of completion. Key assumptions, as detailed in the tables below, provide a basis for interpretations.

Table 6.4-1: All Categories Assumptions

Assumption	Basis for Assumption
Optimization results are based on available information as of March 2022. *	Based on EGI's Optimize Portfolio of Solutions process, the portfolio of spend is determined through the completion of Copperleaf leveling and subsequent reviews. Results are based on best available information. *The timing of St. Laurent Ph 3 & 4 and Wilson Avenue Vintage Steel Replacement project (see Appendix A, Pg. 10, 13 and 14) was updated in May 2022 following LTC Decision (EB-2020-0293).
Future costs are valued at 2022 Present Value.	Current practice forecasts projects based on 2022 rates.
Future costs do not include inflationary measures.	Normal inflationary measures and impacts such as rising material costs, foreign exchange and labour are expected to be covered within investment contingency. Incremental shifts in inflation caused by global supply chain shortages, pandemics or other unusual circumstances have not been considered. A small number of programs with defined scope/unit rates have included a factor where information was available to inform the assumption (such as meter purchases and vehicle purchases).
All cost estimates are based on available information as of March 2022.	Using EGI's AIPM process, these requirements will be reviewed and revised as required.
All Risk Assessments are based on risk models and methodology as of March 2022.	Using EGI's Risk Management process, EGI's significant operational risks are reviewed quarterly and revised as required.
Projects in flight that span over multiple years must continue until complete.	Once a project is in progress it is inefficient and costly to terminate.
Historical actual costs are valued at years' actual value.	Historical values are not adjusted to be expressed in present value.
The proposed capital expenditures represent facility alternatives.	As this is the first year that EGI has applied the IRP Framework to the AMP, EGI's IRP assessment process took place concurrently to the identification of the facility-based investments that underpin the AMP's 2023-2032 Capital Expenditures. Future iterations of the AMP will have proposed capital requirements that incorporate the comparison of viable facility and IRP alternatives to the extent possible prior to the next iteration of the AMP.

Table 6.4-2: Renewal Assumptions

Assumption	Basis for Assumption
Asset health provides a reasonable representation for asset condition and remaining asset life for forecasting purposes.	Reliability engineering is used to understand asset health. Based on projected life cycles, consequences of failure, tacit knowledge and asset data, risk. Renewal projects are planned to reduce this risk to the lowest practicable level.

Table 6.4-3: Customer Growth Assumptions

Assumption	Basis for Assumption
Customer growth is forecast using historical trends, and economic projections for the planning period.	The customer growth forecast considers projected housing starts, municipal growth forecasts, general economic indicators and projections, localized trends and macro-economic factors. EGI is cognizant that there may be impacts to customer growth forecasts based on climate/carbon policies.

Assumption	Basis for Assumption
<p>Load forecasting is based on current understanding of temperature inputs described in Exhibit 3, Tab 2, Schedule 3 and estimated customer consumptions.</p>	<p>EGI has proposed a harmonized forecast methodology as part of this rebasing application. The estimated customer consumptions have historical Demand Side Management (DSM) built into the load forecast based on past results.</p>

Table 6.4-4: Solution Planning Assumptions

Assumption	Basis for Assumption
<p>Budgeting and forecast are determined through the Solution Planning & Value Assessment process.</p>	<p>Estimates are determined considering region and work type to accurately forecast. Appropriate project planning processes are followed.</p>

7 Appendices

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Appendix A – Investments >\$10M



Investment Summary Report

Investment Code 100901	Report Start Year 2023	Number of Years 10
Investment Name		
Dawn to Corunna		

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 48715	Report Start Year 2023	Number of Years 10
Investment Name Dawn C Compression Lifecycle		

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 734634	Report Start Year 2023	Number of Years 10
Investment Name Dawn to Corunna (Dawn Tie-in)		

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 48732	Report Start Year 2023	Number of Years 10
Investment Name Waubuno Compression Lifecycle		

Investment Description

Issue/Concern/Opportunity:

The Waubuno compressor elevates available pipeline pressure to the Waubuno Pool Maximum Operating Pressure (MOP). Compression increases the working inventory value of the pool by approximately 3.5 PJ on top of what the pipeline alone can achieve. The compressor is operated approximately 45 days per year in late summer to early fall to top off the pool. The consequence of compressor failure is dominated by customer impact. Risk associated with failure of the Waubuno compressor is heavily influenced by the level of the pool at which the failure occurs and time to mitigate the failure.

The Joy Compressor (manufactured in 1985) was a used compressor package and installed at Waubuno in 1988. The Joy Compressor Company changed ownership approximately 20 years ago, at that time original equipment manufacturer (OEM) support for the compressor was discontinued. Although normal wear components are still available in the marketplace, replacement major compressor items such as cylinders, crankshafts, and rods, etc., required to support a critical failure are no longer available. In the event of a critical failure, sourcing used parts (which are rare) or aftermarket custom machining services would be the only options for repair. This was the case in 2007 when a discharge valve seat failed, resulting in catastrophic damage to cylinder 611. An extensive search across the used parts dealers was required to secure a viable used cylinder head. Other internal damage was repaired through custom machining services.

Justification: In the event of a future failure, if usable parts or custom machining are not available, the two options would be custom-designed aftermarket castings (if possible) or replacement of the entire compressor. However, both options would render the compressor out of service for at least one operational season.

Assets: Waubuno Compressor

Related Programs: N/A

Recommended Alternative Description

Scope of Work:

In order to meet lifecycle needs for the Waubuno storage facility, EGI is proposing to construct a new NPS 20 pipeline from Waubuno to TR-7 (~1.6 km). This will eliminate the requirement for a remote compressor at Waubuno; and therefore, this project will also involve the abandonment of the Waubuno Remote Compressor Unit and related equipment.

Waubuno Station Modifications (common in all scenario alternatives)

-New Control and Measurement Building

-Upgrade meters, control valve, and filter/separator

-Launcher and associated piping

Pipeline Construction

-NPS 20 Pipeline from Waubuno to TR-7/TR-2/TR-1

-~1.5 km NPS 20 Line (1,440 psi MOP)

-Connection to TR-7 (for injection); to TR-2 (200# Storage Suction); to TR-1 (Flexibility/Optionality)

-Valving to connect new pipeline with TR-1, TR-2, and TR-7 with overpressure protection

-Receiver and associated piping at new TR-7 valve site

-New Control Building

-Waubuno Compressor Abandonment (common in all alternative scenarios)

-Removal of the compressor and any associated equipment in compressor building.

-Removal of all the NPS 8 compressor suction and discharge piping back to their take-off at the bypass control valve.

-Removal of the aftercooler, filter and silencer.

-Removal of all electrical wiring, control wiring and SCADA communication wiring and panels associated with the compressor.

-Removal of the compressor building and foundation. As the site has been in existence since the 1980s, there is a strong possibility of ground contamination that will need remediation.

Resources:

-Consultant resources for design

-Contractor resources for abandonment, construction and commissioning

Solution Impact:

Replace approximately 3.5 PJ of inventory provided by the current compressor that is obsolete and poses the risk of significant downtime in the event of a failure.

Project Timing & Execution Risks:

-Requires Ontario Energy Board Leave to Construct approval

-Pool out of service

-Pipeline route not finalized

-Landowners may want abandoned pipeline removed

-Dependent on TR-7 pipeline

-2025 in-service date

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Compression Stations - Replacements
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_53 - Union South Storage
	Asset Program (EGI)	CS - Replacements
	Asset Class (EGI)	Compression Stations
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No



Investment Summary Report

Investment Code 48732	Report Start Year 2023	Number of Years 10
Investment Name Waubuno Compression Lifecycle		

Spend Profile

Name										Net Base Capex O (CA)		
Waubuno Compression Lifecycle										\$	15,592,500	
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032		
Base CAPEX O	\$ 252,000	\$ 1,260,000	\$ 14,017,500	\$ 63,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Dismantlement	\$ -	\$ -	\$ 630,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 7660	Report Start Year 2023	Number of Years 10
Investment Name VPM - Erin Township		

Investment Description

Issue/Concern:
It has been reported through a leak event that the vintage plastic pipe in Erin Township has experience cracking due to the stony soil in this area. The Gas Technology Institute (GTI) study on Aldyl A pipe has stated stress intensifier such as rock impingement could result in SCG in this type of plastic pipe.

Assets: Vintage plastic pipe in Erin Township

Related Programs: Pipe replacement vintage plastic

Recommended Alternative Description

Scope of Work:
Replace 2,700 metres of 4-inch PE main, 10,000 m of 2-inch PE main and 300 services.

Resources: Extended Alliance contractors

Solution Impact:
Mains Replacement Program will address leaks and condition issues as identified. The approach depends on the extent of the poor condition. Localized poor condition is managed through pipeline repairs whereas broader condition issues are managed through more extensive replacement.

Project Timing & Execution Risks: Cost estimates continue to be refined as project design progresses and approaches construction. The work might require temporary land rights acquisition and permitting ahead of execution, which could have an impact to the project schedule.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - DP - Main Replacement - General Mains Replacement
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	20 - Mississauga
	Asset Program (EGI)	DP - Main Replacement
	Asset Class (EGI)	Distribution Pipe
2. Compliance	Compliance Investment	Yes
	Compliance Justification & Code	Risk Assessment for Aldyl A attached
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
VPM - Erin Township	\$ 11,113,408									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ 2,366,350	\$ 2,366,350	\$ 2,197,800	\$ 2,197,800	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ 709,905	\$ 709,905	\$ 709,905	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 100339	Report Start Year 2023	Number of Years 10
Investment Name A10: Wilson Avenue, Toronto, VSM Replacement		

Investment Description

Issue/Concern/Opportunity:

- Phased replacement of 12 gas main from Bathurst Ave. to Walsh Ave. Main is currently protected by Rectifier.
- The main on Wilson Ave. has numerous Pumpkins that have been installed on it. Starting from Wendell Ave. and going east towards Bathurst St.
- Corrosion on main has been an issue on Wilson Ave. due to stray current from Toronto Transit Commission (TTC) which continues to be an ongoing concern.
- The service connections have field-applied coatings which leaves a concern for future corrosion issues on this main.
- Regarding the main in the middle of the road on Wilson Ave., Curbside Valve Tee (CVT) repairs are problematic due to the location of the main.

Assets:
There is 8.5 km of NPS 12 HP Vintage Steel Main (VSM) installed between 1955 and 1964 on Wilson Ave. between Walsh Ave. and Bathurst St., Toronto.

Related Program: Not applicable.
Phased replacement of 12 Gas Main from Bathurst Ave. to Walsh Ave. Main is currently protected by Rectifier.

- The main on Wilson Ave. has numerous Pumpkins that have been installed on it. Starting from Wendell Ave. and going east towards Bathurst St.
- Corrosion on main has been an issue on Wilson Ave. due to stray current from Toronto Transit Commission (TTC) which continues to be an ongoing concern.
- The service connections have field-applied coatings which leaves a concern for future corrosion issues on this main.
- Regarding the main in the middle of the road on Wilson Ave., Curbside Valve Tee (CVT) repairs are problematic due to the location of the main.

Assets:
There is 8.5 km of NPS 12 HP Vintage Steel Main (VSM) installed between 1955 and 1964 on Wilson Ave. between Walsh Ave. and Bathurst St., Toronto.

Related Program: N/A

Recommended Alternative Description

Scope: Replace approximately 8.5 km of 12-inch SC HP Vintage Steel Gas Main, like for like. There are approximately 384 services and 746 customers. In addition, install 2,000 m of NPS 2 PE IP and 400 m of NPS 4 PE IP, eliminating 136 HP services of the 384 existing HP services.

Resources: NPL to execute.

Solution Impact: Eliminate vintage steel main, reduce the number of HP services attached and reduce corrosion and coding deficiencies.

- Project Timing & Execution Risks: 2024 to 2026
- Toronto and Region Conservation Authority (TRCA) permit is required.
 - Moratorium - At Walsh Ave. W. past Matthews Gate, approximately 700 m expires December 31, 2024.
 - Easement is required for the Humber River Crossing.
 - Major Crossings - CP Rail, 400 Hwy, Humber River, Metrolinx – Barrie Line, the Allen, and 401 off ramp.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - DP - Main Replacement - Vintage Steel Mains Replacement Program
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	10 - Toronto
	Asset Program (EGI)	DP - Main Replacement
	Asset Class (EGI)	Distribution Pipe
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
A10: Wilson Avenue, Toronto, VSM Replacement	\$ 72,015,518									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ 28,199,920	\$ 41,647,950	\$ 937,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ 1,447,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -



Investment Summary Report

Investment Code 1938	Report Start Year 2023	Number of Years 10
Investment Name NPS 10 Glenridge Avenue, St. Catharines		

Investment Description

Issue/Concern:

GENERAL CONCERNS: Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.

SITE SPECIFIC CONCERNS:

This project looks to replace approximately 8.7 km of mostly 1954 to 1960s vintage NPS 10 intermediate pressure (IP) pipe with sections of NPS 12 and NPS 8 spliced in over the years as repairs.

A 2019 DOC survey found that 366 (33%) survey locations had less than 90 cm of cover, and 90 survey locations (8%) had DOC<60cm, with one location found having exposed pipe due to creek erosion. Poor depth of cover leads to increased third-party damages (as has been seen with blow-off valves). Other risk factors include black coal tar pipe coatings used on 1959/1960 vintage NPS 10 pipe which show evidence of degradation, yielding to corrosion.

There are many unusual fittings (Stop-and-Go) and unusual construction practices (such as using unrestrained compression couplings to tie in service connections) that can lead to difficult emergency responses. For example, a recent leak repair took 24 days to complete at a cost of almost \$500K due to complications from DOC, components, and construction practices. Unrestrained compression couplings have been the source of leaks due to ground settlement and increase the risk of pull-out. The river crossing at Twelve Mile Creek is very difficult to access due to steep creek banks and heavy vegetation, making it difficult to perform cathodic protection and leak surveys. It will pose as a significant concern for any required emergency response. The numerous transitions from NPS 8 to NPS 10 to NPS 12 also creates concern and difficulties for operational work to be completed.

There are two main line valves that are suspected to be tied in with unrestrained compression couplings (CC) as per an Integrity Assessment for suspect CC locations. Cathodic protection for some of the NPS 10 segments has been historically poor, showing as much as 25% of historical readings over the last 20 years below minimum required levels.

Assets:

8.7 kilometers of mostly 1954 to 1960s vintage NPS 10 IP pipe with sections of NPS 12 and NPS 8 spliced in over the years as repairs that run along Glenridge Avenue from Russel Avenue south to Lockhart Drive, then along Lockhart Drive west to First Street Louth.

Related Programs: N/A

Recommended Alternative Description

Scope of Work: Asset Renewal and Improvement Main Replacement - Replace approximately 7,500 m of vintage main NPS 10-inch ST IP and approximately 110 service connections with NPS 8 PE.

Resources: External Alliance contractors.

Solution Impact:

Main replacement project identified by Operations as high priority. Replacement is required due to age, pipeline condition and risk assessment results.

Project Timing & Execution Risks:

The timing for execution of this replacement project is planned for 2025/26.

Execution Risks: Moratoriums, third-party developments, COVID-19 impacts, permitting and required easements.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - DP - Main Replacement - Vintage Steel Mains Replacement Program
Investment Stage	Short Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	80 - Niagara
	Asset Program (EGI)	DP - Main Replacement
	Asset Class (EGI)	Distribution Pipe
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
NPS 10 Glenridge Avenue, St. Catharines	\$ 11,804,455									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ 300,000	\$ 6,047,929	\$ 5,456,526	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ 3,565,604	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 11443	Report Start Year 2023	Number of Years 10
Investment Name NPS 12 Martin Grove Rd Main Replacement: Lavington to St. Albans Rd.		

Investment Description

Issue/Concern/Opportunity:

General Concerns:

Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.

Site-Specific Concerns:

Martin Grove to St. Albans Road: Address NPS 12 pipe from Lavington Drive South to Burnhamthorpe Road, then west to Ashbourne Drive, then following Auckland Road south to St. Albans Road.

There are over 360 service connections that will be removed from the HP steel main and an intermediate pressure (IP) polyethylene (PE) subsystem installed to reconnect these customers. Depth of cover (DOC) has been identified as a significant concern for these main segments as identified by 2018 and 2019 DOC surveys that found over 52% of the survey locations had DOC less than 90 cm, with 77 survey locations measuring less than 60 cm of cover. Poor DOC can lead to increased third-party damages. Additional risk factors include two unrestrained compression couplings (CCs), nine restrained CCs, and three suspect valves where, due to their installation dates, may have been tied in using unrestrained CCs (as discovered by an Integrity Assessment showing significant correlation between valves of this vintage with unrestrained CC tie-ins).

Cathodic protection history for the past 20 years shows that over 15% of the readings taken each year were below the minimum requirements. Poor cathodic protection levels can lead to corrosion.

Assets: NPS 12 pipe from Lavington Drive south to Burnhamthorpe Road, then west to Ashbourne Drive, then following Auckland Rd South to St. Albans Road.

Related Programs: 10086.

Recommended Alternative Description

Scope of Work: Replacement of approximately 6.4 km of NPS 12 steel main from Martin Grove Road and Lavington Drive South to Burnhamthorpe Rd, then west to Ashbourne Drive, then south to Auckland Road and St. Albans Road. Approximately 360 services are to be reconnected to a new IP PE sub-system.

Resources: 2026 Out to Construction Phase 2 and resources are to be determined.

Solution Impact: Main replacement project identified as high priority. Replacement is required due to age, pipeline condition and risk assessment results.

Project Timing & Execution Risks: Moratoriums and easements.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - DP - Main Replacement - Vintage Steel Mains Replacement Program
Investment Stage	Short Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	10 - Toronto
	Asset Program (EGI)	DP - Main Replacement
	Asset Class (EGI)	Distribution Pipe
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
NPS 12 Martin Grove Rd Main Replacement: Lavington to St. Albans Rd.	\$ 18,292,755									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ -	\$ 400,000	\$ 17,292,755	\$ 600,000	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 10293	Report Start Year 2023	Number of Years 10
Investment Name St. Laurent Phase 3 - North/South (NPS12/16 Steel)		

Investment Description

Issue/Concern/Opportunity:

General Concerns: Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.

Site-specific Concerns:

Unable to determine leaks due to the close proximity of the NPS 12 470 psi system. Cathodic protection was not installed until the early 1970s. Approximately 429 services are off this network.

This project is to install 8,543 m of NPS 16/12 on Aviation Pkwy tying into the Network 6580 (Ottawa Gate) and running to Rockcliffe Station and abandon 12 km of NPS 12. Scheduled to be replaced 2024.

Full replacement of main comprising Network 6584 - The NPS 12 St. Laurent Ottawa North line is 13.3 km and operates at 275 psi as Network 6584. It runs from south of St. Laurent Control Station (6584:653:1969) to Rockcliffe Control Station (Station #6B558A). It does not include the main south from St. Laurent Control Station to Industrial Ave. as well as the NPS 12 lateral main to Trans Alta (6584:1234:1235) but does include the NPS 12 lateral main along Tremblay Rd. (but does not include the crossing at the Rideau River to Station #61171A).

Assets: Approximately 2.4 km of NPS 16 ST and 6.9 km of NPS 12 ST to be installed and rebuild 3 stations (Rockcliffe, Birch and St. Laurent Control)

Related Programs: 10089, 10288, 10290, 10291, 10292, 10289, 10294.

Recommended Alternative Description

Scope of Work: Install 6.5 km NPS 12 Steel Gas Main; Install 2.4 km NPS 16 Steel Gas Main; Install 5.1 km Plastic Gas Main and relay all XHP services to the new plastic gas main.

In 2024, for the Plastic Gas Main scope, approximately 3 km will be installed on St Laurent Blvd and Sandridge Road and 2.1 km on Coventry Rd. / Ogilvie Rd. and St. Laurent Blvd. Also, for the Steel Gas Main, approximately 6.5 km of NPS 12 will be installed on Cummings Ave., Brittany Drive., St. Laurent Blvd and Sandridge Road, and 2.4 km of NPS 16 on Michael Street.

Resources: TBD

Solution Impact: Replacing the main will ensure the continued operation of EGI's gas distribution system, and will mitigate safety risks to employees, contractors, and general public.

Timing & Execution Risks: Phase 3 is to be executed in 2024, but the NPS 16/12 cannot be abandoned until this main is installed and all the services have been transferred onto the new plastic gas main.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - DP - Main Replacement - Vintage Steel Mains Replacement Program
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	60 - Ottawa
	Asset Program (EGI)	DP - Main Replacement
	Asset Class (EGI)	Distribution Pipe
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
St. Laurent Phase 3 - North/South (NPS12/16 Steel)	\$ 54,437,118									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ 1,000,000	\$ 43,799,598	\$ 1,550,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ 5,000,000	\$ 1,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 10294	Report Start Year 2023	Number of Years 10
Investment Name St. Laurent Phase 4 - East/West (NPS12 Steel)		

Investment Description

Issue/Concern/Opportunity:

General Concerns:

Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization

Site-Specific Concerns:

Unable to determine leaks due to the close proximity of the NPS 12 470 psi system. Cathodic protection was not installed until the early 1970s. Approximately 429 services are off this network.

Full replacement of main comprising Network 6584 - The NPS 12 St. Laurent Ottawa North line is 13.3 km and operates at 275 psi as Network 6584. It runs from south of St. Laurent Control Station (6584:653:1969) to Rockcliffe Control Station (Station #6B558A). It does not include the main south from St. Laurent Control Station to Industrial Ave., as well as the NPS 12 lateral main to Trans Alta (6584:1234:1235) but does include the NPS 12 lateral main along Tremblay Rd. (but does not include the crossing at the Rideau River to Station #61171A).

In 2018, pressure increased to Avenue O.

In 2019, approximately 3.1 km of plastic will be installed on Tremblay and the Avenues, and the services transferred over to intermediate pressure (IP). Also, due to a road moratorium, 2 km of 6-inch PE IP main on St. Laurent between Donald St., and Montreal needs to be brought forward from 2021 to 2019 and approximately 80 services.

Assets: Phase 4 - This project is to install 3,685 m of NPS 12 in 2022 and relay 1 service.

Related Programs: 10089, 10288, 10290, 10291, 10292, 10293, and 10289.

Recommended Alternative Description

Scope of Work: Install 3.1 km NPS 12 Steel Gas Main; Install 3.2 km Plastic Gas Main and relay all XHP services to the new plastic gas main.

In 2025, approximately 3.2 km of plastic will be installed on Industrial Ave., St. Laurent Blvd and Lancaster Road and all the XHP services will be transferred over to intermediate pressure (IP). Also, approximately 3.1 km of steel will be installed on Ogilvie Road & Coventry Road and all existing vintage steel pipeline will be abandoned once the new pipeline is energized.

Resources: To be determined

Solution Impact: Replacing the main will ensure the continued operation of EGI's gas distribution system, and will mitigate safety risks to employees, contractors, and general public.

Timing & Execution Risks: Phase 4 is to be executed in 2025 but the NPS 16/12 vintage steel pipeline cannot be abandoned until this main is installed and all the services have been transferred onto the new intermediate pressure system.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - DP - Main Replacement - Vintage Steel Mains Replacement Program
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	60 - Ottawa
	Asset Program (EGI)	DP - Main Replacement
	Asset Class (EGI)	Distribution Pipe
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
St. Laurent Phase 4 - East/West (NPS12 Steel)	\$ 19,141,532									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ -	\$ 18,224,123	\$ 530,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ 638,911	\$ 879,637	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 503350	Report Start Year 2023	Number of Years 10
Investment Name Moulton Replacement BU		

Investment Description

Issue/Concern/Opportunity:
 There is 5.6 km of NPS 8 Intermediate Pressure (IP) bare steel main to be replaced with NPS 8 IP YJ steel main between #1472 Hwy 3 to #2199 Hwy 3. The in-service date is 2025.
 Justification: Replacement of NPS 8 IP bare steel with size-on-size NPS 8 IP YJ steel main for the 5.6 km segment.

Assets: NPS 8 IP gas main between #1472 Hwy 3 to #2199 Hwy 3.

Related Program: N/A

Recommended Alternative Description

Scope of Work: Due to the existing NPS 8 IP steel gas main being bare pipe, the project scope includes replacement of this line with NPS 8 YJ steel gas main.

Resources: Extended Alliance Partners.

Solution Impact: Replacement with NPS 8 YJ steel gas main will remove the unprotected NPS 8 bare steel pipe for 5.6 km.

Project Timing & Execution Risk: Construction planned for 2025.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - DP - Main Replacement - Bare & Unprotected Steel Replacement Program
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_16 - Hamilton
	Asset Program (EGI)	DP - Main Replacement
	Asset Class (EGI)	Distribution Pipe
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Moulton Replacement BU	\$ 14,452,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ 600,000	\$ 13,752,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 100295	Report Start Year 2023	Number of Years 10
Investment Name Div_04: NPS 8 Port Stanley, London, Replacement		

Investment Description

Issue/Concern/Opportunity:

The NPS 8 Port Stanley line is approximately 20 km of NPS 8 built in 1959, with unknown grade and wall thickness, bare and protected, and Dresser construction (some gas welded – such welds are usually susceptible to lack of fusion imperfections). There has been a history of a significant number of leaks due to corrosion on this single-feed system that provides natural gas to Port Stanley and St. Thomas, with about 13,000 customers including the St. Thomas hospital, a psychiatric hospital in St. Thomas and a retirement home in Port Stanley.

External corrosion has created difficulties with repairs due to the inability to weld. In one repair case, it took Operations three weeks to locate a suitable weld location for a repair. Repairs often require the use of split sleeves (\$8K/ea). Depth of cover is a significant risk factor, with two exposed pipe sections being reported over creek crossings in December 2019. There are significant accessibility issues with locations of the pipe, making it difficult for emergency response and condition surveys. Some sections of pipe are heavily over-grown while other locations can be over 500 m from the nearest road. There are three below-grade stations that are considered confined spaces and which often flood, and must be evacuated before inspections and maintenance can occur. Gas supply from Lake Erie (New Dundee Comp) was known to have high moisture content and may contribute to internal corrosion.

No isolation is built into the single feed system, so if supply needs to be shut down, all downstream customers would be affected. In 2000, 6.8 km of main were replaced due to corrosion and exposed pipe. In 2003, 230 m were replaced due to a Class B leak under a river crossing. Three casings on the system are known to be shorted. An attempted pressure increase in 1970 resulted in numerous leaks from compression couplings and pipe; therefore, the pipe cannot be pressure-elevated.

Assets: Port Stanley line is approximately 20 km of NPS 8 built in 1959.

Related Programs: N/A

Recommended Alternative Description

Scope of Work: The 6.8km of existing NPS 8 section which was recently replaced in year 2000 is not in scope. Approximately 14km of existing NPS 8 steel main will be replaced. Starting from both ends of the year 2000 installed NPS 8 section, 2.1km of NPS 6 (resized down from NPS 8) steel main will be installed headed north to Middlemarch and 2.8km of NPS 6 (resized down from NPS 8) will be installed headed south to the Port Stanley gate station. Furthermore, 4.5km of NPS 8 will be installed from Middlemarch North to the existing NPS 10 tie-in on Talbot line and 4.5km of NPS 8 will be installed from Middlemarch headed east to the St. Thomas South Station.

Solution impact: Replacing the main will ensure the continued operation of EGI's gas distribution system, and will mitigate safety risks to employees, contractors, and general public.

Resources: TBD

Projects Timing and Risks: 2024 Execution

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - DP - Main Replacement - Vintage Steel Mains Replacement Program
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_04 - London
	Asset Program (EGI)	DP - Main Replacement
	Asset Class (EGI)	Distribution Pipe
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Div_04: NPS 8 Port Stanley, London, Replacement	\$ 15,221,497									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ 489,630	\$ 14,401,776	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 736530	Report Start Year 2023	Number of Years 10
Investment Name Sudbury Lateral Integrity Digs 2023		

Investment Description

Issue/Concern/Opportunity:

General: The Integrity Digs portion of the Integrity Management Program is to specifically capture integrity dig work to respond to inspections. The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of the pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.

Project-Specific: The pipeline section was in-line-inspected in 2021 with several Phase 2 features (corrosion with metal loss, and dents, etc.) reported. In compliance with the TIMP condition monitoring standard, all Phase 2 features are required to be investigated and repaired within 12 months of discovery. Consequently, 67 digs have been planned for the 2023 integrity dig works to effect repair or replacement of affected sections.

Assets: NPS 10 x 121 km Sudbury Lateral Section 1

Related Programs: 48268, 734703, 48244, and 736531.

Recommended Alternative Description

Scope of Work: Phase 1 (immediate response) anomalies detected from the 2021 in-line inspection (ILI) report will be mitigated through integrity verification digs and subsequent repair or replacement of affected sections. Project-Specific: 67 digs to be executed on the NPS10 Sudbury Lateral Section 1.

Resources: TBD

Solution Impact: By mitigating all (immediate response) anomalies, the Integrity Management Program reduces the probability of pipeline failures, consequently reducing the overall risk to the public and ensuring reliable gas supply.

Project Timing & Execution Risks: 67 Integrity digs are to be executed in 2023. Dig permit constraints may limit the total number of digs executable in 2023.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - DP - Integrity - Integrity Digs
Investment Stage	Long Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_43 - Sudbury & S.S. Marie
	Asset Program (EGI)	DP - Integrity
	Asset Class (EGI)	Distribution Pipe
2. Compliance	Compliance Investment	Yes
	Compliance Justification & Code	The Integrity Digs portion of the Integrity Management Program is to specifically capture integrity dig work to respond to inspections. The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards.
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Sudbury Lateral Integrity Digs 2023										\$ 10,000,000
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ 10,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 3610	Report Start Year 2023	Number of Years 10
Investment Name CROWLAND STORAGE TRANSFER		

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 735335	Report Start Year 2023	Number of Years 10
Investment Name GTAW Parkway Gate Station Rebuild Phase 2		

Investment Description

Project: Parkway East Phase 2. Phase 1 commenced in 2021.

Issue/Concern/Opportunity: The following sub-assets will be rebuilt due to the issues described below:

Regulators: Two existing Becker control valves, i.e., NPS-8 and NPS-6 downstream operators – PRV-0502 and PRV-0504, Runs 9 and 10 on TC Energy feed (quantity is two) are defective and will not lock up; therefore, replacement is required. Currently, the inlet valve from the TC Energy feed is used to completely shut off the TC Energy feed; otherwise, the control valves will bleed by and affect nominations in the summer, automated TC Energy inlet valve for emergency shutoff from TC Energy, as well as to ensure inlet valve is closed to avoid bleed by of Becker control valves in summer conditions (CLOSE ONLY VALVE). Flow control valves on the TC Energy feed are Fairchild's (will replace with DNGPs – RUNS 9/10) not a computer-controlled regulator and do not sense downstream pressure. Isolation valves for each run are operational. DNGP should also replace Fairchild for 12-inch Union East – CV replacement (12-inch closest to Boiler building - RUN 1); 4th Fairchild is on the MSL – not required – disconnect and replace with VRP pilot (pressure control only due to downstream system operation). The station can be down to facilitate work as system can be fed from Parkway West. An additional five Jordan motors that are obsolete are to be replaced with Rotork motors (quantity is five). Due to capacity constraints and designing for future flow provided by Distribution Optimization Engineering (DOE) / TSP, Run 1 T4 Becker is to be replaced with T1 Becker (NPS 12). Run 3 has undersized isolation valves (currently NPS 8) and will need upsizing to NPS 16.

Civil: There is no urethane layer between the pipe support cradle and the bottom of the pipe. A single new Odourant building is required. The wall between the Pressure Transmitter and Remote Terminal Unit (RTU) room is to be opened up for entire building to be RTU room. Demolition of existing Generator building is required. The Storage building is to be removed due to end of life.

Piping & Valves: An increase in pipe size near heaters to NPS 30 along with inlet/outlet HX valves to ensure flow requirements can be achieved. Upsizing downstream header and inlet pipe to regulators to NPS 30 is required to ensure it can handle capacity requirements.

Odourant: The Odourant system is a metallic odourant building without adequate containment with a rusted containment pan. The fill connection is outdoors. Supports are not fire-rated and no Fire Suppression system is installed. Grating within the building is not safe for accessing valves and equipment. A new Odourant building is required. Two 5,000 GAL odourant tanks complete with electric pumps are to be installed. Low-flow and high-flow pumps with full redundancy on winter pumps on each outlet are required. Switchover between pumps should be automated.

Telemetry & Electrical: Existing obsolete Bristol 3330 is to be replaced with Control Wave Micro. Additional electrical wiring and cabling (including power distribution) and programming are to be included in scope.

Assets: Station components are to be replaced as described above in Phase 2.

Related Program: Not applicable.

Recommended Alternative Description

Scope of Work:

Phase 2 of the station rebuild to address the issues described below related to pressure control issues, odourant compliance issues, Remote Terminal Unit (RTU) / Telemetry upgrades from obsolete equipment.

Resources:

This work will be performed by internal and contractor construction crews.

Solution Impact:

Rebuilding the station components will mitigate the safety risks to employees, contractors, and the general public.

Project Timing & Execution Risks:

This is Phase 2 that will commence in 2022 and will continue through 2023 with some assets being planned to be in service in 2022 and the balance in 2023.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - Distribution Stations - Gate, Feeder & A Stations
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	20 - Mississauga
	Asset Program (EGI)	DS - Gate, Feeder & A Stations
	Asset Class (EGI)	Distribution Stations
2. Compliance	Compliance Investment	Yes
	Compliance Justification & Code	New odorant system including odorant tanks required to meet code.
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	Yes

Spend Profile

Name	Net Base Capex O (CA)									
GTAW Parkway Gate Station Rebuild Phase 2	\$ 12,300,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ 8,500,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ 400,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -



Investment Summary Report

Investment Code 503369	Report Start Year 2023	Number of Years 10
Investment Name		
Lisgar Station		

Investment Description

Issue/Concern/Opportunity:

The Lisgar Gate Station is located at a highly populated area in the City of Mississauga. The station is situated in an urban setting and is surrounded by residential buildings, a commercial plaza, and a church. The station has multiple feeds (two transmission lines and one XHP CER line) and various outlets to the local distribution networks. In the event of a major incident, the consequence would be significant given the close proximity of the houses and buildings.

Justification: The following issues and deficiencies have been identified:

- Pipes & Valves have been deemed unreliable at this site and requires removal and installation of new pipes, fittings, and valves.
- Heating system has been deemed unreliable as it has reached its end-of-life cycle usage. The placement of the heat exchangers in the basement of the boiler building has caused maintenance roadblocks along with flooding concerns.
- Pressure regulation: 20002A regulation has been deemed unreliable, regulation will be rebuilt because of inconsistent flows through them. 20002D has suffered from frost heaving issues as well and requires a rebuild.
- Odorant system current configuration does not ensure adequate containment of the odorant product in the event of a leak and does not meet the current engineering standards and approvals. The pumps need automation along with redundancy for better operational efficiency.
- Regulator building that houses 20002B & 20002C needs a noise evaluation study to determine a better noise attenuation solution.
- Existing Measurement is not reliable and accurate. A more robust and accurate measurement needs to be installed for custody transfer purposes

Assets: Distribution Station Assets at the Lisgar Gate Station

Related Program: AFF - 219 - NPS 24 Lisgar to Pine Valley - permanent launcher support (23192)

Recommended Alternative Description

Scope of Work: Rebuild the station with the following scope:

- Pipes & Valves: Replace station isolation valves with new ball valves. All station piping and valves will be examined to ensure that material specifications and their current condition are acceptable for continued use. Projected future station capacity requirements will also be considered.
- Heating System: Replace the boilers and heat exchanger. Boiler piping will also have to be replaced to match up with the new boilers and heat exchanger. Heat exchangers will need to be replaced and installed outside of the building.
- Pressure Control: There are three different stations at Lisgar. Each will be evaluated for current flow requirements through the design stage.
- Odorant System: The new odorant building will be installed that will include sufficient secondary containment which is not part of the current design. A new odorant tank will also be required, along with a second backup pump injection system to serve as redundancy.
- Telemetry & Electrical: The existing RTU cabinet and panel will be replaced with a new Control Wave unit. The telemetry and electrical systems will be brought up to current standards and will include methane and CO sensors and monitoring, station wiring upgrades, electrical service upgrades, station grounding, telemetry tower upgrades, UPS installation, generator upgrades, modem and firewall upgrades, station lighting upgrades, weather station installation/replacement.
- Measurement: Four new measurement ultrasonic flowmeters will be installed on the inlet NPS 30 from the new Union Gas takeoff. Another measurement will be installed at the outlet on the NPS 24 CER line. Piping will be designed to ensure gas measurement when operationally flowing from the NPS 24CER line to the NPS 20 and reverse. The flow meters will be programmed to have automatic run switching depending on the demand. The NPS 30,20 and 16 outlets will also be equipped with annubar flow meters to capture individual flowrates leaving the station.
- Compliance & Others: Sump pumps will be replaced/relocated to remove them from the confined space.

Resources: Capital Development and Delivery

Solution Impact: Risk reduction to the existing Lisgar Station site by replacing obsolete equipment.

Project Timing & Execution Risks: 2023/2024 Execution

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - Distribution Stations - Gate, Feeder & A Stations
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	20 - Mississauga
	Asset Program (EGI)	DS - Gate, Feeder & A Stations
	Asset Class (EGI)	Distribution Stations
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Lisgar Station	\$ 18,414,114									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ 15,390,204	\$ 1,823,940	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ 1,273,400	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -



Investment Summary Report

Investment Code 1024	Report Start Year 2023	Number of Years 10
Investment Name NW 6581 Ottawa Reinforcement Phase 2 SRP		

Investment Description

Issue/Concern/Opportunity: Reinforcement projects broadly involve the installation of new or modification of existing gas distribution assets to maintain minimum required system pressure, maintain capacity, and meet customer demand. These projects are primarily driven by customer growth and system reliability considerations. Failure to implement reinforcement projects in a timely manner could lead to a potential inability to support increasing demands of existing customers and the addition of future customers.

This network in Ottawa is predominantly made up of residential and commercial customers. In the current configuration, a high pressure network is exclusively fed by both the Ottawa and Richmond Gate Stations. Network Analysis has identified an upstream flow constraint at the Ottawa Gate Station, along with a bottleneck constraint for gas fed from Richmond Gate Station. The South outlet of Ottawa Gate can be set to as low as 400 psig (normally 470 psig) while Richmond Gate is kept at 470 psig, thus flowing more gas from the west to the east.

The current configuration, an existing NPS 12 high pressure pipeline along Fallowfield Road is a bottleneck for gas flowing from the west to Richmond Gate Station, and to eastern areas. The previously constructed Ottawa Reinforcement Plan (ORP) Phase 1 as well as the Strandherd River crossing has helped move gas from Richmond Gate eastward to areas of concentrated and growing gas demand.

This reinforcement will assist in moving additional gas from Richmond Gate toward the areas that would be serviced by Ottawa Gate, and remove the bottleneck constraint. There were approximately 193,553 customers on the associated networks as of 2016.

Assets: Existing NPS 12 HP Pipe

Related Program: Not applicable

Recommended Alternative Description

Scope of Work: The proposed scope includes the installation of 7 km of NPS 12 high pressure main from Greenbank Rd. and W Hunt Club Rd. to Princess of Wales Dr. and W Hunt Club Rd. along W Hunt Club Rd.

Resources: Company crews, contractor labour and third-party vendor suppliers.

Solution Impact: This reinforcement project will ensure the system has adequate flow capacity in anticipation of projected customer growth.

Project Timing & Execution Risks: The Project is proposed to start in 2030 and be completed by 2032.

Risks: Weather impacts, resource availability, and procurement issues, etc.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - Growth - System Reinforcement
Investment Stage	Long Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	60 - Ottawa
	Asset Program (EGI)	GTH - System Reinforcement
	Asset Class (EGI)	Growth
2. Compliance	Compliance Investment	
	Compliance Justification & Code	
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
NW 6581 Ottawa Reinforcement Phase 2 SRP	\$ 52,686,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 268,000	\$ 5,348,000	\$ 47,070,000
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 736259	Report Start Year 2023	Number of Years 10
Investment Name Hamilton Industrial Reinforcement		

Investment Description

Issue/Concern/Opportunity:
Reinforcement required to support changes to industrial demand in the area.

Assets: Distribution Reinforcement

Related Program: N/A

Recommended Alternative Description

Scope of Work: Route options are currently being assessed for constructability. Routes range from NPS 10 to NPS 30.

Resources: Capital Development, Business Development, Engineering Construction

Solution Impact: In May 2021, the customer initiated a significant growth project with Enbridge for an increased demand of 96,000 m3/hr.

Project Timing & Execution Risk: November 2025 as required by the customer.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Growth - System Reinforcement
Investment Stage	Long Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_16 - Hamilton
	Asset Program (EGI)	GTH - System Reinforcement
	Asset Class (EGI)	Growth
2. Compliance	Compliance Investment	
	Compliance Justification & Code	
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Hamilton Industrial Reinforcement	\$ 103,000,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ 2,000,000	\$ 8,000,000	\$ 88,000,000	\$ 5,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 100703	Report Start Year 2023	Number of Years 10
Investment Name SRP_LUG_East_Kingston_Creekford_Rd_Reinforcement_NPS8_6200m_6895kPa		

Investment Description

Issue/Concern/Opportunity: Kingston lateral replacement to be completed from Westbrook CMS to Woodbine TBS to account for forecasted growth, and to address Class Location and depth of cover issues which exist on the current Kingston lateral.

Assets: Kingston Lateral Replacement

Related Program: N/A

Recommended Alternative Description

Scope of Work: The project will replace the existing NPS 6 ST 6895 kPa distribution pipeline from the Westbrook TCPL takeoff to the Woodbine Town Border Station with an NPS 8 ST 6895 kPa pipeline. This project supports all pressures downstream to Kingston. The project is required to support growth and address additional other depth of cover, station and class location issues.

Resources: Company crews, 3rd party contractor crews and 3rd party vendors.

Solution Impact: Organic growth on the Kingston system wide. This reinforcement supports the entire system and downstream networks.

Project Timing & Execution Risks: System reinforcement is required in 2024 as per current plan and significant growth on systems. Risks include weather, resource availability, procurement of materials, etc.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Growth - System Reinforcement
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_22 - Kingston
	Asset Program (EGI)	GTH - System Reinforcement
	Asset Class (EGI)	Growth
2. Compliance	Compliance Investment	
	Compliance Justification & Code	
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
SRP_LUG_East_Kingston_Creekford_Rd_Reinforcement_NPS8_6200m_6895kPa	\$ 24,321,527									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ 3,700,000	\$ 18,800,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Alternative Value - Recommended

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 30523	Report Start Year 2023	Number of Years 10
Investment Name SRP_North_Parry Sound_Seguín Trail_Reinforcement_NPS6_8500m_4960kPa		

Investment Description

Risk/Concern/Opportunity: This project was generated as part of Distribution Optimization Engineering's 2021 System Reinforcement Plan (SRP). 8.5 km of NPS 6 steel looping is required on the existing Parry Sound Lateral (4960 kPa) to maintain the minimum inlet into the Parry Sound TBS station (44801002) and support the forecasted growth in Parry Sound. Without this project, the forecasted growth on the system would increase the likelihood that inlet pressures at Parry Sound TBS would drop below minimum operating limits.

Assets: The existing NPS 4 (4960 kPa) Parry Sound Lateral will be impacted by this investment.

Related Program: N/A

Recommended Alternative Description

Scope of Work: Loop the existing NPS 4 (4960kPa MOP) pipe with NPS 6 for 8.5 km.

Resources: This work will be performed by internal and contractor operations crews.

Solution Impact: The 8.5 km of NPS 6 steel main will ensure forecasted demands (based on the econometric forecast) for the Parry Sound distribution system are met (out to 2042).

Project Timing & Execution Risks: The expected in-service date for the proposed looping is 2032.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Growth - System Reinforcement
Investment Stage	Short Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_43 - Sudbury & S.S. Marie
	Asset Program (EGI)	GTH - System Reinforcement
	Asset Class (EGI)	Growth
2. Compliance	Compliance Investment	
	Compliance Justification & Code	
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
SRP_North_Parry Sound_Seguín Trail_Reinforcement_NPS6_8500m_4960kPa	\$ 17,500,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 17,500,000
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 30542	Report Start Year 2023	Number of Years 10
Investment Name SRP_Southeast_Owen Sound_County Rd 40_Reinforcement_NPS12_11800m_4670kPa		

Investment Description

Risk/Concern/Opportunity: The Owen Sound system north of St. Jacob's historically adds about 1300 customers per year and growth has been strong along the lakeshore (Port Elgin, Southampton, Owen Sound & towards Collingwood).

Assets: Distribution Reinforcement

Related Programs: N/A

Recommended Alternative Description

Scope of Work: The project will loop the existing NPS10 ST 4,670 kPa main from existing PH4 reinforcement to Squire, Ontario with NPS12 ST main, as well as install a valve site and 12-inch receiver facilities. Alternative running lines and pipe sizes can be determined closer to the project design stages in 2023 and 2024. This project supports all pressures downstream to Owen Sound, Port Elgin, Southampton, Warton, Sauble Beach and east of Owen Sound. Actual growth rates and loads will need to be confirmed closer to the project planning stages.

Resources: Company crews, third-party contractor crews and third-party vendors.

Solution Impact: Organic growth on the Owen Sound system wide north of St. Jacobs Transmission Station. This reinforcement supports the entire system and downstream networks.

Project Timing & Execution Risks: System reinforcement is required in 2025 as per current plan and significant growth on systems. Risks include weather, resource availability, and procurement of materials, etc.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Growth - System Reinforcement
Investment Stage	Short Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_07 - Waterloo
	Asset Program (EGI)	GTH - System Reinforcement
	Asset Class (EGI)	Growth
2. Compliance	Compliance Investment	
	Compliance Justification & Code	
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
SRP_Southeast_Owen Sound_County Rd 40_Reinforcement_NPS12_11800m_4670kPa	\$ 26,400,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ -	\$ 26,400,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 736075	Report Start Year 2023	Number of Years 10
Investment Name WIND: Wheatley-1B - Panhandle Distribution Reinforcement - Wheatley Lateral Replacement and Reinforcement		

Investment Description

Risk/Concern/Opportunity:
Greenhouse growth in the Windsor area continues. The Panhandle distribution network needs to be reinforced to allow for the continued industrial customer expansion. A Panhandle transmission reinforcement is also required to meet the demand of the region.

Assets: Distribution Reinforcement

Related Programs: N/A

Recommended Alternative Description

Scope of Work: Wheatley-1B is a distribution system looping project which requires a new station at Wheatley Rd. and Goodreau Line: 5,300 m of NPS 8 and 10,800 m of NPS 8.

Resources: This work will be performed by internal and contractor construction crews.

Solution Impact: New facilities in this area will provide the reinforcement required to support the greenhouse industry growth.

Project Timing & Execution Risks: Project timing will have to align with the ability to justify natural gas expansion (commercial certainty of the new customers). Depending on the geographical spread of industrial customer expansion, the scope of the project will need to be adjusted to support the forecasted need.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Growth - System Reinforcement
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_01 - Windsor
	Asset Program (EGI)	GTH - System Reinforcement
	Asset Class (EGI)	Growth
2. Compliance	Compliance Investment	
	Compliance Justification & Code	
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
WIND: Wheatley-1B - Panhandle Distribution Reinforcement - Wheatley Lateral Replacement and Reinforcement	\$ 16,500,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ 935,000	\$ 15,560,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 736975	Report Start Year 2023	Number of Years 10
Investment Name Enbridge Gas Distribution System Hydrogen Feasibility Study		

Investment Description

Risk/Concern/Opportunity:
Comprehensive techno-economic feasibility study of blending hydrogen into Enbridge Gas Inc.'s (EGI) existing natural gas distribution and transmission network across Ontario.

Assets: Hydrogen Study

Related Programs: N/A

Recommended Alternative Description

Scope of Work:
Evaluate the technical feasibility and maximum limits of blended hydrogen gas in existing networks, identify necessary retrofits or upgrades for varying concentrations of hydrogen, and develop a staged roadmap for transitioning Ontario's gas network to a low-carbon future in line with technical and economic barriers and opportunities. The assessment comprises the entirety of EGI's gas pipeline network in Ontario:
- 78 214 km of gas distribution main lines
- 66 787 km of gas distribution service lines
- 5 471 km of gas transmission lines

Resources: 3rd party contractor

Solution Impact: By blending hydrogen at strategic locations across EGI's existing gas network, EGI aims to reduce the carbon intensity of its 3.8 million residential, commercial, institutional and industrial customers across over 500 communities in Ontario.

Project Timing & Execution Risks:
Study to be completed in 2026

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - Growth - Hydrogen Blending
Investment Stage	Initial		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	30 - Richmond Hill
	Asset Program (EGI)	GTH - Hydrogen Blending
	Asset Class (EGI)	Growth
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Enbridge Gas Distribution System Hydrogen Feasibility Study	\$ 12,000,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ 4,000,000	\$ 4,000,000	\$ 4,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 48714	Report Start Year 2023	Number of Years 10
Investment Name Hagar Cold Box		

Investment Description

Issue/Concern/Opportunity: The Cold Box is several heat exchangers in series used to cool the natural gas feedstock to -160 degrees Celsius at which point the natural gas turns into a liquid. The Cold Box is the core of the Liquefied Natural Gas (LNG) station and is necessary to produce LNG. The consequence of a Cold Box failure is dominated by customer impact. Risk of associated failure is heavily influenced by thermal cycling and operational hours. Over its 50 years of operation, the Cold Box has amassed 140,000 operational hours. Significant failure modes include leakage of natural gas or refrigerants out of the piping into the interior of the Cold Box shell reaching potentially explosive levels or heat exchanger cross leaks that reduce the effectiveness of the refrigeration process. Both of these failure modes impair LNG production to the extent the plant cannot meet its annual production requirements. As the Cold Box internals are encased in very densely packed insulation and clad in an outer steel jacket, troubleshooting and repair of either of these failure modes is extremely difficult and time consuming.

Assets: Cold Box

Related Programs: N/A

Recommended Alternative Description

Scope of Work: This project involves replacement of the Cold Box.

Solution Impact: Considering the complex nature of internal repair or replacement of the Cold Box, a reactive response to internal leakage would render the liquefaction process out of production and unable to meet its regulated requirements for at least an operational season. Due to the age of the plant, the replacement of an individual component such as the Boil Off Gas (BOG) Compressor introduces a risk of the compatibility of new equipment with the existing balance of the plant. This could result in a change in project scope or an approach that favours broader plant renewal.

Resources: Projects will work with a third-party engineering firm to complete the design and a contractor to complete the field work. Operations will support Major Projects as required.

Project Timing & Execution Risks: The proposed timing to complete the on-site work is during the second and third quarters of the year. Design and ordering of long-lead items will need to occur a year in advance.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - LNG - Integrity
Investment Stage	Long Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_53 - Union South Storage
	Asset Program (EGI)	LNG - Integrity
	Asset Class (EGI)	LNG
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Hagar Cold Box	\$ 11,000,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,500,000	\$ 8,500,000
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 49955	Report Start Year 2023	Number of Years 10
Investment Name Hagar JVG Compressor Upgrade		

Investment Description

Issue/Concern/Opportunity: The Boil Off Gas (BOG) Compressor is one of the two compressors used to power the refrigerant process which cools the natural gas feedstock to -160 degrees Celsius at which point the natural gas turns into a liquid. The BOG Compressor was also used to recover BOG (i.e., natural gas vapours) from the Liquefied Natural Gas (LNG) storage tank which occurs on a continuous basis due to the ambient warming of the tank exterior. In 2012, a separate compressor was installed to manage the LNG storage tank boil off gas.

The BOG Compressor is necessary to produce LNG. The consequence of compressor failure is dominated by customer impact. Risk associated with failure of the BOG compressor is heavily influenced by the time of year, weather severity and time to mitigate the failure. Over its 50 years of operation, the 240 horsepower Ingersoll Rand BOG Compressor has amassed 325,000 operational hours. The compressor is obsolete; and, although normal wear components are still available in the marketplace, core compressor replacement parts such as cylinders, crankshafts, and pistons, etc., required to support a critical failure are no longer manufactured by the original equipment manufacturer (OEM). In the event of a critical failure, securing used parts (which are rare) or aftermarket custom machining services are the only options for a timely repair. This was the case in 2017 when an aftermarket service was solicited to develop a weld and machine repair of a compressor cylinder which had failed. The aftermarket service was able to design a custom repair which took three months to complete. In the event that the cylinder is not repairable, a custom-designed aftermarket casting or a complete replacement of the compressor may be options. These options would take the plant out of service for at least one operational season, rendering the plant unable to perform its regulated requirements.

Assets: BOG Compressor

Related Programs: N/A

Recommended Alternative Description

Scope of Work: Replacement of the 240 horsepower Boil Off Gas (BOG) Compressor (JVG)

Solution Impact: Mitigate the risk of a critical part failure that is non-repairable due to obsolescence.

Resources: Projects will work with a third-party engineering firm to complete the design and a contractor to complete the field work. Operations will support Major Projects as required.

Project Timing & Execution Risks: The proposed timing is to complete the on-site work during the second and third quarters. Design and ordering of long-lead items will need to occur a year in advance.

Due to the age of the plant, the replacement of an individual component such as the BOG compressor introduces a risk of the compatibility of new equipment with the existing balance of the plant. This could result in a change in project scope or an approach that favours broader plant renewal.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - LNG - Replacements
Investment Stage	Long Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_92 - Union North Storage
	Asset Program (EGI)	LNG - Replacements
	Asset Class (EGI)	LNG
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Hagar JVG Compressor Upgrade	\$ 26,820,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,500,000	\$ 14,592,000
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 48709	Report Start Year 2023	Number of Years 10
Investment Name Hagar KVGR and Cycle Mix Cooler		

Investment Description

Issue/Concern: The Hagar Liquefied Natural Gas (LNG) Plant was installed in 1968 to provide security of supply to the Sudbury industrial and distribution markets. The KVGR Compressor is one of the two compressors used to power the refrigerant process which cools the natural gas feedstock to -160 degrees Celsius at which point the natural gas turns into a liquid. The KVGR Compressor is necessary to produce LNG. The consequence of compressor failure is dominated by customer impact. Risk associated with failure of the KVGR Compressor is heavily influenced by the time of year, weather severity and time to mitigate the failure. Over its 50 years of operation, the 1,500 horsepower Ingersoll Rand KVGR Compressor has amassed 140,000 operational hours. The compressor is obsolete; and, although normal wear components are still available in the marketplace, core compressor replacement items such as cylinders, crankshafts, and pistons, etc., required to support a critical failure are no longer manufactured by the original equipment manufacturer (OEM). In the event of a critical failure, aftermarket, custom machining services are the only option for repair. In the event custom machining services are not able to make a repair, a custom designed aftermarket casting option or complete replacement of the compressor would be required rendering the LNG plant out of service for at least one operational season and rendering the plant unable to perform its regulated requirements.

Assets: Compressor and Cycle Mix Cooler

Related Programs: N/A

Recommended Alternative Description

Scope of Work: Replacement of the 1,500 horsepower KVGR Compressor

Solution Impact: Mitigate the risk of a critical part failure that is non-repairable due to obsolescence.

Resources: Projects will work with a third-party engineering firm to complete the design and a contractor to complete the field work. Operations will support Major Projects as required.

Project Timing & Execution Risks: The proposed timing to complete the on-site work is during the second and third quarters of the year. Design and ordering of long-lead items will need to occur a year in advance. Due to the age of the plant, the replacement of an individual component such as the compressor introduces a risk of the compatibility of new equipment with the existing balance of the plant. This could result in a change in project scope or an approach that favours broader plant renewal.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - LNG - Replacements
Investment Stage	Long Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_92 - Union North Storage
	Asset Program (EGI)	LNG - Replacements
	Asset Class (EGI)	LNG
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Hagar KVGR and Cycle Mix Cooler	\$ 31,820,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,500,000	\$ 17,592,000
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 8701	Report Start Year 2023	Number of Years 10
Investment Name Kelfield Operations Centre - Land Purchase		

Investment Description

Issue/Concern: The Kelfield office, owned by Enbridge Gas Inc. (EGI), is in poor physical condition and is considered obsolete in its functionality and utilization. It is an old facility with an approximate age of 56 years.

Physical Obsolescence: The acceptable EGI standard for the physical condition is a Facility Condition Index (FCI) of 0 to 5%. The current FCI of the facility based on this study is 10.47%. Therefore, the physical condition of the facility does not meet EGI acceptable standards.

Functional Obsolescence – Building: The acceptable EGI standard for the functional condition is 0. A functional condition between 0 and 49% is considered correctable at the current location. The current facility Adequacy Index (AI) is 71%. Based on the FCI/AI graph, the current recommendation for the existing facility is to increase the site area by purchasing the abutting property, demolish existing building, and rebuild the facility on the combined sites to accommodate current EGI standards.

Functional Obsolescence – Site: The site does not meet operational requirements for size and vehicular circulation. The yard has only one point of access. The yard size is smaller than EGI standard yard size requirements. The current yard size is 0.3 acres. EGI standard yard size is 2.5 acres. The existing building requires expansion by approximately 7,200 square feet to meet the need for current staff and EGI functional requirements. Building addition on the property entails further reduction in the yard and parking areas. Both the building and site area are too small to meet current EGI standards. The current building is approximately 7,724 square feet and the ideal building size, based on EGI design standards, is estimated to be 14,924 square feet, with a site area of approximately five acres. There is no opportunity for building expansion at the current location. It is understood that the location of the facility works well for EGI operations.

Assets: 40 Kelfield St., Etobicoke, ON.

Related Program: N/A

Recommended Alternative Description

Scope of Work:

The assets in scope are located at 40 Kelfield St., Etobicoke, ON. The nature of work is to purchase adjacent property.

Solution Impact:

Purchasing the extra land will ensure adequate yard area for current activities.

Timing & Execution Risks:

The project duration is 3 months (i.e., 0 – 3 months for site acquisition).

Expenditures:

The total cost for the project is \$47M net capital. The project costs are based on a Class 5 estimate.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - Real Estate & Workplace Services - Furniture/Structures & Improvements
Investment Stage	Short Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	10 - Toronto
	Asset Program (EGI)	REWS - Furniture/Structures & Improvements
	Asset Class (EGI)	Real Estate & Workplace Services
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Kelfield Operations Centre - Land Purchase	\$ 25,000,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ -	\$ -	\$ 25,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 737226	Report Start Year 2023	Number of Years 10
Investment Name Kelfield Operations Centre - New Building		

Investment Description

Issue/Concern: The Kelfield office, owned by EGI, is in poor physical condition and is considered obsolete in its functionality and utilization. It is an old facility with an approximate age of 56 years.

Physical Obsolescence: The acceptable EGI standard for the physical condition is a Facility Condition Index (FCI) of 0 to 5%. The current FCI of the facility based on this study is 10.47%. Therefore, the physical condition of the facility does not meet EGI acceptable standards.

Functional Obsolescence – Building: The acceptable EGI standard for the functional condition is 0. A functional condition between 0 and 49% is considered correctable at the current location. The current facility Adequacy Index (AI) is 71%. Based on the FCI/AI graph, the current recommendation for the existing facility is to increase the site area by purchasing the abutting property, demolish existing building, and re-build the facility on the combined sites to accommodate current EGI standards.

Functional Obsolescence – Site: The site does not meet operational requirements for size and vehicular circulation. The yard has only one point of access. The yard size is smaller than EGI standard yard size requirements. The current yard size is 0.3 acres. EGI standard yard size is 2.5 acres. The existing building requires expansion by approximately 7,200 square feet to meet the need for current staff and EGI functional requirements. Building addition on the property entails further reduction in the yard and parking areas. Both the building and site area are too small to meet current EGI standards. The current building is approximately 7,724 square feet and the ideal building size, based on EGI design standards, is estimated to be 14,924 square feet, with a site area of approximately five acres. There is no opportunity for building expansion at the current location. It is understood that the location of the facility works well for EGI operations.

Asset: 40 Kelfield St, Etobicoke, ON.

Related Program: N/A

Recommended Alternative Description

Scope of Work:
The assets in scope are located at 40 Kelfield St, Etobicoke, ON. The nature of work is sell the existing property, development of adjacent property, construction and fit-up of a new building.

Solution Impact: Purchasing the extra land will ensure adequate yard area for current activities and a new building will correct the identified operational deficiencies, using less energy and emitting less greenhouse gases. Once the new facility is occupied the old facility will be demolished. The service life of the new facility will be 25-40 years.

Timing & Execution Risks:
The Project duration is 33 months as described below:
 0 – 3 months: Programming, design development
 3 – 9 months: Site plan agreement, permit & tender documents, permit and tender process
 9 – 11 months: Contract award and winter contingency as required
 11 – 25 months: Construction
 25 – 27 months: Fit-up and occupancy
 27 – 33 months: Disposition of the old property and remaining site activity

Risks include contractor delays and material delivery delays or defects.

Expenditures :
The total cost for the project is \$22M net capital which includes a working construction cost contingency of 15%. Construction costs are determined based on historical EGI project costs and land values are determined using marketplace comparisons. The project also leverages national pricing agreements with furniture, walls, and flooring manufacturers. The project costs are based on a Class 5 estimate.

Resources:
Professional resources for design and engineering will be contracted from the marketplace. EGI has historically retained architectural and engineering consulting services for the execution of similar projects.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - Real Estate & Workplace Services - Furniture/Structures & Improvements
Investment Stage	Initial		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	10 - Toronto
	Asset Program (EGI)	REWS - Furniture/Structures & Improvements
	Asset Class (EGI)	Real Estate & Workplace Services
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Kelfield Operations Centre - New Building	\$ 22,000,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ -	\$ -	\$ 12,000,000	\$ 10,000,000	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -



Investment Summary Report

Investment Code 501813	Report Start Year 2023	Number of Years 10
Investment Name Kennedy Road Expansion		

Investment Description

Issue/Concern/Opportunity:

Overall, the existing building at the Kennedy Road facility is too small to meet current Enbridge Gas Inc. (EGI) standards. The separation of offices and warehouse into two separate buildings is not convenient for staff and causes operational and workplace difficulties and inefficiencies. The configuration of site functions and circulation is inefficient. The yard area is too small to meet current EGI standards. Building expansion on the same property will further reduce the size of the yard area and will cause additional pressure on parking and circulation. Based on the site deficiencies and space limitations, relocation to another property is recommended. This option may no longer be possible so further analysis is required depending on the ability to procure adjacent property or appropriately-sized property nearby. The analysis will look at the possible vertical industrial solution to meet the needs of the business.

Physical Obsolescence: The acceptable EGI standard for the physical condition is a Facility Condition Index (FCI) of 0 to 5%. The current FCI of the facility based on this study is 6.51%. Therefore, the physical condition of the facility does not meet EGI acceptable standards.

Functional Obsolescence – Building: The acceptable EGI standard for the functional condition is 0. A functional condition between 0 and 49% is considered correctable at the current location. The current facility Adequacy Index (AI) is 95%. Based on the FCI/AI graph, the current recommendation for the existing facility is to increase the site area by purchasing the adjacent property, demolish existing building, and rebuild the facility on the combined sites to accommodate current EGI standards.

Functional Obsolescence – Site: The site does not meet operational requirements for size and vehicular circulation. Access and exit from Kennedy is difficult and poses operational inefficiencies. The yard size is smaller than EGI standard yard size requirements. The current yard size is 1.3 acres. EGI standard yard size is 2.5 acres. The existing building requires expansion by approximately 11,000 square feet to meet the need for current staff and EGI functional requirements. Building additions on the property entail further reduction in the yard and parking areas.

Assets: 3157 Kennedy Road, Scarborough, ON.

Related Program: N/A

Recommended Alternative Description

Scope of Work: Sell the existing property, purchase a property suitable in size to accommodate the required program. Required size of new property is approximately 5 acres.

The project will correct operational and workplace inefficiencies, using less energy and emit less greenhouse gases on the combined site. This strategy will leverage current site improvements and keep land acquisition costs to a minimum by joining the currently vacant neighbouring property.

The assets in scope are located at 3157 Kennedy Road, Scarborough, ON. The nature of work includes development of the adjacent property and construction and fit-up of a new building.

Resources:

External professional resources for design and engineering along with a construction company will be contracted for the project. Historically, EGI has retained architectural and engineering consulting services and general construction contractors for the execution of similar projects.

Solution Impact: The service life of the new facility will be 25 – 40 years.

Timing and Execution Risks:

The project duration is 36 months:

0 – 3 months: Programming, design development

3 – 6 months: Site acquisition

6 – 12 months: Site plan agreement, permit and tender documents, permit and tender process

12 – 14 months: Contract award and winter contingency as required

14 – 28 months: Construction

28 – 30 months: Fit-up and occupancy

30 – 36 months: Disposition of old property

Risks include contractor delays and material delivery delays or defects.

Expenditures:

The total cost for the project is \$38.0M net capital which includes a working construction cost contingency of 15%. Construction costs are determined based on historical EGI project costs and estimated land values are based on marketplace comparisons. The project also leverages national pricing agreements with furniture, walls, and flooring manufacturers. The project costs are based on a Class 5 estimate.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - Real Estate & Workplace Services - Furniture/Structures & Improvements
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	10 - Toronto
	Asset Program (EGI)	REWS - Furniture/Structures & Improvements
	Asset Class (EGI)	Real Estate & Workplace Services
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No



Investment Summary Report

Investment Code 501813	Report Start Year 2023	Number of Years 10
Investment Name Kennedy Road Expansion		

Spend Profile

Name										Net Base Capex O (CA)	
Kennedy Road Expansion										\$	46,595,406
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Base CAPEX O	\$ 250,000	\$ 19,750,000	\$ 18,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code

3642

Report Start Year

2023

Number of Years

10

Investment Name

SMOC/Coventry Facility Consolidation

Investment Description

Issue/Concern/Opportunity:

Coventry Road

The office building in Ottawa is an owned facility that is in physically fair condition. The facility's functionality is sound but there is excess space. In addition, the furniture and finishings do not meet functional standards. The office is in a good location to serve the respective area but there is duplication in coverage between the SMOC and Coventry Road facilities.

Functional Obsolescence – Building: The acceptable Enbridge Gas Inc. (EGI) standard for the functional condition is 0, anything between 0 and 49% is considered correctable at the current location. The current facility Adequacy Index is 43%, considered marginally correctable at current location without consideration of other factors including adequacy of land size and the Functional Condition Index.

Functional Obsolescence – Site: The site does not meet operational requirements for size and vehicular circulation within the site. The yard size is smaller than EGI standard yard size requirements. The current yard size is 1.42 acres. EGI standard yard size is 2.5 acres. Building is in average condition and functionally sound (building has excess area). The site does not meet non-functional standards (furniture standards, and finishes, etc.). The site is in a good location but is no longer optimized for best use. There is potential for consolidation with the SMOC facility on 90 Bill Leatham Drive, Nepean, ON.

SMOC

SMOC is an owned facility in physically fair condition. The facility's functionality is sound; however, there is unused/excess space. In addition, the furniture and finishings do not meet non-functional standards (furniture standards, and finishes, etc.). The office is in a good location to serve its respective area but there is duplication in coverage between this office and the office at Coventry Road.

Functional Obsolescence – Building: The acceptable EGI standard for the functional condition is 0. Anything between 0 and 49% is considered correctable at the current location. The current facility Adequacy Index is 24% which is considered correctable at the current location, without consideration of other factors including adequacy of land size and the Functional Condition Index.

Functional Obsolescence – Site: The configuration of site functions and circulation is inefficient and poses a safety hazard. The yard area is too small to meet current EGI standards. The building is in average condition and is functionally sound (building has excess area). The building does not meet non-functional standards (furniture standards, and finishes, etc.). It is in a good location but there is potential for consolidation with the Coventry Road facility.

Assets: 400 Coventry Road, Ottawa, ON, and 90 Bill Leatham Drive, Nepean, ON (SMOC)

Related Program: N/A

Recommended Alternative Description

Scope of Work: Eastern Region Consolidated Facility Project

This project requires selling both the SMOC and Coventry Road properties, purchasing a property suitable in size (approximately 7 acres) and building a new 70,000 square-foot building that will consist of administration, warehouse, welding, and fabrication facilities. The assets in scope are located at 400 Coventry Road, Ottawa, ON, and 90 Bill Leatham Drive, Nepean, ON (SMOC). The nature of work is development of a new property and the construction and fit-up of a new building.

Resources: External professional resources for design and engineering along with a construction company will be contracted for the project. Historically, Enbridge Gas Inc. (EGI) has retained architectural and engineering consulting services and general construction contractors for the execution of similar projects.

Solution Impact: This option corrects operational and workplace inefficiencies by consolidating SMOC and Coventry redundancies. The new facility will use less energy and emit less greenhouse gases. The service life for the new facility will be 25 – 40 years.

Project Timing & Execution Risks:

The total project duration is 30 months:

0 – 3 months: Programming, design development, location analysis

3 – 6 months: Site acquisition

6 – 12 months: Site plan agreement, permit and tender documents, permit and tender process

12 – 14 months: Contract award and winter contingency as required

14 – 28 months: Construction

28 – 30 months: Fit-up and occupancy

Post-occupancy disposition of property

Risks include contractor delays and material delivery delays or defects.

Expenditures: The total cost for the project is \$36M net capital which includes a working construction cost contingency of 15%. Construction costs are determined based on historical EGI project costs and land values using marketplace comparisons. The project also leverages national pricing agreements with furniture, walls, and flooring manufacturers. The project costs are based on a Class 5 estimate.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - Real Estate & Workplace Services - Furniture/Structures & Improvements
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	60 - Ottawa
	Asset Program (EGI)	REWS - Furniture/Structures & Improvements
	Asset Class (EGI)	Real Estate & Workplace Services
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No



Investment Summary Report

Investment Code 3642	Report Start Year 2023	Number of Years 10
Investment Name SMOC/Coventry Facility Consolidation		

Spend Profile

Name										Net Base Capex O (CA)	
SMOC/Coventry Facility Consolidation										\$	36,040,000
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Base CAPEX O	\$ 11,000,000	\$ 5,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 3640	Report Start Year 2023	Number of Years 10
Investment Name Station B New Building		

Investment Description

Issue/Concern/Opportunity:

The Station B office on Eastern Avenue is an owned property in a good location but does not meet current building standards or operational requirements. The physical condition is considered good but the utilization and functionality is challenged. The office space no longer meets the needs of the staff currently working out of the facility. The new building will be able to provide the needed functionality and safety for the staff to carry out their tasks.

Physical Obsolescence: The acceptable EGI standard for the physical condition is a Facility Condition Index (FCI) of 0 to 5%. The current FCI of the facility based on this study is 12.28%. Therefore, the physical condition of the facility does not meet EGI acceptable standards.

Functional Obsolescence – Building: The acceptable EGI standard for the functional condition is 0. A functional condition between 0 and 49% is considered correctable at the current location. The current facility Adequacy Index (AI) is 49%.

Functional Obsolescence – Site: The property is divided into two separate parts. The first part consists of approximately 0.7 acres completely fenced off including a secure gate station located adjacent to the site on the northwest corner. The remainder of the site consists of 3.2 acres and is used as an operations depot. The site does not meet operational requirements for size and vehicular circulation. One point of access is provided to the site which poses circulation difficulties and poses operational inefficiencies. The yard size is marginally smaller than EGI standard yard size requirements. The current yard size is 2.25 acres. The EGI standard yard size is 2.5 acres. It was noted by EGI staff that the existing yard size is adequate for current operations. The existing building requires expansion by approximately 8,000 square feet to meet the need for current staff and EGI functional requirements.

Assets: 405 Eastern Avenue, Toronto, ON.

Related Program: N/A

Recommended Alternative Description

Scope of Work:

The project entails demolishing the existing facility and building a new single-storey building with underground parking to ensure much needed yard requirements for core operational needs such as fleet and equipment parking, aggregate bunkers, and yard. Underground parking will ensure the site is maximized for operations yard needs as land in Toronto's downtown is limited and requires efficient use of property. This will expand the usable existing yard. The new building footprint of approximately 20,000 square feet will ensure adequate interior storage/warehouse and fabrication space for operations, an operations muster/meeting space, washroom/locker facilities appropriately sized for the operation, and a larger office environment for site staff. The program will include currently missing elements such as a lunch room and meeting rooms. This new facility will correct operational and workplace inefficiencies, using less energy and emitting less greenhouse gases.

The assets in scope are located at 405 Eastern Avenue, Toronto, ON. The nature of work is site improvements and construction and fit-up of a new building.

Resources:

Professional resources for design and engineering along with a contractor will be retained from the marketplace. Historically, EGI has engaged architectural and engineering consulting services and general construction contractors for the execution of similar projects.

Solution Impact: The service life of the new facility would be 25 – 40 years, with the old building being demolished.

Project Timing:

The project duration is 36 months.

0 – 3 months: Programming and design development

3 – 9 months: Site plan agreement, permit and tender documents

9 – 12 months: Permit and tender process

12 – 14 months: Contract award and winter contingency as required

14 – 28 months: Construction

28 – 30 months: Fit-up and occupancy

30 – 36 months: Old building demolition and remaining site improvements

Risks include contractor delays and material delivery delays or defects.

Expenditures:

The total cost for the project is \$45.6 M net capital which includes a working construction cost contingency of 15%. Construction costs are determined based on historical EGI projects. The project also leverages national pricing agreements with furniture, walls, and flooring manufacturers. Project costs are based on a Class 5 estimate.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - Real Estate & Workplace Services - Furniture/Structures & Improvements
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	10 - Toronto
	Asset Program (EGI)	REWS - Furniture/Structures & Improvements
	Asset Class (EGI)	Real Estate & Workplace Services
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No



Investment Summary Report

Investment Code 3640	Report Start Year 2023	Number of Years 10
Investment Name Station B New Building		

Spend Profile

Name										Net Base Capex O (CA)	
Station B New Building										\$	43,666,884
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Base CAPEX O	\$ 20,000,000	\$ 9,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 8681	Report Start Year 2023	Number of Years 10
Investment Name Thorold Regional Office - Building & Site		

Investment Description

Issue/Concern/Opportunity: The administrative office in Thorold is an owned property that is in physically good condition, but operating at full occupancy offering minimal room for growth. This office was last renovated 18 years ago and the environment is in need of a refresh. Since this renovation, EGI office standards have evolved and include a focus on natural light and views to the outdoors. The facility does not meet current EGI office standards. In addition, the parking lot at the Thorold administrative facility does not meet current standards or growth demands. The parking lot currently accommodates 127 vehicles and does not accommodate the growth requirements for both operations and administrative staff parking. During peak periods, such as training sessions, department meetings, and special events, staff is required to park off site due to the limited space. In the winter after heavy snow, up to 10 parking spaces are lost until the snow is hauled away off-site.

Physical Obsolescence: The acceptable Enbridge standard for the physical condition is an FCI of 0 to 5%. The current FCI of the facility based on this study is 3.09%; therefore, the physical condition of the facility meets Enbridge acceptable standards.

Functional Obsolescence:

-Building: The acceptable EGI standard for the functional condition is 0. A functional condition between 0 and 49% is considered correctable at the current location. The current facility Adequacy Index (AI) is 59% which is marginally considered correctable at the current location, without consideration of other factors, including adequacy of land size and the FCI.

-Site: The site does not meet operational requirements for vehicular circulation. The yard size is smaller than EGI standard yard size requirements. The current usable yard size is 1.7 acres. EGI standard yard size is 2.5 acres, however there is at least one acre of landscaped area that could be reconfigured to accommodate site deficiencies.

Asset: 3401 Schmon Parkway, Thorold, Ontario.

Related Program: N/A

Recommended Alternative Description

Scope of Work:

The assets in scope are located at 3401 Schmon Parkway, Thorold, Ontario. The nature of work is interior renovation and furnishings and expanding the employee parking lot. This project will correct physical and functional deficiencies by renovating the current office space and expanding the parking lot. Physical and functional standards can be met more cost-effectively by renovating the current office space and site. The renovated facility will use less energy and emit less greenhouse gases.

Expenditures: Total capital expenditure for this Project is estimated to be \$16.5M which includes a working construction cost contingency of 15%. Construction costs are determined based on historical EGI project costs. The project also leverages national pricing agreements with furniture, walls, and flooring manufacturers. The project costs are based on a Class 5 estimate.

Resources: Professional resources for design and engineering will be contracted from the marketplace. Historically, EGI has retained architectural and engineering consulting services for the execution of similar projects.

Solution Impact: The renovation will extend the asset useful life by 15 years.

Project Timing & Execution Risks: The project duration is 12 months as described below:

- 0 to 2 months: Programming and design development
- 2 to 5 months: Permit and tender documents
- 5 to 7 months: Award, tender and permit process
- 7 to 11 months: Construction
- 11 to 12 months: Fit-up and occupancy

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - Real Estate & Workplace Services - Furniture/Structures & Improvements
Investment Stage	Short Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	80 - Niagara
	Asset Program (EGI)	REWS - Furniture/Structures & Improvements
	Asset Class (EGI)	Real Estate & Workplace Services
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	
	Third Party Relocation (EGI)	
	Program work with sufficient history and risk to warrant continuation (EGI)	

Spend Profile

Name	Net Base Capex O (CA)									
Thorold Regional Office - Building & Site	\$ 16,500,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ 250,000	\$ 250,000	\$ 5,000,000	\$ 8,000,000	\$ 3,000,000	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ 600,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -



Investment Summary Report

Investment Code 8782	Report Start Year 2023	Number of Years 10
Investment Name VPC Core and Shell		

Investment Description

Issue/Concern: The building shell and core for the VPC facility is over 50 years old. The tower building was constructed in or around 1968 as a two-storey building with an addition in 1978 that included floors 3 to 5. The VPC facility houses over 1,200 employees. It is an owned facility that is currently undergoing renovations.

Physical Condition: Currently safe, ongoing periodic structural review required.

Functional Condition: Failed performance as an insulator and barrier to the outdoors, water and vapour intrusion, and comfort and energy efficiency is compromised.

Proposed Activity: Envelope replacement - high performance curtain wall, new shell with very high levels of glazing allowing increased daylight and views; change from 30% today to 60 – 80% penetration of light.

Assets: 500 Consumers Rd., North York, ON

Related Program: N/A

Recommended Alternative Description

Scope of Work: The assets in scope are located at 500 Consumers Rd., North York, ON. The nature of work is the removal and replacement of the 50-year-old exterior envelope on the tower and the replacement of core mechanical and electrical systems. This project calls for correcting physical and functional deficiencies by renovating and renewing the existing facility. This is the preferred strategy since the Facility Condition Index (FCI) and Adequacy Index (AI) show the building and site deficiencies are correctable by the following activities:

- Renewing the building's main mechanical system
- Adding two elevators
- Renovating the three main staircases
- Replacing the building envelope

Resources: External professional resources for design and engineering as well as a construction company will be contracted for the project. Historically, Enbridge Gas Inc. (EGI) has retained architectural and engineering consulting services and general construction contractors for the execution of similar projects.

Solution Impact: The renovation will correct operational and workplace inefficiencies by using less energy and emitting less greenhouse gases on the existing property. The service life of the renewed facility would be 40 years.

Timing: The project duration is 24 months:

- 0 – 3 months: Programming and design development
- 3 – 9 months: Permit and tender documents
- 9 – 12 months: Permit and tender process
- 12 – 14 months: Contract award and winter contingency as required
- 14 – 24 months: Construction

Risks include contractor delays and material delivery delays or defects.

Expenditures: The total cost for the project is \$26M net capital. Construction costs are determined from facility assessment reports and architectural consultant budget forecasts and using marketplace comparisons. Project costs are based on a Class 5 estimate.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - Real Estate & Workplace Services - Furniture/Structures & Improvements
Investment Stage	Short Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	00 - Head Office
	Asset Program (EGI)	REWS - Furniture/Structures & Improvements
	Asset Class (EGI)	Real Estate & Workplace Services
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
VPC Core and Shell	\$ 26,000,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 10,000,000	\$ 10,000,000	\$ 6,000,000
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,000,000	\$ 1,000,000



Investment Summary Report

Investment Code 100621	Report Start Year 2023	Number of Years 10
Investment Name Dawn Administrative Centre		

Investment Description

Issue/Concern/Opportunity: The Dawn admin centre on Bentpath Line is an owned property in a good location but does not meet current building standards or operational requirements. The physical condition is considered poor and the utilization and functionality is challenged. The office space no longer sufficiently accommodates current and future staffing needs of the facility.

Physical Obsolescence: The acceptable Enbridge Gas Inc. (EGI) standard for the physical condition is a Facility Condition Index (FCI) of 0 to 5%. The current FCI of the facility based on this study is 16.95%. Therefore, the physical condition of the facility does not meet EGI acceptable standards.

Functional Obsolescence – Building: The acceptable EGI standard for the functional condition is 0. A functional condition between 0 and 49% is considered correctable at the current location. The current facility Adequacy Index (AI) is 28%.

Functional Obsolescence – Site: The area occupied by the building is separated from the adjacent functions with metal fence complete with barb wire. The building occupies approximately 7.5% of 233,541 SF fenced site area. The two driveways to the south and east of the building act as main entry and exit only servicing visitors and employees. There are four access points from the south and east driveway that lead to the front parking lot. The parking area consists of 68 parking spaces and is considered adequate to accommodate staff and visitors. There is no yard associated with the building due to its unique function as an office building with no industrial components. The building is located in the underground gas storage zone. It was reported by staff the proximity of the building to the underground gas storage is of concern to staff and relocation to an area outside the storage zone is desirable.

Assets: 3332 Bentpath Line, Tupperville, ON.

Related Program: N/A

Recommended Alternative Description

Scope of Work: Build new facility elsewhere on the Dawn campus. The current Asset Management Plan has allocated funds in 2021 and 2022 to fulfill the strategy. This presents the safest, most cost-effective solution for maintaining a Category 1 facility.

Resources:

External professional resources for design and engineering along with a construction company will be contracted for the project. Historically, EGI has retained architectural and engineering consulting services and general construction contractors for the execution of similar projects.

Solution Impact: The service life of the new facility will be 25-40 years.

Timing and Execution Risks:

The Project duration is 36 months:

- 0 – 3 months: Programming and design development
- 3 – 9 months: Site plan agreement, permit and tender documents
- 9 – 12 months: Permit and tender process
- 12 – 14 months: Contract award and winter contingency as required
- 14 – 28 months: Construction
- 28 – 30 months: Fit-up and occupancy
- 30 – 36 months: Old building demolition and remaining site improvements

Risks include contractor delays and material delivery delays or defects.

Expenditures:

The total cost for the project is \$13M net capital which includes a working construction cost contingency of 15%. Construction costs are determined based on historical EGI project costs and estimated land values are based on marketplace comparisons. The project also leverages national pricing agreements with furniture, walls, and flooring manufacturers. The project costs are based on a Class 5 estimate.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Real Estate & Workplace Services - Furniture/Structures & Improvements
Investment Stage	Short Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_02 - Chatham
	Asset Program (EGI)	REWS - Furniture/Structures & Improvements
	Asset Class (EGI)	Real Estate & Workplace Services
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name										Net Base Capex O (CA)	
Dawn Administrative Centre										\$	13,000,000
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Base CAPEX O	\$ -	\$ -	\$ -	\$ -	\$ 1,000,000	\$ 12,000,000	\$ -	\$ -	\$ -	\$ -	
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	



Investment Summary Report

Investment Code 101136	Report Start Year 2023	Number of Years 10
Investment Name New London Site		

Investment Description

Issue/Concern/Opportunity: This project will allow for potential consolidation currently under review of four operational sites in the Union rate zones into a single facility. Boundary analysis still ongoing and investment details will continually be updated as strategy progresses.

Functional Obsolescence – Building: N/A
Functional Obsolescence – Site: N/A

Assets: N/A

Related Program: N/A

Recommended Alternative Description

Scope of Work: This project requires selling existing assets, purchasing a property suitable in size (approximately 7 to 10 acres) and building a new 44,000 sq. ft. building that will consist of administration, warehouse, welding and fabrication facilities. The preferred strategy is to correct physical and functional deficiencies by purchasing a new site and build a new facility on the new site.

Resources: External professional resources for design and engineering along with a construction company will be contracted for the project. Historically, Enbridge Gas Inc. (EGI), has retained architectural and engineering consulting services and general construction contractors for the execution of similar projects.

Solution Impact: This option corrects operational and workplace inefficiencies by consolidating existing facilities. The new facility will use less energy and emit less greenhouse gases. The service life for the new facility will be 25 to 40 years.

Project Timing & Execution Risks

Timing: The total project duration is 30 months:

0 – 3 months: Programming, design development, and location analysis

3 – 6 months: Site acquisition

6 – 12 months: Site plan agreement, permit and tender documents, permit and tender process

12 – 14 months: Contract award and winter contingency as required

14 – 28 months: Construction

28 – 30 months: Fit-up and occupancy

Post-occupancy disposition of property

Risks include contractor delays and material delivery delays or defects.

Expenditures:

The total cost for the project is \$42.6M net capital which includes a working construction cost contingency of 15%. Construction costs are determined based on historical EGI project costs and land values using marketplace comparisons. The project also leverages national pricing agreements with furniture, walls, and flooring manufacturers. The project costs are based on a Class 5 estimate.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Real Estate & Workplace Services - Furniture/Structures & Improvements
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_04 - London
	Asset Program (EGI)	REWS - Furniture/Structures & Improvements
	Asset Class (EGI)	Real Estate & Workplace Services
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
New London Site	\$ 42,650,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ 1,500,000	\$ 18,500,000	\$ 20,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 100709	Report Start Year 2023	Number of Years 10
Investment Name Sudbury Regional Operations Centre		

Investment Description

Issue/Concern: The Sudbury depot on Falconbridge Road is an owned property in a good location, but does not meet current building standards or operational requirements. The physical condition is considered poor and the utilization and functionality is challenged. The office space no longer sufficiently accommodates current and future staffing needs of the facility.

Physical Obsolescence: The acceptable EGI standard for the physical condition is a Facility Condition Index (FCI) of 0 to 5%. The current FCI of the facility based on this study is 8.49%. Therefore, the physical condition of the facility does not meet EGI acceptable standards.

Functional Obsolescence – Building: The acceptable EGI standard for the functional condition is 0. A functional condition between 0 and 49% is considered correctable at the current location. The current facility Adequacy Index (AI) is 13%.

Functional Obsolescence – Site: The site is 1.9 acres and is serviced by two driveways off of Westbourne Street. The northern driveway is a two way driveway that provides access to the front parking lot for both employees and staff. The southern driveway is equipped with card access into the yard servicing only employees. The site consists of a main office and warehouse building. The parking and yard are arranged such that the main employee and staff parking is located to the north east of the building with additional staff parking and yard to the south of the building.

Asset: 828 Falconbridge Road, Sudbury, ON.

Related Program: N/A

Recommended Alternative Description

Scope of Work: Correct physical and functional deficiencies by renovating the existing facility. This Project will correct physical and functional deficiencies by renovating the current office space. Physical and functional standards can be met more cost-effectively by renovating the current office space and site. The renovated facility will use less energy and emit less greenhouse gases.

Resources: Professional resources for design and engineering will be contracted from the marketplace. Historically, EGI has retained architectural and engineering consulting services for the execution of similar projects.

Solution Impact: The renovation will extend the asset useful life by 15 years.

Timing: The Project duration is 12 months as described below:

0 – 2 months: Programming and design development

2 – 5 months: Permit and tender documents

5 – 7 months: Award, tender and permit process

7 – 11 months: Construction

11 – 12 months: Fit-up and occupancy

Expenditures: Total capital expenditure for this Project is estimated to be \$11.6M which includes a working construction cost contingency of 15%. Construction costs are determined based on historical EGI project costs. The Project also leverages national pricing agreements with furniture, walls, and flooring manufacturers. The Project costs are based on a Class 5 estimate.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Real Estate & Workplace Services - Furniture/Structures & Improvements
Investment Stage	Short Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_43 - Sudbury & S.S. Marie
	Asset Program (EGI)	REWS - Furniture/Structures & Improvements
	Asset Class (EGI)	Real Estate & Workplace Services
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	
	Third Party Relocation (EGI)	
	Program work with sufficient history and risk to warrant continuation (EGI)	

Spend Profile

Name	Net Base Capex O (CA)									
Sudbury Regional Operations Centre	\$ 11,600,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ -	\$ 1,600,000	\$ 10,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 102291	Report Start Year 2023	Number of Years 10
Investment Name Contract Market Harmonization		

Investment Description

Issue/Concern/Opportunity: The OEB MAADs decision specified that EGI shall file a proposal for rate harmonization in its next rebasing application. In order to harmonize contract market rates, services must also be harmonized. Enbridge believes that harmonizing and aligning services for the contract market will improve the customer experience for contract customers by reducing the number of systems they must transact in, aligning policies across rate zones, and simplifying processes. If the proposal filed as part of 2024 Rebasing is approved, this project will be required to implement the approved rates and services in the systems listed below. By implementing this project coincident with the Contract Market Systems – Technology Obsolescence project, the investment of capital is optimized.

Assets: TIS Business Solutions. EnTRAC, URICA, Enerline, CARE, ConTrax, GDAR, SAP- CIS, SAP-ERP, Oracle Financials, Data Marts are examples of the systems impacted

Related Program: Contract Market Systems - Technology Obsolescence #736942, Rates and Service Harmonization Project #76081

Recommended Alternative Description

Scope of Work: Currently, Enbridge Gas Inc (EGI) has 3 different rate zones (EGD, Union North, Union South), 11 separate service designs and 43 rate classes. This results in complex business and accounting processes. This project will implement changes to several EGI business applications to implement harmonized services, rate zones, and rate classes.

This project, in conjunction with the Contract Market - Technology Obsolescence Project, is required to provide consistent services with common design elements for customers in all areas of the franchise. The simplified, consistent services will enhance the customer experience, provide more flexibility for customers, and reduce the complex variations in the existing services and rates. Contract market harmonization will facilitate harmonized business processes, reduced system complexity, and will reduce the level of effort associated with ongoing business and TIS support. Detailed information regarding the service and rate harmonization and the associated benefits will be filed with EGI's 2024 rebasing application.

Several business applications are impacted based upon the changes proposed:

- ConTrax/CARE/GDAR/Enerline - The Union rate zone business applications that perform contracting, billing and gas management/nominations functions, including customer facing portals.
- EnTRAC/URICA/GDAR – The EGD rate zone business applications that perform contracting and gas management/nominations functions, including customer facing portals.

This functionality will be enabled in conjunction with the Contract Market Systems - Technology Obsolescence project, which will coincidentally integrate the above legacy company applications and replace aging technologies. These business applications must be integrated to allow for the harmonization of rate zones, rate classes and services as well as a single customer portal. If the applications are not integrated, EGI will need to make changes to multiple applications to align them with the harmonized services and business processes. A single customer portal would remain a requirement regardless of the underlying business applications. In addition, some of the proposals for service harmonization may not be able to be implemented. For example, the scenario where customers or contracts cross between the existing rate zones. In addition to the primary business applications, there will also be changes required to downstream processes and applications such as gas accounting, QRAM, and financial reporting to align with the harmonized rates and services.

This project will follow TIS project methodologies as developed and governed by the Project Management Office.

Resources: Project Manager, Business Analysts, Business Systems Support Team, Customer Care SMEs, Regulatory SMEs, Finance SMEs, TIS SMEs, Energy Services SMEs, Enterprise Architecture, Solutions Architecture, Data & Analytics, Report Developers, AMS provider, Solutions Integrator, Audit, Testing, Organizational Change Management (OCM)

Solution Impact: EGI currently has 3 Rate Zones, 11 Separate Service Designs and 43 Rate Classes. This project will implement the required changes to enable service and rate harmonization.

Project Timing & Execution Risks:

- Project expected to start late 2023, and will continue into 2024 pending the approval of Rate and Service Design by the OEB as part of the 2024 Rebasing Application. A key dependency is the Contract Market - Technology Obsolescence Project. In order to harmonize services, EGI must consolidate and modernize the contract rate billing, contracting, GDAR and gas management/nominations applications. Target implementation date is Q2 2026. Project milestones for design, build, test and delivery to be developed once project approved, team established, and project initiated.
- Risks include resource constraints, competing priorities, OEB approval of service and rate harmonization as submitted by EGI.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - TIS - TIS Business Solutions
Investment Stage	Long Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	00 - Head Office
	Asset Program (EGI)	TIS Business Solutions
	Asset Class (EGI)	TIS
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Contract Market Harmonization	\$ 14,760,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ 2,000,000	\$ 5,000,000	\$ 5,000,000	\$ 2,760,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -



Investment Summary Report

Investment Code 736942	Report Start Year 2023	Number of Years 10
Investment Name Contract Market Systems - Technology Obsolescence		

Investment Description

Issue/Concern/Opportunity:

This project will consolidate the contracting, gas management/nominations and billing applications at EGI. The Contract to Cash processes are currently using aging and disparate systems for groups such as Large Volume Contracting, Gas Supply and Storage and Transmission Sales. This new platform and integrated systems will then enable Rate and Service Harmonization (if approved) and further enhance the customer experience, and reduce total cost of ownership.

Justification: Many of these systems are 20-30 years old and are built using technology that is or will become unsupported in the near future and requires upgrading. Failure to refresh aging systems and applications puts our business at risk with an increased chance of service outages, degraded performance, business and customer interruptions, increased costs, difficulty in acquiring support and ability to address cybersecurity risks.

Assets: Legacy (EGD&Union) Contract Management and Billing (EnTrac, URICA, ConTrax) and associated Legacy (LEGD&LUG) Gas Management systems (CARE, Enerline) will be replaced and/or modified by SAP modules and decommissioned (EGI may still retain this system name/brand for the customer facing portal, even if the underlying technology is replaced). New system integrations with CIS/SAP/Oracle/Cost of Gas, reporting, and data warehouse are examples of additional changes and systems impacted.

Related Investments: Contract Market Harmonization Project #102291

Recommended Alternative Description

Scope of Work:

Legacy (LEGD&LUG) Contract Management and Billing (EnTrac, URICA, ConTrax) and associated Legacy (LEGD&LUG) Gas Management systems (CARE, Enerline) will be replaced and/or modified by SAP modules and decommissioned. New system integrations with CIS/SAP/Oracle, reporting, and data warehouse are examples of additional changes and systems impacted.

TIS benefits:

- Improved support and sustainment and cyber security.
- Decommissioning of servers and legacy applications.
- Reduced complexity and total cost of ownership for Contract and Gas Management systems and support

Business Benefits:

- Alignment, simplification and automation of business processes
- Easier to train staff, one set of unified processes and procedures
- Reduction in testing efforts, eliminating multiple systems and applications
- Improved customer experience and ease of use when transacting with Enbridge systems
- Reduced chance of service outages and degraded system performance

Resources: Customer Care Large Volume SME's, Energy Services Gas Management SME's, Finance, TIS SME's, Enterprise Architect, Data and Analytics Arch, Network and Security, Change Management, Project Manager, System Integrator, (Legal, Finance, Regulatory SME's as required)

Solution Impact: This project is required to align disparate and aging systems which must be replaced in order to ensure that contract market customers can continue to transact. Without this project, transactions such as contracting, gas management, and billing are at risk of service outage, degraded performance, cyber security risk, and increased cost of sustainment. This project also delivers a modernized technology platform that will enable the Contract Market Harmonization project which implements the proposed harmonized rates and services for the contract market. The implementation of this project and the Contract Market Harmonization project will deliver improved customer experience, simplified processes and aligned services on a modernized and reliable technology platform.

Project Timing & Execution Risks:

Timing- Project activities are expected to start in 2023, with the teams proving out the technology, and process mining tools, and reviewing business processes for standardization. An Request For Proposal (RFP) will be developed and selection the System Integrator (SI) for a project implementation date in 2026.

Risks- Competing priorities and resource constraints, continuity of resources on the project team to help mitigate schedule impacts for knowledge gaps (current state/future state, design/testing) and any potential rework as a result.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - TIS - TIS Business Solutions
Investment Stage	Initial		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	00 - Head Office
	Asset Program (EGI)	TIS Business Solutions
	Asset Class (EGI)	TIS
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No



Investment Summary Report

Investment Code 736942	Report Start Year 2023	Number of Years 10
Investment Name Contract Market Systems - Technology Obsolescence		

Spend Profile

Name										Net Base Capex O (CA)	
Contract Market Systems - Technology Obsolescence										\$	53,240,000
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Base CAPEX O	\$ 7,450,000	\$ 17,830,000	\$ 17,830,000	\$ 10,130,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

Report Generation Date: 6/2/2022



Investment Summary Report

Investment Code 736081	Report Start Year 2023	Number of Years 10
Investment Name General Service Rebasing Changes		

Investment Description

Issue/Concern/Opportunity: The OEB MAADs decision specified that EGI shall file a proposal for rate harmonization in its next rebasing application. EGI believes that harmonizing rates will improve the customer experience for general service customers by simplifying rates, processes, and improved cost transparency. If the proposal filed as part of 2024 Rebasing is approved, this project will be required to implement the proposal in the EGI systems listed below.

Assets: TIS Business Solutions. CIS-SAP, Kubra, SAP-ERP, Oracle Financials, EnTRAC, ConTrax, GDAR, MyAccount, Data Marts (BBDM, CTDS, BW, EDW, etc), Guardian, Load Gathering, Synergiee, Get Connected are examples of the systems impacted.

Related Program: N/A

Recommended Alternative Description

Scope of Work: Currently, Enbridge Gas Inc. (EGI) has three different rate zones (EGD, Union South and Union North) and six general service customer classes across eight rate categories. This results in complex business and accounting processes. This project will implement changes to several EGI systems to implement a harmonized model with a single rate zone for EGI, two customer classes (rate categories – Small Demand and General Demand) and harmonized rates. This will simplify rates for customers and related business and accounting processes such as QRAM. This project will follow TIS project methodologies as developed and governed by the Project Management Office.

Benefits include improved customer experience due to simplification of rates and improved cost transparency, business process simplification resulting from one set of terms and conditions of service across entire EGI franchise area, simplification of accounting processes including QRAM, forecasting, financial reporting, and easier to administer regulatory application and OEB review processes.

Resources: Project Manager, Business Analysts, Business Systems Support Team, Customer Care SMEs, Regulatory SMEs, Finance SMEs, TIS SMEs, Energy Services SMEs, Finance SMEs Enterprise Architecture, Solutions Architecture, Data & Analytics, Report Developers, AMS provider, Solutions Integrator, Audit, Testing, Organizational Change Management (OCM)

Solution Impact: This project will implement the required changes to enable a single rate zone for EGI with two customer classes (Rate Categories – Small Demand and General Demand) and the harmonization of general service rates.

Project Timing & Execution Risks:

-Project to start no later than January 2024, with approval from the OEB of General Service Rate Harmonization. Target implementation date Q2 2025. Project milestones for design, build, test and delivery to be developed once project approved, team established, and project initiated.

-Risks include resource constraints, competing priorities, OEB approval of harmonization as submitted by EGI.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - TIS - TIS Business Solutions
Investment Stage	Long Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	00 - Head Office
	Asset Program (EGI)	TIS Business Solutions
	Asset Class (EGI)	TIS
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
General Service Rebasing Changes	\$ 16,000,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ 14,000,000	\$ 2,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 6/2/2022



Investment Summary Report

Investment Code 102364	Report Start Year 2023	Number of Years 10
Investment Name Records Management Technology Obsolescence (2024-2026)		

Investment Description

Issue/Concern/Opportunity:

The Records Management technologies host information about EGI gas carrying asset which are critical to drive integrity and operation of these assets. In addition, the information is used by the Integrity group to determine asset condition which will inform the asset life cycle strategies used to develop the 10 year Asset Plan with focus on safe and reliable operations of EGI assets. The Records Management technologies is made up of multiple systems which will become vendor unsupported between 2024 to 2026 and requires upgrades to reduce technology complexity, cyber risk, and to enable process optimization. Failure to maintain software warranty will increase the likelihood of system failures, increase outages, degraded performance and increase vulnerability to cybersecurity attacks.

The objective of the Records Management (Asset Records) Technology Obsolescence project is to align the key systems and high level process for gas carrying asset records which are used to support Operations in performing maintenance, and construction work as well as Engineering to conduct analysis and produce asset plans. This will be enabled through the selection of an integrated suite of applications that satisfy all technical and business requirements.

Assets:

- TIS Business Solutions, examples of the core systems impacted:
- ESRI ArcServer GIS (Packaged Software) 10.8 (2026 retirement)
- Hexagon GIS (Packaged Software) G/Technology (2024 retirement)
- iViewer (Custom)
- ProjectWise Connect (Packaged Software) (2024 retirement)

Related Program: N/A

Recommended Alternative Description

Scope of Work :

The scope and objective of the Records Management (Asset Records) Technology Obsolescence project is to address the technology obsolescence and align the key systems for gas carrying asset records. This will be enabled through the selection of an integrated suite of applications that satisfy all technical and business requirements. The work will consist of upgrading software to the latest supported versions as well as incorporate the opportunities to optimize business processes by leveraging new capabilities offered by the software.

The initiative will follow TIS project methodologies as developed and governed by the Project Management Office, including, signed charter and a project plan covering the activities of design, build, test and implementation.

Benefits:

EGI will be able to leverage advancements in technology which could provide further benefits in optimizing business processes. As such the following benefits are estimated: Technology savings of \$975k annual savings related to a reduction in technology, licenses, and infrastructure. Business savings are comprised of \$1,000,000 related to drafting efficiencies in Distribution Operations; \$400,000 related to Records Management team savings in Engineering & STO; \$50,000 related to efficiencies in Engineering Construction/Drafting and Capital Development; all savings have been derived using an ~8% rate reduction

Resources:

Project Managers, Enterprise Architecture, System Integrators, Operations SMEs, Asset Records SMEs, TIS SMEs, Vendor Professional Services, External Contractors

Solution Impact:

This will impact Operations and Engineering employees as well as third-party alliance partners who require asset records to perform their work. This will also impact teams within the organization that produce and manage asset records throughout the asset lifecycle, such as the Records Management team and Asset Integrity. The solution will implement the latest version of software where software bugs have been resolved and the technology would be compatible to the latest hardware thereby ensuring a more secure, reliable, and sustainable platform. With the upgrades there are advancements in software technology introducing new capabilities that will optimize business processes.

Project Timing & Execution Risks:

This project is expected to start in 2024. With design efforts starting January 2024 and in service target date of completion Dec 2026.

Risk: Competing priorities, resource constraints, and business cost pressures.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - TIS - TIS EGI Business Solutions
Investment Stage	Long Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	00 - Head Office
	Asset Program (EGI)	TIS Business Solutions
	Asset Class (EGI)	TIS
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No



Investment Summary Report

Investment Code 102364	Report Start Year 2023	Number of Years 10
Investment Name Records Management Technology Obsolescence (2024-2026)		

Spend Profile

Name										Net Base Capex O (CA)	
Records Management Technology Obsolescence (2024-2026)										\$	21,550,000
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Base CAPEX O	\$ -	\$ 4,250,000	\$ 8,650,000	\$ 8,650,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

Report Generation Date: 6/2/2022



Investment Summary Report

Investment Code

6377

Report Start Year

2023

Number of Years

10

Investment Name

PCRW:Wells-Upgrade

Investment Description

Issue/Concern:

Wells at Crowland are much older than other wells at EGI. Due to age, the wells were constructed to a production standard which would normally be retired after 10 years. Instead, the wells were converted to Storage service in the early 1970s and have continued to operate ever since. Many wells have been relined, increasing the risk of leaks. Most wells possess only two casings; the current standard requires a minimum of three casings. The two-casing design at Crowland is comprised of an inner casing that runs from the surface to the reservoir (about 225 m) plus a surface casing that runs from the surface to a depth of about 20 m. Most wells do not have an intermediate casing with cement between the inner and intermediate casings; however, there is cement between the inner casing and the surrounding rock. Should the inner casing fail, this provides a poor barrier to gas flow. In addition, none of the wells at Crowland employ wellheads and master valves. Instead, the inner casing is simply connected to a flanged 1/4 turn valve without wing valves or wellhead vents. The surface casing is separated from the surface using cement. There are no casing vents and part of the inner casing (typically a length of 2 to 16 in.) is exposed at the surface. The lack of casing vents eliminates normal approaches to controlling a failed well. Vertilogs have been performed in the last 5 years, and indicated that the inner casing integrity is adequate, although 2 of the 26 wells needed to be abandoned. Currently, there are 24 wells remaining. Bond logs have not been performed yet to determine the condition of cement at sulphur layers.

The primary concerns are:

- (1) Code compliance of the wells and wellheads. Technically, these wells were constructed before CSA Z341 came into force and are grandfathered. However, a well failure would likely be viewed negatively by technical regulators.
- (2) Risk to employees and the public. In the event of a loss of containment, there are insufficient barriers to gas flow. Public risk also extends to possible sulphur contamination of well water at surface levels. In addition to the wells, much of the gathering system is as old as the wells. The gathering system is operating at <30% SMYS, which means that they have not been considered for integrity inspections until recently and that the gathering system pipe condition is unknown after 50 to 100 years of operation.

Assets: Crowland wells and gathering system.

Related Programs: This investment is under consideration in conjunction with the Distribution Station #3610 Crowland Investment. Issues related to the wells and gathering system should be considered together with the additional distribution station and compressor station issues/concerns.

Recommended Alternative Description

Scope of Work:

The scope of works includes: Drilling applications and well locations studies, design, materials, core sampling, drilling of 2 new wells and wellheads / master valves to 12 existing wells, stimulating 2 new wells and 12 existing wells, and upgrading wellheads for 12 existing wells

Resources: The majority of design and installation work will be performed by third parties.

Solution Impact: Results of the core integrity testing will verify that the confining geological formations are suitable for storage, provide inputs needed to simulate the wells, abandon up to eight existing wells thereby reducing risk.

Risks Reduced:

- Loss of containment from exposed inner casing above the surface level of the well.
- Effects of well casing corrosion, where exposed to corrosive sulphur, can be mitigated more readily with modern wellheads and master valves. This limits pressurized gas leaking through the well casing and contaminating well water at surface with sulphur.
- Effects of deteriorated cement between the casing and rock can be mitigated more readily with modern wellheads and master valves. Existing cement is not resistant to the effects of sulphur and has reduced life expectancy.
- Compromised cement may allow well casing leaks to migrate to the surface.

Project Timing & Execution Risks:

- Year 1 - permits, applications, order long lead items, testing and planning
- Year 2 - Construction
- Year 3 - Abandonment

Risks/Assumptions:

- Project schedule is influenced by reservoir pressures, regulatory approvals, and environmental factors.
- Environmental findings may impact execution costs.
- Crowland is located in a marshy area which may impact execution and, subsequently, costs.

Investment Type	Project (EGI)	Planning Portfolio	EGD - Core - Transmission Pipe & Underground Storage - Replacements
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	70 - Storage
	Asset Program (EGI)	TPS - Replacements
	Asset Class (EGI)	Transmission Pipe & Underground Storage
2. Compliance	Compliance Investment	Yes
	Compliance Justification & Code	CSA Z341.1-14 Section 5.8.7
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No



Investment Summary Report

Investment Code 6377	Report Start Year 2023	Number of Years 10
Investment Name PCRW:Wells-Upgrade		

Spend Profile

Name										Net Base Capex O (CA)	
PCRW:Wells-Upgrade										\$	12,780,000
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Base CAPEX O	\$ 8,500,000	\$ 1,750,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Dismantlement	\$ -	\$ 3,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 100699	Report Start Year 2023	Number of Years 10
Investment Name Dawn Parkway Expansion Project (Dawn-Enniskillen NPS 48)		

Investment Description

Issue/Concern: In response to increased natural gas demand growth along the Dawn Parkway System, the Kirkwall to Hamilton Expansion has a forecast in-service date of 2029 to 2030 and will provide reliable, secure, economic natural gas capacity to meet the growing design day demand of the Dawn Parkway Transmission system which serves both in- and ex-franchise markets.

Assets: Install approximately 17.2 km of NPS 48 internally-coated pipeline from Dawn Compressor Station (10G-301) to Enniskillen Valve Site (11H-301V) on the Dawn Parkway System.

Related Programs: These facilities are incremental to the Kirkwall to Hamilton Expansion (#48654) and timing is dependent on the Dawn Parkway System demands.

Recommended Alternative Description

Scope of Work: Install approximately 17.2 km of NPS 48 internally-coated pipeline from Dawn Compressor Station (10G-301) to Enniskillen Valve Site (11H-301V) on the Dawn Parkway System.

Resources: Projects group to provide project management support from design and planning phase to project execution.

Solution Impact: Capacity is available on the Dawn Parkway System to meet in-franchise growth and customer demand.

Project Timing & Execution Risks:

- Schedule delays due to right-of-way access for survey, land acquisition, environmental studies, permitting, and/or issuance of OEB Leave to Construct may put at risk the planned in-service date.
- Further analysis for potential IRPAs.
- This project will follow Kirkwall to Hamilton (48654). It will be based upon studies done by the Transmission System Planning identifying a need for expansion based upon the demands from the study.
- Estimate/ Forecast does not include MOP Upgrade or Dawn Station Work.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Transmission Pipe & Underground Storage - Growth
Investment Stage	Long Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_04 - London
	Asset Program (EGI)	TPS - Growth
	Asset Class (EGI)	Transmission Pipe & Underground Storage
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Dawn Parkway Expansion Project (Dawn-Enniskillen NPS 48)	\$ 246,634,252									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ -	\$ -	\$ -	\$ 24,612,151	\$ 49,222,260	\$ 148,187,690	\$ 24,612,151	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 48654	Report Start Year 2023	Number of Years 10
Investment Name Dawn Parkway Expansion Project (Kirkwall-Hamilton NPS 48)		

Investment Description

Issue/Concern: In response to increased natural gas demand growth along the Dawn Parkway System, the Kirkwall to Hamilton Expansion has a forecast in-service date of November 1, 2026 and will provide reliable, secure, economic natural gas capacity to meet the growing design day demand of the Dawn Parkway Transmission system which serves both in- and ex-franchise markets.

Assets: The Kirkwall-Hamilton Expansion Project consists of 10.2 km of NPS 48 pipeline from the Kirkwall Valve Site to the Hamilton Valve Site.

Related Programs: N/A

Recommended Alternative Description

Scope of Work: System installation of approximately 10.2 km of NPS 48 internally-coated pipeline from Kirkwall Valve Site (17V-302) to Hamilton Valve Site (18W-601V) on the Dawn Parkway System.

Resources: Projects group to provide project management support from design and planning phase to project execution.

Solution Impact: Capacity is available on the Dawn Parkway System to meet in-franchise growth and customer demand.

Project Timing & Execution Risks: In March 2021, this project was pushed out to 2025 and is forecast for November 1, 2026 in-service date. This project was filed with the Ontario Energy Board (OEB); but due to the global pandemic, there was demand uncertainty and the project ultimately was paused. Further analysis for potential IRPAs. Schedule delays due to right-of-way access for survey, environmental studies, land acquisition, permitting, and/or issuance of OEB Leave to Construct may put at risk the planned in-service date.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Transmission Pipe & Underground Storage - Growth
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_16 - Hamilton
	Asset Program (EGI)	TPS - Growth
	Asset Class (EGI)	Transmission Pipe & Underground Storage
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Dawn Parkway Expansion Project (Kirkwall-Hamilton NPS 48)	\$ 192,008,405									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ 19,000,000	\$ 38,247,415	\$ 115,027,169	\$ 16,000,000	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 49758	Report Start Year 2023	Number of Years 10
Investment Name Panhandle Regional Expansion Project		

Investment Description

Issue/Concern:
To provide reliable, secure, and affordable natural gas supply to meet the growth in Design Day demand of the Panhandle System:

- Assets:
- i. Dawn Yard: 700 m of 8960 kPa MOP NPS42 station header is required to maintain the maximum sustainable pressure on design day. This header will also provide operational flexibility and security of supply to the Panhandle system.
 - ii. Panhandle Take-off Station: The existing station will be modified to meet the new system capacity demand requiring measurement, odourization and regulation assets.
 - iii. Dover Transmission Station: This existing regulating station will be modified to connect the new NPS 36 pipeline to the upstream system. Flow measurement equipment will also be added to the station.
 - iv. Panhandle Loop : 19 km of NPS 36 6040 kPag MOP pipeline will parallel the NPS 20 from Dover Transmission station to a new valve site at Richardson Sideroad.
 - v. Richardson Sideroad Valve Site: A new valve site is required at the end of the NPS 36 Panhandle loop to connect to the existing NPS20 mainline. Isolation valves and launcher/receiver facilities will be installed at this location.

Related Programs: Other PREP Investments: #735972 & 736923

Recommended Alternative Description

1. Scope: To provide reliable, secure, and affordable natural gas supply to meet the growth in Design Day demand of the Panhandle System:
 - i. Dawn Yard: 700 m of NPS 42 8960 kPa MOP station header is required to maintain the maximum sustainable pressure on design day. This header will also provide operational flexibility and security of supply to the Panhandle system.
 - ii. Panhandle Take-off Station: The existing station will be modified to meet the new system capacity demand requiring measurement, odourization and regulation assets.
 - iii. Dover Transmission Station: This existing regulating station will be modified to connect the new NPS 36 pipeline to the upstream system. Flow measurement equipment will also be added to the station.
 - iv. Panhandle Loop : 19 km of 6040 kPag MOP NPS36 pipeline will parallel the NPS 20 from Dover Transmission station to a new valve site at Richardson Sideroad.
 - v. Richardson Sideroad Valve Site: A new valve site is required at the end of the NPS 36 Panhandle loop to connect to the existing NPS20 mainline. Isolation valves and launcher/receiver facilities will be installed at this location.
2. Resources:
This project will be internally managed by EGI staff. Construction work, such as well drilling and new pool piping installation, will be performed by contractors.
3. Solution Impact:
Expansion of the Panhandle system provides customers with increased access to diversity, reliability and security of supply of the Dawn Hub.
4. Project Timing & Execution Risks:
This project starts 2021 with its feasibility endorsed in Q2 2022. Construction will commence in 2023 . The expected in-service date is Fall 2023.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Transmission Pipe & Underground Storage - Growth
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_02 - Chatham
	Asset Program (EGI)	TPS - Growth
	Asset Class (EGI)	Transmission Pipe & Underground Storage
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Panhandle Regional Expansion Project	\$ 197,451,236									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ 167,263,803	\$ 8,592,570	\$ 67,613	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -



Investment Summary Report

Investment Code 736923	Report Start Year 2023	Number of Years 10
Investment Name Panhandle Regional Expansion Project - Leamington Interconnect		

Investment Description

Issue/Concern/Opportunity:

To provide reliable, secure, and affordable natural gas supply to meet the growth in Design Day demand of the Panhandle System,

Assets:

- i) Leamington Interconnect : 12 km of 6040 kPag MOP NPS16 pipeline connecting the Leamington North Line, Leamington North Loop, Mersea Line and Kingsville East Line.
- ii. Leamington Interconnect Valve Sites: Three new valve sites with isolation valves are required to connect to each of the existing laterals (1. Leamington North Line and Leamington North Loop, 2. Mersea Line and 3. Kingsville East Line). Launcher/receiver facilities will be installed at location 1 and 3.

Related Program: Not Applicable

Recommended Alternative Description

1. Scope Install approximately 11 km of NPS 16 connecting Kingsville East Line, Mersea Line and the Leamington North Lines.

Reinforcement projects broadly involve the installation of new or modification of existing gas distribution assets to maintain minimum required system pressure, maintain capacity, and meet customer demand. These projects are primarily driven by customer growth and system reliability considerations. Failure to implement reinforcement projects in a timely manner could lead to a potential inability to support increasing demands of existing customers and the addition of future customers.

2. Resources:

This project will be internally managed by EGI staff. Construction work, such as well drilling and new pool piping installation, will be performed by contractors.

3. Solution Impact:

Expansion of the Panhandle system provides customers in the Leamington and Kingsville area with increased access to diversity, reliability and security of supply of the Dawn Hub.

4. Project Timing & Execution Risks:

This project starts 2021 with its feasibility endorsed in Q2 2022. Construction will commence in 2024. The expected in-service date is Fall 2024.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Transmission Pipe & Underground Storage - Growth
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_01 - Windsor
	Asset Program (EGI)	TPS - Growth
	Asset Class (EGI)	Transmission Pipe & Underground Storage
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Panhandle Regional Expansion Project - Leamington Interconnect	\$									55,278,330
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ 12,242,784	\$ 39,598,802	\$ 3,047,378	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -



Investment Summary Report

Investment Code 100086	Report Start Year 2023	Number of Years 10
Investment Name Panhandle Line Replacement		

Investment Description

Issue/Concern:
 Enbridge Gas Inc.'s (EGI's) Integrity Management team initiated work in 2019 to better understand the risk associated with the two NPS12 crossings that connect the Panhandle Eastern System owned and operated by Energy Transfer in Michigan with the EGI system in Ontario. These two crossings, installed in 1947, have never been internally inspected to check for the presence of the primary threat of internal corrosion; such inspection cannot be achieved given the configuration of the asset. A risk assessment was recently completed for the river crossings. The risk owner and risk approver reviewed the risk results and have decided the risk requires treatment with a permanent solution.

Assets: Transmission Pipeline (Canada Energy Regulator-regulated crossing)

Related Programs: N/A

Recommended Alternative Description

Scope of Work: Replacement of the twin NPS 12 Crossings with a single pipeline of equivalent capacity.

Resources: Projects group to provide project management support from design and planning phase to project execution.

Solution Impact: The principal risk is the lack of In-line Inspection (ILI) data needed to inform effective decision-making to mitigate a potential loss of pipeline containment (i.e., leak). Replacement with a new single pipeline, designed, manufactured and constructed to current standards that is ILI-capable can address this risk.

Project Timing & Execution Risks: Original in-service date is estimated to be Q3 2024. Overall project schedule is highly dependent on regulatory process and discussion with joint partner (Energy Transfer).

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Transmission Pipe & Underground Storage - Replacements
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_01 - Windsor
	Asset Program (EGI)	TPS - Replacements
	Asset Class (EGI)	Transmission Pipe & Underground Storage
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	No
	Intolerable Risk (EGI)	Yes
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)									
Panhandle Line Replacement	\$ 29,809,389									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ 1,619,900	\$ 24,257,660	\$ 3,392,719	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022



Investment Summary Report

Investment Code 735972	Report Start Year 2023	Number of Years 10
Investment Name PREP: NPS 36 looping to Comber Transmission		

Investment Description

Issue/Concern:

Panhandle System expansion is driven by in-franchise growth in Chatham-Kent, Windsor-Essex and surrounding areas, including the fast-growing greenhouse market in the Leamington/Kingsville area. Based on the current forecast for in-franchise general service and contract growth in the Panhandle Transmission System market, EGI has determined that the next Panhandle facilities for expansion will need to be in place as early as the 2028 to 2029 winter season (construction beginning in 2028). These facilities are incremental to the Panhandle Regional Expansion Project and timing is dependent on the Panhandle System demands.

Assets:

Install approximately 12 km of NPS 36 pipeline from Richardson sideroad, looping the existing Panhandle NPS 20 pipeline to Comber Transmission Station (05E-403).

Recommended Alternative Description

Scope

To provide reliable, secure, and affordable natural gas supply to meet the growth in Design Day demand of the Panhandle System by installing approximately 12 km of NPS 36 pipeline from Richardson Sideroad, looping the existing Panhandle NPS 20 pipeline to Comber Transmission Station (05E-403).

Resources

This project will be internally managed by EGI staff. Construction work, such as well drilling and new pool piping installation, will be performed by contractors.

Solution Impact

Expansion of the Panhandle system will provide customers with increased access to diversity, reliability and security of supply of the Dawn Hub.

Project Timing & Execution Risks

This project starts in 2026 with its feasibility endorsed in Q2 2027. Construction will commence in 2028. The expected in-service date is Fall 2028.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Transmission Pipe & Underground Storage - Growth
Investment Stage	Long Term Planning		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_02 - Chatham
	Asset Program (EGI)	TPS - Growth
	Asset Class (EGI)	Transmission Pipe & Underground Storage
2. Compliance	Compliance Investment	No
	Compliance Justification & Code	
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile - Recommended

Name	Net Base Capex O (CA)									
PREP: NPS 36 looping to Comber Transmission	\$ 70,000,000									
Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	\$ -	\$ -	\$ -	\$ 7,000,000	\$ 14,000,000	\$ 42,000,000	\$ 7,000,000	\$ -	\$ -	\$ -
Contributions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dismantlement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Report Generation Date: 5/30/2022

Line No.	Investment Code	Appendix A Investment Name	AMP Planning Group	2023-2032 Forecast Including Overheads	2023-2032 Overhead Allocation	In Service Date
	(a)	(b)	(c)	(d)	(e)	(f)
Asset Class (EGI) - Compression Stations						
1	48715	Dawn C Compression Lifecycle	Significant Investments (>\$10M) - Fixed Timing	\$166,338,152	\$41,178,152	2027
2	48732	Waubuno Compression Lifecycle	Value Driven - Fixed Timing	\$29,218,620	\$6,141,720	2025
3	100901	Dawn to Corunna	Value Driven - Fixed Timing	\$200,337,430	\$45,845,900	2023
4	734634	Dawn to Corunna (Dawn Tie-in)	Value Driven - Fixed Timing	\$105,753,129	\$23,718,491	2023
Asset Class (EGI) - Distribution Pipe						
5	10088	NPS 20 Lake Shore Replacement (Cherry to Bathurst)	Value Driven - Fixed Timing	\$20,896,371	\$4,797,127	2022
6	10290	St. Laurent Phase 3 - Coventry/Cummings/St. Laurent (Plastic)	Value Driven - Fixed Timing	\$25,033,190	\$5,478,112	2024
7	10293	St. Laurent Phase 3 - North/South (NPS12/16 Steel)	Value Driven - Fixed Timing	\$121,804,143	\$26,503,360	2025
8	10294	St. Laurent Phase 4 - East/West (NPS12 Steel)	Value Driven - Fixed Timing	\$53,906,876	\$11,800,108	2024
9	11443	NPS 12 Martin Grove Rd Main Replacement: Lavington to St. Albans Rd.	Value Driven - Value Framework	\$30,613,585	\$7,603,920	2026, subject to EDIMP assessment
10	100295	Div_04: NPS 8 Port Stanley, London, Replacement	Value Driven - Fixed Timing	\$18,916,863	\$4,025,457	2025, subject to EDIMP assessment
11	100339	A10: Wilson Avenue, Toronto, VSM Replacement	Executing - Re-Optimize	\$106,992,932	\$25,192,932	2026/2031, refer to Exhibit I.2.6- ED-100
12	503350	Moulton Replacement BU	Executing - Re-Optimize	\$18,165,905	\$3,813,905	2025
13	740604	NPS20 KOL - Parliament St.	Mandatory - Fixed Timing	\$13,131,787	\$3,014,631	2023
Asset Class (EGI) - Distribution Stations						
14	13034	SCRW:Station-Renewal In-Place	Mandatory - Fixed Timing	\$28,244,162	\$6,171,173	2025
15	503369	Lisgar Station	Executing - Re-Optimize	\$20,124,611	\$4,242,407	2025
16	734676	SARN: 13F-220R Vidal St	Value Driven - Value Framework	\$17,192,992	\$4,712,992	2031
17	735022	Sarnia Industrial Station 2029 Rebuild	Value Driven - Fixed Timing	\$14,849,863	\$3,849,863	2029
Asset Class (EGI) - Growth						
18	1024	NW 6581 Ottawa Reinforcement Phase 2 SRP	Mandatory - Fixed Timing	\$70,698,549	\$17,209,549	2029
19	30542	SRP_Southeast_Owen Sound_County Rd 40_Reinforcement_NPS12_11800m_4670kPa	Mandatory - Fixed Timing	\$33,636,531	\$7,236,531	2025
20	30579	SRP_Southwest_Wonderland_New STN & MOP Upgrade	Mandatory - Fixed Timing	\$20,506,933	\$4,306,933	2025
21	100703	SRP_LUG East_Kingston_Creekford Rd_Reinforcement_NPS8_6200m_6895kPa	Mandatory - Fixed Timing	\$45,292,234	\$11,283,270	2027
22	736259	Hamilton Reinforcement Project	Mandatory - Fixed Timing	\$125,821,854	\$26,713,062	2025
23	736975	Enbridge Gas Distribution System Hydrogen Feasibility Study	Value Driven - Fixed Timing	\$15,315,942	\$3,398,275	2022

Line No.	Investment Code	Appendix A Investment Name	AMP Planning Group	2023-2032 Forecast Including Overheads	2023-2032 Overhead Allocation	In Service Date
Asset Class (EGI) - LNG						
24	48709	Hagar KVGR and Cycle Mix Cooler	Value Driven - Value Framework	\$24,740,190	\$5,648,190	2032
25	48714	Hagar Cold Box	Value Driven - Value Framework	\$14,401,282	\$3,401,282	2032
26	49955	Hagar JVG Compressor Upgrade	Value Driven - Value Framework	\$20,873,854	\$4,781,854	2032
Asset Class (EGI) - Real Estate & Workplace Services						
27	3640	Station B New Building	Value Driven - Fixed Timing	\$38,590,879	\$8,590,879	2025
28	8782	VPC Core and Shell	Value Driven - Value Framework	\$35,420,035	\$9,420,035	2031
29	100621	Dawn Administrative Centre	Value Driven - Value Framework	\$16,349,278	\$4,349,278	2028
30	101136	New London Site	Executing - Re-Optimize	\$49,500,658	\$11,959,058	2026
31	737272	Kennedy Road New Build	Value Driven - Value Framework	\$49,647,957	\$11,803,457	2026
32	737374	Ottawa - New Building	Value Driven - Value Framework	\$46,337,933	\$10,498,150	2026
33	737754	Thorold Operations Centre - New Building	Value Driven - Value Framework	\$21,533,430	\$5,033,430	2026
34	739714	GTA East - New Build - Peterborough	Value Driven - Value Framework	\$14,722,478	\$3,722,478	2024
35	739715	GTA West - New Build - Halton Hills	Value Driven - Value Framework	\$42,675,572	\$9,790,356	2026
Asset Class (EGI) - TIS						
36	102291	Contract Market Harmonization	Value Driven - Value Framework	\$19,195,783	\$4,335,783	2026
37	102364	Records Management Technology Obsolescence (2024-2026)	Value Driven - Value Framework	\$23,566,261	\$5,516,261	2026
38	736081	General Service Rebasing Changes	Value Driven - Value Framework	\$17,914,329	\$3,914,329	2025
39	736942	Contract Market Systems - Technology Obsolescence	Mandatory - Fixed Timing	\$69,786,961	\$15,776,961	2026
Asset Class (EGI) Transmission Pipe & Underground Storage						
40	48654	Dawn Parkway Expansion Project (Kirkwall-Hamilton NPS 48)	Mandatory - Fixed Timing	\$251,357,572	\$63,082,988	2027
41	49758	Panhandle Regional Expansion Project	Mandatory - Fixed Timing	\$224,328,497	\$47,088,489	2024
42	100086	Panhandle Line Replacement	Value Driven - Fixed Timing	\$37,899,145	\$8,128,866	2025
43	100699	Dawn Parkway Expansion Project (Dawn-Enniskillen NPS 48)	Mandatory - Fixed Timing	\$332,803,728	\$86,169,476	2029
44	735972	PREP: NPS 36 looping to Comber Transmission	Mandatory - Fixed Timing	\$95,496,455	\$25,496,455	2030
45	736923	Panhandle Regional Expansion Project - Leamington Interconnect	Mandatory - Fixed Timing	\$118,751,452	\$28,443,901	2026
46	740055	Panhandle Regional Expansion Project - Dawn Facilities	Mandatory - Fixed Timing	\$92,044,573	\$19,910,796	2025



Appendix B – IRP

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	11794	A60: City Centre Complex - Ottawa	2023	\$ 578,721									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	23126	Concord St Isolated Steel Replace with Main St PE, Ottawa	2023	\$ 599,422									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	23190	VPM - 310 Cathcart St Header - Aldyl A	2031	\$ 348,702									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30334	Ann St - Eastern - Area 60 - 1100	2032	\$ 1,452,021									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30342	Carling Ave - Eastern - Area 60 - 1104	2031	\$ 1,734,079									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30343	Centre St - Eastern - Area 60 - 1085	2027	\$ 1,108,906									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30347	Elm St W - Eastern - Area 60 - 1726	2028	\$ 978,033									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30352	George St - Eastern - Area 60 - 1088	2027	\$ 1,462,056									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30358	Highgate Rd - Eastern - Area 60 - 1166	2030	\$ 1,212,189									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30376	Othello Ave - Eastern - Area 60 - 1096	2028	\$ 1,212,878									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	30388	Stanley Ave - Eastern - Area 60 - 1069	2030	\$ 1,515,708									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	102424	Relocation Program - Area 60*	2020	\$ 13,287,715									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	501823	A60 1149 Shillington HDR Replacement	2023	\$ 158,256									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	502861	Morrison THP Replacement	2023	\$ 305,493									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	502862	Young St LP Replacement	2023	\$ 1,240,657									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	734548	VSM-HWY 7 Dufferin St Perth	2024	\$ 1,301,690									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Dollar threshold	734590	Viewmount Dr Main Lowering	2031	\$ 570,662									
Eastern	60 - Ottawa	Distribution Pipe	Fail	Emergent Safety	4665	Replacement Blanket - Area 60*		\$ 12,572,770									
Eastern	60 - Ottawa	Distribution Pipe	Pass		4671	Anode Blanket - Area 60*	2020	\$ 3,382,114	Justification: The Corrosion Department conducts pipe-to-soil readings each year on EGI's steel pipelines. When a corrosion area is identified as having fallen below EGI's minimum specifications, an order for an anode installation is processed. The capital request is for 12 months.	Complete	Fail	See investment description, IRPAs not applicable					
Eastern	60 - Ottawa	Distribution Pipe	Pass		4767	AMP Fitting Replacement - Area 60*		\$ 68,867,529	AMP Fittings are a below grade transition fittings. The inserted portion of copper tubing can fail due to internal corrosion. In these cases leaks develop immediately downstream of the AMP Fitting.	Complete	Fail	See investment description, IRPAs not applicable					
Eastern	60 - Ottawa	Distribution Pipe	Pass		8198	LANCASTER GATE Station - Integrity Retrofit > 30% SMYS	2026	\$ 1,856,497	Funds to install launcher (station rebuild occurred in 2016; no provisions for launcher were included) on pipeline to allow for inline inspection are required. This will allow in-line inspection of the pipeline which is required as per the Pipeline Integrity Management Program. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Eastern	60 - Ottawa	Distribution Pipe	Pass		8262	VSM - Preston St - LP	2026	\$ 3,224,565	Vintage Steel Mains, Isolated Steel Mains General: Vintage Steel Replacement Program is a proactive replacement program to renew aging vintage steel pipe assets before reaching their end of life. Vintage steel mains have shown signs of declining health due to the cumulative effect of poor, manufactured coating performance; construction practices; latent third-party damages to pipe coating; and the effect of stray currents from transit infrastructure such as subway and streetcars. The current failure projection model is forecasting an exponential increase in the number of corrosion-related failures, while the C55 value framework and the 40-year risk projection are showing an increase in the safety risk associated with steel main failures. Vintage steel systems also have potential to include compression couplings, shallow installation depth and shallow assemblies making pipe susceptible to third-party damage, and manufactured defects associated with seam welds and fittings.								
Eastern	60 - Ottawa	Distribution Pipe	Pass		10288	St. Laurent Phase 4 - Lower Section (Plastic)	2025	\$ 11,339,012	Issue/Concern: General Concerns: Vintage steel mains have shown signs of declining health due to the cumulative effective of poor manufactured coating performance, construction practices, latent third-party damages to pipe coating, and the effect of stray currents from transit infrastructure such as subway and streetcars. The current failure projection model is forecasting an exponential increase in the number of corrosion-related failures, while the C55 value framework and the 40-year risk projection are showing an increase in the safety risk associated with steel main failures. In addition to age, vintage steel mains are also susceptible to accelerated degradation and/or higher risk of third-party damage in the following ways: •Compression couplings •Shallow blow-off valve assemblies that could be damaged during excavation activities •Reduction in the original depth of cover •Continuous exposure of road salt and seasonal ground movement on bridge crossing assets •Lack of cathodic protection with pipe casings that could result in corrosion causing excessive stress or shorts on the carrier pipe that is in contact with the casing, which could lead to the loss of containment •Manufacturing defects associated with seam welds and fittings that are weak points in the distribution system and could result in a loss of containment due to prolonged exposure to stress and corrosion •Latent damages to pipe coatings that were never reported to EGI for repair and became active corrosion sites, which could hamper the effect of the corrosion protection system and result in accelerated corrosion and potentially loss of containment. Site-Specific Concerns: Unable to determine leaks due to the close proximity of the NPS 12 470 psi system. Cathodic protection was not installed until the early 1970s. Approximately 429 services are off this network. Full replacement of main comprising Network 6584 is required - the NPS 12 St. Laurent Ottawa North line is 13.3 km and operates at 275 psi as Network 6584. It runs from south of St. Laurent Control Station (6584:653:1969) to Rockcliffe Control Station (Station #6B558A). It does not include the main south from St. Laurent Control Station to Industrial Avenue as well as the NPS 12 lateral main to Trans Alta (6584:1234:1235) but does include the NPS 12 lateral	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		10290	St. Laurent Phase 3 - Coventry/Cummings/St. Laurent (Plastic)	2024	\$ 11,273,059	General Concerns: Vintage steel mains have shown signs of declining health due to the cumulative effective of poor manufactured coating performance, construction practices, latent third-party damages to pipe coating, and the effect of stray currents from transit infrastructure such as subway and streetcars. The current failure projection model is forecasting an exponential increase in the number of corrosion-related failures, while the C55 value framework and the 40-year risk projection are showing an increase in the safety risk associated with steel main failures. In addition to age, vintage steel mains are also susceptible to accelerated degradation and/or higher risk of third-party damage in the following ways: •Compression couplings •Shallow blow-off valve assemblies that could be damaged during excavation activities •Reduction in the original depth of cover •Continuous exposure of road salt and seasonal ground movement on bridge crossing assets •Lack of cathodic protection with pipe casings that could result in corrosion, causing excessive stress or shorts on the carrier pipe that is in contact with the casing, which could lead to the loss of containment •Manufacturing defects associated with seam welds and fittings that are weak points in the distribution system and could result in a loss of containment due to prolonged exposure to stress and corrosion •Latent damages to pipe coatings that were never reported to EGI for repair and became active corrosion sites, which could hamper the effect of the corrosion protection system and result in accelerated corrosion and potentially loss of containment. Site-Specific Concerns: Unable to determine leaks due to the close proximity of the NPS 12 470 psi system. Cathodic protection was not installed until the early 1970s. Approximately 429 services are off this network. Full replacement of main comprising Network 6584 is required - the NPS 12 St. Laurent Ottawa North line is 13.3 km and operates at 275 psi as Network 6584. It runs from south of St. Laurent Control Station (6584:653:1969) to Rockcliffe Control Station (Station #6B558A). It does not include the main south from St. Laurent Control Station to Industrial Avenue as well as the NPS 12 lateral main to Trans Alta (6584:1234:1235) but does include the NPS 12 lateral main along Tremblay Road (and does not include the crossing at the Rideau River to Station #61171A). In 2018, pressure increase to Avenue O was completed. In 2019/2020, approximately 3.1 km of plastic pipe was installed on	Planned							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Eastern	60 - Ottawa	Distribution Pipe	Pass		10292	St. Laurent Phase 3 - Montreal to Rockcliffe (Plastic)	2024	\$ 11,877,934	<p>General Concerns: Vintage steel mains have shown signs of declining health due to the cumulative effective of poor-manufactured coating performance, construction practices, latent third-party damages to pipe coating, and the effect of stray currents from transit infrastructure such as subway and streetcars. The current failure projection model is forecasting an exponential increase in the number of corrosion-related failures, while the C55 value framework and the 40-year risk projection show an increase in the safety risk associated with steel main failures. In addition to age, vintage steel mains are also susceptible to accelerated degradation and/or higher risk of third-party damage in the following ways:</p> <ul style="list-style-type: none"> •Compression couplings •Shallow blow-off valve assemblies that could be damaged during excavation activities •Reduction in the original depth of cover •Continuous exposure of road salt and seasonal ground movement on bridge crossing assets •Lack of cathodic protection with pipe casings that could result in corrosion causing excessive stress or shorts on the carrier pipe that is in contact with the casing, which could lead to the loss of containment •Manufacturing defects associated with seam welds and fittings that are weak points in the distribution system and could result in a loss of containment due to prolonged exposure to stress and corrosion •Latent damages to pipe coatings that were never reported to EGI for repair and became active corrosion sites, which could hamper the effect of the corrosion protection system and result in accelerated corrosion and potentially loss of containment. <p>Site-Specific Concerns: An inability to determine leaks due to the close proximity of the NPS 12 470 psi system is a concern. Cathodic protection was not installed until the early 1970s. Approximately 429 services are off this network.</p> <p>Full replacement of main comprising Network 6584 is required - the NPS 12 St. Laurent Ottawa North line is 13.3 km and operates at 275 psi as Network 6584. It runs from south of St. Laurent Control Station (6584:653:1969) to Rockcliffe Control Station (Station #6B558A). It does not include the main south from St. Laurent Control Station to Industrial Avenue as well as the NPS 12 lateral main to Trans Alta (6584:1234:1235) but does include the NPS 12 lateral main along Tremblay Road (and does not include the crossing at the Rideau River to Station #61171A).</p>	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		10293	St. Laurent Phase 3 - North/South (NPS12/16 Steel)	2024	\$ 59,372,892	The NPS 12 St Laurent Pipeline requires replacement due to various pipeline conditions associated with the 1970 vintage steel mains including poor coating, unknown compression coupling fittings, reduced depth of cover, corrosion induced by declining cathodic protection. Replacing the main will ensure continued operation of EGI's gas distribution system, and will mitigate safety risks to employees, contractors, and general public. This project will install 6.5 km NPS 12 Steel Gas Main, 2.4 km NPS 16 Steel Gas Main, 5.1 km Plastic Gas Main and relay all XHP services to the new plastic gas main.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		10294	St. Laurent Phase 4 - East/West (NPS12 Steel)	2025	\$ 24,233,805	The NPS 12 St Laurent Pipeline requires replacement due to various pipeline conditions associated with the 1970 vintage steel mains including poor coating, unknown compression coupling fittings, reduced depth of cover, corrosion induced by declining cathodic protection. Replacing the main will ensure continued operation of EGI's gas distribution system, and will mitigate safety risks to employees, contractors, and general public. This project will install 3.1 km NPS 12 Steel Gas Main, Install 3.2 km Plastic Gas Main and relay all XHP services to the new plastic gas main	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		13609	Service Relay Blanket - Area 60*	2020	\$ 52,687,565	General: A distribution service refers to the pipe between the distribution main and the customer's meter set. Over the years, different materials have been used for this asset, including steel, copper, and varying resins of plastic, each with unique characteristics that contribute to their performance over time. Services can be repaired or replaced depending on asset condition and the nature of the issue exhibited. Generally, replacement is the preferred approach to mitigate unacceptable asset condition.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30330	2nd Ave - Eastern - Area 60 - 1197	2028	\$ 4,087,217	2nd Ave. - Eastern - Area 60 - 1197 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30331	3rd Ave - Eastern - Area 60 - 1226	2030	\$ 3,232,112	3rd Ave. - Eastern - Area 60 - 1226 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30332	Adelaide St - Eastern - Area 60 - 1218	2031	\$ 2,158,470	Adelaide St. - Eastern - Area 60 - 1218 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30333	Ainsley Dr - Eastern - Area 60 - 1723	2027	\$ 2,128,900	Ainsley Dr - Eastern - Area 60 - 1723 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Remove 8 m of mains from project due to overlap (updated as per regional feedback).	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30338	Beckwith St N - Eastern - Area 60 - 1198	2032	\$ 2,688,181	Beckwith St. N. - Eastern - Area 60 - 1198 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30339	Bell St - Eastern - Area 60 - 1052	2032	\$ 2,274,693	Bell St. - Eastern - Area 60 - 1052 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: No timing comment was provided.	Complete	Fail	NPS 2, cannot downsize or retire					

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Eastern	60 - Ottawa	Distribution Pipe	Pass		30340	Borthwick Ave - Eastern - Area 60 - 1139	2031	\$ 3,192,788	Borthwick Ave. (moratorium is until 2025) - Eastern - Area 60 - 1139 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Road work was completed in 2020. Road restrictions will be in place for a long time. The 2025 execution date is based on region's comment.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30341	Brock St - Eastern - Area 60 - 1485	2032	\$ 3,472,215	Brock St. - Eastern - Area 60 - 1485 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Complete	Fail	NPS 2, cannot downsize or retire					
Eastern	60 - Ottawa	Distribution Pipe	Pass		30345	Drummond St W - Eastern - Area 60 - 1142	2028	\$ 2,470,450	Drummond St. W. - Eastern - Area 60 - 1142 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30346	Elm St E - Eastern - Area 60 - 1147	2032	\$ 2,426,470	Elm St. E. - Eastern - Area 60 - 1147 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There are possible road restrictions on County Rd 29 and 15.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30348	Elmsley St N - Eastern - Area 60 - 1725	2032	\$ 1,861,690	Elmsley St. N. - Eastern - Area 60 - 1725 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: A possible permit may be required due to proximity to rail yard. A possible Conservation Authority (CA) permit may be required due to historic buildings. Estimate includes 46 m of PE replacement but the number of services may not be correct;	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30349	Emily St - Eastern - Area 60 - 1101	2031	\$ 2,287,957	Emily St. - Eastern - Area 60 - 1101 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There are possible road restrictions.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30350	First Ave - Eastern - Area 60 - 1175	2031	\$ 3,442,055	First Ave. - Eastern - Area 60 - 1175 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30351	Flora St - Eastern - Area 60 - 1151	2032	\$ 2,528,992	Flora St - Eastern - Area 60 - 1151 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Possible road work to occur along High St.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30354	Grant St - Eastern - Area 60 - 1098	2032	\$ 2,665,699	Grant St. - Eastern - Area 60 - 1098 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Possible CA permit may be required due to proximity to Tay River.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30356	Havelock St - Eastern - Area 60 - 1215	2031	\$ 4,243,311	Havelock St. - Eastern - Area 60 - 1215 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							

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Eastern	60 - Ottawa	Distribution Pipe	Pass		30357	Herriott St - Eastern - Area 60 - 1089	2032	\$ 1,848,715	Herriott St. - Eastern - Area 60 - 1089 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There are possible road restrictions on Moffatt Asphalt Overlay.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30359	Irene Cres - Eastern - Area 60 - 1141	2028	\$ 2,919,753	Irene Cres. - Eastern - Area 60 - 1141 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30360	James St - Eastern - Area 60 - 1112	2029	\$ 2,617,144	James St. - Eastern - Area 60 - 1112 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: CR 34 Major Rd. into Quebec might require an MTO permit. Main St. is already dual-mained and side streets could be considered. Possible CA permit may be required due to proximity to Ottawa River.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30361	James St W - Eastern - Area 60 - 1184	2031	\$ 2,941,172	James St. W. - Eastern - Area 60 - 1184 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Complete	Fail	NPS 2, cannot downsize or retire					
Eastern	60 - Ottawa	Distribution Pipe	Pass		30363	Lake Ave E - Eastern - Area 60 - 1145	2032	\$ 4,172,549	Lake Ave. E. - Eastern - Area 60 - 1145 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30364	LePage Ave - Eastern - Area 60 - 1214	2029	\$ 3,885,028	LePage Ave. (execute by 2025 - paving proposed between 2022 - 2025) - Eastern - Area 60 - 1214 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Some road and sewer work was done in 2021, and paving is proposed between 2022 and 2025 - updated to reflect region's comments.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30365	Madawaska St - Eastern - Area 60 - 1072	2030	\$ 3,169,523	Madawaska St - Eastern - Area 60 - 1072 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30366	Main St E - Eastern - Area 60 - 1172	2031	\$ 3,168,096	Main St. E. - Eastern - Area 60 - 1172 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There is 83 m of 2-inch steel being replaced. Downtown road is likely to have time restrictions.	Complete	Fail	NPS 2, cannot downsize or retire					
Eastern	60 - Ottawa	Distribution Pipe	Pass		30367	McCann St - Eastern - Area 60 - 1160	2029	\$ 4,429,658	McCann St. - Eastern - Area 60 - 1160 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Eastern	60 - Ottawa	Distribution Pipe	Pass		30368	McGonigal St E - Eastern - Area 60 - 1041	2032	\$ 2,640,734	McGonigal St. E. - Eastern - Area 60 - 1041 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							

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Eastern	60 - Ottawa	Distribution Pipe	Pass		30369	Moffatt St - Eastern - Area 60 - 1195	2032	\$ 3,302,942	Moffatt St. - Eastern - Area 60 - 1195 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Townline Rd. and Bridge St. are main roads. There are rectifier-protected areas. Main on Townline Rd. may have to stay steel.	Planned								
Eastern	60 - Ottawa	Distribution Pipe	Pass		30370	Montgomery Pl - Eastern - Area 60 - 1228	2030	\$ 3,228,256	Montgomery Pl. - Eastern - Area 60 - 1228 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned								
Eastern	60 - Ottawa	Distribution Pipe	Pass		30372	North St - Eastern - Area 60 - 1087	2029	\$ 2,613,031	North St - Eastern - Area 60 - 1087 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned								
Eastern	60 - Ottawa	Distribution Pipe	Pass		30373	Oak St - Eastern - Area 60 - 1133	2029	\$ 2,720,235	Oak St. - Eastern - Area 60 - 1133 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Complete	Fail	NPS 2, cannot downsize or retire						
Eastern	60 - Ottawa	Distribution Pipe	Pass		30378	Prince Albert St - Eastern - Area 60 - 1099	2031	\$ 2,866,490	Prince Albert St. - Eastern - Area 60 - 1099 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned								
Eastern	60 - Ottawa	Distribution Pipe	Pass		30379	Queen Mary St - Eastern - Area 60 - 1103	2030	\$ 3,155,878	Queen Mary St. - Eastern - Area 60 - 1103 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned								
Eastern	60 - Ottawa	Distribution Pipe	Pass		30380	Queen St N - Eastern - Area 60 - 1158	2030	\$ 3,743,198	Queen St. N. - Eastern - Area 60 - 1158 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned								
Eastern	60 - Ottawa	Distribution Pipe	Pass		30384	Rochester St - Eastern - Area 60 - 1222	2031	\$ 2,794,057	Rochester St. - Eastern - Area 60 - 1222 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There is the potential for road restrictions due to congested area.	Planned								
Eastern	60 - Ottawa	Distribution Pipe	Pass		30385	Sarah St - Eastern - Area 60 - 1188	2032	\$ 2,805,417	Sarah St. - Eastern - Area 60 - 1188 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned								
Eastern	60 - Ottawa	Distribution Pipe	Pass		30387	Spring St - Eastern - Area 60 - 1047	2031	\$ 2,097,135	Spring St. - Eastern - Area 60 - 1047 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There are major roads where there could be difficulty with traffic management. CA permit is required due to proximity to river.	Planned								
Eastern	60 - Ottawa	Distribution Pipe	Pass		30389	Summerville Ave - Eastern - Area 60 - 1484	2030	\$ 3,502,575	Summerville Ave. - Eastern - Area 60 - 1484 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned								

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Eastern	60 - Ottawa	Distribution Stations	Pass		3608	BROCKVILLE GATE	2025	\$ 2,620,194	<p>Brockville Gate Station is located on EGI-owned property approximately 5 km from the town of Brockville, Ontario. This station accepts natural gas from TC Energy and provides supply to two separate XHP networks. Station components include measurement, gas preheat system, pressure regulation, odourant injection and a telemetry system. This station supplies natural gas to approximately 19,463 customers in Brockville region. The following issues have been identified at this station:</p> <p>Pipes, Valves & Others: The existing valves at this site have experienced issues in performance and operation of the valves. Valve maintenance has been unable to remediate the problem and the valves have deteriorated to the point where the reliability is no longer acceptable. All valves will have to be replaced. The inlet of the regulator runs is a challenge every year.</p> <p>Heating: The boiler system was replaced in 2019. However, the glycol tank and heat exchanger will need to be replaced and relocated to meet Electrical Safety Authority (ESA) requirements. Residual glycol impacts are to be evaluated and removed as required, as a result of glycol release that was reported from a boiler inside the Boiler building.</p> <p>Pressure Control: The regulator station has boot-style regulators posing an undesired higher risk and high associated ongoing maintenance costs. Engineering has identified that boot-style regulators operating as both monitor and operating regulators is unacceptable. The regulator runs will have to be rebuilt.</p> <p>Odourization: The odourant system was installed in 2000. A new Odourant building will have to be installed to ensure adequate containment in the event of a leak. The injection pumps are located in the regulator room and will have to be relocated into the Odourant building to meet current standards.</p> <p>Telemetry and Electrical: The size of the Remote Terminal Unit (RTU) building is not an issue but the leaky roof is. This building not only houses the RTU but also the St. Lawrence Control Centre (CC) (this is the gas control hub for Leeds, Brockville, Bethel, St. Lawrence, Summerstown and Lancaster Gate stations, as well as International Bridge CDN and USA, and Lisgar). The transfer switch, main panel, and junction box are located in the old RTU room, which is attached to the instrumentation room, but does not violate the Electrical code. Boilers were recently replaced and can be reused as well as the inlet/outlet and tank pressure transmitters. New temperature transmitters and a new tank level gauge are needed. The ultrasonic electronics should be upgraded. The main</p>	Planned							
Eastern	60 - Ottawa	Distribution Stations	Pass		3622	SUMMERSTOWN GATE	2026	\$ 3,582,565	<p>Summerstown Gate Station is located on EGI-owned property of approximately 1,000 m2 fenced compound in South Glengarry Township, Ontario, approximately 16 km from Cornwall, Ontario, within a rural area. This station accepts natural gas from TC Energy and provides supply to an XHP network, through components within the measurement system, pressure control system, heating system, odourant system, and telemetry system. This station feeds 265 customers. The following issues have been identified at this station:</p> <p>Valves & Piping: The existing valves at this site have experienced issues in performance and operation of the valves. Maintenance has been performed to attempt to remediate the valves; however, the valves have deteriorated to the point where the reliability is no longer acceptable. The existing inlet and bypass valves are flange by flange and have experienced leaks through these flanges. Flanged valves on the station inlets are more prone to leaks and more difficult to repair.</p> <p>Odourization: The odourant system was installed in 1998. The current configuration of the odourant system does not ensure adequate containment of the odourant product in the event of a leak and does not meet the current engineering standards and approvals.</p> <p>Telemetry & Electrical: The existing electrical system does not meet current EGI electrical installation standards. This poses a potential electrical hazard and faulty wiring may result in lost communications.</p> <p>Tower: Tower is to be removed as it is not required for SCADA communications.</p>	Planned							
Eastern	60 - Ottawa	Distribution Stations	Pass		7751	KEMPTVILLE GATE	2025	\$ 5,739,416	<p>Kemptville Gate Station is located on EGI-owned property of approximately 2,825 m2 fenced compound in the Municipality of North Grenville, Ontario, approximately 37 km south of Ottawa, within a rural area. This station accepts natural gas from TC Energy and provides supply to XHP networks, through components within the Measurement system, Pressure Control system, Heating system, Odourant system, and Telemetry system. This station supplies natural gas to approximately 3,256 customers in the Kemptville area. The following issues have been identified at this station:</p> <p>Pipe, Valves & Others: The existing valves at this site have experienced issues in performance and operation. Maintenance has been performed to attempt to remediate the valves; however, the valves have deteriorated to the point where the reliability is no longer acceptable.</p> <p>Heating: The existing boilers at this site are 22 years old and have reached end of life based on condition review and performance.</p> <p>Pressure Control: The Regulation system is installed within a building currently in disrepair with several leaks. The operator and monitor regulators are both double-boot style regulators and are both susceptible to boot failure should they be exposed to significant debris in the system. Repairs have been made where possible but the building continues to deteriorate. Also, the working space inside the building produces an ergonomic/safety risk to EGI employees. This will require addition of filtration or regulation replacement. Furthermore, a new building will be required to address safety/ergonomic issues at the station.</p> <p>Odourization: The building has containment but does not meet current standards. There are no issues with the current system.</p> <p>Telemetry & Electrical: The Telemetry and Electrical systems do not meet current EGI standards, do not contain backup power supply in the event of power loss, and are approaching end of useful life. The existing Remote Terminal Unit (RTU) is obsolete and is required to be upgraded to current standards along with new communications equipment in order to mitigate cybersecurity threats.</p>	Planned							
Eastern	60 - Ottawa	Growth	Pass		3758	Area 60 - Apartment Ensuite - New Construction*		\$ 101,629	<p>Vertical Subdivision - A multiple unit residential building where each suite is individually metered. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers.</p>	Planned							
Eastern	60 - Ottawa	Growth	Pass		3759	Area 60 - Apartment Traditional - New Construction*		\$ 402,687	<p>Apartment - An apartment customer is a multi-residential dwelling containing more than six units that is bulk-metered Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers.</p>	Planned							
Eastern	60 - Ottawa	Growth	Pass		1024	NW 6581 Ottawa Reinforcement Phase 2 SRP	2032	\$ 71,584,955	<p>Issue/Concern/Opportunity: Reinforcement projects broadly involve the installation of new or modification of existing gas distribution assets to maintain minimum required system pressure, maintain capacity, and meet customer demand. These projects are primarily driven by customer growth and system reliability considerations. Failure to implement reinforcement projects in a timely manner could lead to a potential inability to support increasing demands of existing customers and the addition of future customers. This network in Ottawa is predominantly made up of residential and commercial customers. In the current configuration, a high pressure network is exclusively fed by both the Ottawa and Richmond Gate Stations. An upstream flow constraint has been identified at the Ottawa Gate Station, along with a bottleneck constraint for gas fed from Richmond Gate Station. The South outlet of Ottawa Gate can be set to as low as 400 psig (normally 470 psig) while Richmond Gate is kept at 470 psig, thus flowing more gas from the west to the east.</p> <p>The current configuration, an existing NPS 12 high pressure pipeline along Fallowfield Road is a bottleneck for gas flowing from the west to Richmond Gate Station, and to eastern areas. The previously constructed Ottawa Reinforcement Plan (ORP) Phase 1 as well as the Strandherd River crossing has helped move gas from Richmond Gate eastward to areas of concentrated and growing gas demand.</p> <p>This reinforcement will assist in moving additional gas from Richmond Gate toward the areas that would be serviced by Ottawa Gate, and remove the bottleneck constraint. There were approximately 193,553 customers on the associated networks as of 2016.</p> <p>Assets: Existing NPS 12 HP Pipe</p> <p>Related Program: Not applicable</p>	In Progress							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Eastern	60 - Ottawa	Growth	Pass		3761	Area 60 - Commercial - New Construction*		\$ 25,177,089	<p>Issue/Concern: Commercial New Construction refers to a customer intending to run a commercial business in a newly-constructed building and intending to using natural gas to meet energy needs</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Planned							
Eastern	60 - Ottawa	Growth	Pass		3762	Area 60 - Industrial - New Construction*		\$ 34,475,558	<p>Issue/Concern: Industrial New Construction refers to a customer intending to run an industrial manufacturing business in a newly-built facility and intending to use natural gas.</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Planned							
Eastern	60 - Ottawa	Growth	Pass		3764	Area 60 - Residential - New Construction*		\$ 237,751,447	<p>Issue/Concern: Residential New Construction refers to a new residential construction development of detached single homes constructed by the builder for domestic purposes.</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Planned							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Eastern	60 - Ottawa	Growth	Pass		3765	Area 60 - Residential - Replacement*		\$ 169,789,900	Issue/Concern: Residential Replacement refers to a residential replacement customer using a fuel other than natural gas for domestic purposes and is converting to natural gas. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Planned							
Eastern	60 - Ottawa	Growth	Pass		7743	NW 6587 L'Original Reinforcement SRP	2025	\$ 1,883,892	Victoria St - Eastern - Area 60 - 1138 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There is potential for road restrictions due to congested area. Issue/Concern: Reinforcement projects broadly involve the installation of new or modification of existing gas distribution assets to maintain minimum required system pressure to maintain the capacity to meet customer demand. These projects are primarily driven by customer growth and system reliability considerations. Failure to implement reinforcement projects in a timely manner could lead to a potential inability to support increasing demands of existing customers and the addition of future customers. • Project Purpose/Need: This reinforcement is to add capacity within legacy Enbridge Gas Distribution's pipe network to: o Satisfy the current contractually allowable demand of the Large Volume Contract (LVC) customer Ivaco Rolling Mills, which is 6,800 m3/h o Support customer growth of the downstream High Pressure Polyethylene (HPPE) network This geographic area sits at the eastern tail end of XHP network 6587, which is fed exclusively by Lancaster gate to the southeast. • Pressure Issue/Concern : The minimum system pressure was forecasted to be infeasible by 2020. • Customer Growth Issue/Concern: As of 2017, there are 2,039 customers on this network. Without reinforcement, a forecasted 24 customers may not be able to be added.	Planned							
Eastern	60 - Ottawa	Growth	Pass		102119	Brockville Gate Extension	2025	\$ 3,170,327	Issue/Concern/Opportunity: Area 60 - the Maitland and Brockville regions are currently served by two Gate Stations (i.e., Brockville and Bethel). The Bethel Gate requires a rebuild to maintain safe and reliable operations; and there is an opportunity to add customers in the region if the network has more capacity. The preferred option is to build a lateral connected to the existing Brockville Network extending to the current Bethel Gate site; a district station would be required along with 3,500 m of pipe. Sixty-two potential customers have been identified along this route. A secondary option is to rebuild the Bethel Gate which will ensure safe and reliable operations but will not allow for the opportunity to connect potential new customers. Justification: Bethel Gate is scheduled for a rebuild in 2023 and the pipeline reinforcement is a second option which has added benefits of customer additions and lower future maintenance costs. Assets: Bethel Gate Station Related Program: Not applicable	Planned							
Eastern	60 - Ottawa	Growth	Pass		501824	Huntmar Drive Reinforcement	2023	\$ 3,542,336	Reinforcement required to maintain the gas capacity in the Kanata West area for multiple developments proposed and being built currently in the area. Scope: Install approx. 2.8km of NPS 6 XHP Steel gas main from NPS 12 XHP at Huntmar & Hazeldean going north on Huntmar to Palladium Dr, then install a XHP-HP station at 620 Palladium Drive with its outlet tied in to the existing NPS 6 HP Steel gas main on Palladium Drive. There are no station projects directly linked to this reinforcement project.	Planned							
Eastern	60 - Ottawa	Growth	Pass		736679	NW 6544 Sherwood Drive Crossing SRP	2024	\$ 99,947	Issue/Concern/Opportunity: Reinforcement required to resolve low pressure points that are below the minimum system pressure. Pressures are forecasted to be below the system minimum by 2024 Assets: 30m of NPS 2 PE IP road crossing at Sherwood Dr. and Old Irving Related Program: Not applicable	Planned							
Eastern	60 - Ottawa	Growth	Pass		736680	NW 6429 Rockland IP Reinforcement SRP	2024	\$ 233,211	Issue/Concern/Opportunity: Increase pressures that are below new system min in multiple locations. Pressure less than the 20 psi minimum in multiple locations on the network. Reinforcements are required to bring the system within standards. The system is single-fed and is located at the tail end of the XHP 6580 network that is primarily fed by the Ottawa Gate Station. Assets: Install 30m of 1 1/4" PE IP on Du Chateau Ave from Woods St to 30 m S of Woods St Install 55m of 2" PE IP on Lalonde St from Laurier St to 55 m N of Laurier St Install 100m of 2" PE IP On Notre Dame St from Laurier St to Alma St Related Program: Not applicable	Planned							
Eastern	60 - Ottawa	Growth	Pass		736682	NW 6544 Bank St. Reinforcement SRP	2024	\$ 174,908	Issue/Concern/Opportunity: Reinforcement required to resolve operational issues and bring pressures above the 20 psig minimum system pressures and support future growth. The system being reinforced is in Ottawa central with high potential for growth. Current system pressures are below the minimum system pressures. Network is double-fed by Ottawa Gate and Richmond Gate Station Assets: 90m NPS 2 PE IP on Bank St. from Ardington Ave to Flora St. Related Program: Not applicable	Planned							
Eastern	60 - Ottawa	Growth	Pass		736758	NW 6466 Carp Pressure Increase SRP	2024	\$ 25,628	Issue/Concern/Opportunity: Reinforcement involves an in-class pressure increase to resolve operational issues and pressure low points on the network below the minimum system and support growth. The network being reinforced is single-fed and sits on the tail end of the 6583 high pressure network. Pressures are forecasted to go below the minimum system pressure by 2024. All pipes were installed after 1994. Assets: New district station replacing station near the intersection of Carp Rd. and March Rd. (Station ID: 526053). Related Investments: Not applicable	Planned							

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Eastern	Div_22 - Kingston	Distribution Pipe	Fail	Dollar threshold	734740	King: 520 Wallrich Ave. Service Block Valve Abandonment (Cornwall)	2023	\$ 36,743									
Eastern	Div_22 - Kingston	Distribution Pipe	Fail	Dollar threshold	734742	King: Victoria Street Depth of Cover (Port Hope)	2029	\$ 1,588,743									
Eastern	Div_22 - Kingston	Distribution Pipe	Fail	Dollar threshold	734743	King: Bath and Gardiners Valve Replacement (Kingston)	2031	\$ 139,228									
Eastern	Div_22 - Kingston	Distribution Pipe	Fail	Dollar threshold	734795	King: HWY#2 Caravan Camp PRS Abandonment	2023	\$ 43,594									
Eastern	Div_22 - Kingston	Distribution Pipe	Fail	Dollar threshold	734921	NPS 8 Augusta		\$ 1,432,368									
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		30417	Arthur St - Cornwall - Eastern - 1727	2029	\$ 3,484,009	General: Vintage Steel Replacement Program is a proactive replacement program to renew aging vintage steel pipe assets before reaching their end of life. Vintage steel mains have shown signs of declining health due to the cumulative effect of poor, manufactured coating performance; construction practices; latent third-party damages to pipe coating; and the effect of stray currents from transit infrastructure such as subway and streetcars. The current failure projection model is forecasting an exponential increase in the number of corrosion-related failures, while the C55 value framework and the 40-year risk projection are showing an increase in the safety risk associated with steel main failures. Vintage steel systems also have potential to include compression couplings, shallow installation depth and shallow assemblies making pipe susceptible to third-party damage, and manufactured defects associated with seam welds and fittings.	Planned							
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		30418	Augustus St - Cornwall - Eastern - 1729	2029	\$ 2,680,609	Augustus St - Cornwall - Eastern - 1729Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization Comments: Remove York from 5th to 9th streets. Recently replaced - updated based on region's feedback (Augustus St - 1729) Road work on York in 2021 - removed York from project scope	Planned							
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		30419	Bridge St W-Napanee-1602	2031	\$ 5,565,056	Bridge St. W. - Napanee - 1602 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Complete	Fail	NPS 2, cannot downsize or retire					
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		30420	Cedar Alley-Ganonoque-1455	2032	\$ 3,399,815	Cedar Alley - Ganonoque - 1455 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		30421	Front St-Belleville-1592	2030	\$ 5,630,449	Front St. (moratorium until 2025) - Belleville - 1592 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There has been road construction within last 3 years - project has been updated to reflect moratorium until 2025.	Planned							
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		30423	Garden Alley 2-Ganonoque-1494	2028	\$ 3,968,189	Garden Alley 2 - Ganonoque - 1494 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		30426	Hickory St-Ganonoque-1454	2031	\$ 2,673,449	Hickory St - Ganonoque - 1454 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Elm and Hickory St. are deferred. Project is left as is and the moratorium should be complete once project is executed. Elm was within last five years; Victoria was repaved in the last seven years but has wide gravel shoulders; and Hickory St. was in the last ten years.	Planned							
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		30428	Main St - Ganonoque - Eastern - 1737	2031	\$ 2,570,188	Main St. - Ganonoque - Eastern - 1737 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		30429	Manse Alley-Ganonoque-1466	2032	\$ 5,083,071	Manse Alley - Ganonoque - 1466 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Stone Street was done approximately 10 years ago.	Complete	Fail	NPS 2, cannot downsize or retire					

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Eastern	Div_22 - Kingston	Distribution Pipe	Pass		30430	McGill St-Trenton-1596	2032	\$ 2,547,243	McGill St. - Trenton - 1596 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Dufferin St. was redone in last 10 years.	Planned							
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		30432	North Alley-Gananoque-1468	2032	\$ 2,476,197	North Alley - Gananoque - 1468 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Nothing within 10 years.	Planned							
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		30436	Victoria Ave-Gananoque-1457	2030	\$ 3,391,370	Victoria Ave. - Gananoque - 1457 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		30470	King St W - Eastern - 1799	2027	\$ 2,079,659	King St. W. - Eastern - 1799 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Eastern	Div_22 - Kingston	Distribution Pipe	Pass		48487	KING: Anodes*	2020	\$ 2,703,905	General: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within EGI's system. These installations and replacements are based on the internal Standard Operating Practice established to maintain the appropriate level of cathodic protection on steel pipeline assets.	Complete	Fail	See investment description, IRPAs not applicable					
Eastern	Div_22 - Kingston	Distribution Stations	Fail	Dollar threshold	49888	KING: Ingredient Cardinal (18800003) Rebuild	2024	\$ 865,092									
Eastern	Div_22 - Kingston	Distribution Stations	Fail	Dollar threshold	100777	KING - Under rated valve Trenton TBS 27601001	2027	\$ 305,303									
Eastern	Div_22 - Kingston	Distribution Stations	Fail	Dollar threshold	100835	KING: Belleville Sidney St TBS (27801001) Valve Upgrades	2026	\$ 319,290									
Eastern	Div_22 - Kingston	Distribution Stations	Fail	Dollar threshold	100907	King - corrosion Diamond Head Park PRS 27301037	2023	\$ 87,187									
Eastern	Div_22 - Kingston	Distribution Stations	Fail	Dollar threshold	101198	KING: 22-22-704 College and Sidney DRS (27801009) Rebuild	2024	\$ 1,325,309									
Eastern	Div_22 - Kingston	Distribution Stations	Fail	Dollar threshold	503270	Eastern PFM Compliance Program*		\$ 359,005									
Eastern	Div_22 - Kingston	Distribution Stations	Pass		101199	KING - Cornwall East TBS rebuild	2024	\$ 1,870,090	Issue/Concern: With the decline in much of the area's industrial load (i.e., Domtar, Cortaulds, Celanese, and ICI Chemicals), it has been extremely difficult to balance the two stations since they tend to overtake each other. This has resulted in control issues with pressure regulation, measurement and odourization issues and concerns. A redesign is required to mitigate the concerns.	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		30507	SRP_LUG East_Kingston_28401002STN & Reinforcement_NPS12_1000m_1210kPa	2024	\$ 6,217,387	Station upgrades and relocation is required for additional capacity.	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		30508	SRP_LUG East_Barriefield_28403028STN_Rebuild	2028	\$ 77,066	Station upgrades are required for additional capacity.	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		30509	SRP_LUG East_Barriefield_28403029STN_Rebuild	2023	\$ 186,830	Higher maximum sustainable pressure is required.	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		30510	SRP_LUG East_Belleville_27802132STN_Rebuild	2024	\$ 128,162	Upgrades to existing station or a new station is needed for additional capacity.	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		30512	SRP_LUG East_Colborne_27401005STN_Rebuild	2025	\$ 258,290	Station upgrades are required for additional capacity.	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		30513	SRP_LUG East_Crysler_29401011STN_Rebuild	2023	\$ 373,659	Station upgrades are required for additional capacity.	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		30514	SRP_LUG East_Crysler_29401037STN_Rebuild	2023	\$ 69,750	Station upgrades are required for additional capacity.	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		30515	SRP_LUG East_Deseronto_28103002STN_Rebuild	2023	\$ 186,830	Station upgrades are required for additional capacity.	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		30517	SRP_LUG East_Grafton_27405001STN_Rebuild	2027	\$ 346,936	Station upgrades are required for additional capacity.	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		30518	SRP_LUG East_Picton_28103006STN_Rebuild	2024	\$ 3,011,803	Station upgrades are required for additional capacity.	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		30519	SRP_LUG East_Tweed_27805090STN_Rebuild	2026	\$ 260,645	Station upgrades are required for additional capacity.	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		30520	SRP_LUG East_Winchester_29301001STN_Rebuild	2030	\$ 4,810,148	Station upgrades are required for additional capacity.	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		30521	SRP_LUG East_Winchester_29301008STN_Rebuild	2024	\$ 71,771	Station upgrades are required for additional capacity.	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		30522	SRP_LUG East_Winchester_Main St_Reinforcement_NPS4_550m_1724kPa	2028	\$ 619,279	A 4-inch looping from outlet of Winchester TBS is required.	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		48471	KING: 22-21-001 Company Program - New Business - Scattered Mains - Contractor*	2020	\$ 27,108,231	Scattered Mains	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		48497	King - 22-20-709 McConnell Ave & Tollgate Rd PRS	2024	\$ 352,445	Issue/Concern/Opportunity: System Reinforcement is required; the existing Post Regulation Station (PRS) is undersized. Growth requires a rebuild but a relocate should be considered at the same time as this intersection will be getting widened soon. The existing station will eventually end up in a turning lane. Asset: not available Related Program: N/A	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		100703	SRP_LUG East_Kingston_Creeford Rd_Reinforcement_NPS8_6200m_6895kPa	2024	\$ 28,702,886	Issue/Concern/Opportunity: Kingston lateral replacement to be completed from Westbrook CMS to Woodbine TBS to account for forecast growth, and to address Class Location and depth of cover issues which exist on the current Kingston lateral. Assets: Kingston Lateral Replacement Related Program: N/A	Planned							

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Eastern	Div_22 - Kingston	Growth	Pass		100778	King - Chesterville, Chrysler, Finch Reinforcement	2023	\$ 311,383	Issue/Concern/ Opportunity: The Chesterville, Finch and Chrysler System is primarily fed from the Winchester TBS 29301001. The pipeline run is approx. 40KM and services residential houses and commercial scale farms that have installed or are currently looking to install crop dryers. This reinforcement is required to add additional capacity to the system and maintain healthy system pressures. This area has seen significant agricultural growth which has resulted in the system falling below minimum pressures. There have been a couple low pressure calls from the customers at the end of the system. Distribution Optimization Engineering have halted future main extensions and commercial attachments. If this reinforcement is not done, we would be unable to attach future customers. Asset: 40KM of NPS 4 Steel pipe	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		102520	King: 22-25-504 Tweed Reinforcement - McClellan and Pomeroy	2025	\$ 284,119	Related programs: N/A Issue/Concern/Opportunity: The southern end of the tweed system went below minimum pressure in 2020. Reinforcement is required to boost the pressures based on predicted growth as per Distribution Optimization Engineering. Assets : Connect 2-inch PE mains on McClellan ST and Pomeroy Ave. FID 517313684 ~150 m Related Program: N/A	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		500423	KING: Company Program - Customer Connections*		\$ 68,257,533	Kingston Customer Connections Program Items	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		501482	SRP_LUG East_Odessa_28405001STN_Rebuild	2023	\$ 574,065	Issue/Concern/Opportunity: Full rebuild is required as station becomes under capacity during fall peaking with the addition of new customer. The customer cannot come online unless station is rebuilt. Station is also aging and there are concerns regarding its integrity. Assets: Odessa TBS (28405001) Related Program: N/A	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		734081	King: 22-22-507 Second Street East - Tie NPS4 1210kPa Main Together	2025	\$ 187,260	Issue/Concern/Opportunity: SRPR Z13 2022_002 - Identified by Distribution Optimization Engineering (DOE) in June 2021. Two sections of NPS4 1,210 kPa main on Second Street at approximately #3306 are not tied together; both ends are capped off. A records research of Union and Centra Gas confirms that this section of main was broken in 1981 when linestoppers were installed and caps were welded on. Asset: Two sections of NPS4 1,210 kPa main on Second Street at approximately #330 Related Program: N/A	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		734705	King: Madoc Lateral MOP Upgrade (Belleville North)	2030	\$ 2,354,399	Issue/Concern/Opportunity: Complete a Maximum Operating Pressure (MOP) upgrade on the Madoc Lateral and mitigate service line clearance and Property Line Post Regulator Sets (PLPRS) issues. Assets: Madoc Lateral Related Program: N/A	Planned							
Eastern	Div_22 - Kingston	Growth	Pass		736264	King: 22-25-508Brighton Reinforcement - Main Street	2025	\$ 379,858	Issue/Concern/Opportunity: Looping upgrades to account for connection of 291 Main St. and for future residential/commercial growth to the west. Asset: 300M NPS 4 Pipe Related Program: Additional reinforcements as part of 733975.	Planned							
Eastern	Div_22 - Kingston	Utilization	Pass		48483	KING: Meter & Regulator Inst Repl-Company*	2020	\$ 18,660,613	Meter & Reg Install- Replacement	Complete	Fail	See investment description, IRPAs not applicable					
GTA East	30 - Richmond Hill	Distribution Pipe	Fail	Dollar threshold	4662	Replacement Blanket - Area 30		\$ 596,001									
GTA East	30 - Richmond Hill	Distribution Pipe	Fail	Dollar threshold	30176	Yonge St 2 - GTA East - Area 30 - 1707	2028	\$ 1,618,990									
GTA East	30 - Richmond Hill	Distribution Pipe	Fail	Dollar threshold	103419	30: VSM - Major Mackenzie, Sussex To Newkirk, Replacement	2023	\$ 1,541,431									
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		4668	Anode Blanket - Area 30*	2020	\$ 1,672,025	General Description: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within the EGI system. These installations and replacements are based on the Corrosion Operating Standard established to maintain the appropriate level of cathodic protection on steel pipeline assets.	Complete	Fail	See investment description, IRPAs not applicable					
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		4764	AMP Fitting Replacement - Area 30*	2020	\$ 48,281,159	AMP Fittings are a below grade transition fittings. The inserted portion of copper tubing can fail due to internal corrosion. In these cases leaks develop immediately downstream of the AMP Fitting.	Complete	Fail	See investment description, IRPAs not applicable					
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		7666	VSM - Major Mackenzie and Yonge	2024	\$ 1,799,053	Replacement of 287 m of NPS 6 steel main on Major Mackenzie from Newkirk Rd. to Cedar Ave. including the CN crossing.	Planned							
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		13606	Service Relay Blanket - Area 30*	2020	\$ 19,997,215	General: A distribution service refers to the pipe between the distribution main and the customer's meter set. Over the years, different materials have been used for this asset, including steel, copper, and varying resins of plastic, each with unique characteristics that contribute to their performance over time. Services can be repaired or replaced depending on asset condition and the nature of the issue exhibited. Generally, replacement is the preferred approach to mitigate unacceptable asset condition.	Planned							
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		30162	Ashlar Rd - GTA East - Area 30 - 1489	2028	\$ 2,016,260	Ashlar Rd. - GTA East - Area 30 - 1489 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		30163	Axminster Dr - GTA East - Area 30 - 1490	2030	\$ 2,918,112	Axminster Dr. - GTA East - Area 30 - 1490 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
GTA East	30 - Richmond Hill	Distribution Pipe	Pass		30164	Church St South_2 - GTA East - Area 30 - 1382	2032	\$ 7,646,911	Church St. South 2 - GTA East - Area 30 - 1382 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							

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GTA East	30 - Richmond Hill	Distribution Stations	Fail	Dollar threshold	735172	30988A CONCESSION 2 & TWMARC DISTRICT	2023	\$ 321,080									
GTA East	30 - Richmond Hill	Distribution Stations	Fail	Dollar threshold	735173	32564A - MILL ST & KING SIDEROAD DISTRICT	2023	\$ 319,334									
GTA East	30 - Richmond Hill	Distribution Stations	Fail	Dollar threshold	735300	31335A GILBERT & YONGE DISTRICT (AURO	2024	\$ 208,224									
GTA East	30 - Richmond Hill	Distribution Stations	Fail	Dollar threshold	735301	33300A ISLINGTON & HWY # 407 HP DIST	2024	\$ 432,465									
GTA East	30 - Richmond Hill	Distribution Stations	Fail	Dollar threshold	735302	33525A Bathurst & Rutherford hp-ip	2024	\$ 219,436									
GTA East	30 - Richmond Hill	Distribution Stations	Fail	Dollar threshold	735303	35053A Dufferin Langstaff (langstaff & 407)	2024	\$ 221,038									
GTA East	30 - Richmond Hill	Distribution Stations	Fail	Dollar threshold	735309	50356A COUNTY RD #55 HWY #9 DISTRICT (NEW TECUSETH)	2023	\$ 144,642									
GTA East	30 - Richmond Hill	Distribution Stations	Pass		1011	SCHOMBERG GATE	2024	\$ 4,175,221	Schomberg Gate Station is located on EGI-owned property of approximately 1,250 m2 fenced compound in the Township of King, Ontario, approximately 3 km from the town of Pottageville, within a rural/urban area, in close proximity to Kettleby. This station accepts natural gas from TC Energy and provides supply to two separate XHP networks, through components within the Measurement system, Pressure Control system, Heating system, Odourant system, and Telemetry system. This station supplies natural gas to approximately 23,501 customers in the King Region. The following issues have been identified at this station: Compliance: An engineering assessment of the site layout has identified a conflict with the location of the Telemetry or Boiler buildings with respect to the Electrical Safety Authority (ESA) Area Classification requirements which has identified that an ignition source is in close proximity to a potential leak source, as defined within the Electrical Codes and Standards. Measurement: The current system does not provide measurement of the individual outlet supplies. Visibility to each outlet supply provides greater redundancy to the existing measurement and improved response capabilities. Valve & Piping: The existing valves at this site have experienced issues in performance and operation of the valves. Maintenance has been performed to attempt to remediate the valves; however, the valves have deteriorated to the point where the reliability is no longer acceptable. Heating: The existing boilers at this site have experienced trouble call/failures over the recent years, including failures of the motors and pumps, burner lock-outs and exchanger failures. Due to recent and upcoming customer growth in the King area, the existing heating system will not be capable of supplying the heating requirements to meet the demand. Pressure Control: The Regulation system is undersized and not capable of supplying the demand required to meet the customer growth in the King area. The configuration of the existing regulators is double boot, posing an undesired higher risk and high associated ongoing maintenance costs. Telemetry & Electrical: The existing electrical system does not meet current EGI electrical installation standards. This poses a potential electrical hazard and faulty wiring may result in lost communications.	Planned							
GTA East	30 - Richmond Hill	Distribution Stations	Pass		1013	MARKHAM GATE	2027	\$ 6,498,238	Markham Gate Station Pipe, Valves & Others: Updated Mechanical Piping is required for this station. The existing valves at this site have experienced issues in performance and operation of the valves. Maintenance has been performed to attempt to remediate the valves, however, the valves have deteriorated to the point where the reliability is no longer acceptable Heating System: Updated heating is required at this station. New Heat Exchanger is required including the associated piping for the glycol inlet and outlet to heating element. New boiler building will be procured as the existing building is within the ESA classification. Pressure Control: Not Required Odorant System: New Odorant system is required. This would include a new Odorant building including tank (Assume 500G – Enbridge standard). New Odorant cabinet including 2 new pumps and associated tubing from the tank equipment to cabinet. New sight glass for injection point is required. New odorant building to be outfitting with new electrical distribution and internal/external lighting. Galvanized building stairs to be accounted for. Telemetry/Electrical: New Control Wave Micro unit required and associated connections. Account for 1 new pressure transmitter and 1 new temperature transmitter. The telemetry and electrical systems do not meet current EGI standards, do not contain backup power supply in the event of power loss, and are approaching end of useful life. The existing RTU is obsolete and is required to be upgraded to current standards along with new communications equipment in order to eliminate cyber security threats. New Telemetry building will be required to be installed in new compliance location. Measurement: No information provided. Building: New Odorant Building required (See Odorant Scope for details). Additionally, new boiler building will need to be procured. An engineering assessment of the site layout has identified a conflict with the location of the telemetry or boiler Buildings with respect to the ESA Area Classification	Planned							
GTA East	30 - Richmond Hill	Distribution Stations	Pass		1148	BATHURST GATE	2025	\$ 4,125,265	The regulators are heavy and maintenance is difficult in the current arrangement, a lifting device is needed for ergonomic reasons. The current heating system consists of condensing boilers that have condensate which will require mitigation. A conversion to noncondensing boilers is required and during the conversion three-way valves and associated piping (6,000 by Stations Ops) will be added. The front gate experiences flooding and teh grade by the gate needs to be raised because water pools at the main gate.	Planned							
GTA East	30 - Richmond Hill	Distribution Stations	Pass		3614	BOND HEAD GATE	2026	\$ 6,906,783	Bond Head Gate Station is located on EGI-owned property of approximately 1,900 m2 fenced compound in the village of Bond Head, Ontario, approximately 8.5 km west of Bradford Ontario, within a rural area, in close proximity to several homes. This station accepts natural gas from TC Energy and provides supply to two separate XHP networks and one IP network, through components within the measurement system, pressure control system, heating system, odourant system, and telemetry system. This station supplies natural gas to approximately 60,000 customers in the Alliston, Orangeville, Bradford, and northern York Region. The following issues have been identified at this station: Compliance: An engineering assessment of the site layout has identified a conflict with the location of the Telemetry or Boiler buildings with respect to the Electrical Safety Authority (ESA) Area Classification requirements which has identified that an ignition source is in close proximity to a potential leak source, as defined within the Electrical Codes and Standards. Valves & Piping: The existing valves at this site have experienced issues in performance and operation of the valves. Maintenance has been performed to attempt to remediate the valves; however, the valves have deteriorated to the point where the reliability is no longer acceptable. Measurement: The current Turbine meter does not provide measurement of the individual outlet supplies. Visibility to each outlet supply provides greater redundancy to the existing measurement and improved response capabilities. As well, failures have been experienced over the past year including complete meter failure and jamming. Station has a backup orifice plate meter, which has experienced several alarms. Heating: The existing boilers at this site are approaching 20 years old, they have had 10 trouble call/failures over the recent years, including failures of the motors and pumps, burner lock-outs and exchanger failures. Due to recent and upcoming customer growth in the Bradford/York Region area, the existing heating system will not be capable of supplying the heating requirements to meet the demand. Pressure Control: The regulation system is undersized and not capable of supplying the demand required to meet the customer growth in the Bradford/York Region area. The configuration of the existing regulators are double boot, posing an undesired higher	Planned							

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GTA East	30 - Richmond Hill	Distribution Stations	Pass		3624	VICTORIA SQUARE GATE	2024	\$ 1,737,072	<p>Pipe, Valves and Others: Current actuators on the inlet, outlet and heat exchanger valves need to be commissioned and programmed for remote control by Gas Control in the Remoter Terminal Unit (RTU). The RTU will have to be upgraded to accommodate the additional input/output (I/O) as its current capacity is full. NPS 8 Becker control valve was replaced in 2016. Fuel gas supply and meter set will be required to replace outdated station.</p> <p>Measurement: The existing Measurement system is scheduled for upgrade in 2019 and it is expected that this work will be sufficient for operation in 2024. No upgrade to the Measurement system is included in this business case.</p> <p>Heating System: Existing Heating system is not in compliance with the Area Classification and will require boiler building relocation. The boilers have recently been replaced and should continue to operate. The boiler building is location in a classified area and will have to be moved and/or remediated. Exhaust fans may resolve the issue but this will be determined in detailed engineering. Heat exchangers were recently inspected (2015/2016) and will not require replacement.</p> <p>Pressure Control: Low flow regulator run was added in 2017. No additional work is required on the regulation runs.</p> <p>Odourant: Install a new Odourant building as the current metallic odourant building is without adequate containment. This building rusts, leaks in rain and spill response is hampered due to difficulty wrapping the building. The tank has bottom connections to feed the injection pumps. Odourant pumps are also in a different building and will be located appropriately in the same building as the 3,500 gallon odourant tank. This tank will have to be upsized.</p> <p>Telemetry/Electrical: RTU replacement is required from an old Bristol 3330 to a new control wave RTU. RTU upgrade is required as the current design has no available expansion capacity to accommodate new actuator, measurement inputs, additional methane and CO sensing. This will require a new RTU building. Electrical Safety Authority (ESA) compliance issues will be resolved by relocating electrical equipment. Upgrades to station wiring will be required to allow for new instrumentation. The electrical service will be upgraded to accommodate the new station loads. A new station grounding network, updated anti-climb tower, and updated instrumentation will be installed to meet current standards. A generator (installed 1999) and UPS system will be installed for backup power requirements in the event of a power outage. A new modem and firewall, improved station lighting, odourant tank</p>	Planned							
GTA East	30 - Richmond Hill	Distribution Stations	Pass		7753	NOBLETON GATE	2026	\$ 4,302,068	<p>Issue/Concern: Nobleton Gate Station is located on a fenced, EGI-owned property of approximately 1,000 m2 in the City of Vaughan, Ontario, approximately 3 km from the Town of Nobleton, within a rural area. This station accepts natural gas from TC Energy and provides supply to an XHP network, with a Measurement system, Pressure Control system, Heating system, Odourant system, and a Telemetry and Controls system. This station supplies natural gas to approximately 1,800 customers in the Bolton and King City areas. The following issues have been identified at this station:</p> <p>Compliance: An engineering assessment of the site layout has identified a conflict with the location of the Telemetry and Boiler buildings with respect to the Electrical Safety Authority (ESA) area classification requirements, which have identified that an ignition source is in close proximity to a potential leak source, as defined within the Electrical Codes and Standards. Additional property will be required to remediate the area classification issue.</p> <p>Measurement: Gas measurement is completed using a turbine meter installed in 2004. This meter type has experienced failures causing potential downstream impacts and loss of service to customers. This meter has experienced six failures in the past two years, due to leaks and faulty measurement. A new mass flow meter will be installed to replace the turbine meter and a backup outlet Annubar meter will also be installed.</p> <p>Heating: The existing boilers at this site are 14 years old. They have had three trouble call/failures over the past year including failures of the motors and pumps, burner lock-outs and exchanger failures. The boilers, building, and glycol piping require replacement as they will be 20 years old by the target rebuild date. The heat exchanger is not expected to be replaced but inspection is to be included.</p> <p>Pressure Control: The regulators are the original regulators installed when the station was first commissioned. In 2001, a building was installed over them to improve maintenance and operation. The regulators have experienced 29 trouble calls/failures in the time period including leaks, boot failures, and pilot failures. Both monitor and operator runs are boot-style regulators, which poses an undesired higher risk and high associated ongoing maintenance costs.</p>	Planned							
GTA East	30 - Richmond Hill	Distribution Stations	Pass		7769	KEELE AND STEELES/CNR FEEDER	2025	\$ 2,321,253	<p>Odourization: The odourant system was installed in 2004 with the injection system installed in 2009. The current configuration of Keele and Steeles/CNR Feeder Station is located on 3,000 m2 compound in the city of Vaughan, Ontario, approximately 1.5 km from York University, within an urban area in close proximity to CNR Railway Corridor. This station accepts natural gas from EGI XHP pipeline and provides supply to three separate XHP networks and an HP network, through components within the Pressure Control system, Heating system, Odourant system, and Telemetry system. This station supplies natural gas to approximately 20,000 customers in Vaughan and Toronto area. The following issues have been identified at this station:</p> <p>Valve & Piping: the existing valves at this site have experienced 10 failures and leak issues in performance and operation of the valves. Maintenance has been performed to attempt to remediate the valves; however, the valves have deteriorated to the point where the reliability is no longer acceptable.</p> <p>Pressure Control: The configuration of the existing regulators was installed in 1990 and is double boot, posing an undesired higher risk and high associated ongoing maintenance costs. The existing regulators have reached end of life.</p> <p>Telemetry & Electrical: The Telemetry and Electrical systems do not meet current EGI standards, do not contain backup power supply in the event of power loss, and are approaching end of useful life. The existing Remote Terminal Unit (RTU) is obsolete and is required to be upgraded to current standards along with new communications equipment in order to eliminate cybersecurity threats.</p>	Planned							
GTA East	30 - Richmond Hill	Distribution Stations	Pass		7778	WOODBINE & CNR FEEDER	2024	\$ 2,134,241	<p>Pipe, Valves & Others: Not required.</p> <p>Heating System: Not required.</p> <p>Pressure Control: Not required.</p> <p>Odourant System: A new Odourant system is required. This would include a new Odourant building including tank (assume 500 G – EGI standard). A new Odourant cabinet including two new pumps and associated tubing from the tank equipment to cabinet is required. A new sight glass for injection point is required. New Odourant building is to be outfitted with new electrical distribution and internal/external lighting. Galvanized building stairs are to be accounted for.</p> <p>Telemetry/Electrical: New Control Wave Micro unit and associated connections are required. One new pressure transmitter and one new temperature transmitter are to be accounted for. The Telemetry and Electrical systems do not meet current EGI standards, do not contain backup power supply in the event of power loss, and are approaching end of useful life. The existing Remote Terminal Unit (RTU) is obsolete and is required to be upgraded to current standards along with new communications equipment in order to eliminate cybersecurity threats.</p> <p>Measurement: Not required.</p> <p>Building: New Odourant building is required</p> <p>Compliance/Civil: Minor site grading, new crash bar access and two sides of site will be required.</p>	Planned							

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GTA East	30 - Richmond Hill	Distribution Stations	Pass		8567	St John Sideroad Feeder Station	2023	\$ 7,020,635	<p>Issue/Concern: The property on which St. John's Sideroad Feeder Station currently sits is insufficient for operation. It is located adjacent to a residential property and the area classification extends onto the adjacent private property. The Boiler building is located in a hazardous area classification and the non-compliance needs to be remedied. Road widening of St. John's Sideroad currently has the sidewalk encroaching on our station. A land sale agreement with York Region was completed in 2016 and requires movement of the electrical meter.</p> <p>As the area classification issue risks shutdown of the station by the Electrical Safety Authority, EGI is planning to resolve the movement of the electrical meter (on site) pending a new land purchase for relocation of the entire station. As a result of station relocation, a complete rebuild will be required. Maintenance on the Boiler system piping, pumps and gauges, which are old and obsolete, suggest that the Heating system needs to be replaced regardless of station relocation. The Heating system is already undersized for the current demand. The FL regulators are difficult to work on due to their weight and ergonomic restrictions in a cramped building. These are to be replaced and upgraded. The old Remote Terminal Unit (RTU) 3330 Telemetry system needs to be upgraded, including the backup power generator which is old and obsolete. The station was updated in 2006 and a new generator and boilers were installed in 2003. Source records do not indicate any regulator capacity issue.</p> <p>Asset: Stn ID: 2944180</p> <p>Related Programs: Not applicable.</p>	Planned							
GTA East	30 - Richmond Hill	Growth	Pass	(blank)	3736	Area 30 - Industrial - New Construction*		\$ 694,952	<p>Industrial New Construction- A customer intending to run an industrial manufacturing business in a newly-built facility and intending to use natural gas. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGD develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long term plans EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. Enbridge reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers; and, - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing Assets: Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth</p>	Planned							
GTA East	30 - Richmond Hill	Growth	Pass		2522	Rodinea Road	2023	\$ 589,364	<p>Issue/Concern/Opportunity: The HP network system needs reinforcement through this proposed piping connection. This project is to address system capacity loss due to a previous transit-related main abandonment in Area 10.</p> <p>Assets: install 223m of 8" steel HP gas main to connect mains at the east and the west side. HDD under the railroad.</p> <p>Related Program: N/A</p>	Planned							
GTA East	30 - Richmond Hill	Growth	Pass		3731	Area 30 - Apartment Ensuite - New Construction*		\$ 4,136,135	<p>Issue/Concern: Vertical Subdivision refers to a multiple unit residential building where each suite is individually metered. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets.</p> <p>Related Program: N/A</p>	Planned							
GTA East	30 - Richmond Hill	Growth	Pass		3735	Area 30 - Commercial - New Construction*		\$ 46,840,812	<p>Issue/Concern: Commercial New Construction refers to a customer intending to run a commercial business in a newly-constructed building and intending to using natural gas to meet energy needs.</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets.</p> <p>Related Program: N/A</p>	Planned							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
GTA East	40 - Whitby	Distribution Pipe	Fail	Dollar threshold	14147	Copper Service Replacement - Area 40*	2020	\$ 846,997									
GTA East	40 - Whitby	Distribution Pipe	Fail	Dollar threshold	30183	Howard Ave 1 - Kawartha Lakes - Area 40 - 1692	2027	\$ 925,866									
GTA East	40 - Whitby	Distribution Pipe	Fail	Dollar threshold	30184	Howard Ave 2 - Kawartha Lakes - Area 40 - 1694	2031	\$ 1,740,886									
GTA East	40 - Whitby	Distribution Pipe	Fail	Dollar threshold	30189	Prospect St-Bowmanville-1086	2030	\$ 1,371,368									
GTA East	40 - Whitby	Distribution Pipe	Fail	Dollar threshold	30190	Regent St - Kawartha Lakes - Area 40 - 1697	2028	\$ 817,509									
GTA East	40 - Whitby	Distribution Pipe	Fail	Dollar threshold	100470	Bannerman Crt. and Nordic Crt, Whitby	2023	\$ 910,371									
GTA East	40 - Whitby	Distribution Pipe	Fail	Dollar threshold	102671	Campbellford Replacement Phase 3 Front St	2029	\$ 851,261									
GTA East	40 - Whitby	Distribution Pipe	Fail	Dollar threshold	102672	Campbellford Replacement Phase 4 Kent St	2023	\$ 1,446,589									
GTA East	40 - Whitby	Distribution Pipe	Fail	Dollar threshold	102673	Campbellford Replacement Phase 5 Pellissier St & Bridge St	2028	\$ 1,050,158									
GTA East	40 - Whitby	Distribution Pipe	Pass		4669	Anode Blanket - Area 40*	2020	\$ 1,535,938	General Description: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within the EGI system. These installations and replacements are based on the Corrosion Operating Standard established to maintain the appropriate level of cathodic protection on steel pipeline assets.	Complete	Fail	See investment description, IRPAs not applicable					
GTA East	40 - Whitby	Distribution Pipe	Pass		4766	AMP Fitting Replacement - Area 40*	2020	\$ 28,398,914	AMP Fittings are a below grade transition fittings. The inserted portion of copper tubing can fail due to internal corrosion. In these cases leaks develop immediately downstream of the AMP Fitting.	Complete	Fail	See investment description, IRPAs not applicable					
GTA East	40 - Whitby	Distribution Pipe	Pass		30178	Caddy St-Peterborough-1179	2032	\$ 3,960,180	Caddy St. - Peterborough - 1179 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
GTA East	40 - Whitby	Distribution Pipe	Pass		30179	Christena Cres 1 - Ajax - Area 40 - 1702	2030	\$ 3,285,942	Christena Cres. 1 - Ajax - Area 40 - 1702 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Scope is to be broken up into two investments given the large scope and potential conservation concerns and close proximity to MTO right-of-way (ROW). Project will be adjusted based on regional comments (Christena Cres. 1 - 1702 and Christena Cres. 2 - 1704).	Planned							
GTA East	40 - Whitby	Distribution Pipe	Pass		30181	Durham St W - Kawartha Lakes - Area 40 - 1687	2031	\$ 5,109,709	Durham St. W. - Kawartha Lakes - Area 40 - 1687 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
GTA East	40 - Whitby	Distribution Pipe	Pass		30182	Euclid Ave-Peterborough-1106	2030	\$ 4,142,300	Euclid Ave. - Peterborough - 1106 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
GTA East	40 - Whitby	Distribution Pipe	Pass		30186	Poplar Ave 1 - Ajax - Area 40 - 1680	2032	\$ 4,731,770	Poplar Ave. 1 - Ajax - Area 40 - 1680 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: This scope could be broken up into two projects given the conservation authority impacts - project adjusted based on region's comments (Poplar Ave 1 - 1680 and Poplar Ave 2 - 1681).	Planned							
GTA East	40 - Whitby	Distribution Pipe	Pass		30187	Poplar Ave 2 - Ajax - Area 40 - 1681	2029	\$ 2,371,613	Poplar Ave. 2 - Ajax - Area 40 - 1681 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: This scope could be broken up into two projects given the conservation authority impacts; project was adjusted based on region's comments (Poplar Ave. 1 - 1680 and Poplar Ave. 2 - 1681)	Complete	Fail	NPS 2, cannot downsize or retire					
GTA East	40 - Whitby	Distribution Pipe	Pass		30188	Prince St - Bowmanville-1450	2029	\$ 2,275,535	Prince St. - Bowmanville - 1450 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
GTA East	40 - Whitby	Distribution Pipe	Pass		30192	Simcoe Street-40-Kawartha Lakes-1060	2028	\$ 3,081,605	Simcoe Street - 40 - Kawartha Lakes - 1060 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Complete	Fail	NPS 2, cannot downsize or retire					

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GTA East	40 - Whitby	Distribution Stations	Fail	Dollar threshold	735168	44512A YANKEE LINE & RUSSELL DISTRICT	2023	\$ 277,438									
GTA East	40 - Whitby	Distribution Stations	Fail	Dollar threshold	735304	2885749 Taunton and Gillett	2024	\$ 384,413									
GTA East	40 - Whitby	Distribution Stations	Pass		7749	BOWMANVILLE GATE	2025	\$ 4,964,375	<p>Issue/Concern: Bowmanville Gate Station is located on fenced EGI-owned property of approximately 700 m2 in Clarington, Ontario. It is approximately 5 km north of Newcastle Ontario, within a rural area. This station accepts natural gas from TC Energy and provides supply to two separate XHP networks, through a measurement system, pressure control system, gas pre-heat system, odourant injection system, and telemetry and controls system. This station supplies natural gas to approximately 61,000 customers in an area that spans from Bowmanville to Lindsay. The following issues have been identified at this station:</p> <p>Valves and Piping: The existing valves at this site have experienced issues in performance and operation of the valves. Maintenance has been performed to attempt to remediate the valves; however, the valves have deteriorated to the point where the reliability is no longer acceptable. The inlet piping to the heat exchanger shows signs of deterioration and should be replaced. The station is located close to Hwy 35/115 and its proximity to traffic puts it at a higher risk. The piping is to be relocated away from the road, as far as practical.</p> <p>Measurement: The current system does not provide measurement of the individual outlet supplies. Visibility to each outlet supply provides redundancy to the existing measurement, odourant injection reliability, and improved response capabilities. The turbine meter is to be replaced with a Coriolis meter.</p> <p>Heating: The existing boilers at this site are 18 years old, they have had 42 trouble call/failures over the life of the heating system, including failures of the motors and pumps, burner lock-outs and exchanger failures. The system, including buildings, will require replacement as it approaches end of life.</p> <p>Odourization: The odourant system was installed in 1999. The current configuration of the odourant system does not ensure adequate containment of the odourant product in the event of a leak and does not meet the current engineering standards and approvals. The building is an old-style, rusted metallic odourant building without adequate containment and a new building, tank, and Odourant Injection system will be required.</p> <p>Telemetry and Electrical: The existing Electrical system does not meet current EGI electrical installation standards. This poses a potential electrical hazard and faulty wiring may result in lost communications.</p>	Planned							
GTA East	40 - Whitby	Distribution Stations	Pass		7754	OSHAWA GATE	2025	\$ 4,252,715	<p>Oshawa Gate Station is located on EGI-owned property of approximately 1000 m2 fenced compound in Oshawa, Ontario, approximately 2 km from town, within a rural/urban area, in close proximity to Taunton. This station accepts natural gas from TC Energy and provides supply to 1 XHP network, through components within the Measurement system, Pressure Control system, Heating system, Odourant system, and Telemetry system. This station supplies natural gas to approximately 190,000 customers in the Oshawa Region. The following issues have been identified at this station:</p> <p>Heating System: The existing boilers are undersized for current capacity.</p> <p>Measurement: The current system does not provide measurement of the individual outlet supplies. Visibility to each outlet supply provides greater redundancy to the existing measurement and improved response capabilities.</p> <p>Odourization: The Odourant system was installed in 2011. The current configuration of the Odourant system does not ensure adequate containment of the odourant product in the event of a leak and does not meet the current engineering standards and approvals.</p> <p>Telemetry & Electrical: The existing Electrical system does not meet current EGI electrical installation standards. This poses a potential electrical hazard and faulty wiring may result in lost communications.</p>	Planned							
GTA East	40 - Whitby	Distribution Stations	Pass		7766	DURHAM 23 FEEDER	2024	\$ 2,141,268	<p>Durham Road 23 Feeder Station is located on EGI-owned property of approximately 150 m2 fenced compound in the Township of Whitby, Ontario, approximately 3 km east of Ajax, Ontario, within a rural area in proximity to commercial establishments. This station accepts natural gas from EGI XHP and provides supply to an HP network, through components within the Pressure Control system, Heating system, and Telemetry system. This station supplies natural gas to approximately 35,000 customers in Ajax and Whitby areas. The following issues have been identified at this station:</p> <p>Heating: The existing controls on the Heating system have become obsolete, parts are no longer available, and the system is failing to maintain adequate heating requirements.</p> <p>Telemetry & Electrical: The Telemetry and Electrical systems do not meet current EGI standards and are approaching end of useful life. The existing Remoter Terminal Unit (RTU) is obsolete and is required to be upgraded to current standards along with new communications equipment in order to eliminate cybersecurity threats.</p>	Planned							
GTA East	40 - Whitby	Growth	Pass		3740	Area 40 - Apartment Ensuite - New Construction*		\$ 640,925	Vertical Subdivision - A multiple unit residential building where each suite is individually metered. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers.	Planned							
GTA East	40 - Whitby	Growth	Pass		3744	Area 40 - Commercial - New Construction*		\$ 40,540,507	<p>Issue/Concern: Commercial New Construction refers to a customer intending to run a commercial business in a newly-constructed building and intending to using natural gas to meet energy needs</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Planned							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
GTA East	40 - Whitby	Growth	Pass		3747	Area 40 - Residential - New Construction*		\$ 52,089,891	Issue/Concern: Residential New Construction refers to a new residential construction development of detached single homes constructed by the builder for domestic purposes. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Planned							
GTA East	40 - Whitby	Growth	Pass		3748	Area 40 - Residential - Replacement*		\$ 62,612,624	Issue/Concern: Residential Replacement refers to a residential replacement customer using a fuel other than natural gas for domestic purposes and is converting to natural gas. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Planned							
GTA East	40 - Whitby	Growth	Pass		736524	NW 4793 Carnwith Dr. Brooklin Reinforcement SRP	2024	\$ 301,124	Issue/Concern/Opportunity: Pipe reinforcement of 520 m of NPS 4 PE along Carnwith Dr. W. is required due to system pressures below new minimum allowable system pressure. Assets: Pipe Related Investments: Not applicable	In Progress							
GTA East	40 - Whitby	Growth	Pass		736665	Station Rebuild 42183A Brock and 3rd Conc SRP	2023	\$ 218,210	Issue/Concern/Opportunity: Scope: Station 42183A Rebuild Reinforcement - Pressure regulation upgrades are required to meet the downstream forecasted demands. The reason upgrades are required is to meet capacity requirements to feed network. Assets: District station rebuild Related Program: Not applicable	Planned							
GTA East	40 - Whitby	Utilization	Pass		13546	MXGI Area 40*	2019	\$ 33,673,379	Meters: Meters are used to determine the gas consumption input of customer billing. The replacement program for meters is mandated by Measurement Canada. The program includes: testing, repair, and replacement requirements of meters and instruments. All verified meters are approved by Measurement Canada with an issuance of a certificate which identifies that the meter complies with Electricity and Gas Specification S-EG-02. The Company must ensure all measurement devices remain in compliance for annual audits by Measurement Canada. Measurement Canada specifies tolerances under which the meter must operate in the field. The Company must demonstrate that all aspects of its meter sampling, maintenance, and replacement comply with these criteria in order to be accredited by Measurement Canada to be an "Authorized Service Provider" and adhere to Measurement Canada's accreditation standard S-A-01. Meters may also require exchange for issues such as: damages, leaks, customer billing issues. Regulation: Regulators are the last line of defense for over-pressure to the customer. The condition of regulation systems is determined by regulator performance, corrosion of piping and regulators, and adherence to installation specifications. Failure of the regulation system can cause pressured gas to enter the premise, resulting in failure of gas equipment, loss of containment, and potentially fire or explosion.	Complete	Fail	See investment description, IRPAs not applicable					
GTA West	20 - Mississauga	Distribution Pipe	Fail	Dollar threshold	1193	Erin Mills and Leanne Vital	2025	\$ 1,513,665									
GTA West	20 - Mississauga	Distribution Pipe	Fail	Dollar threshold	7655	VSM - Bromsgrove Header	2025	\$ 874,324									
GTA West	20 - Mississauga	Distribution Pipe	Fail	Dollar threshold	7656	VSM - Bramalea and Balmoral Rd	2023	\$ 830,069									
GTA West	20 - Mississauga	Distribution Pipe	Fail	Dollar threshold	8236	1" ST - Archill Crescent	2022	\$ 104,083									
GTA West	20 - Mississauga	Distribution Pipe	Fail	Dollar threshold	11127	Copper Service Replacement - Area 20*	2020	\$ 2,667,645									
GTA West	20 - Mississauga	Distribution Pipe	Fail	Dollar threshold	736516	3665 Flamework Replacement Copper Relay	2025	\$ 646,405									
GTA West	20 - Mississauga	Distribution Pipe	Fail	Emergent Safety	4661	Replacement Blanket - Area 20*		\$ 4,898,309									
GTA West	20 - Mississauga	Distribution Pipe	Pass		4667	Anode Blanket - Area 20*	2020	\$ 2,396,036	General Description: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within the EGI system. These installations and replacements are based on the Corrosion Operating Standard established to maintain the appropriate level of cathodic protection on steel pipeline assets.	Complete	Fail	See investment description, IRPAs not applicable					
GTA West	20 - Mississauga	Distribution Pipe	Pass		4763	AMP Fitting Replacement - Area 20*	2020	\$ 83,572,177	AMP Fittings are a below grade transition fittings. The inserted portion of copper tubing can fail due to internal corrosion. In these cases leaks develop immediately downstream of the AMP Fitting.	Complete	Fail	See investment description, IRPAs not applicable					

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GTA West	20 - Mississauga	Distribution Pipe	Pass		7660	VPM - Erin Township	2026	\$ 11,695,807	Issue/Concern: There are site-specific concerns. It has been reported through a leak event that the vintage plastic pipe in Erin Township has experienced cracking due to the stony soil in this area. The Gas Technology Institute (GTI) study on Aldyl A pipe has stated stress intensifier such as rock impingement could result in slow crack growth (SCG) in this type of plastic pipe. Assets: Vintage plastic pipe in Erin Township Related Programs: Pipe replacement vintage plastic	Planned							
GTA West	20 - Mississauga	Distribution Pipe	Pass		13605	Service Relay Blanket - Area 20*	2020	\$ 36,638,282	General: A distribution service refers to the pipe between the distribution main and the customer's meter set. Over the years, different materials have been used for this asset, including steel, copper, and varying resins of plastic, each with unique characteristics that contribute to their performance over time. Services can be repaired or replaced depending on asset condition and the nature of the issue exhibited. Generally, replacement is the preferred approach to mitigate unacceptable asset condition.	Planned							
GTA West	20 - Mississauga	Distribution Pipe	Pass		30114	Broadway_GTA West_Area 20_1249	2032	\$ 3,764,887	Broadway - GTA West - Area 20 - 1249 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
GTA West	20 - Mississauga	Distribution Pipe	Pass		30115	Clarkson Rd 1 - GTA West - Area 20 - 1665	2029	\$ 2,078,781	Clarkson Rd. 1 - GTA West - Area 20 - 1665 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Two projects were created based on regional comments (Clarkson Rd. 1 - 1665 and Clarkson Rd. 2 - 1666).	Planned							
GTA West	20 - Mississauga	Distribution Pipe	Pass		30117	Elizabeth St S 1 - GTA West - Area 20 - 1667	2028	\$ 2,830,221	Elizabeth St. S. 1 - GTA West - Area 20 -1667 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Two projects were created based on regional comments (Elizabeth St. S. 1 –1667 and Elizabeth St. S. 2 - 1668).	Planned							
GTA West	20 - Mississauga	Distribution Pipe	Pass		30118	Elizabeth St S 2 - GTA West - Area 20 - 1668	2032	\$ 3,668,254	Elizabeth St. S. 2 - GTA West - Area 20 - 1668 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Two projects were created based on regional comments (Elizabeth St. S. 1 –1667 and Elizabeth St. S. 2 - 1668)	Planned							
GTA West	20 - Mississauga	Distribution Pipe	Pass		30120	Gordon St_GTA West_Area 20_1227	2030	\$ 2,508,009	Gordon St_GTA West - Area 20 - 1227 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Complete	Fail	NPS 2, cannot downsize or retire					
GTA West	20 - Mississauga	Distribution Pipe	Pass		30121	Haggert Ave_GTA West_Area 20_1477	2031	\$ 4,208,533	Haggert Ave. - GTA West - Area 20 - 1477 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
GTA West	20 - Mississauga	Distribution Pipe	Pass		30122	Joymar Dr 1 - GTA West - Area 20 - 1670	2027	\$ 3,195,022	Joymar Dr. 1 (execute 2024 - road rehabilitation work planned for 2024) - GTA West - Area 20 - 1670 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Created two projects based on regional comments (Joyman Dr. 1 - 1670 and Joyman Dr. 2 - 1671).	Complete	Fail	NPS 2, cannot downsize or retire					
GTA West	20 - Mississauga	Distribution Pipe	Pass		30123	Joymar Dr 2 - GTA West - Area 20 - 1671	2027	\$ 3,475,138	Joymar Dr. 2 - GTA West - Area 20 - 1671 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Two projects were created based on regional comments (Joyman Dr. 1 - 1670 and Joyman Dr. 2 - 1671).	Planned							

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GTA West	20 - Mississauga	Distribution Stations	Pass		1043	CAWTHRA AND QUEENSWAY DISTRICT	2024	\$ 2,857,248	<p>Cawthra and Queensway Feeder Station is located on EGI-owned property of approximately 175 m2 fenced compound in the City of Mississauga, Ontario, within an urban area, within 30 m of residential homes in a densely populated subdivision. This station accepts natural gas from EGI XHP pipeline and provides supply to an IP network, through components within the Pressure Control system, and Telemetry system. This station supplies natural gas to approximately 10,000 customers in the City of Mississauga. The following issues have been identified at this station:</p> <p>Valve & Piping: The piping material and components used within this station have been identified as sub-standard with improper construction methods used during construction.</p> <p>Pressure Control: The configuration of the existing regulators is double boot, posing an undesired higher risk and high associated ongoing maintenance costs.</p> <p>Telemetry & Electrical: The Telemetry and Electrical systems do not meet current EGI standards and are approaching end of useful life. The existing Remote Terminal Unit (RTU) is obsolete and is required to be upgraded to current standards along with new communications equipment in order to eliminate cybersecurity threats. Additionally, new instrumentation, a lighting upgrade, and a tower upgrade which is compliant based on space available is required.</p>	Planned							
GTA West	20 - Mississauga	Distribution Stations	Pass		7777	WINSTON CHURCHILL AND STEELES FEEDER	2027	\$ 6,197,593	<p>Winston Churchill and Steeles Feeder Gate Station is located on EGI-owned property fenced compound in Mississauga, Ontario, approximately 4 km from Meadowvale town centre, within a rural area in close proximity to industrial establishments. This station accepts natural gas from EGI XHP and provides supply to two separate XHP and HP networks, through components within the Pressure Control system, Heating system, and Telemetry system. This station supplies natural gas to approximately 20,000 customers in Mississauga and Brampton area. The following issues have been identified at this station:</p> <p>Telemetry & Electrical: The Telemetry and Electrical systems do not meet current EGI standards, do not contain backup power supply in the event of power loss, and are approaching end of useful life. The existing Remoter Terminal Unit (RTU) is obsolete and is required to be upgraded to current standards along with new communications equipment in order to eliminate cybersecurity threats.</p>	Planned							
GTA West	20 - Mississauga	Distribution Stations	Pass		503369	Lisgar Station	2023	\$ 21,527,376	<p>Issue/Concern/Opportunity: The Lisgar Gate Station is located at a highly populated area in the City of Mississauga. The station is situated in an urban setting and is surrounded by residential buildings, a commercial plaza, and a church. The station has multiple feeds (two transmission lines and one XHP CER line) and various outlets to the local distribution networks. In the event of a major incident, the consequence would be significant given the close proximity to houses and buildings.</p> <p>Justification: The following issues and deficiencies have been identified: Pipes & Valves: They have been deemed unreliable at this site and require removal and installation of new pipes, fittings, and valves. The increased load demand will also allow the pipe to be upsized for current and future expansion. Heating: The Heating system has been deemed unreliable as it has reached its end-of-life cycle usage. The placement of the heat exchangers in the basement of the Boiler building has caused maintenance roadblocks along with flooding concerns. Pressure Regulation: The 20002A regulation has been deemed unreliable and will be rebuilt because of inconsistent flows throughout. The 20002D has suffered from frost-heaving issues as well and requires a rebuild. Odourization: The Odourant system's current configuration does not ensure adequate containment of the odourant product in the event of a leak and does not meet the current engineering standards and approvals. The pumps need automation along with redundancy for better operational efficiency. Building: The Regulator building that houses 20002B and 20002C needs a noise evaluation study to determine a better noise attenuation solution. Measurement: Existing measurement is not reliable and accurate. A more robust and accurate measurement needs to be installed for custody transfer purposes.</p> <p>Assets: Distribution Station Assets at the Lisgar Gate Station.</p> <p>Related Program: AFF - 219 - NPS 24 Lisgar to Pine Valley - permanent launcher support (23192)</p>	Planned							
GTA West	20 - Mississauga	Distribution Stations	Pass		735335	GTAW Parkway Gate Station Rebuild Phase 2	2023	\$ 10,598,747	<p>Project: Parkway East Phase 2. Phase 1 commenced in 2021.</p> <p>Issue/Concern/Opportunity: The following sub-assets will be rebuilt due to the issues described below:</p> <p>Regulators: Two existing Becker control valves, i.e., NPS-8 and NPS-6 downstream operators – PRV-0502 and PRV-0504, Runs 9 and 10 on TC Energy feed (quantity is two) are defective and will not lock up; therefore, replacement is required. Currently, the inlet valve from the TC Energy feed is used to completely shut off the TC Energy feed; otherwise, the control valves will bleed by and affect nominations in the summer, automated TC Energy inlet valve for emergency shutoff from TC Energy, as well as to ensure inlet valve is closed to avoid bleed by of Becker control valves in summer conditions (CLOSE ONLY VALVE). Flow control valves on the TC Energy feed are Fairchild's (will replace with DNGPs – RUNS 9/10) not a computer-controlled regulator and do not sense downstream pressure. Isolation valves for each run are operational. DNGP should also replace Fairchild for 12-inch Union East – CV replacement (12-inch closest to Boiler building - RUN 1); 4th Fairchild is on the MSL – not required – disconnect and replace with VRP pilot (pressure control only due to downstream system operation). The station can be down to facilitate work as system can be fed from Parkway West. An additional five Jordan motors that are obsolete are to be replaced with Rotork motors (quantity is five). Due to capacity constraints and designing for future flow provided by Distribution Optimization Engineering (DOE) / TSP, Run 1 T4 Becker is to be replaced with T1 Becker (NPS 12). Run 3 has undersized isolation valves (currently NPS 8) and will need upsizing to NPS 16.</p> <p>Civil: There is no urethane layer between the pipe support cradle and the bottom of the pipe. A single new Odourant building is required. The wall between the Pressure Transmitter and Remote Terminal Unit (RTU) room is to be opened up for entire building to be RTU room. Demolition of existing Generator building is required. The Storage building is to be removed due to end of life.</p> <p>Piping & Valves: An increase in pipe size near heaters to NPS 30 along with inlet/outlet HX valves to ensure flow requirements can be achieved. Upsizing downstream header and inlet pipe to regulators to NPS 30 is required to ensure it can handle capacity requirements. Odourant: The Odourant system is a metallic odourant building without adequate containment with a rusted containment pan.</p>	Planned							
GTA West	20 - Mississauga	Growth	Pass		3724	Area 20 - Apartment Traditional - New Construction*		\$ 2,059	<p>Apartment - An apartment customer is a multi-residential dwelling containing more than six units that is bulk-metered. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/Industrial customers.</p>	Planned							

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GTA West	20 - Mississauga	Growth	Pass		3722	Area 20 - Apartment Ensuite - New Construction*		\$ 3,507,121	Vertical Subdivision - A multiple unit residential building where each suite is individually metered. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Planned							
GTA West	20 - Mississauga	Growth	Pass		3726	Area 20 - Commercial - New Construction*		\$ 43,123,319	Issue/Concern: Commercial New Construction refers to a customer intending to run a commercial business in a newly-constructed building and intending to using natural gas to meet energy needs. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Planned							
GTA West	20 - Mississauga	Growth	Pass		3729	Area 20 - Residential - New Construction*		\$ 65,585,877	Issue/Concern: Residential New Construction refers to new residential construction development of detached single homes constructed by the builder for domestic purposes. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Planned							

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GTA West	20 - Mississauga	Growth	Pass		3730	Area 20 - Residential - Replacement*		\$ 30,865,248	<p>Issue/Concern: Residential Replacement refers to a residential replacement customer using a fuel other than natural gas for domestic purposes and is converting to natural gas.</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Planned							
GTA West	20 - Mississauga	Growth	Pass		3783	Area 20 - Commercial - Replacement*		\$ 7,028,909	<p>Issue/Concern: Commercial Replacement refers to a commercial replacement customer using a fuel other than natural gas for commercial business and is converting to natural gas.</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Planned							
GTA West	20 - Mississauga	Growth	Pass		16748	Erin IP System Reinforcement	2028	\$ 6,204,820	<p>Issue/Concern: Reinforcement projects broadly involve the installation of new or modification of existing gas distribution assets to maintain minimum required system pressure, maintain capacity, and meet customer demand. These projects are primarily driven by customer growth and system reliability considerations. Failure to implement reinforcement projects in a timely manner could lead to a potential inability to support increasing demands of existing customers and the addition of future customers.</p> <ul style="list-style-type: none"> • Project Purpose/Need: The purpose of Phase 1 main reinforcement is to provide capacity on the east side of district station RS21100A, Erin District along Main St. and improve the degrading pressures. Phase 2 and 3 will provide capacity and will improve the degrading pressures southwest of the station along Trafalgar Rd. • Pressure Issue/Concern: The minimum system pressure is 10 psi and is forecasted to be infeasible by 2019 (when the first phase is proposed to start). • Customer Growth Issue/Concern: As of 2018, there are 2,039 customers on this network. Without reinforcement, a forecasted 866 customers may not be able to be added. • Risk If Not Completed: At its current condition, the system will not be able to supply gas for large load additions (i.e., subdivision and commercial) as per the Long-Range Plan (LRP) projections since existing mains have limited capacity and pressures below the minimum system pressure. As per model results, in years 2019, 2023, and 2025, pressures were below minimum system pressures. <p>Assets (preferred option): Phase 1 Year 2019 - Upsize approximately 2,600 m existing NPS 4 ST/PE to NPS 6 PE on Main St. (Station RS21100A, Erin District to Wellington Rd. 124).</p> <p>•2021 Updates: Phases 2 and 3 have been deferred to 2027 and 2028. oPhase 2 was deferred to 2027 from 2023 - Upsize approximately 3,100 m existing NPS 4 ST to NPS and PE on Sideroad 17 (Station RS21100A, Erin District to Wellington Rd. 24). oPhase 3 was deferred to 2028 from 2025 - Upsize approximately 5,000 m existing NPS 4 ST to NPS and PE on Wellington Rd. 24 (Sideroad 17 to Orangeville St.).</p>	Planned							

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GTA West	20 - Mississauga	Growth	Pass		17243	NW 2225 Terra Cotta IP Reinforcement SRP	2028	\$ 1,716,323	<p>Issue/Concern/Opportunity: Reinforcement projects broadly involve the installation of new or modification of existing gas distribution assets to maintain minimum required system pressure to maintain the capacity to meet customer demand. These projects are primarily driven by customer growth and system reliability considerations. Failure to implement reinforcement projects in a timely manner could lead to a potential inability to support increasing demands of existing customers and the addition of future customers.</p> <p>•Project Purpose/Need: The Long-Range Plan (LRP) load growth is on the Northwest of the district station RS21221A, King and Creditview District. Because of its collateral impact , the pressures at Mill St. are degraded to below minimum system pressure (MSP) due to less NPS 2 PE main capacity and distance from the NPS 4 PE main source.</p> <p>•Pressure Issue/Concern: The minimum system pressure is 10 PSI and was forecasted to be infeasible by 2021. Customer growth issue/concern: In 2017, there are 352 customers on this network. Without reinforcement, forecasted 26 customers (2018-2028) may not be able to be added.</p> <p>•Risk if Not Completed: Per model results, pressures on Mill St. will be below the MSP, if the NPS 4 PE main is not installed.</p> <p>•Project Benefits: Installing an NPS 4 PE main on Mill St. will mitigate the deteriorating pressures with the projected yearly load growth on the Northwest of the district station RS21221A, King and Creditview District comes in.</p> <p>Assets (preferred option):</p> <p>•Phase 1 Year 2021 - Install approximately 1,700 m of NPS 4 PE on Mill St. (Creditview Rd. to Mississauga Rd.) .</p> <p>•Phase 2 Year 2030 - Install approximately 1,300 m of NPS 4 PE on Mill St. (Mississauga Rd. to Caledon Trailway Path, then along Caledon Trailway Path to Heritage Rd.).</p> <p>Assets: Pipe</p> <p>Related Program: Not applicable</p>	Planned							
GTA West	20 - Mississauga	Growth	Pass		30500	NW 2103 Dundalk XHP Reinforcement SRP	2024	\$ 6,919,435	<p>NW 2103 Dundalk XHP Reinforcement SRP</p> <p>Issue/Concern/Opportunity: Inlet to Ida and Hanbury district station (Dundalk) has dropped below system minimum requirements. Gas volume and flow will be diminished with a potential to limit supply to existing and future customers. There is potential for loss of supply to existing customers during peak period demands.</p> <p>Assets: Pipe and district station</p> <p>Related Program: Not applicable</p>	Planned							
GTA West	20 - Mississauga	Growth	Pass		30501	NW 2103 Erin XHP Reinforcement SRP	2031	\$ 6,265,955	<p>NW 2103 Erin XHP Reinforcement SRP</p> <p>Issue/Concern/Opportunity: Install pipe to improve pressure for downstream station inlet - Network 2103 (i.e., 400 psig system) low pressures modeled at inlet to Erin Stn21100A (74.8psig) in 2030. After Phase 1 reinforcement, the inlet pressure will drop (82 psig) again in 2032.</p> <p>Assets: Pipe</p> <p>Related Program: Not applicable</p>	Planned							
GTA West	20 - Mississauga	Growth	Pass		30502	NW 2201 Proton Station IP Reinforcement SRP	2023	\$ 1,421,859	<p>NW 2201 Proton Station IP Reinforcement SRP</p> <p>Issue/Concern/Opportunity: Existing Intermediate Pressure (IP) system is experiencing very low pressures - 2022 ERX reading low of 5 psig - January 24. Piping system is currently below minimum system requirements and must be improved prior to adding more customers.</p> <p>Assets: Pipe</p> <p>Related Program: Not applicable</p>	Planned							
GTA West	20 - Mississauga	Utilization	Pass		13544	MXGI Area 20*	2019	\$ 73,468,749	<p>Meters: Meters are used to determine the gas consumption input of customer billing. The replacement program for meters is mandated by Measurement Canada. The program includes: testing, repair, and replacement requirements of meters and instruments. All verified meters are approved by Measurement Canada with an issuance of a certificate which identifies that the meter complies with Electricity and Gas Specification S-EG-02. The Company must ensure all measurement devices remain in compliance for annual audits by Measurement Canada. Measurement Canada specifies tolerances under which the meter must operate in the field. The Company must demonstrate that all aspects of its meter sampling, maintenance, and replacement comply with these criteria in order to be accredited by Measurement Canada to be an "Authorized Service Provider" and adhere to Measurement Canada's accreditation standard S-A-01. Meters may also require exchange for issues such as: damages, leaks, customer billing issues. Regulation: Regulators are the last line of defense for over-pressure to the customer. The condition of regulation systems is determined by regulator performance, corrosion of piping and regulators, and adherence to installation specifications. Failure of the regulation system can cause pressured gas to enter the premise, resulting in failure of gas equipment, loss of containment, and potentially fire or explosion.</p>	Complete	Fail	See investment description, IRPAs not applicable					
GTA West	50 - Barrie	Distribution Pipe	Fail	Dollar threshold	4670	Anode Blanket - Area 50*	2020	\$ 755,380									
GTA West	50 - Barrie	Distribution Pipe	Fail	Dollar threshold	13608	Service Relay Blanket - Area 50*	2020	\$ 8,482,187									
GTA West	50 - Barrie	Distribution Pipe	Fail	Dollar threshold	30083	Collier St - Area 50 - 1216	2032	\$ 1,119,847									
GTA West	50 - Barrie	Distribution Pipe	Fail	Dollar threshold	30087	Main St - Area 50 - 1223	2031	\$ 1,624,861									
GTA West	50 - Barrie	Distribution Pipe	Fail	Dollar threshold	30099	000071, NRP - Wellington D2 - 1651	2027	\$ 714,661									
GTA West	50 - Barrie	Distribution Pipe	Fail	Dollar threshold	30102	000724, NRP - HNS Grove B1 - 1605	2032	\$ 1,561,556									
GTA West	50 - Barrie	Distribution Pipe	Fail	Dollar threshold	30104	Pr#57, NRP - Collins Street - Collingwood - 1614	2027	\$ 590,028									
GTA West	50 - Barrie	Distribution Pipe	Fail	Dollar threshold	30108	Pr#62, NRP - Cameron Street - Collingwood - 1616	2029	\$ 685,339									
GTA West	50 - Barrie	Distribution Pipe	Fail	Dollar threshold	736572	Shallow Main - High Street from Dunlop to Park St	2023	\$ 104,741									
GTA West	50 - Barrie	Distribution Pipe	Fail	Emergent Safety	4664	Replacement Blanket - Area 50		\$ 1,135,353									
GTA West	50 - Barrie	Distribution Pipe	Pass		4765	AMP Fitting Replacement - Area 50*	2020	\$ 13,407,313	<p>AMP Fittings are a below grade transition fittings. The inserted portion of copper tubing can fail due to internal corrosion. In these cases leaks develop immediately downstream of the AMP Fitting.</p>	Complete	Fail	See investment description, IRPAs not applicable					
GTA West	50 - Barrie	Distribution Pipe	Pass		30085	Ferris Ln - Area 50 - 1201	2030	\$ 2,848,979	<p>Ferris Ln. - Area 50 - 1201</p> <p>Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.</p>	Planned							
GTA West	50 - Barrie	Distribution Pipe	Pass		30086	Jeffrey St - Area 50 - 1199	2031	\$ 2,211,627	<p>Jeffrey St. - Area 50 - 1199</p> <p>Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.</p>	Planned							

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GTA West	50 - Barrie	Distribution Stations	Pass		7756	RUGBY GATE	2025	\$ 3,191,800	<p>Rugby Gate Station is located on EGI-owned property of approximately 1,350 m2 fenced compound in the Township of Oro-Medonte, Ontario, approximately 7 km from Orillia, within a rural area. This station accepts natural gas from TC Energy and provides supply to an XHP network, through components within the Measurement system, Pressure Control system, Heating system, Odourant system, and Telemetry system. This station supplies natural gas to approximately 20,000 customers in the Coldwater, Midland area. The following issues have been identified at this station:</p> <p>Measurement: The current system does not provide measurement of the individual outlet supplies. Visibility to each outlet supply provides greater redundancy to the existing measurement and improved response capabilities.</p> <p>Valve & Piping: The existing piping within this station have been assessed to be in poor corrosion condition with identified degradation of the piping.</p> <p>HEATING: the existing boilers at this site are 16 years old, they have had 5 trouble call/failures over the past year including failures of the motors and pumps, burner lock-outs and exchanger failures. Due to recent and upcoming customer growth in the Barrie area, the existing Heating system will not be capable of supplying the heating requirements to meet the demand.</p> <p>Odourization: The Odourant system was installed in 2003. The current configuration of the Odourant system does not ensure adequate containment of the odourant product in the event of a leak and does not meet the current engineering standards and approvals.</p> <p>Telemetry & Electrical: The existing Electrical system does not meet current EGI electrical installation standards. This poses a potential electrical hazard and faulty wiring may result in lost communications.</p> <p>Compliance: The existing Boiler building is located within a hazardous area and will have to be relocated.</p>	Planned							
GTA West	50 - Barrie	Distribution Stations	Pass		7758	THORNTON GATE	2024	\$ 4,656,346	<p>Pipe, Valves & Others: Minor station piping is required for this project scope. The existing Piping and Valve system is in good shape. Due to the reconfiguration for the Heating system, minor station piping may be required to align the new equipment.</p> <p>Issue/Concern:</p> <p>Heating System: Updated heating is required at this station. A new heat exchanger is required including the associated piping for the glycol inlet and outlet to the heating element. New boilers can fit within the limits of the existing building. New modulating boilers are required.</p> <p>Pressure Control: New regulation is required to various flow ranges. New Becker regulators and two runs are required. One monitor and one operator is needed for two runs. This will involve new spools for both runs at a minimum.</p> <p>Odourant System: No changes are required.</p> <p>Telemetry/Electrical: New Control Wave Micro unit and associated connections are required. One new pressure transmitter and one new temperature transmitter are to be accounted for.</p> <p>Measurement: Annubar is sized correct. There is no requirement for replacement.</p> <p>Building: A new Remote Terminal Unit (RTU) building is required (concrete pre-cast building). The existing RTU building is to be removed.</p> <p>Compliance/Civil: Site grading will be required as well as new security fencing (galvanized) including new swing gate and crash bar access.</p> <p>Scope:</p> <p>Heating System: Updated heating is required at this station. New Heat Exchanger is required including the associated piping for the glycol inlet and outlet to heating element. New boilers can fit within the limits of the existing building. New modulating boilers are required.</p> <p>Pressure Control: New Regulation required to various flow ranges. New Becker regulators are 2 Run's are required. 1 Monitor and 1 operator is needed for 2 runs. This will involve new spools for both runs at a minimum.</p> <p>Odorant System: No changes required</p> <p>Telemetry/Electrical: New Control Wave Micro unit required and associated connections. Account for 1 new pressure transmitter and 1 new temperature transmitter.</p> <p>Measurement: Annubar is sized correct. No requirement for replacement.</p>	Planned							
GTA West	50 - Barrie	Growth	Pass		3753	Area 50 - Commercial - New Construction*		\$ 11,233,172	<p>Issue/Concern: Commercial New Construction refers to a customer intending to run a commercial business in a newly-constructed building and intending to using natural gas to meet energy needs</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Planned							

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GTA West	50 - Barrie	Growth	Pass		3756	Area 50 - Residential - New Construction*		\$ 89,321,709	Issue/Concern: Residential New Construction refers to a new residential construction development of detached single homes constructed by the builder for domestic purposes. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Planned							
GTA West	50 - Barrie	Growth	Pass		3757	Area 50 - Residential - Replacement*		\$ 61,102,549	Issue/Concern: Residential Replacement refers to a residential replacement customer using a fuel other than natural gas for domestic purposes and is converting to natural gas. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Planned							
GTA West	50 - Barrie	Growth	Pass		30503	NW 5346 Midhurst Reinforcement SRP	2024	\$ 1,334,348	NW 5346 Midhurst Reinforcement SRP Issue/Concern/Opportunity: Total of 1,300 m NPS 4 is required to increase security of supply for Midhurst, and maintain 140 kPa as Minimum System Pressure in this Maximum Operating Pressure (MOP) 345 kPa system. Assets: Pipe Related Program: Not applicable	Planned							
GTA West	50 - Barrie	Growth	Pass		30504	NW 5446 Hwy 26 and Keith Reinforcement SRP	2024	\$ 750,550	NW 5446 Hwy 26 and Keith Reinforcement SRP Issue/Concern/Opportunity: A new station and total 420 m NPS 4 are required to increase security of supply for Intermediate Pressure (IP) NW5446/5372. Existing station #3362255 cannot maintain the system health and a damage occurred on November 1, 2021. Assets: Pipe and district station Related Program: Not applicable	Planned							
GTA West	50 - Barrie	Growth	Pass		30505	NW 5422 Robins Point Rd. Reinforcement SRP	2024	\$ 717,957	NW 5422 Robins Point Rd. Reinforcement SRP Issue/Concern/Opportunity: A total of 800 m NPS 2 is required to increase security of supply for Victoria Harbour, and maintain 140 kPa as minimum system pressure in this Maximum Operating Pressure (MOP) 310 kPa system. In January 2022, 13 psig was recorded as low pressure in cold snap. Assets: Pipe Related Program: Not applicable	Planned							
GTA West	50 - Barrie	Growth	Pass		500705	NW 5301 Barrie - Collingwood Pressure Increase SRP	2022	\$ 1,496,294	Issue/Concern/Opportunity: Pressure issue is at the west tail end of network 5301. The long-range planning forecast shows by 2024 that the pressure will drop below 100 psig. Recently, a few customer load addition requests have been denied based on a diminished pressure and capacity constraint. Currently, the Maximum Operating Pressure in Network 5301 is 400 psig and this pressure elevation is looking to increase it to 500 psig. •With this pressure elevation, current new customers can be accommodated quickly. •With this pressure elevation, County Rd. 9 reinforcement can be deferred to 10 years later. •Preparation for next steps can happen to harmonize Barrie to Collingwood line with Rugby XHP system, by pressure increase on Rugby Gate Station, from 480 psig to 500 psig and removing Rugby Kicker Station. •By harmonizing these two systems, Penetanguishine Reinforcement project (\$15.2M – BC#7723) can be deferred to 10 years later. Assets: All pipe and stations on Network 5301 will be assessed if any reinforcements need to be made. Related Program: Not applicable.	Planned							

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GTA West	50 - Barrie	Utilization	Pass		13547	MXGI Area 50*	2019	\$ 16,833,109	Meters: Meters are used to determine the gas consumption input of customer billing. The replacement program for meters is mandated by Measurement Canada. The program includes: testing, repair, and replacement requirements of meters and instruments. All verified meters are approved by Measurement Canada with an issuance of a certificate which identifies that the meter complies with Electricity and Gas Specification S-EG-02. The Company must ensure all measurement devices remain in compliance for annual audits by Measurement Canada. Measurement Canada specifies tolerances under which the meter must operate in the field. The Company must demonstrate that all aspects of its meter sampling, maintenance, and replacement comply with these criteria in order to be accredited by Measurement Canada to be an "Authorized Service Provider" and adhere to Measurement Canada's accreditation standard S-A-01. Meters may also require exchange for issues such as: damages, leaks, customer billing issues. Regulation: Regulators are the last line of defense for over-pressure to the customer. The condition of regulation systems is determined by regulator performance, corrosion of piping and regulators, and adherence to installation specifications. Failure of the regulation system can cause pressured gas to enter the premise, resulting in failure of gas equipment, loss of containment, and potentially fire or explosion.	Complete	Fail	See investment description, IRPAs not applicable					
GTA West	Div_17 - Halton	Distribution Pipe	Fail	Dollar threshold	48454	HALT: Dist-Repl-Contr-Mains Leakage*	2019	\$ 1,377,825									
GTA West	Div_17 - Halton	Distribution Pipe	Fail	Dollar threshold	48455	HALT: Dist-Repl-Contr-Services*	2020	\$ 10,347,400									
GTA West	Div_17 - Halton	Distribution Pipe	Fail	Dollar threshold	503061	HALT: Harrop drive, Milton, BU Replacement	2024	\$ 710,529									
GTA West	Div_17 - Halton	Distribution Pipe	Pass		48453	HALT: Dist-Repl-Contr-Mains Municipal*	2020	\$ 38,392,868	General: Projects in the relocation category are capital expenditures required to replace or relocate segments of pipeline in order to accommodate municipal infrastructure work. The cost sharing for this work is managed through the Franchise Agreements established with municipalities. A consultative approach is used between the municipality and EGI to avoid conflicts with municipal infrastructure early in the planning stage. If a conflict is unavoidable, pipeline assets are typically relocated or replaced.	Planned							
GTA West	Div_17 - Halton	Distribution Pipe	Pass		503196	HALT: Anodes*	2020	\$ 5,858,459	General: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within EGI's system. These installations and replacements are based on the internal Standard Operating Practice established to maintain the appropriate level of cathodic protection on steel pipeline assets.	Complete	Fail	See investment description, IRPAs not applicable					
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	101081	HALT-Winston Churchill & 10 Side Rd	2025	\$ 645,725									
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	101085	HALT-Lynden Gate Stn	2025	\$ 645,725									
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	101088	HALT-Third Line and QEW Vault Station	2025	\$ 645,725									
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	101089	HALT-Milton TBS	2025	\$ 1,291,450									
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	101096	HALT - York and Broadway	2028	\$ 688,087									
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	101099	HALT - Dundas and Meadowridge	2025	\$ 516,580									
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	101125	HALT - Centennial and Guelph Line Vault Station	2023	\$ 622,765									
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	735035	HALT: Ninth/Britannia, Rebuild	2024	\$ 640,809									
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	735039	HALT: Ford and Royal Windsor, Maintenance	2025	\$ 516,580									
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	735049	HALT: EC Drury School, Rebuild	2030	\$ 70,737									
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	735052	HALT: Saputo, rebuild	2026	\$ 260,645									
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	735055	HALT: Morgan Thermal Ceramics, Maintenance	2030	\$ 70,737									
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	735066	HALT: Affinia Canada Corp, Rebuild	2032	\$ 271,598									
GTA West	Div_17 - Halton	Distribution Stations	Fail	Dollar threshold	735067	HALT: Milton Hydro Dist Inc, Rebuild	2030	\$ 282,950									
GTA West	Div_17 - Halton	Distribution Stations	Pass		735054	HALT: Burlington Gate, boiler	2028	\$ 2,752,350	Issue/Concern/Opportunity: VALVE & PIPING: Piping is experiencing corrosion and will be evaluated by FIMP closer to the proposed project date. FIMP will assess the existing valves for any issues in performance and operation. FILTRATION: N/A HEATING: the existing boilers at this site have reached end of life based on condition review and performance. The building is in disrepair and will be replaced in this investment. This investment aligns with the obsolete heating system strategy that targets stations with heating equipment that have reached end of life, with a focus on systems where there is a risk of a glycol spill. Natural gas heating equipment is used in many System and Customer Stations to help mitigate failure of equipment due to the freezing of liquids in the gas stream and moisture surrounding buried piping. Over many years of operation, a variety of heating systems have been used, resulting in varying equipment age and ultimately, equipment obsolescence. This work will maintain system reliability, ensure operating costs for heating systems are minimized and reduce the potential for glycol spills, including providing the appropriate containment systems to minimize the impacts of an event. Loss of the heating system function could result in two scenarios, (1) frost heave or (2) pressure control failure due to the freezing of station components. Frost heave occurs when the gas is cooled due to the pressure reduction and causes an upward swelling of soil around public or private property near the gas main. Freezing of station components such as creating large ice buildup around valves can prevent operation if gas isolation is required. This could result in the loss of pressure control and potentially lead to an overpressure or underpressure situation. The financial impact includes commodity loss, service disruptions, increased network leak surveys and system checks, repairs or replacement of company-owned property, or damages caused to public, commercial or industrial property. Inoperable systems will lead to a failure to maintain operational supply to customers. PRESSURE CONTROL: Obsolete design will be replaced in this investment. ODOURIZATION: Current system is in working order. TELEMETRY & ELECTRICAL: the telemetry and electrical systems do not meet current EGI standards, do not contain backup power supply in the event of powerloss, and are approaching end of useful life. MEASUREMENT . COMPLIANCE & OTHER Eng: will be assessed closer to project date. Signage and site assess (fencing/egress) to be	Planned							
GTA West	Div_17 - Halton	Growth	Pass		48452	HALT: Company Program - New Business - Scattered Mains - Contractor*	2020	\$ 37,840,249	Scattered Mains				Planned				
GTA West	Div_17 - Halton	Growth	Pass		500422	HALT: Company Program - Customer Connections*		\$ 40,491,554	Hamilton Customer Connections Program Items				Planned				
GTA West	Div_17 - Halton	Growth	Pass		503058	SRP_GTA West_Oakville_18Y-109RSTN_Rebuild	2023	\$ 1,307,807	Growth in the Old Bronte/Khalsa gate area of Oakville requires a new station to be built. This is a placeholder for the station, land and installation cost.				Planned				
GTA West	Div_17 - Halton	Growth	Pass		735034	SRP_GTA West_Lowville_18X-101STN_Rebuild	2024	\$ 897,133	Issue/Concern/Opportunity: Single feed to Campbellville, no filter, requires operator monitor, heater undersized, and no filtration. The scope is to build a monitor-operator system, upgrade regulation, install Remote Terminal Unit (RTU) and replace heater.				Planned				
GTA West	Div_17 - Halton	Utilization	Pass		48464	HALT: Meter & Regulator Inst Repl-Contractor	2020	\$ 33,814,150	Meter & Reg Install- Replacement	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Dollar threshold	1180	Integrity Capital Tools Program*		\$ 509,611									
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Dollar threshold	1905	2026 Integrity Program*		\$ 387,435									
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Dollar threshold	49651	Mattawa Bridge - North Bay 18	2023	\$ 952,831									
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Dollar threshold	100091	Corrosion Program Rectifier Groundbed*	2030	\$ 4,145,202									
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	1278	2023 Integrity Dig Program*	2023	\$ 13,514,004									Within 3 years, supply side not applicable
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	1287	2024 Integrity Dig Program*	2024	\$ 10,989,876									Within 3 years, supply side not applicable

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Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	1291	2025 Integrity Retrofit Program*	2025	\$ 3,874,351				Within 3 years, supply side not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	1294	2025 Integrity Dig Program*	2025	\$ 8,136,136				Within 3 years, supply side not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	102450	2023 Class Location Replacement Program*	2023	\$ 1,245,530				Within 3 years, supply side not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	102451	2024 Class Location Replacement Program*	2024	\$ 2,563,237				Within 3 years, supply side not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	102452	2025 Class Location Replacement Program*	2025	\$ 2,582,900				Within 3 years, supply side not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Fail	Timing	736419	2023 DP Depth of Cover Mitigation Program*	2023	\$ 7,473,182				Within 3 years, supply side not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		1276	2023 Integrity Retrofit Program*		\$ 3,736,591	Project Specific: Integrity Retrofit program, supporting refinement of pipeline risk profile. The purpose of this program is to gain a more complete level of pipeline risk by making additional pipelines accessible for Inline Inspection. Specific pipelines for retrofit will be identified 1-2 years prior to year of construction. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		1284	2024 Integrity Retrofit Program*		\$ 3,844,855	Project Specific: Integrity Retrofit program, supporting refinement of pipeline risk profile. The purpose of this program is to gain a more complete level of pipeline risk by making additional pipelines accessible for Inline Inspection. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		49935	Depth of Cover Mitigation Program*	2028	\$ 19,612,549	General: In compliance with the TSSA Code Adoption Document, EGI has an annual depth of cover survey program for all 30 per cent SMYS pipelines. These surveys may identify locations where remediation is required. The current cycle of depth of cover surveys will be completed in 2023 at which time a prioritized list of capital replacements will be created to plan for any identified required remediation.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		49938	MOP Verification Replacement Program*	2029	\$ 51,256,031	Maximum Operating Pressure (MOP) verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of pipelines that are greater than 30 percent SMYS. While this is not currently mandated by code in Canada, it is required in the United States and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 percent SMYS, MOP verification will continue to be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey: while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102453	2026 Class Location Replacement Program*	2034	\$ 6,516,114	General: Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102454	2027 Class Location Replacement Program*	2035	\$ 6,938,715	General: Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102455	2028 Class Location Replacement Program*	2036	\$ 6,880,875	General: Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102456	2029 Class Location Replacement Program*	2037	\$ 6,831,606	General: Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102457	2030 Class Location Replacement Program*	2038	\$ 7,073,747	General: Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102744	2026 Integrity Dig Program*		\$ 10,145,589	Forecast: not provided for 2026-2030 at this time, using average of 2020-2025 as placeholder General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					

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Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102746	2027 Integrity Dig Program*		\$ 10,803,579	Forecast: not provided for 2026-2030 at this time, using average of 2020-2025 as placeholder General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102747	2028 Integrity Dig Program*		\$ 10,713,522	Forecast: not provided for 2026-2030 at this time, using average of 2020-2025 as placeholder General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102748	2029 Integrity Dig Program*		\$ 10,636,811	Forecast: not provided for 2026-2030 at this time, using average of 2020-2025 as placeholder General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102750	2030 Integrity Dig Program*		\$ 11,013,824	Forecast: not provided for 2026-2032 at this time, using average of 2020-2025 as placeholder General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102751	2026 Integrity Retrofit Program*		\$ 4,300,635	Project Specific: Forecast note provided for 2026-2030, using average of 2023-2025 as placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102752	2027 Integrity Retrofit Program*		\$ 4,579,552	Project Specific: Forecast note provided for 2026-2030, using average of 2023-2025 as placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102753	2028 Integrity Retrofit Program*		\$ 4,541,377	Project Specific: Forecast note provided for 2026-2030, using average of 2023-2025 as placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102754	2029 Integrity Retrofit Program*		\$ 4,508,860	Project Specific: Forecast note provided for 2026-2030, using average of 2023-2025 as placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		102755	2030 Integrity Retrofit Program*		\$ 4,668,673	Project Specific: Forecast note provided for 2026-2032, using average of 2023-2025 as placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		503431	Bridge Crossing Painting Program*		\$ 6,465,631	Issue/Concern/Opportunity: Bridge crossing inspection results in different levels of action which can include replacement, recoating, or hanger repair/replacement work. This program is for recoating work and hanger repair. Justification: The integrated Corrosion Operating Standard ST-17-B13A-DDA9 was released 2020-11-25 and requires the following surveys: Annual visual, 5 year detailed. The standard outlines the following time frames: Bridge crossing – replace Per Engineering assessment per project plan; Bridge crossing – replace expansion joint / Ins flange within 24 months; Bridge crossing / paint pipe / repair hangers / replace casing end seal within 12 months. Assets: Related Investments:	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		733983	2031 Class Location Replacement Program*	2039	\$ 6,996,393	General: Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		733984	2032 Class Location Replacement Program*	2040	\$ 6,789,956	General: Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to the current standard to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Pipe	Pass		733990	2031 Integrity Dig Program*		\$ 10,893,384	Forecast: not provided for 2026-2032 at this time, using average of 2020-2025 as placeholder General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					

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Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Dollar threshold	735238	2028 Turbine Meter Automatic Oilers Upgrade	2028	\$ 126,147									
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Dollar threshold	735240	2029 Turbine Meter Automatic Oilers Upgrade	2029	\$ 127,748									
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Dollar threshold	735241	2030 Turbine Meter Automatic Oilers Upgrade	2030	\$ 134,922									
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Dollar threshold	735243	2031 Turbine Meter Automatic Oilers Upgrade	2031	\$ 136,116									
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Dollar threshold	735244	2032 Turbine Meter Automatic Oilers Upgrade	2032	\$ 134,741									
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Dollar threshold	735245	2027 Fire Suppression and Auto Transfer Generator	2027	\$ 693,871									
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Timing	102668	2024 Odourant Upgrades - MOIS Upgrades*	2024	\$ 1,640,471			Within 3 years, supply side not applicable						
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Timing	102669	2025 Odourant Upgrades - MOIS Upgrades*	2025	\$ 1,692,575			Within 3 years, supply side not applicable						
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Timing	102726	2023 RTU Upgrade Program*	2023	\$ 1,619,189			Within 3 years, supply side not applicable						
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Timing	102727	2024 RTU Upgrade Program*	2024	\$ 1,537,942			Within 3 years, supply side not applicable						
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Timing	102728	2025 RTU Upgrade Program*	2025	\$ 1,571,211			Within 3 years, supply side not applicable						
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Timing	501373	2023 Fire Suppression and Auto Transfer Generator	2023	\$ 2,535,900			Within 3 years, supply side not applicable						
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Timing	501374	2024 Fire Suppression and Auto Transfer Generator*	2024	\$ 2,509,409			Within 3 years, supply side not applicable						
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Timing	501375	2025 Fire Suppression and Auto Transfer Generator*	2025	\$ 2,582,900			Within 3 years, supply side not applicable						
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Fail	Emergent Safety	48743	Distribution Operations Station Maintenance Blankets*		\$ 21,900,914									
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		48667	CNG Stations - Project #4	2023	\$ 3,113,826	Traditionally, fleet operators fuel their vehicles with gasoline or diesel. EGI promotes the use of natural gas to these customers as an alternate fuel source to provide a lower-cost and lower-emission fueling solution for vehicles such as garbage trucks, light duty vehicles, and transit buses. Business Development is responsible for the installation, maintenance, and the safe and continued operation of NGT stations assets for these customers. NGT stations differ in operation from distribution system stations as NGT stations use and store compressed natural gas (CNG) on site at up to 4000psi. EGD has two general categories for NGT station types: Large, Mobile and Utility NGT stations and Small NGT stations (also referred to as VRAs). Large, Mobile and Utility NGT stations are similar in operation and will be evaluated for condition in the same manner.	Complete	Fail	See investment description, IRPAs not applicable for CNG					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		48744	Distribution Operations Station Painting*		\$ 26,848,160	Issue/concern: This is a centrally managed program in the Union rate zone to apply high performance paint to stations where existing paint has begun to fail or wear off of the facilities on which it has been applied. The Station Painting Program is a significant corrosion mitigation practice. The frequency and criteria for high performance painting at station sites is specifically prescribed in the Corrosion Control Standard Operating Practice (SOP) and is its documented and committed practice on its compliance with the applicable codes for corrosion control on above-grade station assets. This work will improve compliance and ensure the safety and reliability of EGI assets by reducing the risk of leaks and piping and/or equipment failure due to significant corrosion. Assets: Related Programs (enter N/A if not applicable):	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		501127	FIMP Station Assessment Program*		\$ 46,581,557	Issue/Concern/Opportunity: FIMP assesses stations against threats that are listed in the EGI Hazard and Risk Common Register Risk Register to identify susceptibility to identified risks and determine mitigation strategies for individual sites, ensuring that risk is managed to the lowest practical levels. The strategy for the FIMP program is to perform inspections using with approved technologies used at EGI or other utilities for similar asset types. These inspections will assess the condition of existing station assets and will detect any concerns or issues to help determine the likelihood and consequence of failure of individual components and evaluate the risk. This strategy will allow for targeted replacement and will extend the useful life of assets by identifying condition issues prior to the occurrence of an incident. When analysis indicates that ongoing repair costs are likely to exceed capital requirements to replace the asset, the mitigation strategy is evaluated to ensure that risk is managed to the lowest practicable level. Assets: FIMP DS Stations Related Investments: N/A	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		501672	2026 Fire Suppression and Auto Transfer Generator*	2026	\$ 2,841,026	Issue/Concern/Opportunity: 75 buildings that have Odourant inside need fire suppression and 59 need auto transfer generators - as of now 16 have auto transfer generators, this is due to code compliance with building code and the fire code. Justification: To install fire suppression systems inside 75 Odourant buildings in order to be compliant with the fire code and 59 auto transfer generators which need to be installed for the emergency lighting based on the building code, maintaining 30 minutes of light to meet code requirements. Additional compliance requirements to be accordance with the LEG Building Standard to install with methane and CO gas detectors in the boiler building as per page 26. The building standard is being integrated and the above requirement will still be considered requiring the boiler buildings to be equipped through this installation program. Buildings with Gas Burning assets require CO and CH4 Detectors, buildings with gas require CO detectors. This work is in accordance with Code Sections: Ontario Building Code Sections: 9.10.1.3, 3.2.2.71, 3.2.4.1, 3.2.9.1, 3.2.9.2 to 3.2.9.7, 3.3.1.5.(1) and 3.3.5.2 Ontario Fire Code Sections: 2.8, 4.1.5.6, 4.2.7.7**, 4.3.12, 4.3.13.1, 4.3.13.4, 6.2, 6.8.1.1** Assets: 75 LUG Stations Related Investments:	Complete	Fail	See investment description, IRPAs not applicable					

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		733885	Operations Services Central IRR Program	2022	\$ 23,657,218	Issue/Concern/Opportunity: GDS has performed a survey to identify inside regulation at Customer Stations where the risk assessment identified the hazard of leaks from higher operating pressure piping will have a larger leak rate than pipes operating at lower pressures (for same hole size). Indoor regulators cause higher operating pressure pipe indoors - potential leaks may be able to reach LFL faster. Depending on leak rate, building ventilation, and room size, it is possible for indoor gas leak to build up to LFL leading to possible ignition resulting in an explosion. GDS is executing a program to relocate indoor regulators into an external regulator room (ERR) or relocate outdoors if possible. Some locations may not be immediately possible to relocate due to external factors not under the company's control, however over the long-term relocation may be possible. Similar treatment plans were previously considered and initiated in both legacy parts of the business. Review of Inside Regulator Rooms (IRR) in the LUG system and remediation as required Justification: We no longer allow IRRs as part of our standard designs as they pose various operational risks. Assets: Assets span the entire LUG system, review was done for all areas	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735115	LUG DS - Gate, Feeder & A Stations Program*	2031	\$ 146,545,887	Related Investments: Issue/Concern: This Investment was created to hold program dollars for future projects that are not yet identified and/or developed for years later in the capital plan. Assets:	Planned							
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735204	2026 RTU Upgrade Program*	2026	\$ 1,961,237	Related Programs (enter N/A if not applicable): Issue/Concern: The forecast in this category includes projects to replace all the existing remote terminal units and replace with current technology, the ControlWave Micro introduced in 2003. Many current Remote Telemetry Units (RTUs) are 3330/3310 which have been obsolete since 2009 and are no longer supported by the manufacturer. This is a standardized approach that ensures enhanced control and current communication protocols for SCADA Gas Control, odourization, measurement data collection and volume nominations. Starting in 2024, the SCADA RTU lifecycle project will take over as the current technology will be 21 years old. The benefit of these projects will be smooth migration of in-service RTU fleet to current technology using a standardized approach. Currently, these legacy RTUs are at end-of-life and deferring this work may increase failure rate drastically due to the "wear-out" effect. Asset: System Station Assets	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735205	2027 RTU Upgrade Program*	2027	\$ 2,192,853	Related Program: N/A Issue/Concern: The forecast in this category includes projects to replace all the existing remote terminal units and replace with current technology, the ControlWave Micro introduced in 2003. Many current Remote Telemetry Units (RTUs) are 3330/3310 which have been obsolete since 2009 and are no longer supported by the manufacturer. This is a standardized approach that ensures enhanced control and current communication protocols for SCADA Gas Control, odourization, measurement data collection and volume nominations. Starting in 2024, the SCADA RTU lifecycle project will take over as the current technology will be 21 years old. The benefit of these projects will be smooth migration of in-service RTU fleet to current technology using a standardized approach. Currently, these legacy RTUs are at end-of-life and deferring this work may increase failure rate drastically due to the "wear-out" effect. Asset: System Station Assets	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735206	2028 RTU Upgrade Program*	2028	\$ 2,283,303	Related Program: N/A Issue/Concern: The forecast in this category includes projects to replace all the existing remote terminal units and replace with current technology, the ControlWave Micro introduced in 2003. Many current Remote Telemetry Units (RTUs) are 3330/3310 which have been obsolete since 2009 and are no longer supported by the manufacturer. This is a standardized approach that ensures enhanced control and current communication protocols for SCADA Gas Control, odourization, measurement data collection and volume nominations. Starting in 2024, the SCADA RTU lifecycle project will take over as the current technology will be 21 years old. The benefit of these projects will be smooth migration of in-service RTU fleet to current technology using a standardized approach. Currently, these legacy RTUs are at end-of-life and deferring this work may increase failure rate drastically due to the "wear-out" effect. Asset: System Station Assets	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735207	2029 RTU Upgrade Program*	2029	\$ 2,380,301	Related Program: N/A Issue/Concern: The forecast in this category includes projects to replace all the existing remote terminal units and replace with current technology, the ControlWave Micro introduced in 2003. Many current Remote Telemetry Units (RTUs) are 3330/3310 which have been obsolete since 2009 and are no longer supported by the manufacturer. This is a standardized approach that ensures enhanced control and current communication protocols for SCADA Gas Control, odourization, measurement data collection and volume nominations. Starting in 2024, the SCADA RTU lifecycle project will take over as the current technology will be 21 years old. The benefit of these projects will be smooth migration of in-service RTU fleet to current technology using a standardized approach. Currently, these legacy RTUs are at end-of-life and deferring this work may increase failure rate drastically due to the "wear-out" effect. Asset: System Station Assets	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735208	2030 RTU Upgrade Program*	2030	\$ 2,587,903	Related Program: N/A Issue/Concern: The forecast in this category includes projects to replace all the existing remote terminal units and replace with current technology, the ControlWave Micro introduced in 2003. Many current Remote Telemetry Units (RTUs) are 3330/3310 which have been obsolete since 2009 and are no longer supported by the manufacturer. This is a standardized approach that ensures enhanced control and current communication protocols for SCADA Gas Control, odourization, measurement data collection and volume nominations. Starting in 2024, the SCADA RTU lifecycle project will take over as the current technology will be 21 years old. The benefit of these projects will be smooth migration of in-service RTU fleet to current technology using a standardized approach. Currently, these legacy RTUs are at end-of-life and deferring this work may increase failure rate drastically due to the "wear-out" effect. Asset: System Station Assets	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735209	2031 RTU Upgrade Program*	2031	\$ 2,687,583	Related Program: N/A Issue/Concern: The forecast in this category includes projects to replace all the existing remote terminal units and replace with current technology, the ControlWave Micro introduced in 2003. Many current Remote Telemetry Units (RTUs) are 3330/3310 which have been obsolete since 2009 and are no longer supported by the manufacturer. This is a standardized approach that ensures enhanced control and current communication protocols for SCADA Gas Control, odourization, measurement data collection and volume nominations. Starting in 2024, the SCADA RTU lifecycle project will take over as the current technology will be 21 years old. The benefit of these projects will be smooth migration of in-service RTU fleet to current technology using a standardized approach. Currently, these legacy RTUs are at end-of-life and deferring this work may increase failure rate drastically due to the "wear-out" effect. Asset: System Station Assets Related Program: N/A	Complete	Fail	See investment description, IRPAs not applicable					

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735210	2032 RTU Upgrade Program*	2032	\$ 2,738,698	Issue/Concern: The forecast in this category includes projects to replace all the existing remote terminal units and replace with current technology, the ControlWave Micro introduced in 2003. Many current Remote Telemetry Units (RTUs) are 3330/3310 which have been obsolete since 2009 and are no longer supported by the manufacturer. This is a standardized approach that ensures enhanced control and current communication protocols for SCADA Gas Control, odorization, measurement data collection and volume nominations. Starting in 2024, the SCADA RTU lifecycle project will take over as the current technology will be 21 years old. The benefit of these projects will be smooth migration of in-service RTU fleet to current technology using a standardized approach. Currently, these legacy RTUs are at end-of-life and deferring this work may increase failure rate drastically due to the "wear-out" effect. Asset: System Station Assets Related Program: N/A	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735211	2026 Odourant Upgrades - MOIS Upgrades*	2026	\$ 2,033,809	The expenditures in this portfolio include projects to upgrade odourant systems to ensure compliance to current codes, such as replacing old tanks and painting rusted containment pans and tank stands. Additionally, performance capability will be added by installing heat tracer lines, heated cabinets, improved tank valves and indoor regulator panels. This work will help to ensure safe, compliant and continuous odourization. This forecast will help mitigate the risk of tank rupture, frequent freeze off and nuisance odour calls.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735213	2027 Odourant Upgrades - MOIS Upgrades*	2027	\$ 2,165,712	The expenditures in this portfolio include projects to upgrade odourant systems to ensure compliance to current codes, such as replacing old tanks and painting rusted containment pans and tank stands. Additionally, performance capability will be added by installing heat tracer lines, heated cabinets, improved tank valves and indoor regulator panels. This work will help to ensure safe, compliant and continuous odourization. This forecast will help mitigate the risk of tank rupture, frequent freeze off and nuisance odour calls.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735214	2028 Odourant Upgrades - MOIS Upgrades*	2028	\$ 2,147,659	The expenditures in this portfolio include projects to upgrade odourant systems to ensure compliance to current codes, such as replacing old tanks and painting rusted containment pans and tank stands. Additionally, performance capability will be added by installing heat tracer lines, heated cabinets, improved tank valves and indoor regulator panels. This work will help to ensure safe, compliant and continuous odourization. This forecast will help mitigate the risk of tank rupture, frequent freeze off and nuisance odour calls.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735215	2029 Odourant Upgrades - MOIS Upgrades*	2029	\$ 2,132,281	The expenditures in this portfolio include projects to upgrade odourant systems to ensure compliance to current codes, such as replacing old tanks and painting rusted containment pans and tank stands. Additionally, performance capability will be added by installing heat tracer lines, heated cabinets, improved tank valves and indoor regulator panels. This work will help to ensure safe, compliant and continuous odourization. This forecast will help mitigate the risk of tank rupture, frequent freeze off and nuisance odour calls.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735216	2030 Odourant Upgrades - MOIS Upgrades*	2030	\$ 2,207,858	The expenditures in this portfolio include projects to upgrade odourant systems to ensure compliance to current codes, such as replacing old tanks and painting rusted containment pans and tank stands. Additionally, performance capability will be added by installing heat tracer lines, heated cabinets, improved tank valves and indoor regulator panels. This work will help to ensure safe, compliant and continuous odourization. This forecast will help mitigate the risk of tank rupture, frequent freeze off and nuisance odour calls.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735217	2031 Odourant Upgrades - MOIS Upgrades*	2031	\$ 2,183,714	The expenditures in this portfolio include projects to upgrade odourant systems to ensure compliance to current codes, such as replacing old tanks and painting rusted containment pans and tank stands. Additionally, performance capability will be added by installing heat tracer lines, heated cabinets, improved tank valves and indoor regulator panels. This work will help to ensure safe, compliant and continuous odourization. This forecast will help mitigate the risk of tank rupture, frequent freeze off and nuisance odour calls.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Distribution Stations	Pass		735218	2032 Odourant Upgrades - MOIS Upgrades*	2032	\$ 2,119,281	The expenditures in this portfolio include projects to upgrade odourant systems to ensure compliance to current codes, such as replacing old tanks and painting rusted containment pans and tank stands. Additionally, performance capability will be added by installing heat tracer lines, heated cabinets, improved tank valves and indoor regulator panels. This work will help to ensure safe, compliant and continuous odourization. This forecast will help mitigate the risk of tank rupture, frequent freeze off and nuisance odour calls.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Growth	Pass		49179	SRP_Southeast_Port Rowan_Lakeshore Rd_Reinforcement_NPS6_2000m_860kPa	2024	\$ 1,473,861	System Reinforcement - Replace existing 3-inch 860 Maximum Operating Pressure (MOP) line with 6-inch in Phase 1. Move forward from 2026 to 2024 per 2021 System Reinforcement Plan (SRP) refresh.	Planned							
Head Office Support	Div_54 - Head Office Support	Utilization	Fail	Dollar threshold	102816	2023 - LAB FACILITIES UPGRADE	2023	\$ 99,642									
Head Office Support	Div_54 - Head Office Support	Utilization	Fail	Dollar threshold	102817	2024 - LAB FACILITIES UPGRADE	2024	\$ 102,529									
Head Office Support	Div_54 - Head Office Support	Utilization	Fail	Dollar threshold	102818	2025 - LAB FACILITIES UPGRADE	2025	\$ 103,316									
Head Office Support	Div_54 - Head Office Support	Utilization	Fail	Dollar threshold	736034	Commercial / Industrial LPDMS*	2021	\$ 1,160,367									
Head Office Support	Div_54 - Head Office Support	Utilization	Pass		48500	SMC-Meter & Regulator Additions South*		\$ 41,354,891	Meter & Reg Install- New	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Utilization	Pass		48501	SMC_Meter & Regulator Replacements - South*	2020	\$ 183,636,762	Meter & Reg Install- Replacement	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Utilization	Pass		48679	SMC-Meter & Regulator Additions North*		\$ 11,327,082	Meter & Reg Install- New	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Utilization	Pass		48680	SMC_Meter & Regulator Replacements - North*	2020	\$ 48,473,262	Meter & Reg Install- Replacement	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Utilization	Pass		502199	Farm Tap Program (LUG)*	2021	\$ 3,093,332	The Farm Tap regulator purpose is to reduce pressure from XHP/HP to meet the design criteria for the downstream 2nd cut regulator. A malfunctioning Farm Tap regulator has the potential to create downstream hazards. A failure of the regulator set could potentially cause a higher than acceptable pressure entering the customer's premise. This over-pressure can result in downstream customer appliances failing, loss of containment inside the premise, fire, and explosion. The Farm Tap consists of the inlet/outlet riser, a regulator, and a relief. The condition of the Farm Tap population is largely unknown. As they are installed away from the premise and near the property line, they are exposed to more elements originating from the roadway. Their placement can also make them susceptible to third party damage from maintenance equipment and vehicles. Farm Taps have not been part of proactive inspection programs. They historically have not been included in MXGI regulator exchanges. 2021 DIMP survey for LUG - potential for some immediates	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Utilization	Pass		738584	SMC_Meter & Regulator Replacements - North*		\$ 14,218,452	Meter & Reg Install- Replacement	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Utilization	Pass		738583	SMC_Meter & Regulator Replacements - South*		\$ 53,923,496	Meter & Reg Install- Replacement	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Fail	Timing	102546	Class Location Replacement Program 2023 - S&T Assets*	2023	\$ 1,245,530									Within 3 years, supply side not applicable
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Fail	Timing	102552	Class Location Replacement Program 2024 - S&T Assets*	2024	\$ 2,643,338									Within 3 years, supply side not applicable
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Fail	Timing	102553	Class Location Replacement Program 2025 - S&T Assets*	2025	\$ 4,035,782									Within 3 years, supply side not applicable

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Pass		102554	Class Location Replacement Program 2026 - S&T Assets*	2034	\$ 5,457,245	General: Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Pass		102555	Class Location Replacement Program 2027 - S&T Assets*	2035	\$ 7,285,651	General: Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Pass		102556	Class Location Replacement Program 2028 - S&T Assets*	2036	\$ 7,224,918	General: Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Pass		102557	Class Location Replacement Program 2029 - S&T Assets*	2037	\$ 7,173,186	General: Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Pass		102558	Class Location Replacement Program 2030 - S&T Assets*	2038	\$ 7,427,434	General: Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Pass		733985	Class Location Replacement Program 2031 - S&T Assets*	2039	\$ 7,346,212	General: Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office Support	Div_54 - Head Office Support	Transmission Pipe & Underground Storage	Pass		733986	Class Location Replacement Program 2032 - S&T Assets*	2040	\$ 7,129,454	General: Annual Class Location surveys are required as per the Canadian Standards Association Z662 – Oil and Gas Pipeline Systems for pipelines greater than 30 per cent SMYS, unless previously designed, tested, operated, and maintained for a Class 4 location. Any changes in class location need to be assessed to determine if pipeline modifications are required. Urban development which occurs in close proximity to EGI's pipelines typically triggers class location changes. An annual budget is required for EGI's pipeline system in order to meet the current standard requirements. Remediation includes pressure testing, installation of valves, remediating depth of cover issues, and pipeline replacement. This work ensures EGI is compliant and fosters the safety of the public and EGI's pipeline system.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	00 - Head Office	Distribution Pipe	Pass		736833	TIMP Geohazard Mitigation (LUG)*		\$ 24,533,407	General: The Geohazard Mitigation program has been designed to comply with all applicable codes and standards. The program consists of the assessment and maintenance of the integrity of EGI's pipeline systems which may be impacted by geohazards. The assessment ensures asset's continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	00 - Head Office	Distribution Pipe	Pass		736835	TIMP Geohazard Mitigation (LEGD)*		\$ 6,133,885	General: The Geohazard Mitigation Program has been designed to comply with all applicable codes and standards. The program consists of the assessment and maintenance of the integrity of EGI's pipeline systems which may be impacted by geohazards. The assessment ensures asset's continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% SMYS.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	00 - Head Office	Distribution Pipe	Pass		736844	Independent Asset Integrity Review (IAIR) - (LUG)*		\$ 81,727,582	Dynamic Risk completed an independent review of TIMP to establish uncertainty levels in the fitness-for-service conclusions for all TIMP assets. This first phase of the project was completed last year. TIMP is currently developing plans to mitigate high and moderate uncertainties in the fitness-for-service conclusions by leveraging existing integrity activities and potentially introducing new ones.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	00 - Head Office	Distribution Pipe	Pass		736845	Independent Asset Integrity Review (IAIR) - (LEG)*		\$ 8,863,546	Dynamic Risk completed an independent review of TIMP to establish uncertainty levels in the fitness-for-service conclusions for all TIMP assets. This first phase of the project was completed last year. TIMP is currently developing plans to mitigate high and moderate uncertainties in the fitness-for-service conclusions by leveraging existing integrity activities and potentially introducing new ones.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	00 - Head Office	Distribution Stations	Fail	Dollar threshold	17404	NGV Rental VRA's - (2026-2032)	2028	\$ 1,346,723									
Head Office/All	00 - Head Office	Distribution Stations	Pass		2368	NGV Rental VRA's	2025	\$ 491,108	Issue/concern: Individual customers and arenas can achieve fuel cost savings, fuel handling savings, and reduced emission benefits by operating their cleaning machines, forklift trucks, and individual light-duty vehicles on natural gas versus propane or gasoline. This presents an opportunity to grow EGI's natural gas vehicle (NGV) rental refueling business and promotes the use of natural gas to customers as an alternate source for fueling cleaning machines, forklift trucks, and individual light-duty vehicles at a lower cost, reducing fuel handling cost with lower emissions. By providing NGV Vehicle Refueling Appliance (VRA) equipment to customers on a rental basis, EGI can achieve growth in the marketplace, while fully recovering costs. Assets: There are currently over 200 VRA customers that EGI is successfully servicing, including City of Toronto, City of Ottawa, other small city arenas and some private customers. Related Program (if applicable): Not applicable.	Planned							
Head Office/All	00 - Head Office	Distribution Stations	Pass		503415	Bellville Yard Station	2024	\$ 1,922,427	The Enbridge fleet continues to achieve fuel cost savings and reduced emission benefits by operating their light-duty vehicles on natural gas versus gasoline.	Planned							
Head Office/All	00 - Head Office	Transmission Pipe & Underground Storage	Pass		736880	Independent Asset Integrity Review (IAIR) - EGTP*		\$ 13,295,319	Dynamic Risk completed an independent review of TIMP to establish uncertainty levels in the fitness-for-service conclusions for all TIMP assets. This first phase of the project was completed last year. TIMP is currently developing plans to mitigate high and moderate uncertainties in the fitness-for-service conclusions by leveraging existing integrity activities and potentially introducing new ones.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	00 - Head Office	Transmission Pipe & Underground Storage	Pass		736881	Independent Asset Integrity Review (IAIR) - UGTP*		\$ 19,170,667	Dynamic Risk completed an independent review of TIMP to establish uncertainty levels in the fitness-for-service conclusions for all TIMP assets. This first phase of the project was completed last year. TIMP is currently developing plans to mitigate high and moderate uncertainties in the fitness-for-service conclusions by leveraging existing integrity activities and potentially introducing new ones.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Distribution Pipe	Fail	Dollar threshold	102428	Relocation Program - Transit*	2020	\$ (46,507,007)									
Head Office/All	01 - All	Distribution Pipe	Fail	Dollar threshold	102760	2025 Integrity Dig Program*		\$ 775,041									
Head Office/All	01 - All	Distribution Pipe	Fail	Timing	102759	2024 Integrity Dig Program*	2024	\$ 6,406,884				Within 3 years, supply side not applicable					

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered	
Head Office/All	01 - All	Distribution Pipe	Fail	Timing	736439	General Mains Replacement Blanket - All Regions*	2020	\$ 47,983,533				Within 3 years, supply side not applicable						
Head Office/All	01 - All	Distribution Pipe	Pass		6124	Depth of Cover Mitigation Program*		\$ 6,088,895	Mitigation of depth of cover sites on >30% SMYS lines that are out of compliance with CSA Z662 & TSSA requirements. Some of the known sites are discovered during the annual Depth of Cover Survey, while others are reported by company crews when performing maintenance work or by 3rd party. At this time the specific work scope of each year is not defined and this is a blanket program as a placeholder in the budget. The mitigation work will include the construction costs from sites identified and planned for the current year, as well as work on sites that are newly identified. Scope of work can vary from small remediation projects to add fill, concrete or bank stabilization, to short replacement of pipe.	Complete	Fail	See investment description, IRPAs not applicable						
Head Office/All	01 - All	Distribution Pipe	Pass		100225	Rectifier Program - All Areas*		\$ 3,674,496	Issue/Concern: This business case is created to group all Anode Blanket projects for all seven operations areas into one program business case to simplify the Risk Assessment process. Financial tracking will be done on the individual Blanket Anode project to provide financial reporting per area. Justification: The Corrosion Department conducts pipe to soil readings each year on our steel pipelines. When they identify a corrosion area which has fallen below our minimum specifications, they process an order for an anode installation which is completed. The capital request is for 12 months. Engineering has confirmed the Anode Installation as a compliance project. The Corrosion Prevention Program consists of the annual anode replacement to ensure the steel main system is receiving sufficient cathodic protection. The Program utilizes pipe-to-soil survey results to determine which steel main networks require additional or replacement anodes to improve the level of cathodic protection. In addition to active steel mains, the Corrosion Prevention Programs also cover the corrosion control on steel casings. Assets: Steel Mains Related Programs/Business Cases: N/A	Complete	Fail	See investment description, IRPAs not applicable						
Head Office/All	01 - All	Distribution Pipe	Pass		100444	Integrity Retrofit Program >30% SMYS*		\$ 21,792,827	General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable						
Head Office/All	01 - All	Distribution Pipe	Pass		102758	2023 Integrity Dig Program*		\$ 1,995,058	2023 forecast: 8 ILI digs estimated based on previous years inspection plan. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable						
Head Office/All	01 - All	Distribution Pipe	Pass		102761	2026 Integrity Dig Program*		\$ 3,661,501	Forecast: Forecast not provided for 2026-3030; average of 2020-2025 used as a placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable						
Head Office/All	01 - All	Distribution Pipe	Pass		102762	2027 Integrity Dig Program*		\$ 3,890,911	Forecast: Forecast not provided for 2026-3030; average of 2020-2025 used as a placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable						
Head Office/All	01 - All	Distribution Pipe	Pass		102763	2028 Integrity Dig Program*		\$ 3,857,753	Forecast: Forecast not provided for 2026-3030; average of 2020-2025 used as a placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable						
Head Office/All	01 - All	Distribution Pipe	Pass		102764	2029 Integrity Dig Program*		\$ 3,835,204	Forecast: Forecast not provided for 2026-2030; average of 2020-2025 used as a placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable						
Head Office/All	01 - All	Distribution Pipe	Pass		102765	2030 Integrity Dig Program*		\$ 3,950,198	Forecast: Forecast not provided for 2026- 2030; average of 2020-2025 used as a placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable						
Head Office/All	01 - All	Distribution Pipe	Pass		502013	Relocation Program - Engineering Construction* 2020	2020	\$ 22,737,340	General: Projects in the relocation category are capital expenditures required to replace or relocate segments of pipeline in order to accommodate municipal infrastructure work. The cost sharing for this work is managed through the Franchise Agreements established with municipalities. A consultative approach is used between the municipality and EGI to avoid conflicts with municipal infrastructure early in the planning stage. If a conflict is unavoidable, pipeline assets are typically relocated or replaced.	Planned								
Head Office/All	01 - All	Distribution Pipe	Pass		503432	Bridge Crossing Painting Program*		\$ 2,687,789	Issue/Concern/Opportunity: Bridge crossing inspection results in different levels of action which can include replacement, recoating, or hanger repair/replacement work. This program is for recoating work and hanger repair. Justification: The integrated Corrosion Operating Standard ST-17-B13A-DDA9 was released November 25, 2022 and requires the following surveys: Annual visual and 5-year detailed. The standard outlines the following time frames: •Bridge crossing – replace per Engineering assessment per project plan •Bridge crossing – replace expansion joint / Ins flange within 24 month •Bridge crossing – paint pipe / repair hangers / replace casing end seal within 12 months.	Complete	Fail	See investment description, IRPAs not applicable						
Head Office/All	01 - All	Distribution Pipe	Pass		733993	2031 Integrity Dig Program*		\$ 3,905,461	Forecast: Forecast not provided for 2026- 2030; average of 2020-2025 used as a placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable						

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Head Office/All	01 - All	Distribution Pipe	Pass		733994	2032 Integrity Dig Program*		\$ 3,792,072	Forecast: Forecast not provided for 2026- 2030; average of 2020-2025 used as a placeholder. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	9842	2023 Header stations rebuilds*	2023	\$ 1,152,146									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	9843	2024 Header stations rebuilds*	2024	\$ 1,183,992									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	9844	2023 Sales stations rebuilds*	2023	\$ 1,246,911									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	10300	2025 Header stations rebuilds*	2025	\$ 1,193,563									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	10301	2026 Header stations rebuilds*	2026	\$ 1,208,295									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	10303	2024 Sales stations rebuilds*	2024	\$ 1,281,377									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	10304	2025 Sales stations rebuilds*	2025	\$ 1,291,735									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	10361	2026 Sales stations rebuilds*	2026	\$ 1,307,679									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	10362	2027 Sales stations rebuilds*	2027	\$ 1,389,611									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	10541	2027 Header stations rebuilds*	2027	\$ 1,284,001									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	16432	2028 Header stations rebuilds*	2028	\$ 1,273,059									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	16433	2028 Sales stations rebuilds*	2028	\$ 1,377,769									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	101554	2029 Header stations rebuild*	2029	\$ 1,265,617									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	101555	2030 Header stations rebuilds*	2030	\$ 1,303,565									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	101558	2029 Sales stations rebuilds*	2029	\$ 1,369,716									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	101559	2030 Sales stations rebuilds*	2030	\$ 1,410,785									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	734297	2031 Sales stations rebuilds*	2031	\$ 1,394,807									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	734298	2032 Sales stations rebuilds*	2032	\$ 1,354,311									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	734299	2031 Header stations rebuilds*	2031	\$ 1,288,802									
Head Office/All	01 - All	Distribution Stations	Fail	Dollar threshold	734300	2032 Header stations rebuilds*	2032	\$ 1,251,384									
Head Office/All	01 - All	Distribution Stations	Fail	Timing	9845	2024 Telemetry*	2024	\$ 1,573,531				Within 3 years, supply side not applicable					
Head Office/All	01 - All	Distribution Stations	Fail	Timing	9846	2023 Telemetry*	2023	\$ 1,745,676				Within 3 years, supply side not applicable					
Head Office/All	01 - All	Distribution Stations	Fail	Timing	9964	2025 Telemetry*	2025	\$ 1,623,142				Within 3 years, supply side not applicable					
Head Office/All	01 - All	Distribution Stations	Fail	Timing	10296	2024 District Station Rebuilds Program*	2024	\$ 4,988,398				Within 3 years, supply side not applicable					
Head Office/All	01 - All	Distribution Stations	Fail	Timing	10297	2025 District Station Rebuilds Program*	2025	\$ 6,306,185				Within 3 years, supply side not applicable					
Head Office/All	01 - All	Distribution Stations	Pass		9552	NGT Existing customer Maintenance Capital - (Until 2026)*		\$ 1,585,984	Maintenance capital for refueling stations for external customer stations only Issue/concern: EGI fleet operators can continue to achieve fuel cost savings and reduced emission benefits by investing in the wellbeing of the NGV station. This can be achieved by adopting and continuously upgrading their NGV equipment as part of the maintenance strategy. By upgrading major NGV equipment, EGI can extend the life cycle of the equipment, resulting in a more cost-effective way of operating the NGV stations. Assets: There are a number of current NGV stations EGI maintains	Complete	Fail	See investment description, IRPAs not applicable for CNG					
Head Office/All	01 - All	Distribution Stations	Pass		9553	NGT Maintenance Capital for company/fleet NG refueling stations (2021 to 2032)*		\$ 4,284,492	Maintenance capital for refueling stations for EGD NGT Fueling stations only Issue/concern: The EGD Fleet department can achieve fuel cost savings and reduced emission benefits by operating the 800-plus fleet vehicles on natural gas versus diesel or gasoline. This presents an opportunity for the EGD Fleet Department to realize fuel savings and promotes the use of natural gas to other fleet operators as an alternate source for fueling vehicles at a lower cost with lower emissions. By demonstrating the use of natural gas, EGD can achieve growth in the marketplace, while realizing fuel savings. Assets: EGD currently operates 19 Natural Gas Vehicle (NGV) fueling stations on company yards. The stations includes; Arnprior Yard, Barrie Yard, Beamsville Yard, Thorold Office, Brampton, Brockville yard, Ottawa Office, Kelfield yard, Kennedy Road Yard, Midland Gate Station, Oshawa Office, Port Colbourne Yard, Peterborough yard, Shelburne Gate Station, South Merivall, Station B, Stayner Gate Station, Enbridge Training Centre, and the VPC Office. In addition, EGD will installing two new NGT stations to fuel recently converted vehicles and dedicated light duty trucks. These two new stations (Tecumseh Storage facility and Tallman Truck Center (Kemptville)) will also, need to be maintained. Related Program: N/A	Complete	Fail	See investment description, IRPAs not applicable for CNG					
Head Office/All	01 - All	Distribution Stations	Pass		9965	2026 Telemetry*	2026	\$ 1,942,807	Telemetry systems are required to monitor and control our pipeline system. Applicable Codes: Z662, Sec 11.26.4 provides code requirement for safe and reliable communication. The Telemetry system includes communication paths from the instrumentation at our stations to Gas Control and it allows them to monitor EGI Distribution conditions. Gas flow: For gas supply to meet nominations Leak detection: Indicated by large pressure drops Overpressure protection and Pressure Control: Condition monitoring equipment by gas control ensures gas delivery to the customers in a controlled and safe manner. Included in this program are upgrades to the Telemetry network that include: 1)Cyber Security - Ongoing upgrades to Scada system to ensure compliance with EI Cyber security standards and proposed CSA code 2)Legacy equipment - 3330 Bristol units(10/yr) must be replaced with Control Wave Micro units 3) RTU Programming Manual - Development of manual detailing programming standards for design, security and expansion 4)SCADA - Development of maintenance layer of Scada to allow site reporting of gas consumption for boiler gas, odourant pump strokes and usage tracking, boiler diagnostics, remote engineering and automation of gate/feeder stations 5)Broadband Communication - Development of broadband links between major stations to support security (i.e. intrusion detection)	Complete	Fail	See investment description, IRPAs not applicable					

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Head Office/All	01 - All	Distribution Stations	Pass		9966	2027 Telemetry*	2027	\$ 2,105,824	Telemetry systems are required to monitor and control our pipeline system. Applicable Codes: Z662, Sec 11.26.4 provides code requirement for safe and reliable communication. The Telemetry system includes communication paths from the instrumentation at our stations to Gas Control and it allows them to monitor EGI Distribution conditions. Gas flow: For gas supply to meet nominations Leak detection: Indicated by large pressure drops Overpressure protection and Pressure Control: Condition monitoring equipment by gas control ensures gas delivery to the customers in a controlled and safe manner. Included in this program are upgrades to the Telemetry network that include: 1)Cyber Security - Ongoing upgrades to Scada system to ensure compliance with EI Cyber security standards and proposed CSA code 2)Legacy equipment - 3330 Bristol units(10/yr) must be replaced with Control Wave Micro units 3) RTU Programming Manual - Development of manual detailing programming standards for design, security and expansion 4)SCADA - Development of maintenance layer of Scada to allow site reporting of gas consumption for boiler gas, odourant pump strokes and usage tracking, boiler diagnostics, remote engineering and automation of gate/feeder stations 5)Broadband Communication - Development of broadband links between major stations to support security (i.e. intrusion detection)	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Distribution Stations	Pass		10298	2026 District Station Rebuilds Program*	2026	\$ 7,942,642	Issue/Concern: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets. Related Program: N/A	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Distribution Stations	Pass		10299	2027 District Station Rebuilds Program*	2027	\$ 8,189,676	Issue/Concern: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets. Related Program: N/A	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Distribution Stations	Pass		16430	2028 Telemetry*	2028	\$ 2,129,636	Telemetry systems are required to monitor and control our pipeline system. Applicable Codes: Z662, Sec 11.26.4 provides code requirement for safe and reliable communication. The Telemetry system includes communication paths from the instrumentation at our stations to Gas Control and it allows them to monitor EGI Distribution conditions. Gas flow: For gas supply to meet nominations Leak detection: Indicated by large pressure drops Overpressure protection and Pressure Control: Condition monitoring equipment by gas control ensures gas delivery to the customers in a controlled and safe manner. Included in this program are upgrades to the Telemetry network that include: 1)Cyber Security - Ongoing upgrades to Scada system to ensure compliance with EI Cyber security standards and proposed CSA code 2)Legacy equipment - 3330 Bristol units(10/yr) must be replaced with Control Wave Micro units 3) RTU Programming Manual - Development of manual detailing programming standards for design, security and expansion 4)SCADA - Development of maintenance layer of Scada to allow site reporting of gas consumption for boiler gas, odourant pump strokes and usage tracking, boiler diagnostics, remote engineering and automation of gate/feeder stations 5)Broadband Communication - Development of broadband links between major stations to support security (i.e. intrusion detection)	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Distribution Stations	Pass		16434	2028 District Station Rebuilds Program*	2028	\$ 4,372,570	Issue/Concern: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets Related Program: N/A	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Distribution Stations	Pass		101552	2029 Telemetry*	2029	\$ 2,159,532	Telemetry systems are required to monitor and control our pipeline system. Applicable Codes: Z662, Sec 11.26.4 provides code requirement for safe and reliable communication. The Telemetry system includes communication paths from the instrumentation at our stations to Gas Control and it allows them to monitor EGI Distribution conditions. Gas flow: For gas supply to meet nominations Leak detection: Indicated by large pressure drops Overpressure protection and Pressure Control: Condition monitoring equipment by gas control ensures gas delivery to the customers in a controlled and safe manner. Included in this program are upgrades to the Telemetry network that include: 1)Cyber Security - Ongoing upgrades to Scada system to ensure compliance with EI Cyber security standards and proposed CSA code 2)Legacy equipment - 3330 Bristol units(10/yr) must be replaced with Control Wave Micro units 3) RTU Programming Manual - Development of manual detailing programming standards for design, security and expansion 4)SCADA - Development of maintenance layer of Scada to allow site reporting of gas consumption for boiler gas, odourant pump strokes and usage tracking, boiler diagnostics, remote engineering and automation of gate/feeder stations 5)Broadband Communication - Development of broadband links between major stations to support security (i.e. intrusion detection)	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Distribution Stations	Pass		101553	2030 Telemetry*	2030	\$ 2,268,768	Telemetry systems are required to monitor and control our pipeline system. Applicable Codes: Z662, Sec 11.26.4 provides code requirement for safe and reliable communication. The Telemetry system includes communication paths from the instrumentation at our stations to Gas Control and it allows them to monitor EGI Distribution conditions. Gas flow: For gas supply to meet nominations Leak detection: Indicated by large pressure drops Overpressure protection and Pressure Control: Condition monitoring equipment by gas control ensures gas delivery to the customers in a controlled and safe manner. Included in this program are upgrades to the Telemetry network that include: 1)Cyber Security - Ongoing upgrades to Scada system to ensure compliance with EI Cyber security standards and proposed CSA code 2)Legacy equipment - 3330 Bristol units(10/yr) must be replaced with Control Wave Micro units 3) RTU Programming Manual - Development of manual detailing programming standards for design, security and expansion 4)SCADA - Development of maintenance layer of Scada to allow site reporting of gas consumption for boiler gas, odourant pump strokes and usage tracking, boiler diagnostics, remote engineering and automation of gate/feeder stations 5)Broadband Communication - Development of broadband links between major stations to support security (i.e. intrusion detection)	Complete	Fail	See investment description, IRPAs not applicable					

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Head Office/All	01 - All	Distribution Stations	Pass		101556	2029 District Station Rebuilds Program*	2029	\$ 9,588,011	Issue/Concern: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets Related Program: N/A	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Distribution Stations	Pass		101557	2030 District Station Rebuilds Program*	2030	\$ 9,875,495	Issue/Concern: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets Related Program: N/A	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Distribution Stations	Pass		501126	FIMP Station Assessment Program*		\$ 15,572,654	Issue/Concern/Opportunity: FIMP assesses stations against threats that are listed in the EGI Hazard and Risk Common Register Risk Register to identify susceptibility to identified risks and determine mitigation strategies for individual sites, ensuring that risk is managed to the lowest practical levels. The strategy for the FIMP program is to perform inspections using with approved technologies used at EGI or other utilities for similar asset types. These inspections will assess the condition of existing station assets and will detect any concerns or issues to help determine the likelihood and consequence of failure of individual components and evaluate the risk. This strategy will allow for targeted replacement and will extend the useful life of assets by identifying condition issues prior to the occurrence of an incident. When analysis indicates that ongoing repair costs are likely to exceed capital requirements to replace the asset, the mitigation strategy is evaluated to ensure that risk is managed to the lowest practicable level. Assets: FIMP DS Stations Related Investments: N/A	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Distribution Stations	Pass		734294	2031 Telemetry*	2031	\$ 2,287,935	Telemetry systems are required to monitor and control our pipeline system. Applicable Codes: Z662, Sec 11.26.4 provides code requirement for safe and reliable communication. The Telemetry system includes communication paths from the instrumentation at our stations to Gas Control and it allows them to monitor EGI Distribution conditions. Gas flow: For gas supply to meet nominations Leak detection: Indicated by large pressure drops Overpressure protection and Pressure Control: Condition monitoring equipment by gas control ensures gas delivery to the customers in a controlled and safe manner. Included in this program are upgrades to the Telemetry network that include: 1)Cyber Security - Ongoing upgrades to Scada system to ensure compliance with EI Cyber security standards and proposed CSA code 2)Legacy equipment - 3330 Bristol units(10/yr) must be replaced with Control Wave Micro units 3) RTU Programming Manual - Development of manual detailing programming standards for design, security and expansion 4)SCADA - Development of maintenance layer of Scada to allow site reporting of gas consumption for boiler gas, odourant pump strokes and usage tracking, boiler diagnostics, remote engineering and automation of gate/feeder stations 5)Broadband Communication - Development of broadband links between major stations to support security (i.e. intrusion detection)	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Distribution Stations	Pass		734296	2032 Telemetry*	2032	\$ 2,274,064	Telemetry systems are required to monitor and control our pipeline system. Applicable Codes: Z662, Sec 11.26.4 provides code requirement for safe and reliable communication. The Telemetry system includes communication paths from the instrumentation at our stations to Gas Control and it allows them to monitor EGI Distribution conditions. Gas flow: For gas supply to meet nominations Leak detection: Indicated by large pressure drops Overpressure protection and Pressure Control: Condition monitoring equipment by gas control ensures gas delivery to the customers in a controlled and safe manner. Included in this program are upgrades to the Telemetry network that include: 1)Cyber Security - Ongoing upgrades to Scada system to ensure compliance with EI Cyber security standards and proposed CSA code 2)Legacy equipment - 3330 Bristol units(10/yr) must be replaced with Control Wave Micro units 3) RTU Programming Manual - Development of manual detailing programming standards for design, security and expansion 4)SCADA - Development of maintenance layer of Scada to allow site reporting of gas consumption for boiler gas, odourant pump strokes and usage tracking, boiler diagnostics, remote engineering and automation of gate/feeder stations 5)Broadband Communication - Development of broadband links between major stations to support security (i.e. intrusion detection)	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Distribution Stations	Pass		734307	2031 District Station Rebuilds Program*	2031	\$ 9,763,652	Issue/Concern: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets Related Program: N/A	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Distribution Stations	Pass		734308	2032 District Station Rebuilds Program*	2032	\$ 9,480,179	Issue/Concern: The stations identified in this business case fall into one of the following categories: Below-ground box replacements: Removal of below-ground stations improves life cycle cost of stations due to accelerated corrosion related to salting and flooding, increased O&M costs related to increased paint frequency, and the requirement for two at a box when work is performed. An additional and very important benefit to the elimination of below-ground boxes is the improvement of worker health and safety by eliminating the need to handle potentially contaminated water, and non-ergonomic work conditions. Obsolete Regulators: The criteria for this category is that there are no spare parts available, or parts are no longer approved for use on new installations, or a combination of poor performance and manufacturer availability. Low Pressure Districts: The failure of a low pressure district can have disastrous downstream impacts in the event of over-pressure protection failure. The outlets of these stations feed customers who may not have individual regulators at their meter sets. This additional line of defense is not present to protect customer piping. Double Boot-style Regulators: Stations with both operator and monitor boot-style regulators have a common failure mechanism as a result of debris in the gas stream. Replacement of one boot-style regulator with a non-boot regulator reduces the vulnerability of failure. Increased Capacity: Stations that are operating over designed capacity due to system growth are targeted for replacement to maintain gas supply. Loss of Containment: Station experiencing loss of containment (leaks) and high maintenance calls to repair equipment are also identified for replacement. Asset: District station assets Related Program: N/A	Complete	Fail	See investment description, IRPAs not applicable					

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Head Office/All	01 - All	Distribution Stations	Pass		735117	Stations with Auxiliary Equipment Replacement Program*	2023	\$ 160,911,407	Issue/Concern: The replacement / renewal strategy for Stations with Auxiliary Equipment includes: ☑Stations with Auxiliary Equipment Replacement strategy ☑Compliance Remediation strategy ☑Obsolete Heating Equipment strategy ☑Odourization strategy ☑Telemetry strategy ☑Stations Retrofit strategy for Integrity pipe ☑Stations Capital Upgrade program ☑Facilities Integrity Management program Related Program: N/A	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8543	2023 Commercial / Industrial LPDMS Program*	2023	\$ 623,456									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8544	2024 Commercial / Industrial LPDMS Program*	2024	\$ 640,688									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8545	2025 Commercial / Industrial LPDMS Program*	2025	\$ 762,124									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8546	2026 Commercial / Industrial LPDMS Program*	2026	\$ 882,683									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8547	2027 Commercial / Industrial LPDMS Program*	2027	\$ 1,042,208									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8804	2023 Farm tap Program*	2023	\$ 218,210									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8805	2024 Farm tap Program*	2024	\$ 224,241									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8806	2025 Farm tap Program*	2025	\$ 238,971									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8807	2026 Farm tap Program*	2026	\$ 274,613									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	8808	2027 Farm tap Program*	2027	\$ 326,559									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	17966	2023 Assets Downstream of Bulk Meters*	2023	\$ 253,634									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	17967	2025 Assets Downstream of Bulk Meters*	2025	\$ 516,694									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	17968	2024 Assets Downstream of Bulk Meters*	2024	\$ 260,645									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	17969	2026 Assets Downstream of Bulk Meters*	2026	\$ 523,072									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	17970	2027 Assets Downstream of Bulk Meters*	2027	\$ 555,844									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	17971	2028 Assets Downstream of Bulk Meters*	2028	\$ 551,108									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	101968	2029 Assets Downstream of Bulk Meters*	2029	\$ 547,886									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	101970	2028 Commercial / Industrial LPDMS Program*	2028	\$ 1,226,214									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	101971	2029 Commercial / Industrial LPDMS Program*	2028	\$ 1,219,047									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	101972	2028 Farm tap Program*	2028	\$ 378,886									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	101973	2029 Farm tap Program*	2029	\$ 376,672									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	101974	2030 Farm tap Program*	2030	\$ 1,143,974									
Head Office/All	01 - All	Utilization	Fail	Dollar threshold	101976	2030 Assets Downstream of Bulk Meters*	2030	\$ 564,314									
Head Office/All	01 - All	Utilization	Pass		19983	Meter Purchases- MXGI's, MXG's, MXOT's*	2027	\$ 313,176,431	Meters are used to determine the gas consumption input of customer billing. The replacement program for meters is mandated by Measurement Canada. The program includes: testing, repair, and replacement requirements of meters and instruments. All verified meters are approved by Measurement Canada with an issuance of a certificate which identifies that the meter complies with Electricity and Gas Specification S-EG-02. EGI must ensure all measurement devices remain in compliance for annual audits by Measurement Canada. Measurement Canada specifies tolerances under which the meter must operate in the field. EGD must demonstrate that all aspects of its meter sampling, maintenance, and replacement comply with these criteria in order to be accredited by Measurement Canada to be an "Authorized Service Provider" and adhere to Measurement Canada's accreditation standard S-A-01. Meters may also require exchange for issues such as: damages, leaks, customer billing issues.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Utilization	Pass		23228	Meter Purchases- New Customer Additions*		\$ 66,275,270	New meters are required for customer expansion projects. Meters are used to determine the gas consumption input of customer billing.	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Utilization	Pass		101975	2030 Commercial / Industrial LPDMS Program*	2030	\$ 3,702,314	These meter sets primarily serve commercial, industrial, and high density residential customers, typically with a meter > 400 series. They require proper operation to ensure gas does not exceed supply pressure. These sets consist of regulator(s), relief(s), riser, and meter. Failure of the regulation system has the potential to cause an over pressure to the customer's supply line and appliances. Over-pressure can result in a loss of containment within the building making the event of ignition, fire, and explosion possible. The condition of these Commercial/Industrial LPDMS is largely unknown. They have not been part of pro-active inspection programs. A survey on a sample population indicated a number of potential issues including: - Old Regulators - Corrosion of piping and regulators - Non-Adherence to installation specifications	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	01 - All	Utilization	Pass		738580	Meter Purchases- MXGI's, MXG's, MXOT's*		\$ 115,594,243	Meter & Reg Install- Replacement	Complete	Fail	See investment description, IRPAs not applicable					
Head Office/All	Div_54 - Head Office Support	Growth	Pass	(blank)	736972	Hydrogen Fuel Heating Systems Feasibility Assessment	2025	\$ 2,334,906	Issue/Concern/Opportunity: The feasibility study would explore two items: 1.Blending of hydrogen at gate and transmission regulating stations with the potential for on-site production of hydrogen. The study will quantify the maximum practical limits of hydrogen that can be blended into the natural gas fuel source of existing boiler systems. 2.Identifying the optimal site for a pilot project that will use an integrated pilot plant based on the availability of excess electricity and an opportunity to balance the demands on the electrical grid, availability of land for on-site hydrogen production and storage, and general operating conditions. EGI will review 35 of its roughly 165 boiler facilities as part of its mainline Dawn-Parkway gas transmission system and associated downstream distribution stations. These stations regulate EGI's transmission gas pressures to lower distribution pressures to safely feed the Ontario natural gas distribution area. Due to the cooling of gas while regulating a high-pressure cut from transmission to lower distribution pressures, heat is required to mitigate the possible damage of the cooling effect to ensure safe and reliable operations for customers. Additionally, the study will evaluate feasibility and alternatives for procurement or production of hydrogen as required to supply current boiler systems through Combined Heat & Power (CHP) applications where hydrogen will be used as the fuel source for boilers and the waste heat generated during hydrogen production is captured to maximize energy efficiency. Assets: EGI will review 35 of its roughly 165 boiler facilities as part of its mainline Dawn-Parkway gas transmission system and associated downstream distribution stations Related Program: 736973 - Hydrogen for Compression Facilities Feasibility Assessment	Planned							

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Head Office/All	Div_54 - Head Office Support	Growth	Pass	(blank)	736973	Hydrogen for Compression Facilities Feasibility Assessment	2025	\$ 1,640,842	<p>Issue/Concern/Opportunity: The proposed feasibility study will:</p> <ol style="list-style-type: none"> 1.Review the current compressor fleet, identify current and future projected fuel requirements, and evaluate the impact of varying hydrogen concentrations on turbine operations, emissions, safety and reliability. 2.Explore the requirements for partial conversion to hydrogen fuel with current equipment, with minor equipment upgrades, and with major upgrades to facilitate an envisioned 100% pure hydrogen fuel source. 3.Conduct a cost-benefit analysis to support a technically and economically feasible hydrogen transition. 4.Establish a strategy for hydrogen generation and conversion of the compressor fleet. 5.Refine company standards, policies and procedures to ensure continued safe, reliable and affordable operations. <p>Assets:</p> <p>The feasibility study will evaluate the five major compressor sites along EGI's Dawn-Parkway mainline transmission system:</p> <ol style="list-style-type: none"> 1.Dawn Hub - Centred at 3332 Bentpath Line, Dawn-Euphemia, ON - 9 turbines totalling 189 MW 2.Lobo Compressor (14M-601) - 11025 Ivan Drive, Ilderton, ON - 5 turbines totalling 124 MW 3.Bright Compressor (16S-101) - 866139 Twp. Rd. #10, Bright, ON - 4 turbines totalling 115 MW 4.Parkway West Compressor (20Y-407) - 6699 8th Line, Milton, ON - 2 turbines totalling 66 MW 5.Parkway East Compressor (20Y-404) - 6626 9th Line, Mississauga, ON - 2 turbines totalling 50 MW <p>Related Program: 736972 - Hydrogen Fuel Heating Systems Feasibility Assessment</p>	Planned							
Head Office/All	Div_54 - Head Office Support	Growth	Pass	(blank)	736974	Hydrogen Blending Phase 2	2026	\$ 9,050,523	The second part of the hydrogen blending project LCEP 1 . It will expand blended gas with hydrogen at 2% supplied to an additional 12400 customers approximately	Planned							
Head Office/All	Div_54 - Head Office Support	Growth	Pass	(blank)	736975	Enbridge Gas Distribution System Hydrogen Feasibility Study		\$ 15,523,163	Comprehensive techno-economic feasibility study of blending hydrogen into Enbridge Gas Inc.'s (EGI) existing natural gas distribution and transmission network across Ontario.	Planned							
									Evaluate the technical feasibility and maximum limits of blended hydrogen gas in existing networks,identify necessary retrofits or upgrades for varying concentrations of hydrogen, and develop a staged roadmap for transitioning Ontario's gas network to a low-carbon future in line with technical and economic barriers and opportunities. The assessment comprises the entirety of EGI's gas pipeline network in Ontario.								
									By blending hydrogen at strategic locations across EGI's existing gas network, EGI aims to reduce the carbon intensity of its 3.8 million residential, commercial, institutional and industrial customers across over 500 communities in Ontario.								
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	1268	Thunder Bay Loop Retrofit		\$ 809,595									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	48507	THUN: Dist-Repl-Compy-Mains Municipal*	2020	\$ 3,221,779									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	48508	THUN: Dist-Repl-Compy-Mains Leakage*	2020	\$ 8,390,461									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	48509	THUN: Dist-Repl-Compy-Services*	2020	\$ 3,035,773									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	48511	THUN: Land Rights-Replacements	2023	\$ 3,737									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	48515	THUN: Indirect Materials-Replacements	2023	\$ 55,036									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	48524	TBAY: 33-21-600 Centennial Park Exposed NPS 8	2023	\$ 769,051									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	49507	TBAY: 33-22-600 Atikokan Lateral - TP8 -Leak	2023	\$ 529,350									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	49509	Atikokan Steep Rock Mine Valve Nest Retirement	2031	\$ 139,928									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	49510	Darlington Bay Bridge - NPS 2 Replacement	2025	\$ 1,291,450									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	501009	THUN: PSLM Maintenance	2023	\$ 175,579									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	503015	TBAY: 33-22-601 Atikokan Lateral Leak Dwnst of Sapawe Mill	2031	\$ 536,347									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	503375	TBAY: Kenora 9 Brinkman Rectifier		\$ 68,504									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	503376	TBAY: Kenora 9 Rupert at Ninth Rectifier		\$ 68,504									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	734922	NPS 8 Redlake Retrofit		\$ 1,303,223									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Fail	Dollar threshold	735679	45-22-000 TIMM Grierson Rd Valve Replacement	2023	\$ 56,049									
Northern	Div_33 - Thunder Bay	Distribution Pipe	Pass		1266	Redrock Retrofit		\$ 1,718,832	<p>Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2024 Operations and Maintenance (O&M) spend for ILI.</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Complete	Fail	See investment description, IRPAs not applicable					
Northern	Div_33 - Thunder Bay	Distribution Pipe	Pass		30134	4th Ave S-Kenora-1562	2031	\$ 4,954,127	4th Ave. S. - Kenora - 1562	Planned							
									Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.								
Northern	Div_33 - Thunder Bay	Distribution Pipe	Pass		30136	Arthur St W -Thunder Bay-1496	2027	\$ 4,182,490	Arthur St. W. -Thunder Bay - 1496	Planned							
									Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.								
									Comments: There is a fault associated with the area.								

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Northern	Div_33 - Thunder Bay	Distribution Pipe	Pass		30142	Dominion Ave 2-Kapuskasing-1540	2031	\$ 2,481,933	Dominion Ave. 2 - Kapuskasing - 1540 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Northern	Div_33 - Thunder Bay	Distribution Pipe	Pass		30143	Dominion Ave-Kapuskasing-1499	2030	\$ 5,091,521	Dominion Ave. - Kapuskasing - 1499 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Northern	Div_33 - Thunder Bay	Distribution Pipe	Pass		30144	Finlayson St-Thunder Bay-1563	2031	\$ 3,175,990	Finlayson St. - Thunder Bay - 1563 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Complete	Fail	NPS 2, cannot downsize or retire					
Northern	Div_33 - Thunder Bay	Distribution Pipe	Pass		30145	George St-Hearst-1558	2032	\$ 5,437,097	George St. - Hearst - 1558 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Northern	Div_33 - Thunder Bay	Distribution Pipe	Pass		30146	Hart St-Timmins -1559	2032	\$ 4,955,639	Hart St. - Timmins (moratorium until 2025) -1559 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: City will not allow work on Toke St. within the next five years as it was reconstructed in 2020. Moratorium is until 2025.	Planned							
Northern	Div_33 - Thunder Bay	Distribution Pipe	Pass		30151	Marks St S-Thunder Bay-1537	2029	\$ 5,500,549	Marks St. S. - Thunder Bay - 1537 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Northern	Div_33 - Thunder Bay	Distribution Pipe	Pass		30155	Ogden St-Thunder Bay-1568	2030	\$ 5,556,674	Ogden St. - Thunder Bay - 1568 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Northern	Div_33 - Thunder Bay	Distribution Pipe	Pass		30156	Prince Arthur Blvd-Thunder Bay-1538	2031	\$ 4,043,057	Prince Arthur Blvd. - Thunder Bay - 1538 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Northern	Div_33 - Thunder Bay	Distribution Pipe	Pass		30157	Seventh Ave N-Kenora-1546	2031	\$ 4,237,285	Seventh Ave. N. - Kenora - 1546 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Northern	Div_33 - Thunder Bay	Distribution Pipe	Pass		30158	Seventh St S-Kenora-1542	2032	\$ 3,823,134	Seventh St. S. - Kenora - 1542 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Northern	Div_33 - Thunder Bay	Distribution Pipe	Pass		30160	Spruce St-Kapuskasing-1565	2029	\$ 5,024,951	Spruce St. - Kapuskasing - 1565 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Complete	Fail	NPS 2, cannot downsize or retire					

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered	
Northern	Div_33 - Thunder Bay	Distribution Stations	Pass		100917	TBAY: 33-22-700 Dryden TBS, Glycol and Odorant Upgrades	2023	\$ 2,117,401	Issue/Concern/Opportunity: Due to new standards, there is need to relocate below-grade glycol lines to above-grade. Also, the replacement/relocation of separate odourant bulk and pump buildings with combined structure/building is required. This would facilitate removal of above-grade odourant gravity feed between buildings and below-grade odourant injection line. The most likely risk is the increased risk of a significant environmental incident. The worst-case scenario is leakage of the below-grade boiler glycol lines or odourant injection lines, either of which would cause significant environmental concerns. Assets: Station ID 30101001, Dryden Town Border Station (TBS) Related Program: Not applicable.	Planned								
Northern	Div_33 - Thunder Bay	Distribution Stations	Pass		100918	TBAY: 33-23-700 Arthur St TBS, Thunder Bay, Station Rebuild	2024	\$ 2,563,237	Issue/Concern/Opportunity: Based on 2021 Stations Engineering review, a full station rebuild is required including new inlet filter, ERX telemetry, and a CWT 1155. Station material estimate alone was \$900,000. Alliance Partner. The most likely risk is regulation failure. The worst case scenario is significant system outage, as Thunder Bay North system backbone pipelines all lead to this station. Also, this station lies at the quadrant of a major MTO intersection. Assets: Station ID 30202014 Related Program: There are no related C55 investments.	Planned								
Northern	Div_33 - Thunder Bay	Distribution Stations	Pass		503174	TBAY: English River PCS Station Rebuild	2029	\$ 2,049,482	Issue/Concern/Opportunity: Station alterations need to have pilot heat, larger relief valve and larger trims due to TC Energy work. Assets: Station #30701001. Related Investments: Not applicable.	Planned								
Northern	Div_33 - Thunder Bay	Growth	Pass		48506	TBAY: Company Program - New Business - Scattered Mains - Company*	2020	\$ 3,643,105	Scattered Mains	Planned								
Northern	Div_33 - Thunder Bay	Growth	Pass		500424	TBAY: Company Program - Customer Connections*		\$ 16,175,436	Thunder Bay Customer Connections Program Items	Planned								
Northern	Div_33 - Thunder Bay	Growth	Pass		734531	THUN: Rosslyn Rd at Sideroad 20 Reinforcement Project	2031	\$ 174,910	Issue/Concern/Opportunity: •Approximately 130 m 2-inch PE main extension is to tie together two existing 420 kPa systems. •The Goal is to abandon 30206036 STN (Rosslyn Rd. at 20th Side Rd.) and small customer station south of there. •Customers currently fed by this station will then be tied to the neighbouring 420 kPa system fed by 30206035 Station (Rosslyn Rd. at Almira Post Regulation Station [PRS]) and 30206034 Station (Rosslyn Rd. at R.S. Piper). Assets: Stations 30206036, 30206025, and 30206034 Related Program: None.	Planned								
Northern	Div_33 - Thunder Bay	Utilization	Pass		48513	TBAY: Meter & Regulator Inst Repl-Company*	2020	\$ 8,731,453	Meter & Reg Install- Replacement	Complete	Fail	See investment description, IRPAs not applicable						
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	1275	Espanola Retrofit		\$ 934,148										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	48534	SUDB: Dist-Repl-Contr-Services*	2020	\$ 2,204,560										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	48544	SUDB: Land Rights-Replacements	2023	\$ 6,228										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	48548	SUDB: Misc Materials-Company	2023	\$ 6,228										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	48549	SUDB: Anodes*	2020	\$ 329,312										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	48553	NE: Whittaker St., Sudbury, Replacement	2028	\$ 443,950										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	49628	SSM: Goulais Rd Main replacement SSM	2030	\$ 1,492,561										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	49641	SUDB: Gagnon St Lateral, Azilda	2031	\$ 209,892										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	49645	116 Simmons Rd, Dowling PLPR	2024	\$ 44,857										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	49652	NE: New Sudbury Mall Rooftop Main Coating	2023	\$ 293,628										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	49653	SUDB: Regent St grasshopper, Sudbury	2027	\$ 381,629										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	49666	863 Attlee St shallow main, Sudbury	2030	\$ 113,180										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	49670	Bay St. Roof top piping blocking Replacement and Maintenance, SSM	2024	\$ 96,121										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	49673	Kingsmount Blvd, Bannister Tees Replacement, SSM	2023	\$ 112,098										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	100737	NE: Southview & Martindale, Sudbury, Valve Nest Repl	2023	\$ 87,187										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	734394	SUDB: Fourth Avenue, Sudbury Damage	2023	\$ 73,615										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	734593	SUDB: Bancroft Dr and Bellevue Ave, Valves Replacement	2023	\$ 373,659										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	734613	SUDB: Martindale Road, Sudbury Replacement	2023	\$ 112,098										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	734615	NE: Second Ave & Centre St, Espanola, Valve Replacement	2023	\$ 118,325										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	734616	NE: Wellington St, SSM, Replacement	2024	\$ 121,754										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Dollar threshold	735465	SUD: Copper Cliff Replacement	2031	\$ 1,708,519										
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Timing	736530	Sudbury Lateral Integrity Digs 2023	2023	\$ 12,455,303									Within 3 years, supply side not applicable	
Northern	Div_43 - Sudbury & S.S. Marie	Distribution Pipe	Fail	Timing	736531	Sudbury Lateral Integrity Digs 2024	2024	\$ 7,433,386									Within 3 years, supply side not applicable	

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Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733769	TIMM: South Porcupine/Crawford TBS, Boiler Replacement	2029	\$ 341,580									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733770	TIMM: Porcupine PCS, Boiler Replacement	2026	\$ 241,096									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733771	TIMM: Kirkland Lake TBS, Boiler Replacement	2026	\$ 191,574									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733773	TIMM: Cochrane TBS, Boiler Replacement	2027	\$ 213,712									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733864	TIMM: Matheson TBS, Boiler Replacement	2028	\$ 145,875									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733868	TIMM: Schumacher TBS, Boiler Replacement	2029	\$ 151,662									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733871	TIMM: Dalton TBS (Mcbride St S.), Station Rebuild and Boiler Replacement	2030	\$ 1,061,062									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733873	TIMM: Kapuskasing TBS, Boiler Replacement	2031	\$ 699,639									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733874	TIMM: Moneta TBS, Boiler Replacement	2032	\$ 267,524									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	733877	TIMM: Hwy 655 TBS, Boiler Replacement	2031	\$ 289,651									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734572	TIMM: Malette Kraft SMS Retirement	2030	\$ 53,861									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734573	TIMM: Evergreen Greenhouse SMS Retirement	2023	\$ 6,377									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734574	TIMM: Hallnor Mine PRS Retirement	2030	\$ 70,737									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734576	TIMM: Munoro Mine SMS Retirement	2032	\$ 47,530									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734623	TIMM: Opasatika TBS Rebuild	2028	\$ 825,705									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734624	TIMM: Mattice TBS Rebuild	2028	\$ 825,705									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734625	TIMM: Val Gagne TBS Rebuild	2029	\$ 819,793									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734626	TIMM: Fauquier TBS Rebuild	2029	\$ 819,793									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	734943	TIMM: Kirkland Lake CMS (Kenogami) - Long-Term Odorant Solution	2023	\$ 498,212									
Northern	Div_45 - Timmins	Distribution Stations	Fail	Dollar threshold	735730	TIMM: Monteith CMS	2025	\$ 1,291,450									
Northern	Div_45 - Timmins	Distribution Stations	Pass		100920	TIMM: Hearst TBS, Rebuild	2023	\$ 2,241,955	Issue/Concern/Opportunity: According to a geological investigation completed on this station in 2021 it was determined that the existing facilities have undergone movements (frost heave, sinking, erosion) which have caused structural damages between the existing buildings and interconnecting pipeline facilities. The operations department also confirmed that heaving/ movements have been an ongoing issue at this station since it was rebuilt in 2004. There is a need to replace the station or remediate existing soil, due to extensive ground movement and assets. This site was constructed new in 2005 and experienced significant movement by 2008. The site has been reworked once already and now requires additional work. A cost analysis should be considered to compare reworking the existing site versus relocating the station. Assets: Station ID 41301001 Related Program: There are no related C55 investments.	Planned							
Northern	Div_45 - Timmins	Distribution Stations	Pass		101158	TIMM: 45-22-700 Goldcorp Dome Mine SMS, Rebuild	2023	\$ 2,149,400	Issue/Concern/Opportunity: Station needs to be raised or relocated due to seasonal flooding. Mine site has been built up around the station and there is no place for Spring thaw and/or rainwater to run off. Justification: The most likely risk/scenario is above-grade frozen valves/assets. The worst-case scenario is the inability to isolate and/or shut down the station in an emergency (i.e., injury, fire, or explosion) due to frozen flood waters. Assets: Station ID 42199002 Related Investments: 735784 (the heater replacement for this station)	Planned							
Northern	Div_45 - Timmins	Distribution Stations	Pass		733880	TIMM: Tembec Spruce Falls SMS, Rebuild	2024	\$ 1,922,427	Issue/Concern/Opportunity: Customer-driven station needs a rebuild. Assets: 41402004	Planned							
Northern	Div_45 - Timmins	Distribution Stations	Pass		734628	TIMM: Smooth Rock Falls CMS, TBS, and DRS Relocations/Retirements	2025	\$ 3,486,916	Related Investments: Not applicable. Issue/Concern/Opportunity/Justification: Project may include modifications to whole town system. The project includes building new Town Border Station (TBS) at TC Energy. The existing Customer Meter Station (CMS) will be removed and the old TBS will be repurposed as Distribution Regulation Station (DRS). Scope is to be further defined in the future. Assets: Station #41501002 (TBS), 41501005 (CMS), 41502002 (DRS) Related Program: Not applicable.	Planned							
Northern	Div_45 - Timmins	Distribution Stations	Pass		734941	TIMM: Iroquois Falls TBS, Station Rebuild	2028	\$ 2,752,350	Issue/Concern/Opportunity: The current station is experiencing frost heave due to a large pressure cut and the soil conditions that is leading to pipe movement. The existing regulation building has moved as a result and a rebuild of all regulation is required to remediate the issues. The scope will include the demolition and removal old the Regulator building. The site will receive new fencing, grading improvements, and a new Remoter Terminal Unit (RTU) building (currently mounted outside on side of boiler building). The station is experiencing odourant injection issues, related to the Co-Gen facility. Due to the reduction in load as a result of the Co-Gen customer no longer requiring natural gas, setting Odourization injection rates with the current equipment is difficult for all flow patterns. The existing Heating building does not have adequate containment in the event of a glycol leak and will be addressed as part of this project. When the piping is remediated due to the frost heave, the site will be reduced to include only one filter. Assets: 41701002	Planned							
Northern	Div_45 - Timmins	Growth	Pass		30525	SRP_North_Timmins_Hwy 655_Reinforcement_NPS6_850m_6895kPa	2024	\$ 2,050,589	Related Investments: N/A A reinforcement project is required to ensure EGI can meet station minimum inlets on the 6,895 kPa Maximum Operating Pressure (MOP) system under design winter conditions (with 4,000 kPa minimum from TC). Station 41902024 only requires SAP/field update (no project cost associated).	Planned							

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Northern	Div_46 - North Bay & Orillia	Distribution Pipe	Pass		30197	4th Ave E - Northeast - 1302	2031	\$ 1,887,402	4th Ave. E. - Northeast - 1302 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There is rocky terrain.	Planned							
Northern	Div_46 - North Bay & Orillia	Distribution Pipe	Pass		30198	Alder St 1 - Northeast - 1715	2031	\$ 2,122,240	Alder St. 1 (moratorium until 2026) - Northeast - 1715 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Project will take 11 months / 2 years to complete. Project was updated based on regional feedback (Alder St. 1 – 1715 and Alder St. 2 - 1716). It is rocky and rectifier is in area. Road work was just completed on Beatty St. Project was updated to reflect a moratorium until 2026.	Planned							
Northern	Div_46 - North Bay & Orillia	Distribution Pipe	Pass		30199	Alder St 2 - Northeast - 1716	2032	\$ 2,045,448	Alder St. 2 (moratorium until 2026) - Northeast - 1716 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Project will take 11 months / 2 years to complete. Project was updated based on regional feedback (Alder St. 1 – 1715 and Alder St. 2 - 1716). It is rocky and there is a rectifier in the area. Road work was just completed on Beatty St. Project was updated to reflect a moratorium until 2026.	Planned							
Northern	Div_46 - North Bay & Orillia	Distribution Pipe	Pass		30206	Ferguson Ave 1 - Northeast - 1686	2032	\$ 2,208,807	Ferguson Ave. 1 - Northeast - 1686 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Project will take 16 months / 2.5 years to complete. Project was updated based on regional feedback (Ferguson Ave. 1 - 1686, Ferguson Ave. 2 - 1688). Permit may be required.	Planned							
Northern	Div_46 - North Bay & Orillia	Distribution Pipe	Pass		30207	Ferguson Ave 2 - Northeast - 1688	2030	\$ 2,470,442	Ferguson Ave. 2 - Northeast - 1688 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: It will take 16 months / 2.5 years to complete. Project was updated based on regional feedback (Ferguson Ave. 1 - 1686 and Ferguson Ave. 2 - 1688). Permit may be required.	Planned							
Northern	Div_46 - North Bay & Orillia	Distribution Pipe	Pass		30209	Galt St 2 - Northeast - 1691	2029	\$ 2,101,362	Galt St. 2 - Northeast - 1691 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Project will take 12 months / 2 years to complete. Project was updated based on regional feedback (Galt St. 1 - 1690, Galt St. 1 - 1690).	Planned							
Northern	Div_46 - North Bay & Orillia	Distribution Pipe	Pass		30211	Georgina Ave 2 - Northeast - 1695	2028	\$ 2,009,206	Georgina Ave. 2 - Northeast - 1695 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Project will take 16 months / 2.5 years to complete. Project was updated based on regional feedback (Georgina Ave. 1 - 1686, Ferguson Ave. 2 - 1688). Permit may be required.	Planned							
Northern	Div_46 - North Bay & Orillia	Distribution Pipe	Pass		30212	Hilda St 1 - Northeast - 1696	2031	\$ 2,386,808	Hilda St. 1 - Northeast - 1696 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: It will take 14 months / 2 years to complete. Project was updated based on region (Hilda St. 1 - 1696 and Hilda St. 2 - 1698).	Planned							

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Southeast	80 - Niagara	Distribution Pipe	Pass		1938	NPS 10 Glenridge Avenue, St. Catharines	2026	\$ 15,332,118	<p>Issue/Concern:</p> <p>General Concerns: Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.</p> <p>Site-Specific Concerns: This project looks to replace approximately 8.7 km of mostly 1954 to 1960s vintage NPS 10 intermediate pressure (IP) pipe with sections of NPS 12 and NPS 8 spliced in over the years as repairs.</p> <p>A 2019 Depth of Cover (DOC) survey found that 366 (33%) survey locations had less than 90 cm of cover, and 90 survey locations (8%) had DOC<60 cm, with one location found having exposed pipe due to creek erosion. Poor depth of cover leads to increased third-party damages (as has been seen with blow-off valves). Other risk factors include black coal tar pipe coatings used on 1959/1960 vintage NPS 10 pipe which show evidence of degradation, yielding to corrosion.</p> <p>There are many unusual fittings (Stop-and-Go) and unusual construction practices (such as using unrestrained compression couplings to tie in service connections) that can lead to difficult emergency responses. For example, a recent leak repair took 24 days to complete at a cost of almost \$500K due to complications from DOC, components, and construction practices. Unrestrained compression couplings (CC) have been the source of leaks due to ground settlement and increase the risk of pull-out. The river crossing at Twelve Mile Creek is very difficult to access due to steep creek banks and heavy vegetation, making it difficult to perform cathodic protection and leak surveys. It will pose as a significant concern for any required emergency response. The numerous transitions from NPS 8 to NPS 10 to NPS 12 also creates concern and difficulties for operational work to be completed.</p> <p>There are two main line valves that are suspected to be tied in with unrestrained CCs as per an Integrity Assessment for suspect CC locations. Cathodic protection for some of the NPS 10 segments has been historically poor, showing as much as 25% of historical readings over the last 20 years below minimum required levels.</p>	Planned							
Southeast	80 - Niagara	Distribution Pipe	Pass		4673	Anode Blanket - Area 80*	2020	\$ 3,190,809	<p>General Description: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within the EGI system. These installations and replacements are based on the Corrosion Operating Standard established to maintain the appropriate level of cathodic protection on steel pipeline assets.</p>	Complete	Fail	See investment description, IRPAs not applicable					
Southeast	80 - Niagara	Distribution Pipe	Pass		4768	AMP Fitting Replacement - Area 80*		\$ 40,070,557	<p>AMP Fittings are a below grade transition fittings. The inserted portion of copper tubing can fail due to internal corrosion. In these cases leaks develop immediately downstream of the AMP Fitting.</p>	Complete	Fail	See investment description, IRPAs not applicable					
Southeast	80 - Niagara	Distribution Pipe	Pass		8258	Woodington Rd NFalls 1" ST Replacement	2023	\$ 1,980,451	<p>Issue/Concern: 1-inch Steel and Copper Risers</p> <p>Replace existing 3,302 m of existing steel main and 151 services in area defined.</p>	Planned							
Southeast	80 - Niagara	Distribution Pipe	Pass		13611	Service Relay Blanket - Area 80*	2020	\$ 24,369,554	<p>General: A distribution service refers to the pipe between the distribution main and the customer's meter set. Over the years, different materials have been used for this asset, including steel, copper, and varying resins of plastic, each with unique characteristics that contribute to their performance over time. Services can be repaired or replaced depending on asset condition and the nature of the issue exhibited. Generally, replacement is the preferred approach to mitigate unacceptable asset condition.</p>	Planned							
Southeast	80 - Niagara	Distribution Pipe	Pass		23230	Black Creek Rd and River Trail, Fort Erie - VPM Aldyl-A MP lined in steel	2023	\$ 1,706,660	<p>Issue/Concern: General: Proactive replacement program to renew aging vintage plastic pipe assets before reaching end-of-life. Vintage plastic Aldyl A mains are the earliest plastic mains used within the distribution system; the installation period of Aldyl A plastics started in the late 1960s on a field trial basis and was concluded by the end of 1976 for the EGD rate zone and 1984 for the Union rate zones. It is well known and studied in the North American gas industry that Aldyl A plastic mains have brittle-like cracking properties. The oxidation of the inner wall surface during manufacturing (also known as Low Ductile Inner Wall (LDIW)) and the large spherulites found in its microstructure causes pipe to be susceptible to cracking and premature failure in the presence of stress intensifiers such as a large number of connections, squeeze-off locations, and the presence of rock impingement points caused by rocky soil types.</p> <p>Site specific: MP vintage plastic main lined within old steel mains. If pipe is damaged or leaks, the migration path could cause gas to travel long distances. Difficult to pinpoint leaks and increased risk of migration into other conduits/utilities.</p> <p>Assets: Black Creek Rd and River Trail, Fort Erie - VPM Aldyl-A MP lined in steel Black Creek - Phase One - Scope: consists of 1001M, NPS 4 PE Intermediate Pressure (IP), 13 Medium Pressure (MP) to IP Services and one water crossing (drainage ditch). A Header at 13693 Niagara River Parkway also will be replaced as part of this phase: 230M NPS 2 PE IP and 4 MP to PI Services.</p> <p>Status as of 1/21/2021: Survey has been completed for both the Main Replacement as well as the Header Replacement. Drawing completed for the Main Replacement portion of the project and class 3 estimate has been submitted and completed by Construction, CSS numbers to be updated once Class 3 for Phase 2 is completed. Submitted to Land for preliminary Species at Risk (SAR) and permits review. Early consultation with Land shows existing valid easement at Header location. MTO permit will not be required. Follow up requested from Land 1/21/2021 and copy of DWG provided. Header DWG in progress – estimate was included with Phase 1 and is complete.</p> <p>Black Creek - Phase Two - Scope: consists of 3230M NPS 4 PE IP, 214M NPS 2 PE IP, the replacement of 17 IP to IP services and 34 MP to IP services. There are two Headers that will be replaced as part of this phase. 1) Private Laneway: 253M, NPS 2 PE IP and 2 MP to IP Services. 2) Switch Road: 363M NPS 2 PE IP and 3 MP to IP Services. Project also has one water crossing and 3 Concrete Culvert</p>	Planned							
Southeast	80 - Niagara	Distribution Pipe	Pass		30046	2nd Ave PTC - Area 80 - 1180	2032	\$ 4,468,978	<p>2nd Ave. - Area 80 - 1180</p> <p>Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.</p> <p>Comments: Plan Year 1 and Execute Year 2 (1711990).</p>	Planned							
Southeast	80 - Niagara	Distribution Pipe	Pass		30047	Briarsdale Dr STC - Area 80 - 1174	2032	\$ 3,014,798	<p>Briarsdale Dr. - Area 80 - 1174</p> <p>Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization</p> <p>Comments: Plan Year 1 and execute Year 2.</p>	Complete	Fail	NPS 2, cannot downsize or retire					
Southeast	80 - Niagara	Distribution Pipe	Pass		30049	Cattell Dr NFalls- Area 80 - 1170	2032	\$ 2,638,617	<p>Cattell Dr. - Area 80 - 1170</p> <p>Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization</p>	Planned							

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Southeast	80 - Niagara	Distribution Pipe	Pass		30050	Dexter Dr WELL - Area 80 - 1169	2030	\$ 3,715,274	Dexter Dr. - Area 80 - 1169 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Plan Year 1 and execute Year 2.	Planned							
Southeast	80 - Niagara	Distribution Pipe	Pass		30054	Forkes Rd E PTC - Area 80 - 1132	2031	\$ 3,308,747	Forkes Rd. E. - Area 80 - 1132 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Plan Year 1 and execute Year 2.	Planned							
Southeast	80 - Niagara	Distribution Pipe	Pass		30055	Geneva St STC - Area 80 - 1187	2031	\$ 7,869,856	Geneva Street - Area 80 - 1187 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Plan Year 1 and execute Year 2.	Planned							
Southeast	80 - Niagara	Distribution Pipe	Pass		30056	Flanders Ave STC - Area 80 - 1809	2030	\$ 4,664,378	Handers Ave. - Area 80 - 1156 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Plan Year 1 and execute Year 2.	Planned							
Southeast	80 - Niagara	Distribution Pipe	Pass		30057	Hillcrest Ave STC - Area 80 - 1176	2028	\$ 1,984,698	Hillcrest Ave. - Area 80 - 1176 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Southeast	80 - Niagara	Distribution Pipe	Pass		30058	Hixon St LINC - Area 80 - 1153	2032	\$ 2,040,131	Hixon St. - Area 80 - 1153 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Southeast	80 - Niagara	Distribution Pipe	Pass		30062	Lavinia St FE - Area 80 - 1171	2029	\$ 2,847,536	Lavinia St. - Area 80 - 1171 Vintage steel pipes exhibit increased failures as they age, as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Plan Year 1 and execute Year 2.	Planned							
Southeast	80 - Niagara	Distribution Pipe	Pass		30064	McCain St PTC - Area 80 - 1136	2031	\$ 2,321,259	McCain St. - Area 80 - 1136 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Plan Year 1 and execute Year 2.	Planned							
Southeast	80 - Niagara	Distribution Pipe	Pass		30067	Niagara Wine Route 2 NOTL - Area 80 - 1191	2030	\$ 1,938,422	Niagara Wine Route 2 - Area 80 - 1191 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Plan Year 1 and execute Year 2	Planned							

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Southeast	80 - Niagara	Distribution Pipe	Pass		30071	Queen St LINC - Area 80 - 1150	2029	\$ 2,241,560	Queen St. - Area 80 - 1150	Complete	Fail	NPS 2, cannot downsize or retire					
									Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.								
Southeast	80 - Niagara	Distribution Pipe	Pass		30078	Swan Dr STC- Area 80 - 1163	2032	\$ 4,517,357	Swan Dr. - Area 80 - 1163	Planned							
									Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.								
									Comments: Plan Year 1 and execute Year 2.								
Southeast	80 - Niagara	Distribution Stations	Fail	Dollar threshold	7759	THOROLD TOWNLINE GATE	2024	\$ 888,490									
Southeast	80 - Niagara	Distribution Stations	Fail	Dollar threshold	7760	VINELAND GATE	2026	\$ 875,031									
Southeast	80 - Niagara	Distribution Stations	Fail	Dollar threshold	18850	GRASSYBROOK & MCKENNY DISTRICT	2026	\$ 157,496									
Southeast	80 - Niagara	Distribution Stations	Fail	Dollar threshold	18851	ONTARIO & DEERE DISTRICT LP	2026	\$ 283,358									
Southeast	80 - Niagara	Distribution Stations	Fail	Dollar threshold	18917	TOWNLINE & RUSHOLME DISTRICT	2023	\$ 144,018									
Southeast	80 - Niagara	Distribution Stations	Pass		3610	CROWLAND STORAGE TRANSFER	2023	\$ 24,124,880	Crowland Storage Transfer Station is located on EGI-owned property of approximately 7,300 m2 fenced compound in the Port Colborne, Ontario, approximately 7 km southeast of Welland, Ontario, within a rural area, in close proximity to a railway corridor. This station accepts natural gas from EGI Crowland Gas Storage facilities and provides supply to and from XHP networks, through components within the measurement system, pressure control system, heating system, odourant system, and telemetry system. This station delivers and withdraws natural gas from Storage Operations Wells in the Niagara Region. The following issues have been identified at this station: Odourization: The odourant system was installed in 2000. The current configuration of the odourant system does not ensure adequate containment of the odourant product in the event of a leak and does not meet the current engineering standards and approvals. Telemetry & Electrical: The existing electrical system does not meet current EGI electrical installation standards. This poses a potential electrical hazard and faulty wiring may result in lost communications. Compliance: The Canadian Electrical Code Section 22.1 indicates that all electrical and instrumentation equipment located in a hazardous area must be rated for that area classification. The Remoter Terminal Unit (RTU) building has been identified as being located in an area classification and its equipment is not rated to operate in this environment. This is a risk of ignition and fire in the event of a gas leak. Scope Includes: 1) Install annubars on inlet and outlet. -Install actuator on each operator regulator and on valves 8, 9 and 10. Required electrical work: -Relocate RTU building out of classified area (including new building and foundation). -Install generator and automatic transfer switch. -Upgrade tower to improve signal quality. -Upgrade lighting. 2) Install filter separator and receiver on inlet.	Planned							
Southeast	80 - Niagara	Distribution Stations	Pass		3620	MOUNTAIN RD GATE	2026	\$ 4,651,715	Mountain Road Gate Station is located on EGI-owned property of approximately 1,800 m2 in a fenced compound in Niagara Falls, Ontario, approximately 10 km from Niagara Falls, within a rural/urban area. This station accepts natural gas from TC Energy and provides supply to one NPS 12 XHP network (Glendale), one NPS 12 HP network (Dorchester), and one NPS 8 IP network (Lundy's Lane). The gate station includes a measurement system, pressure control system, heating system, odourant system, and telemetry system. This station supplies natural gas to approximately 85,700 customers in the Niagara region. The following issues have been identified at this station: Valves & Piping: Valve actuators have been installed on the outlet valves and on the heat exchanger isolation and bypass valves, but programming is required to control the actuators with the Remote Terminal Unit (RTU). Valves are functioning well but are all original valves that were installed during the installation of the gate station (approximately 30 years) and may need to be replaced due to age. Measurement: The inlet is metered by a relatively new NPS 12 ultrasonic meter (approximately 10 years). The current system does not provide measurement of the individual outlet supplies. Visibility to each outlet supply provides greater redundancy to the existing measurement and improved response capabilities. Outlet metering is to be connected to SCADA and visible to the Gas Control group. Heating: Three existing boilers at this site are old boilers that are approximately 20 years old. They have had 10 trouble call/failures over the recent years, including failures of the motors and pumps, burner lock-outs and exchanger failures. The existing heat exchanger was installed in 1995 and will be at end of life by the rebuild date. Due to recent and upcoming customer growth in the Niagara Falls area, the existing heating system will not be capable of supplying the heating requirements to meet the demand. Fuel gas station to the boilers is metered but conversion of the generator from diesel to natural gas will require it to be upsized. Pressure Control: The configuration of the existing regulators are all boot-style regulators, posing an undesired higher risk and high associated ongoing maintenance costs. The regulators will have to be replaced. In addition, an upstream filter should be installed.	Planned							
Southeast	80 - Niagara	Distribution Stations	Pass		7752	NIAGARA GATE	2024	\$ 4,550,640	Niagara Gate Station is located on EGI-owned property of approximately 1,900 m2 fenced compound in the Town of Niagara-on-the-Lake, Ontario, approximately 7 km from Niagara-on-the-Lake, ON, within a rural area. This station accepts natural gas from TC Energy and provides supply to an XHP network, through components within the Measurement system, Pressure Control system, Heating system, Odourant system, and Telemetry system. This station supplies natural gas to approximately 6,800 customers in the Niagara Region. The following issues have been identified at this station: Heating: The existing boilers at this site are 15 years old, they have had numerous trouble call/failures recently, including failures of the motors and pumps, burner lock-outs and exchanger failures, and are at end of life. Repairs have been made but the reliability of the heating system is no longer acceptable. The proposal is to replace the existing boiler system with a CWT outside of any hazardous area. Telemetry & Electrical: The existing Electrical system does not meet current EGI electrical installation standards. This poses a potential electrical hazard and faulty wiring may result in lost communications. A new natural gas generator for backup power will also be required.	Planned							

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Southeast	80 - Niagara	Distribution Stations	Pass		16586	TALISMAN PRODUCTION	2025	\$ 1,916,321	<p>Issue/Concern:</p> <p>Measurement: Currently, a Turbine meter is used with no problems.</p> <p>Assets: Odourant, Telemetry, Related Program (if applicable).</p> <p>Measurement: There is flanged obsolete Daniel Senior orifice meter on site on the outlet piping that needs to be removed; a simple flanged spool piece can be inserted.</p> <p>Odourant: Old odourant pumps and a separate odourant tank need to be put into a single building with containment.</p> <p>Telemetry and Electrical: Currently, old Remote Terminal Unit (RTU) 3330 is required to be upgraded. The Telemetry and Electrical systems do not meet current EGI standards, do not contain backup power supply in the event of power loss, and are approaching end of useful life. The existing RTU is obsolete and is required to be upgraded to current standards along with new communications equipment in order to eliminate cybersecurity threats. There should be an upgrade of RTU to Control Wave Micro. There should be an upgrade of electrical wiring to the new Odourant building. This site has no generator.</p> <p>Piping: There is a live riser in place that is flanged closed, so removing it may be a consideration. There is no distribution regulation; line pressure is taken from the compressors.</p>	Planned							
Southeast	80 - Niagara	Growth	Pass		3766	Area 80 - Apartment Ensuite - New Construction*		\$ 9,616	Vertical Subdivision - A multiple unit residential building where each suite is individually metered. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers.	Planned							
Southeast	80 - Niagara	Growth	Pass		3769	Area 80 - Commercial - New Construction*		\$ 23,213,667	<p>Issue/Concern: Commercial New Construction refers to a customer intending to run a commercial business in a newly-constructed building and intending to using natural gas to meet energy needs</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Planned							
Southeast	80 - Niagara	Growth	Pass		3770	Area 80 - Industrial - New Construction*		\$ 9,245,468	<p>Issue/Concern: Industrial New Construction refers to a customer intending to run an industrial manufacturing business in a newly-built facility and intending to use natural gas.</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Planned							
Southeast	80 - Niagara	Growth	Pass		3772	Area 80 - Residential - New Construction*		\$ 53,055,300	<p>Issue/Concern: Residential New Construction refers to anew residential construction development of detached single homes constructed by the bulder for domestic purposes.</p> <p>Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth.</p> <p>Assets: All applicable assets. Related Program: N/A</p>	Planned							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Southeast	Div_07 - Waterloo	Distribution Pipe	Pass		30246	Div. 06 - Brantford - Franklin St - Southeast - Waterloo - 1388	2031	\$ 4,963,682	Div. 06 - Brantford - Franklin St. - Southeast - Waterloo - 1388 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Southeast	Div_07 - Waterloo	Distribution Pipe	Pass		30248	Div. 06 - Brantford - Greenwich St - Southeast - Waterloo - 1332	2029	\$ 3,486,632	Div. 06 - Brantford - Greenwich St - Southeast - Waterloo - 1332 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Southeast	Div_07 - Waterloo	Distribution Pipe	Pass		30252	Div. 06 - Brantford - St George St - Southeast - Waterloo - 1312	2031	\$ 5,813,159	Div. 06 - Brantford - St. George St. - Southeast - Waterloo - 1312 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Southeast	Div_07 - Waterloo	Distribution Pipe	Pass		30253	Div. 06 - Brantford - St George St 2 - Southeast - Waterloo - 1386	2030	\$ 6,018,336	Div. 06 - Brantford - St. George St. 2 - Southeast - Waterloo - 1386 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: MTO permit may be required and it is a lengthy process.	Planned							
Southeast	Div_07 - Waterloo	Distribution Pipe	Pass		30256	Div. 06 - Brantford - Toll Gate Rd - Southeast - Waterloo - 1314	2029	\$ 3,565,964	Div. 06 - Brantford - Toll Gate Rd. - Southeast - Waterloo - 1314 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Piping on Hill Ave. from Charing Cross to Wood St. was replaced with NPS 2 PE in 2021 as part of 06-21-609 Hill Ave. (Charing Cross to Wood St.) replacement project. The City of Brantford is restoring Hill Ave., Wood St. and Charing Cross. Pipe on Hill Ave. from Charing Cross to Wood St. was replaced in 2021. This project was updated to reflect a moratorium until 2026.	Planned							
Southeast	Div_07 - Waterloo	Distribution Pipe	Pass		30260	Div. 06 - Norfolk County - Andy's Corners - Norfolk County Rd 21 - Southeast - Waterloo - 1325	2028	\$ 1,674,985	Div. 06 - Norfolk County - Andy's Corners - Norfolk County Rd. 21 - Southeast - Waterloo - 1325 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Customer station 12U-327C will need to be shut down and monetary compensation may be required. Producer station 12U-301 may need to be built. Inlet gas is not owned by EGI and coordination is required. Farm taps will need to be built for every service.	Planned							
Southeast	Div_07 - Waterloo	Distribution Pipe	Pass		30266	Div. 06 - Norfolk County - Tillsonburg - 3rd Concession Rd N - Southeast - Waterloo - 1310	2031	\$ 4,084,703	Div. 06 - Norfolk County - Tillsonburg - 3rd Concession Rd. N. - Southeast - Waterloo - 1310 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There is a rail crossing.	Planned							
Southeast	Div_07 - Waterloo	Distribution Pipe	Pass		30267	Div. 06 - Tillsonburg - Brownville Rd - Southeast - Waterloo - 1391	2027	\$ 2,548,549	Div. 06 - Tillsonburg - Brownville Rd. - Southeast - Waterloo - 1391 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There are inside regulators and wall-to-wall concrete in downtown core.	Complete	Fail	NPS 2, cannot downsize or retire					
Southeast	Div_07 - Waterloo	Distribution Pipe	Pass		30269	Div. 06 - Tillsonburg - Potters Rd - Southeast - Waterloo - 1375	2028	\$ 2,759,507	Div. 06 - Tillsonburg - Potters Rd. - Southeast - Waterloo - 1375 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Complete	Fail	NPS 2, cannot downsize or retire					

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Southeast	Div_07 - Waterloo	Distribution Stations	Fail	Dollar threshold	735308	WATE: 18U-220R Bechtel & Millvue LP	2023	\$ 62,277									
Southeast	Div_07 - Waterloo	Distribution Stations	Fail	Dollar threshold	735310	WATE: 18U-407R Church & Sherring LP	2023	\$ 62,277									
Southeast	Div_07 - Waterloo	Distribution Stations	Fail	Dollar threshold	735320	WATE: 17U-211R Stanley @ Glenmorris LP	2023	\$ 62,277									
Southeast	Div_07 - Waterloo	Distribution Stations	Fail	Dollar threshold	735321	WATE: 17U-214R Middleton St at Waterworks LP	2023	\$ 62,277									
Southeast	Div_07 - Waterloo	Distribution Stations	Fail	Dollar threshold	735322	WATE: 18U-403R Agnes & William LP	2023	\$ 62,277									
Southeast	Div_07 - Waterloo	Distribution Stations	Fail	Dollar threshold	735324	WATE: 18U-418R 122 Dolph St N LP	2023	\$ 62,277									
Southeast	Div_07 - Waterloo	Distribution Stations	Fail	Dollar threshold	735325	WATE: 18U-506R Bishop & King LP	2023	\$ 62,277									
Southeast	Div_07 - Waterloo	Distribution Stations	Pass		503275	Waterloo/Brantford PFM Compliance Program*		\$ 1,190,069	Issue/Concern/Opportunity: -PFMs that require a bypass will be rebuilt w/bypass to the new standard: oWhen they are due for a meter exchange and in the meter seal expiry year, provided that year is between 2022 and 2026. This will fall under the meter exchange budget and costs are not covered in this program. of the meter seal year is not between 2022 and 2026, the set will be rebuilt with a bypass the year after it is inspected. This will allow the technicians to identify which will require rebuilt at the time of inspection, and Sohan and I will be developing a process to get work orders generated for these rebuilds after the inspection. Also ensures that we focus our efforts on rebuilding active PFMs requiring rebuild. While I originally mentioned a proactive strategy to rebuild prior to the inspection year, we decided against that. -Assumption is that 50% of PFMs will need to be rebuilt. -Calculations are based on an estimate of \$5500 per rebuild. As you know there is a significant swing depending on the pipe size, volume, existing set up (first stage cut, etc) that may influence this including the release of the new SEADs designs, that I have not seen yet.	Complete	Fail	See investment description, IRPAs not applicable					
Southeast	Div_07 - Waterloo	Growth	Pass		30527	SRP_Southeast_Baden_185-501STN_Rebuild	2029	\$ 956,425	Increase capacity.	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		30528	SRP_Southeast_Baden_Peel St_Reinforcement_NPS6_400m_420kPa	2028	\$ 644,963	New reinforcement main along Bleams Rd. E. is required.	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		30529	SRP_Southeast_Brantford_Maple Grove Rd_Reinforcement_NPS6_830m_420kPa	2027	\$ 1,323,087	Pipe reinforcement required to maintain system pressures due to growth	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		30530	SRP_Southeast_Breslau_19T-601RSTN_Rebuild	2028	\$ 1,350,208	Increase capacity.	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		30532	SRP_Southeast_Breslau_Sawmill Rd_Reinforcement_NPS4_500m_3450kPa	2027	\$ 797,040	High Pressure (HP) reinforcement along Sawmill Rd. is required.	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		30533	SRP_Southeast_Breslau_Sawmill Rd_Reinforcement_NPS4_900m_3450kPa	2032	\$ 1,550,035	High Pressure (HP) reinforcement is required along Sawmill Rd. This is a continuation of project SRPR OSGW 2027_005.	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		30536	SRP_Southeast_Cambridge_Guelph Ave_Reinforcement_NPS6_1000m_420kPa	2026	\$ 1,467,640	Reinforce existing main along Guelph Ave. in Cambridge with 1,000 m NPS 6 PE.	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		30537	SRP_Southeast_Cambridge_Pinebush Rd_Reinforcement_NPS6_470m_420kPa	2023	\$ 614,669	Reinforce existing NPS 2 PE along Pinbush Rd. with approximately 470 m NPS 6 PE. Project has been pushed to 2023.	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		30540	SRP_Southeast_Kitchener_Bleams_Reinforcement_NPS12_10m_6160kPa	2023	\$ 809,595	Install an above-grade valve site with 12-inch crossover and scraper bar tees.	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		30541	SRP_Southeast_Listowel_21Q-103RSTN_Rebuild	2024	\$ 411,015	Increase capacity and maximum sustainable.	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		30542	SRP_Southeast_Owen Sound_County Rd 40_Reinforcement_NPS12_11800m_4670kPa	2025	\$ 34,094,285	Loop existing 10-inch Steel 4,670 kPa main from existing PH4 reinforcement to Squire, Ontario with 12-inch steel main. Install valve site and 12-inch receiver facilities.	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		30545	SRP_Southeast_Port Elgin_29N-101STN_Rebuild	2024	\$ 1,318,144	Increase capacity.	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		30547	SRP_Southeast_Southampton_30N-501STN_Rebuild	2030	\$ 1,335,240	Increase capacity.	In Progress							
Southeast	Div_07 - Waterloo	Growth	Pass		30548	SRP_Southeast_Southampton_South St_Reinforcement_NPS6_600m_550kPa	2028	\$ 967,445	A new main from Railway Rd. running along South St. is required.	In Progress							
Southeast	Div_07 - Waterloo	Growth	Pass		48396	WATE: Company Program - New Business - Scattered Mains - Contractor*	2020	\$ 29,699,613	Scattered Mains	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		48998	WATE - Breslau System Reinforcement	2022	\$ 2,816	Issue/Concern/Opportunity: System Reinforcement - Loop existing 2-inch PE with 1,300 m 6-inch PE along Victoria Rd. S. from Clair Rd. E. southerly to #1953 Victoria Ave. S. tying into NPS 4 PE main. (WAT FBPR 2022_1) Per Distribution Optimization Engineering (DOE) 2021 System Reinforcement Plan (SRP). Asset: 2-inch PE with 1,300 m 6-inch PE along Victoria Rd. S. from Clair Rd. E. southerly to #1953 Victoria Ave. S. tying into NPS 4 PE main. (WAT FBPR 2022_1) Related Program: N/A	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		49079	SRP_Southeast_Guelph_Victoria Rd S_Reinforcement_NPS6_1500m_420kPa	2026	\$ 1,204,126	Issue/Concern/Opportunity: System Reinforcement - Loop existing 2-inch PE with 1,300 m 6-inch PE along Victoria Rd. S. from Clair Rd. E. southerly to #1953 Victoria Ave. S. tying into NPS 4 PE main. (WAT FBPR 2022_1) Per Distribution Optimization Engineering (DOE) 2021 System Reinforcement Plan (SRP) review, project was deferred from 2022 to 2026. Asset: 2-inch PE with 1,300 m 6-inch PE along Victoria Rd. S. from Clair Rd. E. southerly to #1953 Victoria Ave. S. tying into NPS 4 PE main. (WAT FBPR 2022_1) Related Program: N/A	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		49104	WATE: Starlight Dist Stn, Meaford, Growth	2025	\$ 14,978	Issue/Concern/Opportunity: Station is to be rebuilt with 9.5-150FR. There is over-capacity due to load additions. Asset: Station ID: 31T-102R. Related Program: N/A	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		49105	WATE: Baden Dist Stn, Baden, Growth	2025	\$ 1,056,821	Issue/Concern/Opportunity: A new distribution station for growth in Baden off the 6,160 kPa system delivering 1,900 kPa outlet is required. Predicted flow of 8,000 m3/h is required. It is a similar station to 18S-374 in 2018. EGI is not meeting minimum inlets at 19R-501R (Wellesley District Regulating Station) and 19R-502R (Hammer District Regulating Station). This project may be pushed into 2024 but need it to be flowing in 2024. This has been deferred to 2025 per the 2021 System Reinforcement Plan (SRP) updates. Asset: 19R-501R (Wellesley District Regulating Station) and 19R-502R (Hammer District Regulating Station) Related Program: N/A	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		49149	WATE - Mount Forest System Reinforcement	2027	\$ 388,568	Issue/Concern/Opportunity: A system reinforcement is required. Loop 2-inch PE with 4-inch PE along Main St. N. 600 m NPS 4 PE from Sligo Rd. to Cora Lea St. Minimum pressures are NW of town. (WAT FBPR 2025_4) Asset: Main St. N. 600 m NPS 4 PE from Sligo Rd. to Cora Lea St. Related Program: N/A	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		49794	WATE: Listowel System Reinforcement, Proj# 07-21-705	2023	\$ 1,743,742	Listowel - 1.9 km of 6-inch ST at 1,900 kPa MOP. This project in conjunction with the 2024 project will accommodate approximately 5 years' growth on the Listowel lateral starting in 2023, preferred alternative is MOP upgrade. This project has 2021 prework (direct assessment, etc.). Results of the prework may change the 2024 capital requirements.	Planned							
Southeast	Div_07 - Waterloo	Growth	Pass		100831	WATE: 21U-101 Fergus Second Stage, Fergus, Station Rebuild (Load Growth), Proj#	2023	\$ 890,554	Issue/Concern/Opportunity: Station is expected to be at capacity in 2023. Rebuild is required to restore capacity for Fergus system and enable additional growth. Assets: 21U-101 Fergus Second Stage Related Program: Not applicable	Planned							

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Southeast	Div_16 - Hamilton	Distribution Stations	Pass		503271	Hamilton/Halton PFM Compliance Program*		\$ 843,392	Issue/Concern/Opportunity: -PFMs that require a bypass will be rebuilt w/bypass to the new standard: oWhen they are due for a meter exchange and in the meter seal expiry year, provided that year is between 2022 and 2026. This will fall under the meter exchange budget and costs are not covered in this program. of the meter seal year is not between 2022 and 2026, the set will be rebuilt with a bypass the year after it is inspected. This will allow the technicians to identify which will require rebuilt at the time of inspection, and Sohan and I will be developing a process to get work orders generated for these rebuilds after the inspection. Also ensures that we focus our efforts on rebuilding active PFMs requiring rebuild. While I originally mentioned a proactive strategy to rebuild prior to the inspection year, we decided against that. -Assumption is that 50% of PFMs will need to be rebuilt. -Calculations are based on an estimate of \$5500 per rebuild. As you know there is a significant swing depending on the pipe size, volume, existing set up (first stage cut, etc) that may influence this including the release of the new SEADs designs, that I have not seen yet.	Complete	Fail	See investment description, IRPAs not applicable					
Southeast	Div_16 - Hamilton	Distribution Stations	Pass		735038	HAMI: Hamilton Takeoff & Carlisle Gate, Rebuild	2026	\$ 7,819,336	Issue/Concern/Opportunity: The current station is experiencing frost heave due to a large pressure cut and the soil conditions that is leading to pipe movement. The odourant lines are kinked as a result of the station heaving. The existing heating system will be evaluated and possibly replaced with a CWT heater. The current pressure control devices are Control valves that have been experiencing reliability concerns and have required maintenance. The scope of this project is to rebuild with below-grade control valves. Assets: Related Investments: N/A Station rebuild not required if Growth investment #30538 proceeds	Planned							
Southeast	Div_16 - Hamilton	Distribution Stations	Pass		735043	HAMI: Jarvis trans, full rebuild	2026	\$ 6,516,114		Planned							
Southeast	Div_16 - Hamilton	Distribution Stations	Pass		735045	HAMI: KIRKWALL/DOMINION, Full Rebuild	2029	\$ 8,197,927	Issue/Concern/Opportunity: Noise issues This site has received numerous noise complaints and odour from residents in the area. Constant bleeds on the control valves are causing the odour complaints. Consider Becker below grade ball valve station with no bleed pilots and DNGP for any needed flow control/pressure control. Fisher control valves are not a good option as they come with high O&M annual spend to operate and maintain. VALVE & PIPING: Most valves becoming difficult to turn even with greasing. Many position indicators on tops of valves have fallen off due to ongoing corrosion. FILTRATION: Filter decent shape – gas is dry and clean HEATING: System is in constant state of repair and boiler age is old. A lot of corrosion on the glycol piping. There is not proper containment for the heat exchanger. Current system used all un-odourized gas inside. PRESSURE CONTROL: Control valves needs support from Lakeside Controls to perform annual Operations ODOURIZATION: Mois system (older vintage) room is very tight to get all assets inside the cabinet and room. Odourant cabinet in poor condition. No fire suppression system installed on odourant. TELEMETRY & ELECTRICAL: Back up generator in decent shape. Electrical panels in poor shape and not properly labelled. All building do not have any methane detection or CO detection in boiler rooms. MEASUREMENT . COMPLIANCE & OTHER Eng: Turbine meter is in decent shape and is used for process control only. Buildings are old and in declining condition. One is brick façade and the others are metal buildings. Fencing in decent shape. Gates droop in the winter and would be better to go to the sliding gate standard. Consider adding swipe card access to compound and buildings to meet corporate security standards to compound and buildings. There is not a containment area for any chemicals being stored on site. Ancaster Gate South is inside compound and is also in similar condition to Kirkwall-Dominion. There is supposed to be a pig launcher added to this site. Assets: 16W-606	Planned							
Southeast	Div_16 - Hamilton	Distribution Stations	Pass		735048	HAMI :CALEDONIA TRANSMISSION STN, Rebuild	2027	\$ 8,326,458	Issue/Concern/Opportunity: VALVE & PIPING: Most valves becoming difficult to turn even with greasing. Many position indicators on tops of valves have fallen off due to ongoing corrosion. Lots of corrosion on piping and leaks on an orifice meter that cannot be repaired. Frost heave on the Mount Hope line. Paint of piping in entire site is in poor condition and lots of external rust. FILTRATION: Filter is getting replaced next month. If pigging at this site, a separator is needed. HEATING: System is old and poor shape. The heaters are oversized and there is some cracking on some of the older boilers. Because heaters do not run the correct length of time, some of the gas lines remain frosted on the second and third cut. Heat exchangers are not contained and boiler rooms only have angle iron containment on the floors. PRESSURE CONTROL: second station cut cannot keep up with demand to the Dunnville market. A pressure cuts are single regs and full capacity reliefs. Consider Becker buried ball valve station with no bleed pilots. ODOURIZATION: no odurant on site TELEMETRY & ELECTRICAL: Transmitters are old analogue devices and situated to make ongoing testing and maintaining difficult. Electrical panels are old and not properly labeled. There are no methane or CO detectors in boiler room. Should consider swipe card access to compound and buildings. Site does not have a back up generator. MEASUREMENT . COMPLIANCE & OTHER Eng: Orifice measurement has leaks and should be upgraded to a properly sized turbine meter. Measurement runs do not have any bypass piping. Site has an old storage building of metal construction. Need new storage building as this is a location where the Dunnville yard keeps materials and supplies in a remote location. There is not a contained area for any chemicals being stored on site. Need space from existing fencing to adjacent neighbors to keep vegetation controlled. Lots of vegetation coming up through fencing and gates are drooping, consider a new slide gate standard. Site access is off of highway 6 where traffic is at a high rate of speed (80 kph +) Consider possibility of accessing yard from rear laneway. Front fence line should be lined with Jersey barriers for compound protection. Snow plowing is a challenge at this location due to closeness to road and high rate of traffic speed. Existing compound does not have any crash bar man gates for egress. The heating system will be replaced during this project. Assets: 15X-401	Planned							
Southeast	Div_16 - Hamilton	Growth	Pass		30526	SRP_Southeast_Ancaster_16W-601STN_Rebuild	2024	\$ 181,990	Build to higher capacity.	Planned							
Southeast	Div_16 - Hamilton	Growth	Pass		30538	SRP_Southeast_Jarvis_12W-102STN_Rebuild	2026	\$ 4,430,957	Rebuild for increased capacity and lower pressure differential across station is required.	Planned							
Southeast	Div_16 - Hamilton	Growth	Pass		30539	SRP_Southeast_Jarvis_12W-201STN_Rebuild	2023	\$ 1,806,019	Build to higher outlet pressure and higher capacity.	Planned							
Southeast	Div_16 - Hamilton	Growth	Pass		48427	HAMI: Company Program - New Business - Scattered Mains - Contractor*	2020	\$ 37,827,801	Scattered Mains	Planned							
Southeast	Div_16 - Hamilton	Growth	Pass		500421	HAMI: Company Program - Customer Connections*		\$ 43,466,496	Hamilton Customer Connections Program Items	Planned							
Southeast	Div_16 - Hamilton	Growth	Pass		736259	Hamilton Industrial Reinforcement	2025	\$ 132,907,739	Issue/Concern/Opportunity :Reinforcement required to support changes to industrial demand in the area. Assets: Distribution Reinforcement	Planned							
Southeast	Div_16 - Hamilton	Utilization	Pass		48439	HAMI: Meter & Regulator Inst Repl-Contractor	2020	\$ 42,953,109	Related Program: N/A Meter & Reg Install- Replacement	Complete	Fail	See investment description, IRPAs not applicable					

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30035	Riverside Dr E - Southwest - Windsor - 1357	2032	\$ 2,567,902	Riverside Dr. E. - Southwest - Windsor - 1357 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30036	Rourke Line Rd - Southwest - Windsor - 1373	2031	\$ 3,170,019	Rourke Line Rd. - Southwest - Windsor - 1373 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30037	Spring Garden Rd - Southwest - Windsor - 1658	2028	\$ 2,195,452	Spring Garden Rd. - Southwest - Windsor - 1658 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: Project is split into smaller projects based on feedback from region (Spring Garden Rd. and included in Malden Rd.).	Planned							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30038	St Anne Blvd - Southwest - Windsor - 1319	2030	\$ 2,221,991	St. Anne Blvd. - Southwest - Windsor - 1319 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30039	Talbot Rd - Southwest - Windsor - 1369	2031	\$ 3,120,988	Talbot Rd. - Southwest - Windsor - 1369 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30042	Tecumseh Rd W 2 - Southwest - Windsor - 1492	2031	\$ 3,772,556	Tecumseh Rd. W. 2 - Southwest - Windsor - 1492 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		30044	Walker Rd - Southwest - Windsor - 1333	2029	\$ 3,711,443	Walker Rd. - Southwest - Windsor - 1333 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.	Planned							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		48288	WIND: Dist-Repl-Contr-Mains Municipal*	2020	\$ 71,550,345	General: Projects in the relocation category are capital expenditures required to replace or relocate segments of pipeline in order to accommodate municipal infrastructure work. The cost sharing for this work is managed through the Franchise Agreements established with municipalities. A consultative approach is used between the municipality and EGI to avoid conflicts with municipal infrastructure early in the planning stage. If a conflict is unavoidable, pipeline assets are typically relocated or replaced.	Planned							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		48302	WIND: Anodes*	2020	\$ 8,143,100	General: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within EGI's system. These installations and replacements are based on the internal Standard Operating Practice established to maintain the appropriate level of cathodic protection on steel pipeline assets.	Complete	Fail	See investment description, IRPAs not applicable					
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		48994	WIND: Laird & Centre MIP, Essex, Replacement	2028	\$ 2,057,382	Replace 2,400 m of 2-inch/4-inch S DL protected main (35 kPa) with 250 m of 4-inch plastic main (420 kPa) and 3,850 m of 2-inch plastic main (420 kPa) on Laird Ave. and Centre St. in the Town of Essex. Abandon existing station and replace with new Lakeside pre-fab station. There are 150 services that will either need to be replaced or tied over.	Planned							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		49743	WIND: Riverside Aldyl A - Ph 1, Windsor, Replacement	2027	\$ 2,151,002	This project will replace the approximately 1.1km of 1978 vintage Aldyl-A PE main along Riverside Drive in Windsor, from Bertha Street to Clover Drive. This main is known to be very brittle, has a total of 4 known C leaks, and many lined services. A portion of this 4" PE main is lined in the former 6" S CT main installed in 1968 that continues on either side of Riverside Drive, making maintenance and new service connections extremely difficult. There are approximately 18 services renewals required. Main to be replaced with 1100 m of 4" PE IP.	Planned							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		49747	WIND: Tecumseh Rd W, Windsor, Replacement	2028	\$ 2,683,541	This job will replace 1,025 m of NPS 8 steel (S) Prior to Records (PTR) main on Tecumseh Rd. W. from Everts Ave. to Betts Ave. with 1,025 m of 8-inch S Yellow Jacket (YJ). This main is either too poor condition or laminated, and as a result cannot be welded on. In addition to weldability issues, several leaks have occurred over the last several years, which have all resulted in high capital expenditures to repair them. This main also requires many anodes try and maintain cathodic protection levels, all of which must be installed in wall-to-wall concrete. The most recent anodes were installed in the last two to three years meaning by 2025, new ones will need to be installed to replace them. This project will also include the renewal of 16 services.	Planned							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		49812	WIND: Oak St - Ph 2, Leamington, Replacement	2031	\$ 2,091,921	Phase 2 will continue from the end point of the 2017 project, and replace the remaining 600 m of NPS 8 Prior to Records (PTR) pipe from Danforth to Oak Street station with 10-inch steel (S) Yellow Jacket (YJ). There will be 12 service renewals. There is one leak on this section of main.	Planned							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		49814	WIND: Tecumseh Rd E - Ph 2, Windsor, Replacement	2028	\$ 2,993,180	Phase 2 will replace 1,000 m of Prior to Records (PTR) / DL protected NPS 8 Steel (S) main from 10490 to 11168 Tecumseh Rd. E. with 1,000 m of 8-inch S Yellow Jacket (YJ). There are a total of 14 services and 3 main tie-overs. This main is either in too poor condition or laminated, and as a result cannot be welded on. In addition to weldability issues, several leaks have occurred over the last several years which have all resulted in high capital expenditures to repair them. This area requires a substantial amount of anodes to keep it cathodically protected. This area also contains a large amount of growth and development for which the district currently cannot service due to the lacking pipe weldability.	Planned							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		49816	WIND: Mersea Rd 2 - Ph 2, Leamington, Replacement	2023	\$ 1,690,807	This project is Phase 2 of a two-phase project to replace approximately 2,200 m of Coal Tar Wrap (C&W) (620 kPa) steel main along Mersea Rd. 2 (Oak St. Station to Deer Run Rd.). The second phase of this project will involve the replacement of 1,243 m of NPS 6 and 8 C&W (620 kPa) steel main with 1,200 m of 8-inch Steel (S) Yellow Jacket (YJ) gas main and 100 m of 2-inch S YJ. This project will also involve the renewal of 30 steel services.	Planned							

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Southwest	Div_01 - Windsor	Distribution Pipe	Pass		100688	WIND: Riverside Aldyl A - Ph 2, Windsor, Replacement	2028	\$ 3,027,585	This project will replace the approximately 1.7km of 1978 vintage Aldyl-A PE main along Riverside Drive in Windsor, from Bertha Street to Clover Drive. This main is known to be very brittle, has a total of 4 known C leaks, and many lined services. A portion of this 4" PE main is lined in the former 6" S CT main installed in 1968 that continues on either side of Riverside Drive, making maintenance and new service connections extremely difficult. There are approximately 73 services renewals required. Main to be replaced with 700 m of 4" PE IP.	Planned							
Southwest	Div_01 - Windsor	Distribution Pipe	Pass		733732	NPS 12, 10 Baldoon	2024	\$ 4,672,494	Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2025 Operations and Maintenance (O&M) spend for ILI. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	48291	WIND: Plan(T)-Dist-Stn Measuring/Corrosion Stn*	2020	\$ 4,591,035									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	101342	WIND - 03B-102R County Rd 20 & Concession Rd 3 - Heater addition	2023	\$ 215,817									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	101347	WIND - 05B-401R Smith Ind Park - Station Rebuild with Heater	2024	\$ 214,677									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	101357	WIND - 06B-548I Chrysler Paint - Heater Replacement	2024	\$ 206,069									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	101360	WIND - 04B-401R Howard and Pike - Rebuild with Heater	2026	\$ 305,412									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	101608	WIND - 06D-401 Belle River Gate - Replace heater	2031	\$ 624,761									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	101611	WIND - 05A-304R Sprucewood IP - Replace heater	2030	\$ 716,554									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	502698	WIND - 03D-322C Leamington Hospital - rebuild	2023	\$ 271,970									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	502700	WIND - 06B-401 Grand Marais - reg repl & liquid tank	2025	\$ 291,405									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	502701	WIND - 04D-601R Albuna Station rebuild	2030	\$ 1,173,124									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	502772	WIND - 06B-314R Isabelle Place LP - rebuild	2023	\$ 197,166									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	502773	WIND - 06B-517R Ypres LP - rebuild	2024	\$ 204,809									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	502774	WIND - 03E-104C Thiessen Flower Shop - rebuild	2028	\$ 265,880									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	502777	WIND - 04A-302R Texas Rd	2023	\$ 321,023									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	502950	WIND: 06B-607I Ford/Nemak Station Rebuild	2028	\$ 1,273,402									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	503331	WIND - 06C-401 Manning Rd station rebuild	2025	\$ 696,312									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	503333	WIND - 06C-502 Patillo Rd station rebuild	2024	\$ 739,649									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	734654	WIND: 04E-438C Protolight Farms	2026	\$ 311,740									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	734663	WIND: 05B-205R Howard & Outer	2029	\$ 300,135									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	734665	WIND: 06C-602 Puce Transmission	2027	\$ 225,447									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	734666	WIND: 06A-605R Matchette & Prince	2029	\$ 1,450,502									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	734667	WIND: 06B-404 Bruce Ave	2028	\$ 1,533,144									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	734673	WIND: 06B-502 WALKER RD	2032	\$ 694,756									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	735375	WIND: 07H-402R Peter St Station LP	2024	\$ 205,226									
Southwest	Div_01 - Windsor	Distribution Stations	Fail	Dollar threshold	735378	WIND: 06B-105R 540 Ouellette Dist		\$ 99,642									
Southwest	Div_01 - Windsor	Distribution Stations	Pass		101626	WIND - 05A-203 LaSalle Boismier Ave - Heater replacement	2025	\$ 3,099,480	Issue/Concern/Opportunity: Heater controls are located within the hazardous area and are not rated to be within this zone. There is obsolete heating equipment; BS&B style heater that is on the risk register is to be replaced. Justification: Station needs to be rebuilt with new CWT 770. Potential requirement for additional land. Assets: 05A-203 LaSalle Boismier Ave. Related Investments: Not applicable.	Planned							
Southwest	Div_01 - Windsor	Distribution Stations	Pass		502697	WIND - 05B-201 Windsor McGregor Line - rebuild	2026	\$ 1,749,028	Issue/Concern/Opportunity: Known corrosion issues are on risers. Justification: Rebuild station to eliminate potential for leak. Assets: 05B-201	Planned							
Southwest	Div_01 - Windsor	Distribution Stations	Pass		502699	WIND - 05A-601 Front & Malden full rebuild	2025	\$ 1,697,712	Issue/Concern/Opportunity: Station freezes in winter so heater is required. Corrosion is significant on outlet riser. Land will be required to rebuild this station. Justification: Eliminate station freeze risk and remediate corrosion on riser. Assets: 05A-601	Planned							
Southwest	Div_01 - Windsor	Distribution Stations	Pass		503276	Windsor/Chatham PFM Compliance Program*		\$ 676,389	Issue/Concern/Opportunity: -PFMs that require a bypass will be rebuilt w/bypass to the new standard: oWhen they are due for a meter exchange and in the meter seal expiry year, provided that year is between 2022 and 2026. This will fall under the meter exchange budget and costs are not covered in this program. of the meter seal year is not between 2022 and 2026, the set will be rebuilt with a bypass the year after it is inspected. This will allow the technicians to identify which will require rebuilt at the time of inspection, and Sohan and I will be developing a process to get work orders generated for these rebuilds after the inspection. Also ensures that we focus our efforts on rebuilding active PFMs requiring rebuild. While I originally mentioned a proactive strategy to rebuild prior to the inspection year, we decided against that. -Assumption is that 50% of PFMs will need to be rebuilt. -Calculations are based on an estimate of \$5500 per rebuild. As you know there is a significant swing depending on the pipe size, volume, existing set up (first stage cut, etc) that may influence this including the release of the new SEADs designs, that I have not seen yet.	Complete	Fail	See investment description, IRPAs not applicable					
Southwest	Div_01 - Windsor	Distribution Stations	Pass		503332	WIND - 06B-403 California Ave station rebuild	2024	\$ 4,101,179	Issue/Concern/Opportunity: There are asbestos concerns. The converted NATCO heating system is out of date. There are hazardous area concerns. The maintenance of station is an ergonomics concern. The residential neighbourhood location not ideal. There is no containment for glycol. Justification: Station rebuild. Assets: 06B-403	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		30549	SRP_Southwest_Amherstburg_County Rd 20_Reinforcement_NPS4_1500m_420kPa	2032	\$ 407,397	Main extension connecting two 420 kPa pipes together in rural Amherstburg is required.	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		30550	SRP_Southwest_Blenheim_Industrial Ave_Reinforcement_NPS6_600m_420kPa	2032	\$ 711,587	Main reinforcement to tie larger mains together at the low point in Blenheim is required. Replace the existing 2-inch on the north side of Industrial Ave.	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		30552	SRP_Southwest_Essex_05B-401RSTN_Rebuild	2023	\$ 1,126,974	Increase station maximum sustainable from 275 kPa to 380 kPa.	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		30561	SRP_Southwest_Amherstburg_New STN & Reinforcement_NPS4_2200m_3450kPa	2032	\$ 4,619,499	Main extension to the west of the 3,450 kPa pipe and a new distribution station to feed into the 420 kPa network in rural Amherstburg is required.	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		30574	SRP_Southwest_Tecumseh_Manning_Reinforcement_NPS6_250m_420kPa	2023	\$ 311,383	Main extension to the south of Manning Rd. Station is required.	Planned							

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Southwest	Div_01 - Windsor	Growth	Pass		30576	SRP_Southwest_Windsor_05B-205RSTN_Rebuild	2026	\$ 23,693	Station is flowing over capacity.	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		30577	SRP_Southwest_Windsor_County Rd 42_Reinforcement_NPS6_3800m_420kPa	2032	\$ 678,996	Main extension to connect two existing 420 kPa pipes together south of the airport is required.	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		30578	SRP_Southwest_Windsor_Howard_Reinforcement_NPS6_1800m_420kPa	2026	\$ 847,095	Main extension and reinforcement to the south of Howard and Outer Station is required.	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		48287	WIND: Company Program - New Business - Scattered Mains - Contractor*	2020	\$ 11,245,853	Scattered Mains	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		48306	WIND: Generic Greenhouse Windsor*	2020	\$ 81,077,243	Customer Growth	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		101359	SRP_Southwest_Windsor_05A-201STN_Rebuild	2023	\$ 2,138,292	Issue/Concern/Opportunity: There is no station heat. The IP cut is at risk for freeze-off due to large pressure drop (3450kPa to 420kPa). Frost heave, fish-mouth supports, and ankle-level pipe are all concerns. Justification: Eliminate risk of regulator freeze-off and frost heave by adding a CWT 385, rebuild regulator runs (ankle-level and fish-mouth supports). Mercury remediation is needed. Assets: 05A-201 Turkey Creek Related Investments: 502777 - Texas Rd. - Valve MUST be fixed at Texas Rd. before work can begin.	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		500415	WIND: Company Program - Customer Connections*		\$ 50,761,394	Windsor Customer Connections Program Items	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		736070	WIND: LEAM-3 Panhandle Distribution Reinforcement - Essex Road 37 Reinforcement	2026	\$ 1,432,721	Issue/Concern/Opportunity: Greenhouse growth in the Windsor area continues. The Panhandle distribution network needs to be reinforced to allow for the continued industrial customer expansion. A Panhandle transmission reinforcement is also required to meet the demand of the region. LEAM-3 is a distribution system looping project with a station upgrade. Assets: 1,200 m of NPS 6 PE 420 kPa. Station Modification/Rebuild of 04E-501R - Mersea Rd 6/ Cty Rd 37. Related Program: Panhandle Regional Expansion Project 49758	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		736071	WIND: LEAM-4 Panhandle Distribution Reinforcement - Mersea Road 12 Reinforcement	2031	\$ 1,960,382	Issue/Concern/Opportunity: Greenhouse growth in the Windsor area continues. The Panhandle distribution network needs to be reinforced to allow for the continued industrial customer expansion. A Panhandle transmission reinforcement is also required to meet the demand of the region. LEAM-4 is a distribution system looping project: Assets: 1,600 m of NPS 6 ST 3450 kPa Related Program: Panhandle Regional Expansion Project 49758	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		736073	WIND: LEAM-7 Panhandle Distribution Reinforcement - Mersea Road 8 Reinforcement	2023	\$ 1,270,441	Issue/Concern/Opportunity: Greenhouse growth in the Windsor area continues. The Panhandle distribution network needs to be reinforced to allow for the continued industrial customer expansion. A Panhandle transmission reinforcement is also required to meet the demand of the region. LEAM-7 is a distribution system looping project: Assets: 1,300 m of NPS 6 ST, 3450 kPa Related Program: Panhandle Regional Expansion Project 49758	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		736074	WIND: Staples-1A Panhandle Distribution Reinforcement - Ontario Hwy 77 and Mersea Rd 7 Reinforcement	2023	\$ 6,090,643	Issue/Concern/Opportunity: Greenhouse growth in the Windsor area continues. The Panhandle distribution network needs to be reinforced to allow for the continued industrial customer expansion. A Panhandle transmission reinforcement is also required to meet the demand of the region. Staples-1A is a distribution system looping project which requires stations upgrades at Mersea Twp. Conc. 6 Assets: 2,000 m of NPS 6 ST 3450 kPa. Mersea Twp Conc 6 Station (04E-401) modifications/rebuild Related Program: Panhandle Regional Expansion Project 49758	Planned							
Southwest	Div_01 - Windsor	Growth	Pass		736075	WIND: Wheatley-1B - Panhandle Distribution Reinforcement - Wheatley Lateral Replacement and Reinforcement	2024	\$ 21,106,551	Risk/Concern/Opportunity: Greenhouse growth in the Windsor area continues. The Panhandle distribution network needs to be reinforced to allow for the continued industrial customer expansion. A Panhandle transmission reinforcement is also required to meet the demand of the region. Assets: Distribution Reinforcement Related Programs: N/A	Planned							
Southwest	Div_01 - Windsor	Utilization	Pass		48298	WIND: Meter & Regulator Inst Repl-Contractor*	2020	\$ 55,151,861	Meter & Reg Install- Replacement	Complete	Fail	See investment description, IRPAs not applicable					
Southwest	Div_01 - Windsor	Transmission Pipe & Underground Storage	Pass		100086	Panhandle Line Replacement	2024	\$ 37,488,223	Issue/Concern: EGI's Integrity Management team initiated work in 2019 to better understand the risk associated with the two NPS 12 crossings that connect the Panhandle Eastern System owned and operated by Energy Transfer in Michigan with the EGI system in Ontario. These two crossings, installed in 1947, have never been internally inspected to check for the presence of the primary threat of internal corrosion; such inspection cannot be achieved given the configuration of the asset. A risk assessment was recently completed for the river crossings. The risk owner and risk approver reviewed the risk results and have decided the risk requires treatment with a permanent solution. Assets: Transmission Pipeline (Canada Energy Regulator-regulated crossing) Related Programs: Not applicable.	Complete	Fail	LTC in progress					
Southwest	Div_01 - Windsor	Transmission Pipe & Underground Storage	Pass		736923	Panhandle Regional Expansion Project - Leamington Interconnect	2024	\$ 69,934,844	Issue/Concern/Opportunity: To provide reliable, secure, and affordable natural gas supply to meet the growth in Design Day demand of the Panhandle System, Assets: i) Leamington Interconnect : 12 km of 6040 kPag MOP NPS16 pipeline connecting the Leamington North Line, Leamington North Loop, Mersea Line and Kingsville East Line. ii. Leamington Interconnect Valve Sites: Three new valve sites with isolation valves are required to connect to each of the existing laterals (1. Leamington North Line and Leamington North Loop, 2. Mersea Line and 3. Kingsville East Line). Launcher/receiver facilities will be installed at location 1 and 3. Related Program: Not Applicable	In Progress		Market side supply options to be assessed prior to LTC application					
Southwest	Div_02 - Chatham	Distribution Pipe	Fail	Dollar threshold	48323	CHAT: Dist-Repl-Contr-Services*		\$ 244,088									
Southwest	Div_02 - Chatham	Distribution Pipe	Fail	Dollar threshold	49721	CHAT: Base Line, Wallaceburg, Replacement	2025	\$ 1,097,733									
Southwest	Div_02 - Chatham	Distribution Pipe	Fail	Dollar threshold	49856	CHAT: St Clair St, Tilbury, Replacement	2027	\$ 312,103									
Southwest	Div_02 - Chatham	Distribution Pipe	Fail	Dollar threshold	49893	CHAT: Water St & Talbot Trail, Chatham-Kent, Replacement	2031	\$ 277,757									
Southwest	Div_02 - Chatham	Distribution Pipe	Fail	Dollar threshold	101164	CHAT: Ridge St, West Lorne, Replacement	2023	\$ 49,198									
Southwest	Div_02 - Chatham	Distribution Pipe	Fail	Dollar threshold	102251	CHAT: Gordon St & Elm St, Chatham-Kent, Replacement	2026	\$ 78,193									
Southwest	Div_02 - Chatham	Distribution Pipe	Pass		49742	CHAT: Ridgetown LP, Ridgetown, Replacement	2027	\$ 1,908,147	Replace approximately 1.9 km of NPS 4 low-pressure (LP) steel main in downtown Ridgetown with approximately 1.0 km of NPS 4 intermediate-pressure (IP) plastic main and 760 m of 2-inch IP plastic main. This IP system contains several leaks and is located mostly in wall-to-wall concrete (from Market Lane to Victoria Ave.). There are approximately 75 homes and businesses fed off of this system.	Planned							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Southwest	Div_02 - Chatham	Distribution Pipe	Pass		49749	Tilbury South Line Replacement	2031	\$ 2,863,693	General: The capital expenditure included in this category covers a variety of planned maintenance projects. The projects covered under this expenditure include low-pressure system replacements, distribution pipeline replacements due to historical leakage and integrity concerns, pipeline casing replacements, bridge and water-crossing replacements and repairs, etc. These projects are often identified through planned inspections and pipeline surveys and would then be assessed and planned based on risk and resource availability.	Planned							
Southwest	Div_02 - Chatham	Distribution Pipe	Pass		49859	CHAT: Tweedsmuir LP, Chatham, Replacement	2027	\$ 3,046,096	Replace 2,300 m of 4-inch steel, bare, protected gas main (2.5 kPa) with 4,300 m of 2-inch plastic gas main (420 kPa) in the Tweedsmuir subdivision in the Municipality of Chatham-Kent. There are 167 services that will need to be replaced.	Planned							
Southwest	Div_02 - Chatham	Distribution Pipe	Pass		733723	NPS 8 Dover Centre Retrofit		\$ 2,065,337	Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2026 Operations and Maintenance (O&M) spend for ILI. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Southwest	Div_02 - Chatham	Distribution Pipe	Pass		733733	NPS 10 Essex	2024	\$ 4,031,684	Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2025 Operations and Maintenance (O&M) spend for ILI. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Southwest	Div_02 - Chatham	Distribution Stations	Fail	Dollar threshold	101354	CHAT - 07H-601 Burke Line - Heater Replacement	2027	\$ 975,725									
Southwest	Div_02 - Chatham	Distribution Stations	Fail	Dollar threshold	101610	CHAT - 07J-301 Ridgetown North Transmission - Replace heater	2024	\$ 603,602									
Southwest	Div_02 - Chatham	Distribution Stations	Fail	Dollar threshold	502775	CHAT - 08H-302C Greenhill Produce - rebuild and heater addition	2023	\$ 570,844									
Southwest	Div_02 - Chatham	Distribution Stations	Fail	Dollar threshold	502778	CHAT - 09G-502 Tupperville Trans - heater replacement	2026	\$ 1,027,617									
Southwest	Div_02 - Chatham	Distribution Stations	Fail	Dollar threshold	734661	CHAT: 06J-103 Blenheim North Gate	2026	\$ 285,332									
Southwest	Div_02 - Chatham	Distribution Stations	Fail	Dollar threshold	734669	CHAT: 07H-501 MAYNARD LINE	2030	\$ 701,073									
Southwest	Div_02 - Chatham	Distribution Stations	Fail	Dollar threshold	734671	CHAT: 07K-409 MCKINLAY RD STATION	2031	\$ 1,602,257									
Southwest	Div_02 - Chatham	Distribution Stations	Pass		101627	CHAT - 07G-201 Baldoon Transmission - Station Rebuild	2023	\$ 996,424	Issue/Concern/Opportunity: Obsolete regulators cannot be serviced nor parts obtained to repair them; obsolete heating equipment contains 20,000 L of glycol and is on the risk register. Justification: Replace regulators and heaters. Assets: 07G-201 Baldoon Transmission Related Investments: Not applicable.	Planned							
Southwest	Div_02 - Chatham	Distribution Stations	Pass		503334	CHAT - 07G-601 Chatham North Gate	2026	\$ 2,830,046	Issue/Concern/Opportunity: Converted BS&B and heat exchanger replacement is required. There have already been several environmental spills (glycol) as a result of condition failures from these converted heaters and is known on the risk register. Also, the condition of the heaters is creating risks around reliability and the ability to adequately provide heat. Justification: Potential for reliability issues with the safe and reliable delivery of natural gas. In addition, Possible glycol leaks from heating system equipment or piping inside building (indoor equipment typically includes boilers, pressure relief, glycol recirculation pumps, air extractors, instruments/controls, gauges, expansion tanks). Possible leaks from heating system equipment or piping located outside on station property (outdoor equipment typically includes the heat exchanger, overpressure burst disk, air extractors, instruments/controls, gauges, and atmospheric glycol expansion tank) Assets: 07G-601 Related Investments: Not applicable.	Planned							
Southwest	Div_02 - Chatham	Distribution Stations	Pass		734660	CHAT: 09F-501 Wallaceburg Baseline	2025	\$ 2,047,659	Issue/Concern/Opportunity: There are concerns from Station Operations around the condition of the existing filter. If the filter cannot operate as per its intended use there is a potential to It is recommended to replace the complete station as there are reliability and integrity concerns. Justification: Replace filter (like for like). Assets: 09F-501 Related Investments: Not applicable.	Planned							
Southwest	Div_02 - Chatham	Growth	Pass		48320	CHAT: Company Program - New Business - Scattered Mains - Contractor*	2020	\$ 2,303,369	Scattered Mains	Planned							
Southwest	Div_02 - Chatham	Growth	Pass		500416	CHAT: Company Program - Customer Connections*		\$ 8,728,284	Chatham Customer Connections Program Items	Planned							
Southwest	Div_02 - Chatham	Utilization	Pass		48328	CHAT: Meter & Regulator Inst Repl-Company*	2020	\$ 8,657,519	Meter & Reg Install- Replacement	Complete	Fail	See investment description, IRPAs not applicable					
Southwest	Div_02 - Chatham	Transmission Pipe & Underground Storage	Pass		49758	Panhandle Regional Expansion Project	2023	\$ 219,431,846	Issue/Concern: To provide reliable, secure, and affordable natural gas supply to meet the growth in Design Day demand of the Panhandle System: Assets: i. Dawn Yard: 700 m of 8960 kPa MOP NPS42 station header is required to maintain the maximum sustainable pressure on design day. This header will also provide operational flexibility and security of supply to the Panhandle system. ii. Panhandle Take-off Station: The existing station will be modified to meet the new system capacity demand requiring measurement, odourization and regulation assets. iii. Dover Transmission Station: This existing regulating station will be modified to connect the new NPS 36 pipeline to the upstream system. Flow measurement equipment will also be added to the station. iv. Panhandle Loop : 19 km of 6040 kPag MOP NPS36 pipeline will parallel the NPS 20 from Dover Transmission station to a new valve site at Richardson Sideroad. v. Richardson Sideroad Valve Site: A new valve site is required at the end of the NPS 36 Panhandle loop to connect to the existing NPS20 mainline. Isolation valves and launcher/receiver facilities will be installed at this location. Related Program: Not applicable	In Progress		Market side supply options to be assessed prior to LTC application					

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Southwest	Div_02 - Chatham	Transmission Pipe & Underground Storage	Pass		735972	PREP: NPS 36 looping to Comber Transmission	2028	\$ 95,914,556	<p>Issue/Concern:</p> <p>Panhandle System expansion is driven by in-franchise growth in Chatham-Kent, Windsor-Essex and surrounding areas, including the fast-growing greenhouse market in the Leamington/Kingsville area. Based on the current forecast for in-franchise general service and contract growth in the Panhandle Transmission System market, EGI has determined that the next Panhandle facilities for expansion will need to be in place as early as the 2028 to 2029 winter season (construction beginning in 2028). These facilities are incremental to the Panhandle Regional Expansion Project and timing is dependent on the Panhandle System demands.</p> <p>Assets:</p> <p>Install approximately 12 km of NPS 36 pipeline from Richardson sideroad, looping the existing Panhandle NPS 20 pipeline to Comber Transmission Station (05E-403).</p> <p>Related Program:</p> <p>Not applicable</p>	In Progress		Market side supply options to be assessed prior to LTC application					
Southwest	Div_03 - Sarnia	Distribution Pipe	Fail	Dollar threshold	48336	SARN: Dist-Repl-Contr-Services*		\$ 87,271									
Southwest	Div_03 - Sarnia	Distribution Pipe	Fail	Dollar threshold	48771	SARN - Highway Dr and Lynwood Ave - Sarnia BU	2024	\$ 369,106									
Southwest	Div_03 - Sarnia	Distribution Pipe	Fail	Dollar threshold	48831	SARN-Point Edward LP Leakage - Sarnia BU	2024	\$ 922,765									
Southwest	Div_03 - Sarnia	Distribution Pipe	Fail	Dollar threshold	48846	SARN - Errol Rd E Leakage - Sarnia BU	2023	\$ 1,006,388									
Southwest	Div_03 - Sarnia	Distribution Pipe	Fail	Dollar threshold	48951	SARN - Errol Rd W & Newell St. Leakage - Sarnia BU	2023	\$ 848,206									
Southwest	Div_03 - Sarnia	Distribution Pipe	Fail	Dollar threshold	101192	SARN - Vidal & Cromwell Leakage - Sarnia BU	2024	\$ 35,188									
Southwest	Div_03 - Sarnia	Distribution Pipe	Fail	Dollar threshold	101193	SARN - Lakeshore Rd. and Modeland Rd Leakage - Sarnia BU	2024	\$ 752,647									
Southwest	Div_03 - Sarnia	Distribution Pipe	Fail	Dollar threshold	101194	SARN - Christina St at Highbury Pk Leakage - Sarnia BU	2023	\$ 229,763									
Southwest	Div_03 - Sarnia	Distribution Pipe	Fail	Dollar threshold	101210	SARN - Smith Line Leakage - Sombra BU	2024	\$ 142,452									
Southwest	Div_03 - Sarnia	Distribution Pipe	Fail	Dollar threshold	101214	SARN - Eastlawn Ave and Kember Ave Leakage - Sarnia BU	2023	\$ 973,538									
Southwest	Div_03 - Sarnia	Distribution Pipe	Fail	Dollar threshold	101295	SARN - Kathleen Ave Leakage - Sarnia BU	2023	\$ 69,712									
Southwest	Div_03 - Sarnia	Distribution Pipe	Fail	Dollar threshold	502679	SARN- Brigden Rd and Duncan St Leakage - Moore Twp	2024	\$ 138,415									
Southwest	Div_03 - Sarnia	Distribution Pipe	Fail	Dollar threshold	733836	SARN - Oil Heritage Rd and Douglas Line Exposed Main	2024	\$ 139,696									
Southwest	Div_03 - Sarnia	Distribution Pipe	Fail	Dollar threshold	735710	SARN - Zone St Leakage BU- Wyoming	2024	\$ 96,890									
Southwest	Div_03 - Sarnia	Distribution Pipe	Pass		1267	Cogen Retrofit		\$ 2,005,304	<p>Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2024 Operations and Maintenance (O&M) spend for ILI.</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Complete	Fail	See investment description, IRPAs not applicable					
Southwest	Div_03 - Sarnia	Distribution Pipe	Pass		733720	NPS 6 Retrofit	2024	\$ 4,485,664	<p>Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2025 Operations and Maintenance (O&M) spend for ILI.</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Complete	Fail	See investment description, IRPAs not applicable					
Southwest	Div_03 - Sarnia	Distribution Pipe	Pass		733734	NPS 6 Sarnia	2024	\$ 2,750,066	<p>Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2025 Operations and Maintenance (O&M) spend for ILI.</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Complete	Fail	See investment description, IRPAs not applicable					
Southwest	Div_03 - Sarnia	Distribution Stations	Fail	Dollar threshold	734679	SARN: 12F-201I Suncor Ethanol	2029	\$ 396,233									
Southwest	Div_03 - Sarnia	Distribution Stations	Fail	Dollar threshold	734680	SARN: 13F-323R McPlank	2029	\$ 642,171									
Southwest	Div_03 - Sarnia	Distribution Stations	Fail	Dollar threshold	734685	SARN: 13F-402 Shell Canada	2029	\$ 512,370									
Southwest	Div_03 - Sarnia	Distribution Stations	Fail	Dollar threshold	734693	SARN: 11H-201R Oil Spring Reg Stn	2026	\$ 221,548									
Southwest	Div_03 - Sarnia	Distribution Stations	Fail	Dollar threshold	734696	SARN: 14F-503R Point Edward Victoria and St. Clair Reg Stn	2027	\$ 242,855									
Southwest	Div_03 - Sarnia	Distribution Stations	Pass		48664	CNG Stations - Project #1 - Dawn CNG	2025	\$ 3,228,626	<p>Traditionally, fleet operators fuel their vehicles with gasoline or diesel. EGI promotes the use of natural gas to these customers as an alternate fuel source to provide a lower-cost and lower-emission fueling solution for vehicles such as garbage trucks, light duty vehicles, and transit buses. Business Development is responsible for the installation, maintenance, and the safe and continued operation of NGT stations assets for these customers. NGT stations differ in operation from distribution system stations as NGT stations use and store compressed natural gas (CNG) on site at up to 4000psi.</p> <p>EGD has two general categories for NGT station types: Large, Mobile and Utility NGT stations and Small NGT stations (also referred to as VRAs). Large, Mobile and Utility NGT stations are similar in operation and will be evaluated for condition in the same manner.</p>	Complete	Fail	See investment description, IRPAs not applicable for CNG					
Southwest	Div_03 - Sarnia	Distribution Stations	Pass		734662	SARN: 12F-106I Suncor Hydrogen/Air Products	2029	\$ 2,418,389	<p>Issue/Concern/Opportunity: Heater age (per integrity) is a concern.</p> <p>Justification: Replace heater.</p> <p>Assets: 12F-106I</p> <p>Related Investments: Not applicable.</p>	Planned							
Southwest	Div_03 - Sarnia	Distribution Stations	Pass		734670	SARN: 13F-501 Sarnia Industrial	2027	\$ 13,296,976	<p>Issue/Concern/Opportunity:</p> <p>The station is located on leased property that is limited in size and makes it difficult to install a required filter. In addition, the heater is past its average lifespan and there are other ergonomic concerns. There is an opportunity to merge the station with 13F-503 Churchill Rd Station and will be assessed during this project.</p> <p>Justification: Entire rebuild, potentially relocate.</p> <p>Assets: 13F-501</p> <p>Related Investments: 13F-503 may potentially be merged with this station in a relocation.</p>	Planned							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Southwest	Div_04 - London	Distribution Pipe	Pass		30316	Ridout St S - Southwest - London - 1470	2029	\$ 2,840,207	Ridout St. S. - Southwest - London - 1470	Planned							
									Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.								
Southwest	Div_04 - London	Distribution Pipe	Pass		30319	Southdale Rd E - Southwest - London - 1434	2032	\$ 8,236,025	Southdale Rd. E. - Southwest - London - 1434	Planned							
									Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.								
Southwest	Div_04 - London	Distribution Pipe	Pass		30325	Wellington Rd - Southwest - London - 1449	2029	\$ 4,758,338	Wellington Rd. - Southwest - London - 1449	Planned							
									Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.								
Southwest	Div_04 - London	Distribution Pipe	Pass		30327	Wilton Grove Rd - Southwest - London - 1395	2032	\$ 5,077,157	Wilton Grove Rd. - Southwest - London - 1395	Planned							
									Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.								
Southwest	Div_04 - London	Distribution Pipe	Pass		30328	Windsor Ave - Southwest - London - 1515	2029	\$ 3,248,500	Windsor Ave. - Southwest - London - 1515	Planned							
									Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.								
Southwest	Div_04 - London	Distribution Pipe	Pass		30441	Stratford-Huron St-Matilda to Douglas Phase 2-1758	2030	\$ 3,143,889	Stratford - Huron St. - Matilda to Douglas Phase 2 - 1758	Planned							
									Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.								
Southwest	Div_04 - London	Distribution Pipe	Pass		30461	Courthouse Sq - Southwest - London - 1802	2032	\$ 1,860,014	Courthouse Sq. - Southwest - London - 1802	Planned							
									Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.								
Southwest	Div_04 - London	Distribution Pipe	Pass		30462	Downie St 1 - Southwest - London - 1806	2030	\$ 3,536,340	Downie St. 1 - Southwest - London - 1806	Planned							
									Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.								
Southwest	Div_04 - London	Distribution Pipe	Pass		30465	Ontario Rd - Southwest - London - 1803	2032	\$ 1,299,309	Ontario Rd. - Southwest - London - 1803	Planned							
									Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.								
Southwest	Div_04 - London	Distribution Pipe	Pass		30466	Queen St E - Southwest - London - 1804	2030	\$ 2,662,891	Queen St. E. - Southwest - London - 1804	Planned							
									Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.								
Southwest	Div_04 - London	Distribution Pipe	Pass		48348	LOND: Dist-Repl-Contr-Mains Municipal*	2020	\$ 45,104,908	General: Projects in the relocation category are capital expenditures required to replace or relocate segments of pipeline in order to accommodate municipal infrastructure work. The cost sharing for this work is managed through the Franchise Agreements established with municipalities. A consultative approach is used between the municipality and EGI to avoid conflicts with municipal infrastructure early in the planning stage. If a conflict is unavoidable, pipeline assets are typically relocated or replaced.	Planned							

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Southwest	Div_04 - London	Distribution Pipe	Pass		48364	LOND: Anodes*	2020	\$ 8,279,619	General: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within EGI's system. These installations and replacements are based on the internal Standard Operating Practice established to maintain the appropriate level of cathodic protection on steel pipeline assets.	Complete	Fail	See investment description, IRPAs not applicable					
Southwest	Div_04 - London	Distribution Pipe	Pass		100295	NPS 8 Port Stanley Replacement	2024	\$ 19,067,429	Issue/Concern/Opportunity: The NPS 8 Port Stanley line is approximately 20 km of NPS 8 built in 1959, with unknown grade and wall thickness, bare and protected, and Dresser construction (some gas welded – such welds are usually susceptible to lack of fusion imperfections). There has been a history of a significant number of leaks due to corrosion on this single-feed system that provides natural gas to Port Stanley and St. Thomas, with about 13,000 customers including the St. Thomas hospital, a psychiatric hospital in St. Thomas and a retirement home in Port Stanley. External corrosion has created difficulties with repairs due to the inability to weld. In one repair case, it took Operations three weeks to locate a suitable weld location for a repair. Repairs often require the use of split sleeves (\$8K/each). Depth of cover is a significant risk factor, with two exposed pipe sections being reported over creek crossings in December 2019. There are significant accessibility issues with locations of the pipe, making it difficult for emergency response and condition surveys. Some sections of pipe are heavily overgrown while other locations can be over 500 m from the nearest road. There are three below-grade stations that are considered confined spaces and which often flood, and must be evacuated before inspections and maintenance can occur. Gas supply from Lake Erie (New Dundee Comp) was known to have high moisture content and may contribute to internal corrosion. No isolation is built into the single feed system; so if supply needs to be shut down, all downstream customers would be affected. In 2000, 6.8 km of main were replaced due to corrosion and exposed pipe. In 2003, 230 meters were replaced due to a Class B leak under a river crossing. Three casings on the system are known to be shorted. An attempted pressure increase in 1970 resulted in numerous leaks from compression couplings and pipe; therefore, the pipe cannot be pressure-elevated. Assets: Port Stanley line is approximately 20 km of NPS 8 built in 1959. Related Programs: Not applicable.	Planned							
Southwest	Div_04 - London	Distribution Pipe	Pass		733736	NPS 6 London	2023	\$ 2,491,061	Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) Program, supporting refinement of pipeline risk profile. Associated 2024 Operations and Maintenance (O&M) spend for ILI. General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
Southwest	Div_04 - London	Distribution Pipe	Pass		736302	Wardsville Line - Southwest - London - 1797	2028	\$ 13,046,196	Wardsville Line - Southwest - London - 1797 Vintage steel exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (Vintage Steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization Site Specific: Recently completed a CIS/DCVG survey on it and it has many possible coating holidays. There was also a leak discovered in early December 2021. The pipeline has the same characteristics as the London Lines with respect to aerial crossings oThe design / construction method at the time of installation was to install aerial crossing over any drainage ditch or water crossing oCoating issues where the pipeline transitions out of the ground. The majority of the pipeline is within easement, travelling cross county for most of the running line; operationally the preference would be to relocate to the right of the way.	Planned							
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	48376	LOND - Mitchell Station Rebuild - London	2028	\$ 427,165									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	49861	LOND: 140-619I 3M Customer Station Rebuild; 528	2030	\$ 466,867									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	49862	LOND: 140-603I 3M Customer Station Rebuild	2030	\$ 466,867									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	100978	LOND - 17K-601R Grand Bend Northgate	2023	\$ 993,873									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	100993	190-101 Dublin Gate	2027	\$ 1,298,927									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	100994	150-401R Bryanston Gate	2023	\$ 1,167,062									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	100998	15R-604R Young & Peel LP Stn	2026	\$ 175,935									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	100999	130-113R Bathurse & Talbot	2023	\$ 215,477									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	733607	LOND - 15N-671 Medway Creek Removal and Main Extension	2023	\$ 74,732									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734658	LOND: 130-109R Edith and Mt. Pleasant	2023	\$ 215,477									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734664	LOND: 10M-503R Main and Shackleton	2024	\$ 211,467									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734668	LOND: 130-210R Hale and Burslem	2024	\$ 211,467									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734678	LOND: 130-212R Highbury and Brydges	2024	\$ 211,467									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734681	LOND: 140-510R Curry and Oxford	2024	\$ 211,467									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734687	LOND: 190-601 Mitchell Gate	2027	\$ 520,404									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734688	LOND: 130-206R London Baseline Reg Station	2025	\$ 1,350,857									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734690	LOND: 17M-601 Centralia Stn	2025	\$ 342,234									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734691	LOND: 15R-608R Walter and Fyfe Reg Stn	2025	\$ 219,547									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734692	LOND: 130-123R Napier and Blackfriars Reg Stn	2025	\$ 219,547									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	734694	LOND: 110-306R Wellington and Fifth Reg Stn	2026	\$ 221,548									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	735272	LOND: 130-401 White Oaks	2028	\$ 646,802									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	735275	LOND: 160-301 St. Mary's Gate	2028	\$ 646,802									
Southwest	Div_04 - London	Distribution Stations	Fail	Dollar threshold	735276	LOND: 15J-401 Forest Gate Transmission Station	2025	\$ 374,521									
Southwest	Div_04 - London	Distribution Stations	Fail	Timing	500438	100-501 Port Stanley Gate Reg Corrosion Repair	2023	\$ 3,113,826									
Southwest	Div_04 - London	Distribution Stations	Pass		100996	13P-101R Sovereign & Gore	2024	\$ 1,867,318	Issue/Concern/Opportunity: There is frost heave impacting the road outside of station. Stations where a highpressure reduction occurs can be subject to freezing of station components, which may cause a loss of pressure control if there is moisture in the gas, heaving of the station piping if there is moisture in the ground surrounding the station, or the temperature reduction of the gas could cool the downstream piping and impact the surrounding grounds including the potential to damage roads. The effects of the Joule-Thomson Effect. Ice buildup is visible on the downstream components and the station assembly is misaligned due to heaving. Consequence on a 35DD ION: The southeast corner of London will have low pressures and areas dropping below minimums. Approximate number of customers Lost: 3,600+, Major customers lost: Kaiser Aluminum and Accuride Assets: Tembec Spruce Falls SMS (41402004) Related Investments: N/A	Planned		Within 3 years, supply side not applicable					

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Southwest	Div_04 - London	Distribution Stations	Pass		503272	London/Sarnia PFM Compliance Program*		\$ 1,031,773	Issue/Concern/Opportunity: -PFMs that require a bypass will be rebuilt w/bypass to the new standard: oWhen they are due for a meter exchange and in the meter seal expiry year, provided that year is between 2022 and 2026. This will fall under the meter exchange budget and costs are not covered in this program. of the meter seal year is not between 2022 and 2026, the set will be rebuilt with a bypass the year after it is inspected. This will allow the technicians to identify which will require rebuilt at the time of inspection, and Sohan and I will be developing a process to get work orders generated for these rebuilds after the inspection. Also ensures that we focus our efforts on rebuilding active PFMs requiring rebuild. While I originally mentioned a proactive strategy to rebuild prior to the inspection year, we decided against that. -Assumption is that 50% of PFMs will need to be rebuilt. -Calculations are based on an estimate of \$5500 per rebuild. As you know there is a significant swing depending on the pipe size, volume, existing set up (first stage cut, etc) that may influence this including the release of the new SEADs designs, that I have not seen yet.	Complete	Fail	See investment description, IRPAs not applicable					
Southwest	Div_04 - London	Distribution Stations	Pass		734674	LOND: 14O-503R Highbury and Cheapside Dist Stn	2024	\$ 9,583,267	Issue/Concern/Opportunity: The station has obsolete regulators (Grove regulators) where replacement parts are no longer available. In the event of a failure, no replacement parts are available. In addition, the station is receiving liquids and only has a dry gas filter installed. There are concerns with the potential of liquids entering the pressure control equipment and potentially impacting the performance of these assets. There is a single bypass valve that does not meet the current design standards and could impact manual bypass operations. The site has a large pressure drop and heat is required to prevent heaving. Justification: Complete station rebuild is required. Assets: 14O-503R Related Investments: Not applicable.	Planned							
Southwest	Div_04 - London	Distribution Stations	Pass		734689	LOND: 14R-104 Beachville Domtar Trans Stn	2024	\$ 8,458,681	Issue/Concern/Opportunity: The station is equipped with a dry gas filter and is currently receiving liquids at the inlet of the station without the ability to remove the liquids. There are concerns that if liquid gets to the pressure control equipment, there may not be reliable pressure control and may lead to other operational issues. The heating system is obsolete and has the potential to leak glycol to the ground. There is a significant volume of glycol in the heating system (i.e., > 5,000 L) that could lead to environmental concerns if released from the existing aging heating system. This investment is to replace the heating system, the filter and remove underground insulation. Justification: Complete rebuild is required. Assets: 14R-104 Related Program: Not applicable	Planned							
Southwest	Div_04 - London	Distribution Stations	Pass		734695	LOND: 15Q-603 C C Trans Stn	2027	\$ 4,635,770	Issue/Concern/Opportunity: Heater age (per integrity) is a concern. Loss of Heating System Function: Loss of the heating system function could result in two scenarios, (1) frost heave or (2) pressure control failure due to the freezing of station components. Frost heave occurs when the gas is cooled due to the pressure reduction and causes an upward swelling of soil around public or private property near the gas main. Freezing of station components such as creating large ice buildup around valves can prevent operation if gas isolation is required. This could result in the loss of pressure control and potentially lead to an overpressure or underpressure situation. The financial impact includes commodity loss, service disruptions, increased network leak surveys and system checks, repairs or replacement of company-owned property, or damages caused to public, commercial or industrial property. Inoperable systems will lead to a failure to maintain operational supply to customers. FIMP will assess the site closer to execution to determine if additional components require replacement. Assets: 15Q-603 Related Investments: Not applicable.	Planned							
Southwest	Div_04 - London	Distribution Stations	Pass		735155	LOND: 21L-201 Goderich Gate	2028	\$ 2,005,087	Issue/Concern/Opportunity: Heater age (per integrity) is a concern. Justification: Replace heater. Assets: 21L-201 Related Investments: Not applicable.	Planned							
Southwest	Div_04 - London	Growth	Pass		30551	SRP_Southwest_Embro_15Q-301STN_Rebuild	2023	\$ 504,896	Station flows over capacity in Winter 2023.	Planned							
Southwest	Div_04 - London	Growth	Pass		30553	SRP_Southwest_Forest_Townsend Line_Reinforcement_NPS6_4500m_3450kPa	2031	\$ 6,156,826	Maintain system minimum inlets to downstream constraints.	Planned							
Southwest	Div_04 - London	Growth	Pass		30554	SRP_Southwest_Innerkip_16S-503STN_Rebuild	2029	\$ 1,373,566	Rebuild Innerkip Transmission Station to a capacity of 2,470 m3/hr and set pressure to 1,860 kPa so downstream stations meet their inlet pressures.	Planned							
Southwest	Div_04 - London	Growth	Pass		30555	SRP_Southwest_Kettle Point Ravenswood Line_Reinforcement_NPS4_2000m_3450kPa	2027	\$ 2,359,163	Maintain system minimum inlets to downstream constraints.	Planned							
Southwest	Div_04 - London	Growth	Pass		30556	SRP_Southwest_London_13O-402STN_Rebuild	2023	\$ 1,758,068	Westmount station is flowing over capacity, currently without System Reinforcement Plan (SRP) growth.	Planned							
Southwest	Div_04 - London	Growth	Pass		30557	SRP_Southwest_London_Bradley Ave_Reinforcement_NPS6_500m_420kPa	2031	\$ 322,329	A 6-inch reinforcement to maintain system minimum pressures is required.	Planned							
Southwest	Div_04 - London	Growth	Pass		30558	SRP_Southwest_London_Byron Baseline_Reinforcement_NPS8_700m_420kPa	2023	\$ 1,684,679	There is 8-inch main out of Byron station required to increase pressures north.	Planned							
Southwest	Div_04 - London	Growth	Pass		30559	SRP_Southwest_Mt. Brydges_12M-303RSTN_Rebuild	2023	\$ 1,316,573	Station is flowing over capacity. Minimum inlet can increase.	Planned							
Southwest	Div_04 - London	Growth	Pass		30560	SRP_Southwest_Sarnia_New STN & Reinforcement_NPS6_1600m_420kPa	2032	\$ 1,176,280	A new distribution station off of the existing 1,210 kPa system and a main extension to tie into the 420 kPa system north of Sarnia along the water is required.	In Progress							
Southwest	Div_04 - London	Growth	Pass		30563	SRP_Southwest_Bluewater_New STN & Reinforcement_NPS4_7200m_3450kPa	2025	\$ 8,833,102	Transmission pipe from Bluewater to a new station in Saint Joseph is required (verify Maximum Operating Pressure [MOP] of 550 kPa).	In Progress							
Southwest	Div_04 - London	Growth	Pass		30564	SRP_Southwest_Oil Springs_11H-201RSTN_Rebuild	2023	\$ 192,797	Station is flowing over capacity at Oil Springs.	Planned							
Southwest	Div_04 - London	Growth	Pass		30565	SRP_Southwest_Port Stanley_George Street_Reinforcement_NPS4_300m_420kPa	2029	\$ 149,246	A 4-inch looping is required to increase pressures downstream.	Planned							
Southwest	Div_04 - London	Growth	Pass		30566	SRP_Southwest_Woodstock_Reinforcement & Reinforcement_NPS6_8200m_1900kPa	2024	\$ 11,662,726	New 6-inch ST (1,900 kPa) line from Beachville Lateral to existing 6-inch main. New station is to be constructed on other end of new main.	Planned							
Southwest	Div_04 - London	Growth	Pass		30568	SRP_Southwest_Sarnia_13F-324RSTN_Rebuild	2023	\$ 51,724	Station is flowing over capacity.	Planned							
Southwest	Div_04 - London	Growth	Pass		30569	SRP_Southwest_St. Marys Church Street_Reinforcement_NPS6_100m_420kPa	2032	\$ 59,950	Trout Creek River Crossing	Planned							
Southwest	Div_04 - London	Growth	Pass		30570	SRP_Southwest_St. Marys_Glass Street_Reinforcement_NPS4_650m_420kPa	2030	\$ 108,562	New business reinforcement on new street in St Mary's is required.	Planned							
Southwest	Div_04 - London	Growth	Pass		30571	SRP_Southwest_Stratford_18Q-501RSTN_Rebuild	2030	\$ 1,422,251	Increase maximum sustainable and increase capacity.	Planned							
Southwest	Div_04 - London	Growth	Pass		30572	SRP_Southwest_Talbotville_11O-173STN_Rebuild	2023	\$ 385,230	Talbotville South Station will be flowing over capacity in Winter 2023. Station upgrades are required. New station should have an outlet of 380 kPa instead of the existing 275 kPa.	Planned							

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STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734319	Methane Leak Remediation : Valve Replacement 2023*		\$ 62,346									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734320	Methane Leak Remediation : Valve Replacement 2024*		\$ 64,069									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734321	Methane Leak Remediation : Valve Replacement 2025*		\$ 64,587									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734322	Methane Leak Remediation : Valve Replacement 2026*		\$ 65,384									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734323	Methane Leak Remediation : Valve Replacement 2027*		\$ 69,481									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734324	Methane Leak Remediation : Valve Replacement 2028*		\$ 68,888									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734325	Methane Leak Remediation : Valve Replacement 2029*		\$ 68,486									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734326	Methane Leak Remediation : Valve Replacement 2030*		\$ 70,539									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734327	Methane Leak Remediation : Valve Replacement 2031*		\$ 69,740									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734328	Methane Leak Remediation : Valve Replacement 2032*		\$ 67,716									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734330	SCOR:525 UPS-Replace*	2032	\$ 178,769									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734331	SCOR:HMI PCs-Replace*	2031	\$ 90,663									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734332	SCOR:Obsolete Mech-Replace 2031*	2031	\$ 132,507									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734333	SCOR:Obsolete Mech-Replace 2032*	2032	\$ 128,659									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734334	SM:Obsolete Elec-Replace 2031*	2031	\$ 76,715									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734335	SM:Obsolete Elec-Replace 2032*	2032	\$ 74,487									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734336	SM:Obsolete Instr-Replace 2031*	2031	\$ 76,715									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734337	SM:Obsolete Instr-Replace 2032*	2032	\$ 74,487									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734338	SM:SCADA-Annual Upgrade 2029*	2029	\$ 75,334									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734339	SM:SCADA-Annual Upgrade 2030*	2030	\$ 77,593									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734340	SM:SCADA-Annual Upgrade 2031*	2031	\$ 76,714									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734341	SM:SCADA-Annual Upgrade 2032*	2032	\$ 74,487									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734342	SM:FIMP Recommend'ns-Implement 2031*	2031	\$ 69,740									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734343	SM:FIMP Recommend'ns-Implement 2029*	2029	\$ 68,486									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734344	SM:FIMP Recommend'ns-Implement 2030*	2030	\$ 70,539									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	734345	SM:FIMP Recommend'ns-Implement 2032*	2032	\$ 67,716									
STO - EGD	70 - Storage	Compression Stations	Fail	Dollar threshold	736505	SCOR: K711 MOD Hdr Valves-Replace	2023	\$ 810,492									
STO - EGD	70 - Storage	Compression Stations	Fail	Timing	12959	SM:100MOD Hdr Valves-Replace*	2023	\$ 2,880,365			Within 3 years, supply side not applicable						
STO - EGD	70 - Storage	Compression Stations	Fail	Timing	12960	SM:100MOD Hdr Valves-Replace*	2025	\$ 1,989,272			Within 3 years, supply side not applicable						
STO - EGD	70 - Storage	Compression Stations	Pass		5624	SCOR:60004-Fdn Blk-Replace	2023	\$ 3,366,661	Issue/Concern: Due to the age of the compressor infrastructure, hours operating, and oil contamination, engine block foundations are deteriorating. Industry benchmarks suggest that reciprocating engine block foundations degrade in 25 years or less for engines that run 24/7. Excessive bearing deflections place cyclic stresses on the crankshaft of the unit, leading to increased frequency of bearing failure and increased potential for a crankshaft fatigue failure. Unit reliability will be diminished dramatically if repairs are not performed. Worst case consequence is unit unavailability during a design day. Compressor foundations have been considered in the Asset Health Review. Condition assessment is largely visual. The telltale sign of poor foundation condition is the existence of cracks on the surface of the foundation, with oil seeping out of the crack. Cracks typically extend to a depth that is consistent with the bottom of the unit's anchor bolts. Without remediation, failing foundations will allow unit settlement, creating a misalignment of bearings. Frequency of bearing failures increases reducing operation reliability. Collateral damage to the crankshaft is also common. Asset: Compressor foundations Related Programs: Not applicable	In Progress							
STO - EGD	70 - Storage	Compression Stations	Pass		12884	SCOR:60011-Fdn Blk-Replace	2032	\$ 2,992,383	Issue/Concern: Due to the age of the compressor infrastructure, hours operating and oil contamination, engine block foundations are deteriorating. Industry benchmarks suggest that reciprocating engine block foundations degrade in 25 years or less for engines that run 24/7. Excessive bearing deflections place cyclic stresses on the crankshaft of the unit leading to increased frequency of bearing failure and increased potential for a crankshaft fatigue failure. Unit reliability will diminish dramatically if repairs are not performed. Worst case consequence is unit unavailability during a design day. Compressor foundations have been considered in the Asset Health Review. Condition assessment is largely visual. The telltale sign of poor foundation condition is the existence of cracks on the surface of the foundation, with oil seeping out of the crack. Cracks typically extend to a depth that is consistent with the bottom of the unit's anchor bolts. Without remediation, failing foundations will allow unit settlement, creating a misalignment of bearings. Frequency of bearing failures increases reducing operation reliability. Collateral damage to the crankshaft is also common. Asset: Compressor foundations. Related Program: Not applicable.	In Progress							

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STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	101907	PM:Wells-Acidize 2023*	2023	\$ 309,234									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	101908	PM:Wells-Acidize 2025*	2025	\$ 320,350									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	101909	PM:Wells-Acidize 2027*	2027	\$ 344,624									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	101910	PM:Wells-Acidize 2029*	2029	\$ 339,690									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	101911	PM:Wells-Acidize 2030*	2030	\$ 349,875									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	101912	LM:Well Loops-Adjust*	2029	\$ 97,312									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	101913	LM:Well Loops-Adjust*	2030	\$ 100,230									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	101914	PM:Roads&Laneways-Improve*	2031	\$ 92,057									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	101915	PM:Roads&Laneways-Improve*	2032	\$ 89,385									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	101916	PM:Well Casing-Replace Program 2029*	2029	\$ 289,355									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	101917	PM:Well Casing-Replace Program 2030*	2030	\$ 298,031									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	102418	Rectifier Ground Bed Replacement Program*	2021	\$ 1,342,470									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	102794	2026 Depth of Cover Mitigation Program*		\$ 539,418									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	102795	2027 Depth of Cover Mitigation Program*		\$ 573,215									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	102796	2028 Depth of Cover Mitigation Program*		\$ 568,330									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	102797	2029 Depth of Cover Mitigation Program*		\$ 565,008									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	102798	2030 Depth of Cover Mitigation Program*		\$ 581,949									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	735061	PM:Well Casing-Replace Program 2031*	2030	\$ 294,656									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	735062	PM:Well Casing-Replace Program 2032*	2030	\$ 286,101									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	735063	PM:Wells-Acidize 2031*	2031	\$ 345,912									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	735064	PM:Wells-Acidize 2032*	2032	\$ 335,869									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	735359	PM:Well Tools-Purchase - 2031*	2029	\$ 117,164									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	735376	2031 Depth of Cover Mitigation Program*		\$ 575,358									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	735377	2032 Depth of Cover Mitigation Program*		\$ 558,653									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	735399	LM:MS UPS-Replace - 2029*	2029	\$ 18,834									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	735400	LM:MS UPS-Replace - 2030*	2030	\$ 19,398									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	735401	LM:MS UPS-Replace - 2031*	2031	\$ 19,179									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	735402	LM:MS UPS-Replace - 2032*	2032	\$ 18,622									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	735992	Bluewater A1 Well	2023	\$ 1,119,732									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	736101	New Well Lateral/Crossover (Well Lifecycle Replacement)*	2020	\$ 1,312,725									
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Timing	1917	2023 Dig Program S&T*	2023	\$ 2,493,823			Within 3 years, supply side not applicable						
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Timing	1922	2024 Dig Program S&T*	2024	\$ 3,331,580			Within 3 years, supply side not applicable						
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Fail	Timing	736855	2025 S&T Pipelines Integrity Program*	2025	\$ 3,965,626			Within 3 years, supply side not applicable						

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		6377	PCRW:Wells-Upgrade	2023	\$ 12,841,157	Issue/Concern: Wells at Crowland are much older than other wells at EGI. Due to age, the wells were constructed to a production standard which would normally be retired after 10 years. Instead, the wells were converted to Storage service in the early 1970s and continue to operate ever since. Many wells have been relined, increasing the risk of leaks. Most wells possess only two casings; the current standard requires a minimum of three casings. The two-casing design at Crowland is comprised of an inner casing that runs from the surface to the reservoir (about 225 m) plus a surface casing that runs from the surface to a depth of about 20 m. Most wells do not have an intermediate casing with cement between the inner and intermediate casings; however, there is cement between the inner casing and the surrounding rock. This provides a poor barrier to gas flow should the inner casing fail. In addition, none of the wells at Crowland employ wellheads and master valves. Instead, the inner casing is simply connected to a flanged 1/4 turn valve without wing valves or wellhead vents. The surface casing is separated from the surface using cement. There are no casing vents and part of the inner casing (typically a length of 2 to 16 inches) is exposed at the surface. The lack of casing vents eliminates normal approaches to controlling a failed well. Vertilogs have been performed in the last 5 years, and indicated that the inner casing integrity is adequate, although 2 of 26 wells needed to be abandoned. Currently, there are 24 wells remaining. Bond logs have not been performed yet to determine the condition of cement at sulphur layers. Primary concerns are: (1) Code compliance of the wells and wellheads - Technically, these wells were constructed before CSA Z341 came into force and are grandfathered. However, a well failure would likely be viewed negatively by technical regulators. (2) Risk to employees and the public - In the event of a loss of containment, there are insufficient barriers to gas flow. Public risk also extends to possible sulphur contamination of well water at surface levels. In addition to the wells, much of the gathering system is as old as the wells. The gathering system is operating at <30% SMYS, which means they have not been considered for integrity inspections until recently and the gathering system pipe condition is unknown after 50 to 100 years of operation. Assets: Crowland wells and gathering system. Related Programs: This investment is under consideration in conjunction with other Crowland investments in the Distribution Station asset class and Compressor Station asset class. Issues related to the wells and gathering system should be considered together with the additional distribution station and compressor station issues/concerns.	Planned							
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		13044	PSEC:TS22H Well-Install	2024	\$ 3,182,592	Issue/Concern: Micro-annulus leaks have been occurring on wells that have been relined. Relining a well may be performed when the integrity of an existing casing is inadequate, and a smaller diameter casing is installed inside the original casing (concentrically). A recent rash of these relined wells has experienced leakage between the two casings. Concerns: 1.Localized leakage can be prevented by sealing the flow path at the wellhead (casing vent). This action causes pressure in the space between the two casings to achieve full reservoir pressure. 2.If the annulus space is allowed to be pressurized, there is the potential for a breach of the original casing; the original casings are known to have inadequate integrity. 3.A breach of the original casing could occur anywhere along the well string which is 2,000 ft long/deep. Leaking, unodorized gas could come to surface at unpredictable locations. About half of the relined wells operated by EGI are those which have not yet started to leak. Of the 20+ relined wells currently in-service at EGD Storage, 11 were recently found to be actively leaking and are being or have been abandoned. The mechanism by which a relined well becomes a leaking well has not been conclusively determined. The remaining (non-leaking) wells are expected to develop a leak in the short term. Once the wells are actively leaking, the problem becomes a compliance issue as follows: •CSA Z341.1-14 - 5.3.1 (a) The design of a well casing program shall provide control of pressures and fluids encountered by the well. •CSA Z341.1-14 - 5.3.6 (c) Well casings shall be set and cemented at sufficient depth to ensure isolation of storage zones. •OGSRA (O/Reg 245.97) - 17 (1) An operator of a well...shall provide casing and blowout prevention equipment and maintain it in such a condition that any oil, gas or water encountered can be effectively controlled. •OGSRA (O/Reg 245.97) - 17 (3) The operator shall ensure that the well does not flow uncontrolled. •O. Reg. 22/00, s. 6 (2) Well abandonments resulting from the Leaking and Relined well replacement programs will diminish the flow capacity of the associated reservoir. This performance degradation negatively impacts peak day deliverability. Reservoir performance deterioration, due to abandonment of relined wells, is currently unknown. Assets: Seckerton reservoir (Wells and Well Equipment asset program) and gathering system (Field Lines asset program).	Planned							
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		13047	PSEC:TS23H Well-Install	2024	\$ 3,182,592	Issue/Concern: Well abandonments resulting from abandoned wells since 2007 have already diminished the flow capacity of Seckerton. The proposed relined well replacement program will diminish the flow capacity of the Seckerton Reservoir even further. In addition, wells on the northern saddle of Seckerton (referred to as Seckerton North) are being shut in during low-end withdrawal in order to mitigate crude oil carryover. The North and South saddles have limited interconnected permeability, meaning that gas migrates very slowly between the two saddles. Shutting in wells has the effect of stranding an estimated 1.5 BCF for three weeks at the end of the withdrawal cycle. This performance problem negatively impacts peak day deliverability. Assets: Seckerton reservoir (Wells and Well Equipment asset program) and gathering system (Field Lines asset program). Related Programs: Installation of wells is performed by the Reservoir group (Wells and Well Equipment asset program), installation of laterals is performed by the project execution group (Field Lines asset program). This separation is based on skill set and qualifications. There is a programmatic time dependence between the two asset programs.	Planned							
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		102767	2026 Dig Program S&T*		\$ 1,788,905	2026 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		102768	2027 Dig Program S&T*		\$ 2,167,793	2027 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		102769	2028 Dig Program S&T*		\$ 2,149,320	2028 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		735382	2032 S&T Pipelines Integrity Program*		\$ 4,157,736	2032 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2024 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		735385	MOP Verification Replacement Program 2025 - S&T Assets*	2030	\$ 1,291,735	General: MOP verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of existing greater than 30 per cent SMYS pipeline systems based upon these records. While this is not currently mandated by code in Canada, it is required in the U.S. and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 per cent SMYS, MOP Verification will be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey: while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Complete	Fail	See investment description, IRPAs not applicable					
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		735386	MOP Verification Replacement Program 2026 - S&T Assets*	2031	\$ 2,615,358	General: MOP verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of existing greater than 30 per cent SMYS pipeline systems based upon these records. While this is not currently mandated by code in Canada, it is required in the U.S. and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 per cent SMYS, MOP Verification will be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey: while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Complete	Fail	See investment description, IRPAs not applicable					
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		735387	MOP Verification Replacement Program 2027 - S&T Assets*	2032	\$ 2,779,222	General: MOP verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of existing greater than 30 per cent SMYS pipeline systems based upon these records. While this is not currently mandated by code in Canada, it is required in the U.S. and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 per cent SMYS, MOP Verification will be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey: while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Complete	Fail	See investment description, IRPAs not applicable					
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		735388	MOP Verification Replacement Program 2028 - S&T Assets*	2033	\$ 2,755,538	General: MOP verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of existing greater than 30 per cent SMYS pipeline systems based upon these records. While this is not currently mandated by code in Canada, it is required in the U.S. and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 per cent SMYS, MOP Verification will be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey: while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Complete	Fail	See investment description, IRPAs not applicable					
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		735389	MOP Verification Replacement Program 2029 - S&T Assets*	2034	\$ 2,739,432	General: MOP verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of existing greater than 30 per cent SMYS pipeline systems based upon these records. While this is not currently mandated by code in Canada, it is required in the U.S. and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 per cent SMYS, MOP Verification will be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey: while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Complete	Fail	See investment description, IRPAs not applicable					
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		735390	MOP Verification Replacement Program 2030 - S&T Assets*	2035	\$ 2,821,570	General: MOP verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of existing greater than 30 per cent SMYS pipeline systems based upon these records. While this is not currently mandated by code in Canada, it is required in the U.S. and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 per cent SMYS, MOP Verification will be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey: while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Complete	Fail	See investment description, IRPAs not applicable					
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		735391	MOP Verification Replacement Program 2031 - S&T Assets*	2036	\$ 2,789,615	General: MOP verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of existing greater than 30 per cent SMYS pipeline systems based upon these records. While this is not currently mandated by code in Canada, it is required in the U.S. and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 per cent SMYS, MOP Verification will be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey: while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Complete	Fail	See investment description, IRPAs not applicable					
STO - EGD	70 - Storage	Transmission Pipe & Underground Storage	Pass		735392	MOP Verification Replacement Program 2032 - S&T Assets*	2037	\$ 2,708,623	General: MOP verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of existing greater than 30 per cent SMYS pipeline systems based upon these records. While this is not currently mandated by code in Canada, it is required in the U.S. and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 per cent SMYS, MOP Verification will be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey: while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Complete	Fail	See investment description, IRPAs not applicable					

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STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734222	TCO Obsolete Mechanical - Replace 2029*	2029	\$ 239,106									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734223	TCO Obsolete Mechanical - Replace 2030*	2030	\$ 247,581									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734224	TCO Obsolete Mechanical - Replace 2031*	2031	\$ 244,874									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734225	TCO Obsolete Mechanical - Replace 2032*	2032	\$ 237,648									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734236	Parkway Ultrasonic Meter Upgrades 2023*		\$ 106,294									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734237	Parkway Ultrasonic Meter Upgrades 2024*		\$ 109,374									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734274	High Performance Coating Program 2031*	2030	\$ 783,596									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734275	High Performance Coating Program 2032*	2032	\$ 760,475									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734347	STO - UPS Battery replacements 2026	2026	\$ 156,387									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734348	STO - UPS Battery replacements 2027	2027	\$ 166,529									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734349	STO - UPS Battery replacements 2028	2028	\$ 165,141									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734350	STO - UPS Battery replacements 2029	2029	\$ 163,959									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734351	STO - UPS Battery replacements 2030	2030	\$ 169,770									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734352	STO - UPS Battery replacements 2031	2031	\$ 167,913									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	734353	STO - UPS Battery replacements 2032	2032	\$ 162,959									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	735627	Bright A1 Scrubber Replacement	2024	\$ 1,268,802									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	735656	Parkway East Generator Control Upgrade	2023	\$ 1,245,530									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	735978	STO Moisture Analyzer Upgrade 2023*		\$ 74,732									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736014	STO Moisture Analyzer Upgrade 2024*		\$ 76,897									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736015	STO Moisture Analyzer Upgrade 2025*		\$ 77,487									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736016	STO Moisture Analyzer Upgrade 2026*		\$ 78,193									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736017	STO Moisture Analyzer Upgrade 2027*		\$ 83,265									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736018	STO Moisture Analyzer Upgrade 2028*		\$ 82,570									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736019	STO Moisture Analyzer Upgrade 2029*		\$ 81,979									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736021	STO Moisture Analyzer Upgrade 2030*		\$ 84,885									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736022	STO Moisture Analyzer Upgrade 2031*		\$ 83,957									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736023	STO Moisture Analyzer Upgrade 2032*		\$ 81,479									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736182	Lobo C Siemens Valve Controllers Replacement	2023	\$ 105,870									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736274	Dawn Fire Pump 1	2023	\$ 940,375									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736276	Large Diameter - Valve Replacement 2026*	2026	\$ 977,417									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736277	Large Diameter - Valve Replacement 2028*	2028	\$ 1,032,131									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736325	Parkway C Siemens Valve Controllers Replacement	2023	\$ 105,870									
STO - UG	Div_53 - Union South Storage	Compression Stations	Fail	Dollar threshold	736922	Dawn Fire Pond Weir	2023	\$ 62,277									
STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		48231	Parkway A Gas Generator(38148) End-of-Life Overhaul	2027	\$ 2,886,505	Issue/Concern/Opportunity: The consequence of compressor failure is dominated by gas cost impacts to customers. The compressor package is comprised of a gas turbine engine driver, compressor, power turbine and ancillary equipment such as lube oil, fuel supply, and electronic control systems, which are required for the compressor to operate. The gas turbine engine is very complex and carries the greatest failure risk of all of the compressor package components. By continuing to comply with original equipment manufacturer (OEM) recommended Preventive Maintenance (PM) schedules and overhauls, compressor reliability risks are controlled to moderate levels. In the case of performing regular OEM prescribed overhauls, the risk of unit failure is proposed as a sawtooth function, whereby risk increases gradually over the recommended interval between overhauls and then drops suddenly after an overhaul. Critical internal wear components are on a path to failure and generally in sync with operating hours. If the operating hours are extended too far, the resulting additional operational stress on internal components, such as high temperature coatings and bearings, will increase the component scrap rate when performing the overhaul. This will add significant (10 to 20% or more) cost to the base overhaul and increases the risk of a random failure leading to system unreliability and further cost increases.	In Progress							
									Justification: Potential for unexpected or catastrophic failure if timing is extended.								
									Assets: Avon serial 38148								
									Related Investments: Not applicable.								

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STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		48240	Lobo A1 Gas Generator (38425) End-of-Life Overhaul	2025	\$ 2,686,216	<p>Issue/Concern/Opportunity: The consequence of compressor failure is dominated by gas cost impacts to customers. The compressor package is comprised of a gas turbine engine driver, compressor, power turbine and ancillary equipment such as lube oil, fuel supply, and electronic control systems, which are required for the compressor to operate. The gas turbine engine is very complex and carries the greatest failure risk of all of the compressor package components. By continuing to comply with original equipment manufacturer (OEM) recommended Preventive Maintenance (PM) schedules and overhauls, compressor reliability risks are controlled to moderate levels. In the case of performing regular OEM prescribed overhauls, the risk of unit failure is proposed as a sawtooth function, whereby risk increases gradually over the recommended interval between overhauls and then drops suddenly after an overhaul. Critical internal wear components are on a path to failure and generally in sync with operating hours. If the operating hours are extended too far, the resulting additional operational stress on internal components, such as high temperature coatings and bearings, will increase the component scrap rate when performing the overhaul. This will add significant (10 to 20% or more) cost to the base overhaul and increases the risk of a random failure leading to system unreliability and further cost increases.</p> <p>Justification: Potential for unexpected or catastrophic failure if timing is extended.</p> <p>Asset: Avon serial 38425</p> <p>Related Investments: Not applicable.</p>	In Progress							
STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		48715	Dawn C Compression Lifecycle	2026	\$ 163,382,650	<p>Issue/Concern: Dawn C Plant is one of the nine centrifugal compressors located at the Dawn Compressor Station. It is primarily used to lift from lower storage pressure levels, experienced later in the operations season, to intermediate pressure levels. The intermediate pressure level is typically elevated further in pressure by another compressor to reach the desired Dawn outlet pressure. Dawn Plant C and Plant D have a suction pressure rating of 195 psig, the lowest rating of the compressor fleet at Dawn. Considering the other compressors at Dawn have a 225 psig minimum inlet rating, Dawn Plants C and D become very critical when pool storage levels fall below 225 psig, as they typically do late in the operational season. Overall, compression can pose a very large consequence of failure as compressors are integral assets required to achieve the Dawn to Parkway Transmission System deliverability requirements throughout the year.</p> <p>The consequence of compressor failure is dominated by gas cost impacts to customers. Transmission system consequences associated with failure of a single compressor are heavily influenced by the time of year, weather severity and time to mitigate the failure. Siemens, the original equipment manufacturer (OEM) of the Dawn C compressor, has indicated that 40 years is the typical timeframe for supporting the supply of engine parts required to recover from a critical engine failure or to complete recommended overhauls. Dawn Plant C was installed in 1984, which indicates that the RB211-24A engine in Plant C is reaching end of life.</p> <p>Justification: By continuing to comply with OEM-recommended Preventive Maintenance (PM) schedules and overhauls, compressor reliability risk is controlled to moderate levels but risk increases gradually over the 25,000-hour recommended interval between overhauls. Availability of parts is essential to repair internal engine failures and complete overhauls. Notably, the RB211-24A in Plant C has non-standard dimensions and cannot be retrofitted with more modern editions of the RB211 without significant plant retrofits. Similar to the 40-year old Dawn Plant B, which was replaced and retired in 2017 due to the risks associated with discontinued OEM support of critical engine parts, it is expected that Dawn Plant C will be exposed to a similar level of risk as the global inventory of spare components diminishes.</p> <p>Assets: Dawn Plant C</p>	In Progress							
STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		48732	Waubuno Compression Lifecycle	2025	\$ 20,113,719	<p>Issue/Concern/Opportunity: The Waubuno compressor elevates available pipeline pressure to the Waubuno Pool Maximum Operating Pressure (MOP). Compression increases the working inventory value of the pool by approximately 3.5 PJ on top of what the pipeline alone can achieve. The compressor is operated approximately 45 days per year in late summer to early fall to top off the pool. The consequence of compressor failure is dominated by customer impact. Risk associated with failure of the Waubuno compressor is heavily influenced by the level of the pool at which the failure occurs and time to mitigate the failure.</p> <p>The Joy Compressor (manufactured in 1985) was a used compressor package and installed at Waubuno in 1988. The Joy Compressor Company changed ownership approximately 20 years ago whereupon original equipment manufacturer (OEM) support for the compressor was discontinued. Although normal wear components are still available in the marketplace, replacement major compressor items such as cylinders, crankshafts, and rods, etc., required to support a critical failure are no longer available. In the event of a critical failure, sourcing used parts (which are rare) or aftermarket custom machining services would be the only options for repair. This was the case in 2007 when a discharge valve seat failed, resulting in catastrophic damage to cylinder 611. An extensive search across the used parts dealers was required to secure a viable used cylinder head. Other internal damage was repaired through custom machining services.</p> <p>Justification: In the event of a future failure, if usable parts or custom machining are not available, the two options would be custom-designed aftermarket castings (if possible) or replacement of the entire compressor. However, both options would render the compressor out of service for at least one operational season.</p> <p>Assets: Waubuno Compressor</p> <p>Related Programs: N/A</p>	In Progress							
STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		48753	Parkway C Gas Generator Midlife Overhaul	2026	\$ 4,039,990	<p>Issue/Concern/Opportunity: The consequence of compressor failure is dominated by gas cost impacts to customers. The compressor package is comprised of a gas turbine engine driver, compressor, power turbine and ancillary equipment such as lube oil, fuel supply, and electronic control systems, which are required for the compressor to operate. The gas turbine engine is very complex and carries the greatest failure risk of all of the compressor package components. By continuing to comply with original equipment manufacturer (OEM) recommended Preventive Maintenance (PM) schedules and overhauls, compressor reliability risks are controlled to moderate levels. In the case of performing regular OEM prescribed overhauls, the risk of unit failure is proposed as a sawtooth function, whereby risk increases gradually over the recommended interval between overhauls and then drops suddenly after an overhaul. Critical internal wear components are on a path to failure and generally in sync with operating hours. If the operating hours are extended too far, the resulting additional operational stress on internal components, such as high temperature coatings and bearings, will increase the component scrap rate when performing the overhaul. This will add significant (10 to 20% or more) cost to the base overhaul and increases the risk of a random failure leading to system unreliability and further cost increases.</p> <p>Assets:</p> <p>Related Investments:</p>	In Progress							

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STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		49954	Avon 1534 Gas Generator (37433)End-of-Life Overhaul	2026	\$ 2,710,703	<p>Issue/Concern/Opportunity: The consequence of compressor failure is dominated by gas cost impacts to customers. The compressor package is comprised of a gas turbine engine driver, compressor, power turbine and ancillary equipment such as lube oil, fuel supply, and electronic control systems, which are required for the compressor to operate. The gas turbine engine is very complex and carries the greatest failure risk of all of the compressor package components. By continuing to comply with original equipment manufacturer (OEM) recommended Preventive Maintenance (PM) schedules and overhauls, compressor reliability risks are controlled to moderate levels. In the case of performing regular OEM prescribed overhauls, the risk of unit failure is proposed as a sawtooth function, whereby risk increases gradually over the recommended interval between overhauls and then drops suddenly after an overhaul. Critical internal wear components are on a path to failure and generally in sync with operating hours. If the operating hours are extended too far, the resulting additional operational stress on internal components, such as high temperature coatings and bearings, will increase the component scrap rate when performing the overhaul. This will add significant (10 to 20% or more) cost to the base overhaul and increases the risk of a random failure leading to system unreliability and further cost increases.</p> <p>Justification: Extension of interval can result in unexpected or catastrophic failure</p> <p>Asset: 37433</p> <p>Related Investments: Not applicable.</p>	In Progress							
STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		49956	Bright A1 Gas Generator - Mid life Overhaul	2028	\$ 5,367,082	<p>Issue/Concern/Opportunity: The consequence of compressor failure is dominated by gas cost impacts to customers. The compressor package is comprised of a gas turbine engine driver, compressor, power turbine and ancillary equipment such as lube oil, fuel supply, and electronic control systems, which are required for the compressor to operate. The gas turbine engine is very complex and carries the greatest failure risk of all of the compressor package components. By continuing to comply with original equipment manufacturer (OEM) recommended Preventive Maintenance (PM) schedules and overhauls, compressor reliability risks are controlled to moderate levels. In the case of performing regular OEM prescribed overhauls, the risk of unit failure is proposed as a sawtooth function, whereby risk increases gradually over the recommended interval between overhauls and then drops suddenly after an overhaul. Critical internal wear components are on a path to failure and generally in sync with operating hours. If the operating hours are extended too far, the resulting additional operational stress on internal components, such as high temperature coatings and bearings, will increase the component scrap rate when performing the overhaul. This will add significant (10 to 20% or more) cost to the base overhaul and increases the risk of a random failure leading to system unreliability and further cost increases.</p> <p>Justification: Extension of interval can result in unexpected or catastrophic failure.</p> <p>Assets: RB211-G DLE 1790-863</p> <p>Related Investments: Not applicable.</p>	In Progress							
STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		49958	Bright B Gas Generator End-of-Life Overhaul	2025	\$ 4,003,496	<p>Issue/Concern/Opportunity: The consequence of compressor failure is dominated by gas cost impacts to customers. The compressor package is comprised of a gas turbine engine driver, compressor, power turbine and ancillary equipment such as lube oil, fuel supply, and electronic control systems, which are required for the compressor to operate. The gas turbine engine is very complex and carries the greatest failure risk of all of the compressor package components. By continuing to comply with original equipment manufacturer (OEM) recommended Preventive Maintenance (PM) schedules and overhauls, compressor reliability risks are controlled to moderate levels. In the case of performing regular OEM prescribed overhauls, the risk of unit failure is proposed as a sawtooth function, whereby risk increases gradually over the recommended interval between overhauls and then drops suddenly after an overhaul. Critical internal wear components are on a path to failure and generally in sync with operating hours. If the operating hours are extended too far, the resulting additional operational stress on internal components, such as high temperature coatings and bearings, will increase the component scrap rate when performing the overhaul. This will add significant (10 to 20% or more) cost to the base overhaul and increases the risk of a random failure leading to system unreliability and further cost increases.</p> <p>Justification: Extension of interval can result in unexpected or catastrophic failure.</p> <p>Assets: Bright B RB211-24C</p> <p>Related Investments: Not applicable.</p>	In Progress							
STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		49965	Dawn F2 Gas Producer Overhaul	2025	\$ 2,149,800	<p>Issue/Concern/Opportunity: The consequence of compressor failure is dominated by gas cost impacts to customers. The compressor package is comprised of a gas turbine engine driver, compressor, power turbine and ancillary equipment such as lube oil, fuel supply, and electronic control systems, which are required for the compressor to operate. The gas turbine engine is very complex and carries the greatest failure risk of all of the compressor package components. By continuing to comply with original equipment manufacturer (OEM) recommended Preventive Maintenance (PM) schedules and overhauls, compressor reliability risks are controlled to moderate levels. In the case of performing regular OEM prescribed overhauls, the risk of unit failure is proposed as a saw tooth function, whereby risk increases gradually over the recommended interval between overhauls and then drops suddenly after an overhaul. Critical internal wear components are on a path to failure and generally in sync with operating hours. If the operating hours are extended too far, the resulting additional operational stress on internal components, such as high temperature coatings and bearings, will increase the component scrap rate when performing the overhaul. This will add significant (10 to 20 per cent or more) cost to the base overhaul and increases the risk of a random failure leading to system unreliability and further cost increases.</p> <p>Justification: Extension of interval can result in unexpected or catastrophic failure</p> <p>Asset: Taurus 70- TC06299/OHC15-B3953</p> <p>Related Investments: Not applicable.</p>	In Progress							
STO - UG	Div_53 - Union South Storage	Compression Stations	Pass		100948	Dawn: 5985 CV & Piping - Improvements	2023	\$ 2,327,024	<p>Issue/Concern/Opportunity: Flow control to and from the Dawn 5985 pool consists of a high-flow and low-flow control valve run. Flow dynamic of natural gas out of this critical supply high deliverability pool into the Dawn Yard has changed over the years such that the flow regime during normal non-peak day operations falls greater than the capability of the low-flow control valve run but at the very low end of the large control valve flow run. The high-flow control valve is an older style ball Fisher type valve which does not work efficiently at low flows. Extreme noise is created, over the 100 dB level, resulting in high cycle vibration of the valve internals leading to premature failure. A failure occurred in 2019 whereupon a clanging noise was being produced. The valves were removed and examined by Fisher. The large diameter valve was found to be excessively worn. Fisher rebuilt the large diameter valve after which it was reinstalled in order to place the 5985 pool back in service. Fisher's recommendation is that EGI avoids operating the large diameter valve under these conditions.</p> <p>Assets: Control valves (CV 12 and CV 20)</p> <p>Related Investments: Not applicable.</p>	Planned							

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STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	736408	156 Storage Pool Gathering System Retrofits		\$ 437,139									
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Dollar threshold	736651	Mandaumin A1 observation well	2024	\$ 1,416,750									
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1277	2023 Well Lateral Integrity Program*	2023	\$ 4,982,120			Within 3 years, supply side not applicable						
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1279	2023 Integrity Dig Program S&T*	2023	\$ 3,051,549			Within 3 years, supply side not applicable						
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1283	2024 Well Lateral Integrity Program*	2024	\$ 5,126,473			Within 3 years, supply side not applicable						
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1286	2024 Depth of Cover Mitigation Program*	2024	\$ 2,563,237			Within 3 years, supply side not applicable						
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1288	2024 Integrity Dig Program S&T*	2024	\$ 7,016,860			Within 3 years, supply side not applicable						
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1293	2025 Depth of Cover Mitigation Program*	2025	\$ 3,260,663			Within 3 years, supply side not applicable						
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1295	2025 Integrity Dig Program S&T*	2025	\$ 3,616,059			Within 3 years, supply side not applicable						
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	1296	2025 Well Lateral Integrity Program*	2025	\$ 4,429,673			Within 3 years, supply side not applicable						
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Fail	Timing	736365	A1 Observation Well Program*	2022	\$ 9,031,716			Within 3 years, supply side not applicable						
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		48257	INTE: Dawn - Cuthbert - NPS 42 replacement	2022	\$ 626,339	<p>General Concern: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% SMYS. It includes installation costs for a permanent in-line inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and repair and replacement of pipeline segments with integrity issues that are identified through the inspections.</p> <p>Project-Specific Concern: The NPS 42, NPS 34, and NPS 26 pipelines between Dawn Compressor Station and Cuthbert Road receiver site have been inspected using external corrosion direct assessment (ECDA). Although it meets the intent of the Transmission Integrity Management Program (TIMP), there are specific features that ECDA could not detect comparing to the ILI. ILI of these transmission lines is required to ensure continued safety and reliability of EGI's assets.</p> <p>Assets: Transmission Pipeline (NPS 42, NPS 34, and NPS 26 pipelines between Dawn Compressor Station and Cuthbert Road receiver site)</p> <p>Related Programs: TIMP</p>	Planned							
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		48258	INTE: Dawn - Cuthbert - ECDA to ILI Retrofit NPS 34*	2022	\$ 143,402	<p>Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) retrofit of NPS 34 pipeline between Dawn Compressor station and Cuthbert Road receiver site.</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections</p>	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		48259	INTE: Dawn - Cuthbert - ECDA to ILI Retrofit NPS 26	2022	\$ 75,062	<p>Project-Specific: External Corrosion Direct Assessment (ECDA) to In-Line Inspection (ILI) retrofit of NPS 26 pipeline between Dawn Compressor station and Cuthbert Road receiver site.</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30% Specified Minimum Yield Strength (SMYS). It includes installation costs for permanent ILI tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		48735	Well Lifecycle Replacement	2032	\$ 14,292,296	<p>Issue/Concern: This project is intended to recover lost design day deliverability due to well relines and abandonments. The deliverability of the new well is not intended to increase but maintain the deliverability. This project will drill one new vertical injection/withdrawal well and connect it to the existing gathering system of the desired pool.</p> <p>Asset: Wells</p> <p>Related Program: N/A</p>	Planned							
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102573	MOP Verification Replacement Program 2025 - S&T Assets*	2030	\$ 1,291,450	<p>General: MOP verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of existing greater than 30 per cent SMYS pipeline systems based upon these records. While this is not currently mandated by code in Canada, it is required in the U.S. and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 per cent SMYS, MOP Verification will be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey: while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.</p>	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102772	2026 Integrity Dig Program S&T*		\$ 4,346,248	<p>2026 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Complete	Fail	See investment description, IRPAs not applicable					

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STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102773	2027 Integrity Dig Program S&T*		\$ 4,628,123	2027 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102774	2028 Integrity Dig Program S&T*		\$ 4,589,543	2028 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102775	2029 Integrity Dig Program S&T*		\$ 4,556,681	2029 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102776	2030 Integrity Dig Program S&T*		\$ 4,718,189	2030 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102777	2026 Depth of Cover Mitigation Program*		\$ 4,289,775	2026 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 Mitigation of depth of cover sites that are out of compliance with CSA Z662 & TSSA requirements. Some of the known sites are discovered during annual Depth of Cover Surveying, while others are reported by company crews when performing maintenance work or by 3rd party . At this time the specific work scope of each year is not defined and this is a blanket program as a placeholder in the budget. The mitigation work will include the construction costs from sites identified and planned for the current year, as well as work on sites that are newly identified. Scope of work can vary from small remediation projects to add fill, concrete or bank stabilization, to short replacement of pipe.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102778	2027 Depth of Cover Mitigation Program*		\$ 4,567,988	2027 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 Mitigation of depth of cover sites that are out of compliance with CSA Z662 & TSSA requirements. Some of the known sites are discovered during annual Depth of Cover Surveying, while others are reported by company crews when performing maintenance work or by 3rd party . At this time the specific work scope of each year is not defined and this is a blanket program as a placeholder in the budget. The mitigation work will include the construction costs from sites identified and planned for the current year, as well as work on sites that are newly identified. Scope of work can vary from small remediation projects to add fill, concrete or bank stabilization, to short replacement of pipe.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102779	2028 Depth of Cover Mitigation Program*		\$ 4,529,910	2028 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 Mitigation of depth of cover sites that are out of compliance with CSA Z662 & TSSA requirements. Some of the known sites are discovered during annual Depth of Cover Surveying, while others are reported by company crews when performing maintenance work or by 3rd party . At this time the specific work scope of each year is not defined and this is a blanket program as a placeholder in the budget. The mitigation work will include the construction costs from sites identified and planned for the current year, as well as work on sites that are newly identified. Scope of work can vary from small remediation projects to add fill, concrete or bank stabilization, to short replacement of pipe.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102781	2029 Depth of Cover Mitigation Program*		\$ 4,497,474	2029 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 Mitigation of depth of cover sites that are out of compliance with CSA Z662 & TSSA requirements. Some of the known sites are discovered during annual Depth of Cover Surveying, while others are reported by company crews when performing maintenance work or by 3rd party . At this time the specific work scope of each year is not defined and this is a blanket program as a placeholder in the budget. The mitigation work will include the construction costs from sites identified and planned for the current year, as well as work on sites that are newly identified. Scope of work can vary from small remediation projects to add fill, concrete or bank stabilization, to short replacement of pipe.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102782	2030 Depth of Cover Mitigation Program*		\$ 4,656,884	2030 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 Mitigation of depth of cover sites that are out of compliance with CSA Z662 & TSSA requirements. Some of the known sites are discovered during annual Depth of Cover Surveying, while others are reported by company crews when performing maintenance work or by 3rd party . At this time the specific work scope of each year is not defined and this is a blanket program as a placeholder in the budget. The mitigation work will include the construction costs from sites identified and planned for the current year, as well as work on sites that are newly identified. Scope of work can vary from small remediation projects to add fill, concrete or bank stabilization, to short replacement of pipe.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102783	2026 Well Lateral Integrity Program*		\$ 3,905,325	2026 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2023-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools or subject to other integrity verification.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102784	2027 Well Lateral Integrity Program*		\$ 4,651,252	2027 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2023-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools or subject to other integrity verification.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102785	2028 Well Lateral Integrity Program*		\$ 5,045,975	2028 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2023-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools or subject to other integrity verification.	Complete	Fail	See investment description, IRPAs not applicable					

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STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102786	2029 Well Lateral Integrity Program*		\$ 5,009,845	2029 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2023-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools or subject to other integrity verification.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102787	2030 Well Lateral Integrity Program*		\$ 4,083,910	2030 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2023-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools or subject to other integrity verification.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		102801	MOP Verification Replacement Program 2026 - S&T Assets*	2031	\$ 2,606,446	General: MOP verification is the process of reviewing all existing records for a pipeline system and confirming the maximum operating pressure of existing greater than 30 per cent SMYS pipeline systems based upon these records. While this is not currently mandated by code in Canada, it is required in the U.S. and is expected to become a requirement in Canada in the future. Given the number of pipelines greater than 30 per cent SMYS, MOP Verification will be a multi-year project requiring a dedicated team to complete the verifications and determine if any pipeline remediation is required. This forecast includes the costs of replacing sections of pipelines as identified through the MOP verification work. MOP verification was also included in the 2017 customer engagement survey: while 43 per cent of those surveyed recommend waiting for regulation requirements to keep costs down, 40 per cent recommend proactively implementing industry standard. Spreading the verifications over several years will keep costs down and proactively implement an industry standard, which provides additional support for this program. Starting this program as forecast will mitigate the need for higher expenditures in a shorter time frame to meet these expected future mandated requirements.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		503024	2024 Waubuno 2 replacement wells	2024	\$ 5,322,148	Issue: The deliverability of the Waubuno pool has declined due to the relines of the injection withdrawal wells UI20, UM20, UI22 and UI25 as well as the abandonment of the well UI30. The well UI20 is in a flood plain which is inaccessible during the spring months. Any response to a well incident would be severely impacted by the condition of the well and access to the well. The proposed abandonment of this well will reduce deliverability. This project drills abandoned one well UI20 and drills two 8 5/8-inch wells. The two new wells will offset the reduction of deliverability due to the relines and abandonments. Assets: Waubuno pool and Gathering lines Related Program: Not applicable.	Planned							
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		503069	Dow A McPlank Connection	2024	\$ 2,632,571	Issue/Concern/Opportunity: The Dow A pool is currently used to supply gas to the Sarnia market. Current Sarnia design day models assume that the Dow A pool is being completely drained. However, the Dow A pool can only be utilized until the pool reaches 700 psig without running the compressor. The purpose of this project is to tie Dow A into a lower pressure distribution line so that the inventory below 700 psi can be utilized without requiring compression. Assets: A new pipeline from Dow A Compression Station to McPlank distribution Related Program: Not applicable	Planned							
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		503195	NPS 24 Trafalgar Bypass Retrofit	2023	\$ 2,491,061	Issue/Concern/Opportunity: The NPS 24 Trafalgar Bypass pipeline connects the NPS 26 Trafalgar pipeline to Kirkwall Custody Transfer Station. The length is approximately 1.1 km. This pipeline's condition is currently monitored via External Corrosion Direct Assessment (ECDA), which does not provide as complete a data set as In-Line Inspection (ILI) for Integrity Management purposes. By inspecting the pipeline via ILI, the condition of the asset will be more fully understood and the asset risk profile defined and managed in accordance with company standard. Justification: Move pipeline Condition Monitoring from ECDA to ILI in order to provide more complete data for Integrity Management purposes. Assets: NPS 24 Trafalgar Bypass Pipeline; Kirkwall Custody Transfer Station.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		734057	2031 Integrity Dig Program S&T*		\$ 4,666,594	Related Investments: 2024 Operations and Maintenance (O&M) budget for in-line inspection. 2030 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		734058	2032 Integrity Dig Program S&T*		\$ 4,528,901	2030 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		735413	2031 Depth of Cover Mitigation Program*		\$ 4,605,959	2031 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 Mitigation of depth of cover sites that are out of compliance with CSA Z662 & TSSA requirements. Some of the known sites are discovered during annual Depth of Cover Surveying, while others are reported by company crews when performing maintenance work or by 3rd party. At this time the specific work scope of each year is not defined and this is a blanket program as a placeholder in the budget. The mitigation work will include the construction costs from sites identified and planned for the current year, as well as work on sites that are newly identified. Scope of work can vary from small remediation projects to add fill, concrete or bank stabilization, to short replacement of pipe.	Complete	Fail	See investment description, IRPAs not applicable					
STO - UG	Div_53 - Union South Storage	Transmission Pipe & Underground Storage	Pass		735414	2032 Depth of Cover Mitigation Program*		\$ 4,470,055	2032 forecast: This is a program budget placeholder, estimated using an average of the spend profile between 2021-2025 Mitigation of depth of cover sites that are out of compliance with CSA Z662 & TSSA requirements. Some of the known sites are discovered during annual Depth of Cover Surveying, while others are reported by company crews when performing maintenance work or by 3rd party. At this time the specific work scope of each year is not defined and this is a blanket program as a placeholder in the budget. The mitigation work will include the construction costs from sites identified and planned for the current year, as well as work on sites that are newly identified. Scope of work can vary from small remediation projects to add fill, concrete or bank stabilization, to short replacement of pipe.	Complete	Fail	See investment description, IRPAs not applicable					

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Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	102203	NPS 12 Victoria Square Pipeline - Integrity Retrofit > 30% SMYS		\$ 257,725									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	102419	Relocation Program - Area 10*	2020	\$ 13,287,715									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	502932	TOR10YR - Toro to Cataford Replacement Standardization - Network # 161_169_172	2031	\$ 1,733,079									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	502933	TOR10YR - Dubray to Cornelius Replacement Standardization - Network # 161_169_172	2030	\$ 861,827									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	503156	TOR10YR - Horner and Carson Replacement - Network # 123_368_373	2027	\$ 1,418,768									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	503159	TOR10YR - Rimiton Replacement - Network # 123_368_373	2029	\$ 1,222,291									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	503160	TOR10YR - Delta and Gamma Replacement - Network # 123_368_373	2028	\$ 1,584,146									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	503164	TOR10YR - Alderbrae Replacement - Network # 123_368_373	2028	\$ 753,747									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	503169	TOR10YR - Delta North Replacement - Network # 123_368_373	2030	\$ 1,033,185									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733664	TOR10YR - Silvercrest to Aldercrest Replacement - Network # 123_368_373	2031	\$ 809,195									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733665	TOR10YR - Evans Industrial Replacement - Network # 123_368_373	2032	\$ 1,111,220									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733667	TOR10YR - Browns Evans Gair Replacement - Network # 123_368_373	2029	\$ 1,618,971									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733672	TOR10YR - Horner and Orianna Replacement - Network # 123_368_373	2030	\$ 1,328,808									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733677	TOR10YR - Browns and Owen Replacement - Network # 123_368_373	2031	\$ 1,313,524									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733799	TOR10YR - Belleglade and Palms Replacement Standardization - Network # 152_154	2029	\$ 1,046,066									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733801	TOR10YR - Bradstock to Verobeach Replacement Standardization - Network # 152_154	2031	\$ 430,538									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733802	TOR10YR - Lilac and Griffith Replacement Standardization - Network # 152_154	2028	\$ 1,651,311									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	733803	TOR10YR - Westin and Jasmine Replacement Standardization - Network # 152_154	2029	\$ 1,372,480									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735491	TOR10YR - Treverton & Stratton Replacement - Network # 455	2030	\$ 1,816,430									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735492	TOR10YR - Mooregate and Treverton Replacement - Network # 455	2028	\$ 1,393,156									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735495	TOR10YR - Moorecroft and Sedgewick Replacement - Network # 455	2030	\$ 1,807,058									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735498	TOR10YR - Bertrand and Birchmount Replacement - Network # 455	2028	\$ 1,542,245									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735817	TOR10YR - Bay Mills and Birchmount Replacement - Network # 455	2029	\$ 581,222									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735848	TOR10YR - Laurentide and Silverdale Replacement - Network # 455	2031	\$ 1,676,585									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735851	TOR10YR - Groveland and Lacewood Replacement - Network # 455	2031	\$ 1,759,440									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735853	TOR10YR - Fenelon and Graydon Hall Replacement - Network # 455	2030	\$ 1,663,440									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735864	TOR10YR - Tiffany and Woodthorpe Replacement - Network # 455	2032	\$ 1,122,977									
Toronto	10 - Toronto	Distribution Pipe	Fail	Dollar threshold	735865	TOR10YR - Anewen and Kenewen Replacement - Network # 455	2032	\$ 1,550,831									
Toronto	10 - Toronto	Distribution Pipe	Fail	Emergent Safety	4660	Replacement Blanket - Area 10*		\$ 21,849,759									
Toronto	10 - Toronto	Distribution Pipe	Pass		3430	Anode Blanket - Area 10*	2020	\$ 7,495,416	General: The anodes program within the corrosion program includes the required expenditure to install anodes in order to reduce the amount of down plant within EGI's system. These installations and replacements are based on the internal Standard Operating Practice established to maintain the appropriate level of cathodic protection on steel pipeline assets.	Complete	Fail	See investment description, IRPAs not applicable					
Toronto	10 - Toronto	Distribution Pipe	Pass		4160	Vintage Steel: NPS 12 SC HP on Parliament St, Carlton St to Front St	2023	\$ 6,830,552	Issue/Concern: General Concerns: Vintage steel mains have shown signs of declining health due to the cumulative effect of poorly manufactured coating performance, construction practices, latent third-party damages to pipe coating, and the effect of stray currents from transit infrastructure such as subway and streetcars. The current failure projection model is forecasting an exponential increase in the number of corrosion-related failures, while the quantitative risk assessment and the 40-year risk projection are showing an increase in the safety risk associated with steel main failures. In addition to its age, vintage steel mains are also susceptible to accelerated degradation and/or higher risk of third-party damage in the following ways: 1)Compression couplings (e.g., mechanical fittings which are not welded onto the main) on steel mains that are not properly restrained or unrestrained could cause a loss of containment due to exposed points of thrust. In this case, the weight of the soil is required to hold the fittings in place. When the soil is disturbed, the pipe pulls out of the fitting, resulting in blowing gas through the open pipe end with the potential of full bore release of gas. 2)Compression couplings on steel mains that are unknowingly isolated from the corrosion protection system could result in inadequate cathodic protection, leading to the assets' accelerated corrosion and potentially loss of containment. 3)The existence of shallow blow-off valve assemblies could be damaged during excavation activities. 4)Reduction in the original depth of cover due to urban development could increase the potential of damages due to excavation activities and increased external loading. According to the codes and standards, a minimum depth of cover is needed to ensure the appropriate distribution of weight of transportation vehicles across pipelines is not exceeded. If the depth of cover is not appropriate, excessive stresses are introduced into the pipe and failures could result. 5)The continuous exposure of road salt and seasonal ground movement on bridge-crossing assets could result in accelerated corrosion and external loading/stresses. 6)Lack of cathodic protection with pipe casings could result in corrosion causing excessive stress or shorts on the carrier pipe that is in contact with the casing, which could lead to the loss of containment. 7)Manufacturing defects associated with seam welds and fittings that are weak points in the distribution system could result in a loss of containment due to prolonged exposure to stress and corrosion. 8)Latent damages to pipe coatings that were never reported to EGI for repair and became active corrosion sites could hamper the effect of the corrosion protection system and result in accelerated corrosion and potentially loss of containment.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		4760	AMP Fitting Replacement - Area 10*	2020	\$ 113,626,049	AMP Fittings are a below grade transition fittings. The inserted portion of copper tubing can fail due to internal corrosion. In these cases leaks develop immediately downstream of the AMP Fitting.	Complete	Fail	See investment description, IRPAs not applicable					
Toronto	10 - Toronto	Distribution Pipe	Pass		10088	NPS 20 Lake Shore Replacement (Cherry to Bathurst)	2022	\$ 3,241,970	The NPS 20 assessment identifies risk results that exceeds EGI's risk threshold and supports the recommendation that this section of the pipeline (Cherry to Bathurst) requires replacement. The vintage steel replacement of the NPS 20 main on Lakeshore KOL from Cherry St to Bathurst will help address known pipe integrity and operational field concerns by proactively replacing the steel main approaching intolerable risk due to failing pipes or pipes in poor condition. This project will replace approximately 4.5 km of NPS 20 HP steel main and will abandon approximately 4.5 km of the existing NPS 20 HP main on Lakeshore Blvd in Toronto.	Planned							

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Toronto	10 - Toronto	Distribution Pipe	Pass		11443	NPS 12 Martin Grove Rd Main Replacement: Lavington to St. Albans Rd.	2026	\$ 23,963,834	<p>Issue/Concern:</p> <p>General Concerns: Vintage steel mains have shown signs of declining health due to the cumulative effects of poorly manufactured coatings, construction practices, latent third-party damages to pipe coatings, and the effect of stray currents from transit infrastructure (such as the subway and streetcars). The current failure projection model forecasts an exponential increase in the number of corrosion-related failures. The C55 value framework and the 40-year risk projection show an aggressive increase in the safety risk associated with steel main failures. In addition to age, vintage steel mains are also susceptible to accelerated degradation and/or higher risk of third-party damage in the following ways:</p> <ul style="list-style-type: none"> •Compression couplings •Shallow blow-off valve assemblies that could be damaged during excavation activities •Reduction in the original depth of cover •Continuous exposure to road salt and seasonal ground movement on bridge-crossing assets •Lack of cathodic protection on pipe casings that could result in corrosion and could lead to the loss of containment •Manufacturing defects associated with seam welds and fittings that could result in a loss of containment due to prolonged stress and corrosion •Latent damages to pipe coatings that were never reported to EGI for repair and became active corrosion sites, resulting in accelerated corrosion and potential loss of containment. <p>Site-Specific Concerns: Martin Grove to St. Albans Road: Address NPS 12 pipe from Lavington Drive South to Burnhamthorpe Road, then west to Ashbourne Drive, then following Auckland Road south to St. Albans Road.</p> <p>There are over 360 service connections that will be removed from the high-pressure (HP) steel main and an intermediate pressure (IP) polyethylene (PE) subsystem installed to reconnect these customers. Depth of cover (DOC) has been identified as a significant concern for these main segments as identified by 2018 and 2019 DOC surveys that found over 52% of the survey locations had DOC less than 90 cm, with 77 survey locations measuring less than 60 cm of cover. Poor DOC can lead to increased third-party damages. Additional risk factors include two unrestrained compression couplings (CCs), nine restrained CCs, and three suspect valves where, due to their installation dates, may have been tied in using unrestrained CCs (as discovered by an Integrity Assessment showing</p>	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		13612	Service Relay Blanket - Area 10*	2020	\$ 114,559,613	<p>General: A distribution service refers to the pipe between the distribution main and the customer's meter set. Over the years, different materials have been used for this asset, including steel, copper, and varying resins of plastic, each with unique characteristics that contribute to their performance over time. Services can be repaired or replaced depending on asset condition and the nature of the issue exhibited. Generally, replacement is the preferred approach to mitigate unacceptable asset condition.</p>	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		23147	Toronto Island NPS 2 Feed Relocation	2025	\$ 3,900,832	<p>Issue/Concern: Currently, a 2-inch SC HP gas line (asset 61054) is sole feed to Toronto Island and is running through Western Gap Utility Tunnel. The utility tunnel is now considered a mine shaft, preventing necessary inspections of the line and the hangers that are supporting the line. This 2-inch SC HP main was installed in 1963 and the last known inspection of this line and hangers was in 1992. Should the line fail, the only recourse would be shutting the feed to Toronto Island, losing approximately 300 customers and undertaking an emergency replacement to resume service.</p> <p>Assets: NPS 2 SC HP Main (asset ID 61054)</p> <p>Related Program: Steel Mains Replacement Program</p>	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		100339	A10: Wilson Avenue, Toronto, VSM Replacement	2025	\$ 91,158,784	<p>Issue/Concern/Opportunity:</p> <p>Phased replacement of 12 gas main from Bathurst Ave. to Walsh Ave. Main is currently protected by Rectifier.</p> <ul style="list-style-type: none"> -The main on Wilson Ave. has numerous Pumpkins that have been installed on it. Starting from Wendell Ave. and going east towards Bathurst St. -Corrosion on main has been an issue on Wilson Ave. due to stray current from Toronto Transit Commission (TTC) which continues to be an ongoing concern. -The service connections have field-applied coatings which leaves a concern for future corrosion issues on this main. -Regarding the main in the middle of the road on Wilson Ave., Curbside Valve Tee (CVT) repairs are problematic due to the location of the main. <p>Assets:</p> <p>There is 8.5 km of NPS 12 HP Vintage Steel Main (VSM) installed between 1955 and 1964 on Wilson Ave. between Walsh Ave. and Bathurst St., Toronto.</p> <p>Related Program: Not applicable.</p> <p>Phased replacement of 12 Gas Main from Bathurst Ave. to Walsh Ave. Main is currently protected by Rectifier.</p> <ul style="list-style-type: none"> -The main on Wilson Ave. has numerous Pumpkins that have been installed on it. Starting from Wendell Ave. and going east towards Bathurst St. -Corrosion on main has been an issue on Wilson Ave. due to stray current from Toronto Transit Commission (TTC) which continues to be an ongoing concern. -The service connections have field-applied coatings which leaves a concern for future corrosion issues on this main. -Regarding the main in the middle of the road on Wilson Ave., Curbside Valve Tee (CVT) repairs are problematic due to the location of the main. <p>Assets:</p> <p>There is 8.5 km of NPS 12 HP Vintage Steel Main (VSM) installed between 1955 and 1964 on Wilson Ave. between Walsh Ave. and Bathurst St., Toronto.</p>	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		100497	VSM - Firestone Road - 2" ST - PH1	2023	\$ 1,968,821	<p>Issue/Concern/Opportunity:</p> <p>General Concerns: Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization.</p> <p>Assets: Approximately 1623.3 m 2-inch SC Intermediate Pressure (IP) to be replaced by 2-inch PE IP.</p> <p>Related Investments: Investment code #735792.</p>	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		102204	NPS 42 GTA Transmission - Integrity Retrofit > 30% SMYS	2025	\$ 2,577,255	<p>Funds to install launcher (station rebuild occurred in 2016; no provisions for launcher were included) on pipeline to allow for inline inspection are required. This will allow in-line inspection of the pipeline which is required as per the Pipeline Integrity Management Program.</p> <p>General: The Integrity Management Program is a mandated regulatory requirement which has been designed to comply with all applicable codes and standards. The program consists of the regular assessment and maintenance of the integrity of EGI's pipeline systems to ensure their continued safety and reliability. Most of the expenditure included in this category is for pipelines that operate above 30 per cent SMYS. It includes installation costs for permanent inline inspection (ILI) tool launcher and receiver facilities, retrofits to existing lines to remove restrictive fittings or pipe configurations so they can be inspected with ILI tools, and replacement of pipeline segments with integrity issues that are identified through the inspections.</p>	Complete	Fail	See investment description, IRPAs not applicable					

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Toronto	10 - Toronto	Distribution Pipe	Pass		502929	TOR10YR - Keelesgate and Cuffley Replacement Standardization - Network # 161_169_172	2030	\$ 1,969,836	TOR10YR - Keelesgate and Cuffley Replacement Standardization - Network #161_169_172 The 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services. Scope: Replace gas mains with 300 m of NPS 4 PE and 1,040 m of NPS 2 PE, relay 90 services and reconnect 28 services. Resources: NPL to execute. Solution Impact: General Main (GM) upgrades will elevate pressure to reinforce system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		502935	TOR10YR - Bayford to Dubray Replacement Standardization - Network # 161_169_172	2030	\$ 1,872,755	TOR10YR - Bayford to Dubray Replacement Standardization - Network #161_169_172 The 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires main extension to 55 PSI network and upgrades to services. Scope: Upgrade gas mains and add main extension with 320 m of NPS 4 PE and 1,010 m of NPS 2 PE, relay 72 services, reconnect 27 services, and remove district station. Resources: NPL to execute. Solution Impact: General Main (GM) replacement and extension will elevate pressure and reinforce system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		503158	TOR10YR - Horner from Browns Line Replacement - Network # 123_368_373	2027	\$ 1,848,507	TOR10YR - Horner from Browns Line Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 575 m NPS 8 PE, 13 service relays and 8 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		503161	TOR10YR - Beta and Aldercrest Replacement - Network # 123_368_373	2029	\$ 1,903,273	TOR10YR - Beta and Aldercrest Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 575 m NPS 4 PE, 430 NPS 2 PE, 81 service relays and 44 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		503165	TOR10YR - Hallmark to Lunness Replacement - Network # 123_368_373	2028	\$ 1,806,166	TOR10YR - Hallmark to Lunness Replacement - Network # 123_368_373 MP system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services Scope: Replace and Upgrade gas mains and services with 1100 NPS 2 PE 88 Service Relays, 33 Service Reconnects. Resources: NPL to execute Solution Impact: GM replacements to meet pressure elevation requirements in system to meet growth requirements Project Timing: TBD.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		503167	TOR10YR - Lanor and Valermo Replacement - Network # 123_368_373	2029	\$ 1,956,524	TOR10YR - Lanor and Valermo Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 1,300 NPS 2 PE, 79 service relays and 42 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		503168	TOR10YR - Beta and Gamma North Replacement - Network # 123_368_373	2029	\$ 1,849,686	TOR10YR - Beta and Gamma North Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 1,000 NPS 2 PE, 105 service relays and 27 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							

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Toronto	10 - Toronto	Distribution Pipe	Pass		733447	TOR10YR - Aldercrest to Lunness North Replacement - Network # 123_368_373	2029	\$ 2,156,416	TOR10YR - Aldercrest to Lunness North Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 540 NPS 4 PE, 950 NPS 2 PE, 91 service relays and 52 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733448	TOR10YR - Evans Ave Replacement- Network # 123_368_373	2029	\$ 2,719,150	TOR10YR - Evans Ave. Replacement - Network # 123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains (like for like) and services with 1,200m NPS 8 PE, 400 m NPS 4 PE, 70 service relays, 26 service reconnects, and upgrade station to 55 PSI. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733666	TOR10YR - Bellman to N Carson Replacement- Network # 123_368_373	2029	\$ 2,309,839	TOR10YR - Bellman to N. Carson Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 1,400 NPS 2 PE, 119 service relays and 42 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733668	TOR10YR - Savona and Bisset Replacement- Network # 123_368_373	2031	\$ 2,229,896	TOR10YR - Savona and Bisset Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 1,600 NPS 2 PE, 112 service relays, and 50 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733669	TOR10YR - Delma and Ecker Replacement- Network # 123_368_373	2031	\$ 2,367,588	TOR10YR - Delma and Ecker Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 320 NPS 4 PE, 1,170 NPS 2 PE, 100 service relays and 32 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733670	TOR10YR - Westhead Replacement- Network # 123_368_373	2029	\$ 1,955,611	Victoria St - Eastern - Area 60 - 1138 Vintage steel pipes exhibit increased failures as they age as steel mains are susceptible to external corrosion when barriers of pipe coatings and cathodic protection are compromised. The current pipe replacement rate (mains and services) is inadequate to prevent the average age of the population from increasing and hence reaching the end of their useful life. EGI has determined that a long-term proactive replacement program targeting higher-risk steel pipes installed on or before 1970 (vintage steel) is required to manage the increasing number of expected leaks that create increasing risk for the organization. Comments: There is potential for road restrictions due to congested area. TOR10YR - Westhead Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 1,250 m NPS 2 PE, 91 service relays and 34 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							

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Toronto	10 - Toronto	Distribution Pipe	Pass		733671	TOR10YR - Browns and Finsbury Replacement- Network # 123_368_373	2030	\$ 2,229,129	TOR10YR - Browns and Finsbury Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 180 m NPS 8 PE, 650 m NPS 4 PE, and 580 NPS 2 PE; 66 service relays and 14 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733673	TOR10YR - Mitcham and Fulham Replacement - Network # 123_368_373	2030	\$ 2,311,878	TOR10YR - Mitcham and Fulham Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 1,400 NPS 2 PE, 85 service relays and 70 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733674	TOR10YR - Eltham and Delma Replacement- Network # 123_368_373	2030	\$ 2,337,978	TOR10YR - Eltham and Delma Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 1,550 NPS 2 PE, 76 service relays and 58 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733675	TOR10YR - Browns Line at Horner Replacement- Network # 123_368_373	2030	\$ 1,867,745	TOR10YR - Browns Line at Horner Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 400 NPS 8 PE, 14 service relays and 9 service reconnects. There is approximately 400 m of NPS 4 PE required on 3 services and there is 1 garage header reconnect. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733678	TOR10YR - Sunset and Burlington Replacement- Network # 123_368_373	2030	\$ 2,165,109	TOR10YR - Sunset and Burlington Replacement- Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 920 NPS 2 PE and 400 NPS 4 PE, 73 service relays and 44 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733679	TOR10YR - Albright and Roseland Replacement- Network # 123_368_373	2030	\$ 2,417,166	TOR10YR - Albright and Roseland Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 900 NPS 2 PE, 500 NPS 4 PE, 81 service relays and 98 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							

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Toronto	10 - Toronto	Distribution Pipe	Pass		733680	TOR10YR - Foch and Woodbury Replacement- Network # 123_368_373	2031	\$ 2,349,456	TOR10YR - Foch and Woodbury Replacement - Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains and services with 1,220 NPS 2 PE, 220 NPS 4 PE, 98 service relays and 51 service reconnects. Resources: NPL to execute. Solution Impact: General Main (GM) replacements to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733681	TOR10YR - St Lucie Replacement Standardization - 2027 Network # 152_154	2027	\$ 2,174,985	TOR10YR - St. Lucie Replacement Standardization - Network #152_154 The 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services. Scope: Replace gas mains with 500 m of NPS 4 PE and 760 m of NPS 2 PE, relay 120 services and reconnect 58 services. Resources: NPL to execute. Solution Impact: General Main (GM) replacement will elevate pressure to reinforce system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733682	TOR10YR - Gulfstream and Franson Replacement Standardization - Network # 152_154	2028	\$ 1,923,418	TOR10YR - Gulfstream and Franson Replacement Standardization - Network # 152_154 25 PSI IP Pipe system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services Scope: Replace gas mains with 400m of NPS 4 PE and 630m of NPS 2 PE Relay 95 services; Reconnect 37 Services Resources: NPL to execute Solution Impact: GM Replacement in order to elevate pressure to reinforce system to meet growth requirements Project Timing: TBD	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733683	TOR10YR - Verobeach Replacement Standardization - Network # 152_154	2031	\$ 2,526,511	TOR10YR - Verobeach Replacement Standardization - Network #152_154 The 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services. Scope: Replace gas mains with 690 m of NPS 4 PE and 900 m of NPS 2 PE, relay 135 services, and reconnect 48 services. Resources: NPL to execute. Solution Impact: General Main (GM) replacement will elevate pressure to reinforce system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733800	TOR10YR - Coral Gable Replacement Standardization - Network # 152_154	2031	\$ 2,322,509	TOR10YR - Coral Gable Replacement Standardization - Network #152_154 The 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services. Scope: Replace gas mains with 570 m of NPS 4 PE, 1,170 m of NPS 2 PE (like for like), relay 79 services, reconnect 52 services and remove 25 PSI station. Resources: NPL to execute. Solution Impact: General Main (GM) replacement will elevate pressure to reinforce system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733804	TOR10YR - Yorkdale and Wallasey Replacement Standardization - Network # 152_154	2030	\$ 2,327,023	TOR10YR - Yorkdale and Wallasey Replacement Standardization - Network #152_154 The 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services. Scope: Replace gas mains with 1,160 m of NPS 2 PE, relay 129 services and reconnect 60 services. Resources: NPL to execute. Solution Impact: General Main (GM) replacement will elevate pressure to reinforce system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733805	TOR10YR - Starview and Weston Replacement Standardization - Network # 152_154	2030	\$ 2,371,979	TOR10YR - Starview and Weston Replacement Standardization - Network #152_154 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services. Scope: Replace gas mains with 1,330 m of NPS 2 PE, relay 146 services and reconnect 12 services. Resources: NPL to execute. Solution Impact: General Main (GM) replacement will elevate pressure to reinforce system to meet growth requirements. Project Timing: To be determined.	Planned							

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Toronto	10 - Toronto	Distribution Pipe	Pass		733806	TOR10YR - Gaydon and Highbury Replacement Standardization - Network # 152_154	2029	\$ 2,308,231	TOR10YR - Gaydon and Highbury Replacement Standardization - Network #152_154 25 PSI Intermediate Pressure (IP) Pipe system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI requires reinforcing upgrades of mains and services. Scope: Install 350 m of NPS 4 PE and replace gas mains with 1,330 m of NPS 2 PE, relay 117 services, reconnect 55 services and upgrade station to 55 PSI. Resources: NPL to execute. Solution Impact: General Main (GM) replacement will elevate pressure to reinforce system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		733910	TOR10YR - Browns Line and Jellicoe Replacement- Network # 123_368_373	2032	\$ 5,197,777	TOR10YR - Browns Line and Jellicoe Replacement- Network #123_368_373 Medium Pressure (MP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system requires replacement of MP mains and services. Scope: Replace and upgrade gas mains (like for like) and services with 80 m NPS 8 PE, 950 m NPS 4 PE, 2,275 m NPS 2 PE, 196 service relays, and 145 service reconnects; abandon station and outlet piping. Resources: NPL to execute. Solution Impact: General Main (GM) replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		734406	Vintage Steel Replacement Program - 10 Toronto*	2026	\$ 25,545,052	Issue/Concern: The VS Steel Main Replacement Program is both a reactive and proactive asset renewal program. Over the next ten years, the program will focus on reactively replacing steel mains that have experienced failure and integrity issues. The planned replacement will replace gas mains that exhibit signs of approaching end-of-life found in recent leak survey results and through field discovery of integrity issues (such as poor coating condition, severe corrosion, insufficient depth of cover or exposure, and leaks), as supported by the DIMP risk model.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735485	TOR10YR - Foxbridge-Roebuck Replacement - Network # 277	2031	\$ 2,354,728	TOR10YR - Foxbridge-Roebuck Replacement - Network #277 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires replacement of some mains and services. Scope: Replace and upgrade gas mains with 450 m NPS 2 PE, 192 service relays, and 12 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735487	TOR10YR - Birchmount & Foxbridge Replacement - Network # 277	2028	\$ 2,752,982	TOR10YR - Birchmount & Foxbridge Replacement - Network # 277 IP system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires replacement of some mains and services Scope: Install Replace and Upgrade gas mains with 1500m NPS 2 PE, 1000m NPS 4 PE 32 Service Relays, CC removals Resources: NPL to execute Solution Impact: Gas Plant replacements and install to meet pressure elevation requirements in system to meet growth requirements Project Timing: TBD	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735489	TOR10YR - Willowmount & Birchmount Replacement - Network # 277	2031	\$ 2,353,768	TOR10YR - Willowmount and Birchmount Replacement - Network #277 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires replacement of some mains and services. Scope: There are 181 service relays, 73 service reconnects, station removal/abandonment, and compression couplings (CCs) removal. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735497	TOR10YR - Kingsdown and Ranstone Replacement - Network # 455	2028	\$ 2,736,597	TOR10YR - Kingsdown and Ranstone Replacement - Network # 455 IP system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires replacement of some mains and services Scope: Replace and Upgrade gas mains with 1100m NPS 2 PE, 100m NPS 4 (Like for Like) 120 Service Relays, 91 Service Reconnects Resources: NPL to execute Solution Impact: Gas Plant replacements to meet pressure elevation requirements in system to meet growth requirements Project Timing: TBD	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735501	TOR10YR - Ionview South Replacement - Network # 455	2028	\$ 2,230,996	TOR10YR - Ionview South Replacement - Network # 455 IP system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires replacement of some mains and services Scope:Replace and Upgrade gas mains with 1300m NPS 2 PE (Like for Like) Install tie-in 30m NPS 4 109 Service Relays, 32 Service Reconnects Remove Station, tie-in to network 262 Resources: NPL to execute Solution Impact: Gas Plant replacements to meet pressure elevation requirements in system to meet growth requirements Project Timing: TBD	Planned							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Toronto	10 - Toronto	Distribution Pipe	Pass		735819	TOR10YR - Bay Mills and Birchmount Services Replacement - Network # 455	2029	\$ 2,616,745	TOR10YR - Bay Mills and Birchmount Services Replacement - Network #455 Intermediate pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas services including 274 service relays and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined. Permit: Some services may encroach in regulated area.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735820	TOR10YR - Amethyst and Cass Replacement - Network # 455	2029	\$ 4,372,195	TOR10YR - Amethyst and Cass Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services Scope: Replace and upgrade gas mains and services with 2,350 m NPS 2 PE, 1,000 m NPS 4 PE (like for like), 98 service relays, 27 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735821	TOR10YR - Aragon and Malamute Replacement - Network # 455	2030	\$ 2,458,254	TOR10YR - Aragon and Malamute Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 1,600 m NPS 2 PE, 121 service relays and 17 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735822	TOR10YR - Scarden and Tourmaline Replacement - Network # 455	2030	\$ 2,545,630	TOR10YR - Scarden and Tourmaline Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 1,600 m NPS 2 PE, 250 m NPS 4, 96 service relays, and 18 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735824	TOR10YR - Moraine Hill and Sunmount Replacement - Network # 455	2031	\$ 3,799,870	TOR10YR - Moraine Hill and Sunmount Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 2,800 m NPS 2 PE, 450 m NPS 4 (like for like), 154 service relays and 34 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735830	TOR10YR - Birchmount South Sheppard Replacement - Network # 455	2029	\$ 3,731,512	TOR10YR - Birchmount South Sheppard Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 900 m NPS 8 PE (like for like), 17 service relays, 3 service reconnects, 100 m NPS 1.25 header, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Toronto	10 - Toronto	Distribution Pipe	Pass		735835	TOR10YR - Allanford and Pender Replacement - Network # 455	2031	\$ 3,673,333	TOR10YR - Allanford and Pender Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 500 m NPS 6 PE, 600 m NPS 4 PE, 1,700 m NPS 2 PE (like for like), 140 service relays and 20 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735836	TOR10YR - Araman and Earlton Replacement - Network # 455	2031	\$ 3,673,333	TOR10YR - Araman and Earlton Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 2,800 m NPS 6 PE (like for like), 176 service relays, and 19 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735839	TOR10YR - Colingwood and Dempster Replacement - Network # 455	2030	\$ 2,494,336	TOR10YR - Colingwood and Dempster Replacement - Network #455 Intermediate Pressure (IP) is system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 50 m NPS 4 PE, 650 NPS 8 PE, 137 service relays and 29 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735847	TOR10YR - Birchmount North Ellesmere Replacement - Network # 455	2030	\$ 2,314,209	TOR10YR - Birchmount North Ellesmere Replacement - Network #455 Intermediate Pressure (IP) system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 650 m NPS 8 PE, 50 NPS 2 PE (like for like) 36 service relays, 7 service reconnects (commercial services), and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined. Toronto and Region Conservation Authority (TRCA) Permit - Some services and mains may encroach into regulated area.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735849	TOR10YR - Larabee and Tetbury Replacement - Network # 455	2031	\$ 2,010,061	TOR10YR - Larabee and Tetbury Replacement - Network #455 Intermediate Pressure (IP) is system running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 1,700m NPS 2 PE (like for like) 72 service relays and 45 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined. Permit: Some services and mains may encroach into regulated area.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735850	TOR10YR - Three Valley Dr Replacement - Network # 455	2031	\$ 2,879,976	TOR10YR - Three Valley Dr. Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 60 m NPS 6 PE, 900 m NPS 4 PE, 500 m NPS 2 PE (like for like), 148 service relays, and 39 service reconnects. Resources: NPL to execute. Solution Impact: Gas Plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined. Permit: Some services and mains may encroach into regulated area.	Planned							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Toronto	10 - Toronto	Distribution Pipe	Pass		735852	TOR10YR - Valentine and York Mills Replacement - Network # 455	2030	\$ 2,252,485	TOR10YR - Valentine and York Mills Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 200 m NPS 4 PE, 650 m NPS 2 PE, 168 service relays, 20 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Permit: Some services and mains may encroach into regulated area.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735854	TOR10YR - Fenside and Lynedock Replacement - Network # 455	2030	\$ 5,285,359	TOR10YR - Fenside and Lynedock Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 150 m NPS 6 PE, 400 m NPS 4 PE, 2,700 m NPS 2 PE (like for like), 301 service relays, 46 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Permit - Creek Crossing	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735855	TOR10YR - Roywood and York Mills Replacement - Network # 455	2032	\$ 5,008,877	TOR10YR - Roywood and York Mills Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 200 m NPS 2 PE (like for like), 569 service relays, 1 service reconnect, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Permit: Some services and mains may encroach into regulated area.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735856	TOR10YR - Sloane and Ruscica Replacement - Network # 455	2032	\$ 2,972,934	TOR10YR - Sloane and Ruscica Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 30 m NPS 6 PE, 1,100 m NPS 4 PE, 1,000 m NPS 2 PE (like for like), 71 service relays, 34 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Permit: Some services and mains may encroach into regulated area.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735857	TOR10YR - Wigmore and Draycott Replacement - Network # 455	2031	\$ 2,969,602	TOR10YR - Wigmore and Draycott Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 1,900 m NPS 2 PE, 104 service relays, and 54 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Permit: Some services and mains may encroach into regulated area.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735858	TOR10YR - Elvaston Replacement - Network # 455	2031	\$ 2,516,300	TOR10YR - Elvaston Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 1,600 m NPS 2 PE, 102 service relays and 30 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Toronto and Region Conservation Authority (TRCA) Permit - Some services and mains may encroach into regulated area.	Planned							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Toronto	10 - Toronto	Distribution Pipe	Pass		735859	TOR10YR - Eccleston and Tinder Replacement - Network # 455	2031	\$ 2,144,073	TOR10YR - Eccleston and Tinder Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 1,200 m NPS 2 PE, 104 service relays, 24 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Toronto and Region Conservation Authority (TRCA) Permit: Some services and mains may encroach into regulated area.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735860	TOR10YR - North Sloane Replacement - Network # 455	2031	\$ 3,558,130	TOR10YR - North Sloane Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 100 m NPS 6 PE, 900 m NPS 4 PE, 1,350 m NPS 2 PE (like for like), 62 service relays, 20 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735861	TOR10YR - Sweeney Replacement - Network # 455	2031	\$ 5,123,664	TOR10YR - Sweeney Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 750 m NPS 6 PE, 200 m NPS 4 PE, and 2,000 m NPS 2 PE (like for like), 124 service relays, 65 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined. Permit: Some services and mains may encroach into regulated area.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735862	TOR10YR - Knighton and Prestbury Replacement - Network # 455	2031	\$ 3,509,187	TOR10YR - Knighton and Prestbury Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 200 m NPS 4 PE, 2,100 m NPS 2 PE (like for like) 89 service relays, and 82 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735863	TOR10YR - Carnforth and Wyndcliff Replacement - Network # 455	2032	\$ 4,062,625	TOR10YR - Carnforth and Wyndcliff Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 700 m NPS 4 PE, 2,200 m NPS 2 PE (like for like), 100 service relays, 104 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735866	TOR10YR - Pharmacy and Dewey Replacement - Network # 455	2032	\$ 1,808,003	TOR10YR - Pharmacy and Dewey Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 350 m NPS 2, 219 service relays, 7 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Toronto	10 - Toronto	Distribution Pipe	Pass		735867	TOR10YR - Victoria Park Ivordale Replacement - Network # 455	2032	\$ 2,556,852	TOR10YR - Victoria Park Ivordale Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 760 m NPS 4 PE, 50 m NPS 2 PE (like for like), 214 service relays, 18 service reconnects, and compression coupling (CC) removals. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735868	TOR10YR - Combermere Replacement - Network # 455	2032	\$ 4,289,303	TOR10YR - Combermere Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 550 m NPS 4 PE, 2,700 m NPS 2 PE (like for like), 181 service relays and 45 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735869	TOR10YR - Parkwoods Village Replacement - Network # 455	2032	\$ 3,359,999	TOR10YR - Parkwoods Village Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services Scope: Replace and upgrade gas mains and services with 650 m NPS 4 PE, 2,200 m NPS 2 PE (like for like) 145 service relays, and 33 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735870	TOR10YR - Brookbanks and Valley Woods Replacement - Network # 455	2032	\$ 3,535,865	TOR10YR - Brookbanks and Valley Woods Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 1,000 m NPS 4 PE, 1,850 m NPS 2 PE (like for like), compression couplings (CCs), 65 service relays, and 26 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined. Permit: Some services and mains may encroach into regulated area.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735871	TOR10YR - Truxford and Overbank Replacement - Network # 455	2032	\$ 2,491,913	TOR10YR - Truxford and Overbank Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 100 m NPS 4 PE, 2,100 m NPS 2 PE (like for like), compression coupling (CC) removals, 61 service relays, and 54 service reconnects. Resources: NPL to execute. Solution Impact: Gas Plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined. Permit – Some services and mains may encroach into regulated area.	Planned							
Toronto	10 - Toronto	Distribution Pipe	Pass		735872	TOR10YR - Wallingford Replacement - Network # 455	2032	\$ 3,061,749	TOR10YR - Wallingford Replacement - Network #455 Intermediate Pressure (IP) system is running close to capacity and not meeting growth needs. Plans to elevate pressure to 55 PSI system from 25 PSI requires upgrades and replacement of some mains and services. Scope: Replace and upgrade gas mains and services with 500 m NPS 4 PE, 2,100 m NPS 2 PE (like for like), compression coupling (CC) removals, 94 service relays, and 31 service reconnects. Resources: NPL to execute. Solution Impact: Gas plant replacements are to meet pressure elevation requirements in system to meet growth requirements. Project Timing: To be determined. Permit – Some services and mains may encroach into regulated area.	Planned							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Toronto	10 - Toronto	Distribution Stations	Pass		17403	NGT Existing customer Maintenance Capital - (+2027)*		\$ 2,796,843	Issue/Concern: EGI Fleet operators can continue to achieve fuel cost savings and reduced emission benefits by investing in the wellbeing of the NGV station. This can be achieved by adopting continuously upgrading the major NGV equipment as part of the maintenance strategy. By upgrading the major NGV equipment, EGD can extend the life cycle of the equipment, resulting in a more cost effective way of operating the NGV stations. Assets: There is a number of current NGV Station EGI maintains.	Complete	Fail	See investment description, IRPAs not applicable for CNG					
Toronto	10 - Toronto	Distribution Stations	Pass		18962	(O)-ELLESMERE / BUDEA	2025	\$ 195,388	Issue/Concern: BOOT ABOVE GROUND BOX AGE: 31.9 Customer Count: 554 Utilization: 0.01858793 Can't short Sense # of Regs/Avg Size: 4 / 0in Assets: Related Program (if applicable): N/A	Complete	Fail	See investment description, IRPAs not applicable					
Toronto	10 - Toronto	Distribution Stations	Pass		503183	Albion Feeder Station Control Valve Upgrade	2023	\$ 2,638,215	At Albion Gate, valve F54201D controls the flow rate from the EGT line to the TC Energy Kings North outlet. All gas flowing to TC Energy must pass through the valve; there is no bypass, isolation, or redundancy included in the existing design. If this valve (F54201D) failed (and required maintenance), the inlet to both the EGI system and TC Energy's outlets would be affected. The original purpose of the valve was to control flow to TC Energy to their contractual limit when flows on the EGT line were at their peaks. This control would guarantee the inlet pressure to the station feeding the EGI XHP systems which would be sufficient during peak operations. It was expected that this valve would be primarily 100% open and only be in service on the coldest of high-market demand days. Utilization was expected to be less than 10% of the winter days. In the winter period November 1, 2020 to February 25, 2021, the valve had been less than 100% open, 50% of the time (1407 hours / 2788 hours - source SCADA). Gas Control has utilized this valve more often for two purposes: (1) to carry higher pressure to Albion Gate for the distribution station; and (2) to maintain the operation of Parkway West compression within tolerances. Parkway West compressors are each 40,000 HP plus units. For the units to operate in their limited emission mode, both the volume pumped by the compressor and the lift across the compressor must be maintained within specific ranges. Using F54201D at Albion to limit flow to TC Energy allows the EGT line to act as a buffer for the compression. Compression volumes and lift can be maintained by operating the EGT line at higher pressure on warmer days. Risks: With no bypass and a single valve, a failure of the valve to open when needed will not allow EGI to deliver contracted quantities to TC Energy. Although this station rarely operates in summer months, summer would be the only time to work on the valve controls. Recommendation: Identify the appropriate design for the control valve feeding TC Energy Kings North that will meet EGI's control, bypass, and maintenance requirements.	Planned							
Toronto	10 - Toronto	Distribution Stations	Pass		733809	Parliament & Winchester Station Replacement - Execution Phase	2023	\$ 1,147,246	Phase 2 (Execution Phase) of the Parliament and Winchester Station Replacement Phase 2 project was created because original investment 1217 exceeded 5-years. The first station purchased in 2017 will not be used for this station rebuild and will be repurposed for future projects.	Planned							
Toronto	10 - Toronto	Distribution Stations	Pass		735180	12377A PURPLE DUSK TRAIL & NELSON DISTRICT	2023	\$ 143,021	Issue/Concern/Opportunity: (from Field) • Below ground box Assets: District Station 12377A	Complete	Fail	See investment description, IRPAs not applicable					
Toronto	10 - Toronto	Growth	Pass		3405	Area 10 - Apartment Traditional - New Construction*		\$ 31,629	Apartment - An apartment customer is a multi-residential dwelling containing more than six units that is bulk-metered Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential customers.	Planned							
Toronto	10 - Toronto	Growth	Pass		3720	Area 10 - Industrial - New Construction*		\$ 435,336	Industrial New Construct. A customer intending to run an ind. mfg business in a newly-built facility and intending to use natural gas.	Planned							
Toronto	10 - Toronto	Growth	Pass		3402	Area 10 - Apartment Ensuite - New Construction*		\$ 33,932,813	Issue/Concern: Vertical Subdivision refers to a multiple unit residential building where each suite is individually metered. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Planned							
Toronto	10 - Toronto	Growth	Pass		3406	Area 10 - Commercial - New Construction*		\$ 88,357,565	Commercial New Construction- A commercial customer in a newly-built facility intending to use natural gas for a commercial business. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Planned							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Toronto	10 - Toronto	Growth	Pass		3407	Area 10 - Commercial - Replacement*		\$ 20,036,048	Commercial Replacement - A commercial replacement customer using a fuel other than natural gas for commercial business and is converting to natural gas. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Planned							
Toronto	10 - Toronto	Growth	Pass		3408	Area 10 - Residential - Replacement*		\$ 98,154,218	Issue/Concern: Residential Replacement refers to a residential replacement customer using a fuel other than natural gas for domestic purposes and is converting to natural gas. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Planned							
Toronto	10 - Toronto	Growth	Pass		3700	Area 10 - Residential - New Construction*		\$ 118,460,850	Issue/Concern: Residential New Construction refers to a new residential construction development of detached single homes constructed by the builder for domestic purposes. Issue/Concern: EGI is mandated to provide new or upgraded natural gas services to feasible residential and commercial/industrial customers. Feasibility is measured using the Profitability Index metric that ensures gas cost impacts are minimized. Without the required CAPEX captured under this program, EGI will not be able to provide new or upgraded natural gas services to feasible customers. Each year, EGI develops a customer additions forecast using a number of information sources: - Projections of potential customer growth resulting from current projects in different geographical areas of operation based on information from builders, developers and municipalities - Projections for customer growth based on housing start forecasts and other economic factors such as GDP growth, employment rates, and mortgage rates - Projections developed by external consultants specializing in population growth forecasting - Municipal long-term plans: EGI extends its gas main within its franchise area to serve new customers when economically feasible, as per criteria prescribed by the Ontario Energy Board (OEB) in the EBO 188 report. EGI reviews the following when determining feasibility: - The number of potential new customers - The consumption of natural gas by new customers - The cost of extending the gas main The OEB, through EBO 188, directs utilities to have an average PI of 1.0 or greater for their total portfolio of projects and that any one individual project must meet a PI of at least 0.8, ensuring the minimization of cross-subsidization among customers across all projects. This ensures that the costs of projects are recovered from the customer(s) who would directly benefit. Without this approach to system expansion, the utility would not collect enough revenue to fund its projects, and the shortfall would need to be recovered from all other customers. If the cost of the extension is not economically feasible, the applicant(s) will be required to pay a contribution in aid of construction (CIAC). EGI determines the CIAC amount and communicate with the applicant(s) in writing. Generally, there are three components of capital investments needed to support customer addition requirements: - Installation costs related to mains, services, and meters - Material costs related to mains, services and meters - Costs related to measurement and regulation equipment required to support customer growth. Assets: All applicable assets. Related Program: N/A	Planned							

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	2023-2032 Forecast (Includes overhead allocation)	Investment Description - Binary Screening - Pass	Technical Evaluation Completion Status	Technical Evaluation Results	Technical Evaluation - IRPAs Considered	Economic Evaluation Completion Status	Economic Evaluation Results	Economic Evaluation - IRPAs Considered	IRP Plan Completion Status	IRP Plan - IRPAs Considered
Toronto	10 - Toronto	Growth	Pass		7710	McCowan Ave HP Reinforcement	2022	\$ 31,173	<p>Issue/Concern: Reinforcement projects broadly involve the installation of new or modification of existing gas distribution assets to maintain minimum required system pressure to maintain the capacity to meet customer demand. These projects are primarily driven by customer growth and system reliability considerations. Failure to implement reinforcement projects in a timely manner could lead to a potential inability to support increasing demands of existing customers and the addition of future customers.</p> <ul style="list-style-type: none"> • Project Purpose/Need: This reinforcement is meant to support upstream and downstream load growth, bring back the flexibility EGI previously had in the system and to reduce dependency of other stations feeding the Intermediate Pressure (IP) network. Both McCowan and Southdale and South Unionville districts have been set to 40 psi and 50 psi respectively in 2016 to increase the tail-end pressures in the High Pressure (HP) network. Operations has posed concerns with leaving these stations set at their current outlet pressures for an extended period of time. If the reinforcement is completed, the set pressures can be increased to 55 psi, the downstream networks' intended pressure setting. Monitor points have been set up near the tail end of the HP network to determine if a reinforcement would be required in the near future. Mostly large volume customers and HP-IP district stations are fed off of the HP network and maintaining an inlet above 100 psi has always been an EGI standard (according to the PDR). As indicated, there are many alternate sources available, but the pressure tends to diminish as it approaches the tail end of the network. This constraint will become apparent in the event of a damage or repairs need to be performed on one of the alternate feeds. If the reinforcement is performed at the date indicated, key decisions can be made in the field with high levels of confidence. • Pressure Issue/Concern: McCowan and Southdale District is approaching the minimum inlet pressure of 100 psi. There is a need to shift the flow to other sources in order to boost pressures near the tail end of the HP network. • Risk If Not Completed: If the inlet to STN 36013A - McCowan and Southdale District or STN 32758A - South Unionville and McCowan District (Markham) fall below 100 psi during design conditions in 2021, approximately 5,000 customers downstream will be lost. Scheduled maintenance for both stations beyond 2017 will need to occur in summer months due to the instability of the HP feed. If this reinforcement is completed by the in-service date, either station could be taken offline for servicing without customer losses. <p>Updates from 2021 review</p>	Planned							
Toronto	10 - Toronto	Growth	Pass		11850	Area 10 - Sales Stations - Replacements*		\$ 6,380,455	Area 10 - Sales Station - Replacements	Planned							
Toronto	10 - Toronto	Growth	Pass		736616	Area 10 Sales Station - New*		\$ 18,731,558	Area 10 - Sales Station - New	Planned							
Toronto	10 - Toronto	Growth	Pass		736690	Station Rebuild 14164A Lakeshore & Stadium SRP	2023	\$ 1,151,410	<p>Issue/Concern/Opportunity: Model shows a requirement to increase capacity through pressure control for the district station. ERX also shows outlet pressure dropping at 34 Degree Day (DD). System Reinforcement Plan (SRP) predicts the downstream will continue to grow in the next 10 years.</p> <p>Assets: District station rebuild</p> <p>Related Program: Not applicable</p>	Planned							
Toronto	10 - Toronto	Utilization	Pass		13543	MXGI Area 10*	2019	\$ 142,732,655	<p>Meters: Meters are used to determine the gas consumption input of customer billing. The replacement program for meters is mandated by Measurement Canada. The program includes: testing, repair, and replacement requirements of meters and instruments. All verified meters are approved by Measurement Canada with an issuance of a certificate which identifies that the meter complies with Electricity and Gas Specification S-EG-02. The Company must ensure all measurement devices remain in compliance for annual audits by Measurement Canada. Measurement Canada specifies tolerances under which the meter must operate in the field. The Company must demonstrate that all aspects of its meter sampling, maintenance, and replacement comply with these criteria in order to be accredited by Measurement Canada to be an "Authorized Service Provider" and adhere to Measurement Canada's accreditation standard S-A-01. Meters may also require exchange for issues such as: damages, leaks, customer billing issues. Regulation: Regulators are the last line of defense for over-pressure to the customer. The condition of regulation systems is determined by regulator performance, corrosion of piping and regulators, and adherence to installation specifications. Failure of the regulation system can cause pressured gas to enter the premise, resulting in failure of gas equipment, loss of containment, and potentially fire or explosion.</p>	Complete	Fail	See investment description, IRPAs not applicable					