OEB STAFF COMPENDIUM

PANEL 11 – CAPITAL EXPENDITURES

EB-2022-0200

Staff Compendium

Panel 11 – Enbridge Gas Panel on Capital Expenditures

Table 8
Utility Capital Expenditures by Asset Class
March Filing Versus Capital Update

Line No.	Particulars ($ millions)	Category	2024 As Filed	Carry Forward From Prior Year (+)	New (+)	Cancelled /Deferred to Subsequent Year (-)	Other (+/-) (3)(4)	2024 Update
			(a)	(b)	(c)	(d)	(e)	(f)=(a+b+c+d+e)
1	Compression Stations	Storage	38.9	10.7	15.1	(24.7)	6.3	46.3
2	Customer Connections	Growth	249.2	0.0	0.0	0.0	54.9	304.1
3	Distribution Pipe	Dist Ops	368.3	4.2	4.0	(97.8)	78.4	357.1
4	Distribution Stations	Dist Ops	120.6	8.1	5.6	(80.5)	29.7	83.5
5	Fleet & Equipment	General	35.0	1.3	2.6	0.0	(7.4)	31.5
6	Growth - Distribution System Reinforcement	Growth	105.1	15.2	9.3	(64.6)	20.2	85.2
7	Real Estate & Workplace Services	General	56.6	8.8	1.1	(34.6)	31.1	63.0
8	Technology Information Services	General	112.4	0.8	14.7	(13.9)	(11.6)	102.4
9	Transmission Pipe and Underground Storage	Storage	171.7	5.8	11.8	(39.0)	(81.1)	69.2
10	Utilization	Dist Ops	146.5	0.0	0.0	0.0	5.9	152.3
11	Extended Alliance Fixed Overhead	Other	21.9	0.0	0.0	0.0	17.9	39.8
12	Integration Capital	Other	0.0	0.0	0.0	0.0	0.0	0.0
13	Community Expansion	Growth	24.4	0.0	0.0	(13.2)	0.0	11.2
14	Other	Other	40.8	24.1	59.7	0.0	0.0	124.6
15	Total		1,491.3	79.0	123.9	(368.3)	144.3	1,470.3

Notes:

(1) Expenditures are shown by asset class inclusive of IDC and overheads and net of contributions.

(2) Expenditures are shown on an annual basis.

(3) Includes changes in capex estimates, allocation of Overheads, profiling differences, etc.

(4) Panhandle Regional Expansion Project capex reductions of $194.9M in 2024.

a) Compression Stations: The increase of $7.4 million is predominantly attributable to $7.4 million of work expected to carry forward for 2023 from the Dawn to Corunna project in addition to $2.1 million of smaller projects with forecasted carry-over costs, $7.6 million for an unplanned compressor overhaul and foundation replacement at the Hagar LNG station, $8.5 million in new projects identified though inspection activities and failures, and approximately $5.9 million worth of projects whose costs 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 $24.7 million in project cancellations and deferrals, the most significant of which is the deferral of $16 million for the Dawn C Compression Lifecycle project to allow time for completion of the reliability assessment to inform the updated scope.

b) Customer Connections: The increase of $54.9 million is related to inflationary pressures in construction and material costs. /u

c) Distribution Pipe: The decrease of $11.2 million is primarily attributed to deferral of $36.1 million for the Wilson Avenue project and $18.5 million for the Port Stanley replacement projects to provide sufficient time for further inspection and health assessment as part of the Enhanced Distribution Integrity Management program before finalizing the need and scope for these projects. Additionally, $20.4 million in planned integrity retrofit costs and $22.8 million of other small main replacements and relocations have been deferred. This is partially offset by a $48.1 million increase in integrity digs and $30.3 million in changes to other project estimates in addition to $4.2 million in smaller projects forecasted to carry costs into 2024 from 2023, and $4.0 million in new main and bridge crossing replacement projects identified through inspections and surveys

d) Distribution Stations: The decrease of $37.0 million is attributable to $80.5 million in deferral of smaller station projects during portfolio reprioritization. This is partially offset by $8.1 million in forecasted carry over costs from 2023 into 2024, $5.6 million in new station projects having been identified through inspections, and $29.7 million in cost increases on smaller station projects relating to increasing construction and material costs compared to the original estimates.
e) Fleet & Equipment: The decrease of $3.5 million is related to $2.2 million in anticipated carry over costs and new equipment and tool investments offset by reductions during reprioritization for vehicles and equipment purchases.
f) Growth: The decrease of $19.9 million is primarily due to the deferral of $24.1 million for the East Kingston Creekford Road Reinforcement through an interim solution using of CNG to support system peak demands, cancellation of $19.9 million for the Wheatley 1B Panhandle Distribution Reinforcement as locations for greenhouse expansion in Essex County have become clearer, and deferral of several smaller growth reinforcement projects. These reductions are partially offset by $15.2 million in forecasted carry-over costs from 2023, and $9.3 million of new reinforcement projects identified following review of specific customer connection projects and resultant system constraints.
g) Real Estate and Workplace Services: The increase of $6.4 million is primarily related to $14.1 million of cost increase for Station B attributable to inflationary pressures and execution timing, $13.3 million of deferred cost and inflationary pressures associated with the Ottawa building construction, and $3.7 million in smaller project increases; $8.8 million of project costs planned for prior years carrying into 2024 due to shifts in construction pacing and addition of several other smaller projects offset by a $25.2 million

deferral of the Kennedy Rd land purchase and $9.4 million worth of several other small reductions and deferrals relating to reprioritization of projects and forecast refinements.

h) Technology Information Services: The decrease of $10.0 million is related to reprioritization of the TIS Business Solutions portfolio based on business needs leading to $11.6 million in reductions and $13.9 million in deferrals offset by $14.7 million in new investments added to the forecast and some minor carry over costs.

i) Transmission Pipe and Underground Storage: The decrease of $102.5 million is primarily a result of removal of $66.9 million from the forecast for PREP, deferral of $23.1 million for the Dawn to Parkway Expansion Project: Kirkwall to Hamilton Loop based on updated market forecasts, and delayed expenditures amounting to $29.7 million for the Panhandle Line Replacement. This is offset by a $11.2 million 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.

j) Utilization: The increase of $5.9 million is primarily a result of an increase in meter orders to ensure sufficient inventory for the increase in forecasted customer connections and meter exchanges.

k) EA Fixed Overhead: The increase of $17.9 million is related is related to renegotiation of the Extended Alliance Contracts. Enbridge Gas recently completed a competitive RFP for construction services which provided the opportunity to review the total cost structure of their service model and propose new contract terms for the future 5 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 & 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.

l) Integration Capital: There are no integration capital projects after December 2023.

m) Community Expansion: The decrease of $13.2 million is due to shifts in timing for the execution of NGEP Phase 2 projects.

n) Other: The increase of $83.8 million is due to the carry forward of several customer-driven RNG projects from 2023 into 2024 totalling $24.1 million and the addition of several new customer driven CNG and RNG projects in 2024 totalling $59.7 million.

2.2 Rate Base

25. Table 9 provides an overview of rate base contained in the March Filing. Table 10 provides an overview of the updated rate base.

Table 5.2.3-4: Distribution Pipe Capital Summary ($ Millions) – EGI[11]

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	Integrity	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		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	Main Replacement	16.1M	12.6M	0.1M	-	-	-	-	-	-	-	**28.7M**
Vintage Steel Replacement Program		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

Enbridge Gas is a very good cost performer and therefore has less potential to achieve efficiency gains than much of the rest of the gas distribution industry. This study is provided at Exhibit 10, Tab 1, Schedule 1, Attachment 1.

7. Other

7.1 Projects/Programs Subject to Leave to Construct (LTC)

89. In constructing hydrocarbon pipelines, Enbridge Gas follows the guidelines prescribed in the OEB Act. The guidelines require a leave of the OEB prior to constructing a hydrocarbon pipeline project subject to the following criteria:
    a) The proposed hydrocarbon pipeline is more than 20 km in length;
    b) Is projected to cost more than the amount prescribed by the regulations (presently $2 million);
    c) Any part of the proposed hydrocarbon line (i) uses pipe that has a nominal pipe size of 12 inches or more, and (ii) has an operating pressure of 2,000 kilopascals or more; and,
    d) Criteria prescribed by the regulations are met 2003, c.3, s. 63(1).

90. Table 5 lists the investments that have been identified as subject to LTC in 2024, overhead allocations are included in the forecast costs. This investment list is subject to change as projects are identified within programs and as the scope and cost of investments are further refined.

Table 5: 2024 Investments Subject to LTC

Asset Class	Investment Code	Investment Name	2024 Forecast	2023 to 2032 Forecast
Distribution Pipe	10290	St. Laurent Phase 3 - Coventry/Cummings/St. Laurent (Plastic)	$10,971,063	$11,273,059
Distribution Pipe	10293	St. Laurent Phase 3 - North/South (NPS12/16 Steel)	$56,123,791	$59,372,892

Asset Class	Investment Code	Investment Name	2024 Forecast	2023 to 2032 Forecast
Distribution Pipe	100295	NPS 8 Port Stanley Replacement	$18,457,580	$19,067,429
Growth	30500	NW 2103 Dundalk XHP Reinforcement SRP	$6,919,435	$6,919,435
Growth	30507	SRP_LUG East_Kingston_28401002STN & Reinforcement_NPS12_1000m_1210kPa	$6,217,387	$6,217,387
Growth	30518	SRP_LUG East_Picton_28103006STN_Rebuild	$3,011,803	$3,011,803
Growth	30525	SRP_North_Timmins_Hwy 655_Reinforcement_NPS6_850m_6895kPa	$2,050,589	$2,050,589
Growth	30566	SRP_Southwest_Woodstock_Reinforcement & Reinforcement_NPS6_8200m_1900kPa	$11,662,726	$11,662,726
Growth	100703	SRP_LUG East Kingston_Creekford Rd_Reinforcement_NPS8_6200m_6895kPa	$24,094,424	$28,702,886
Growth	736075	WIND: Wheatley-1B - Panhandle Distribution Reinforcement - Wheatley Lateral Replacement and Reinforcement	$19,941,981	$21,106,551
Growth	736259	Hamilton Industrial Reinforcement	$10,252,946	$132,907,739
Compression Stations	100901	Dawn to Corunna	$6,418,838	$165,101,440
Transmission Pipe & Underground Storage	48654	Dawn Parkway Expansion Project (Kirkwall-Hamilton NPS 48)	$24,350,748	$245,855,289
Transmission Pipe & Underground Storage	49758	Panhandle Regional Expansion Project	$11,012,395	$219,431,846
Transmission Pipe & Underground Storage	736923	Panhandle Regional Expansion Project - Leamington Interconnect	$50,750,549	$69,934,844

ENBRIDGE GAS INC.

Answer to Interrogatory from
Environmental Defence (ED)

Interrogatory

Reference:

Exhibit 2, Tab 6, Schedule 2, Appendix A (AMP, Investments >$10M)

Question(s):

a) Please provide a table of all items in Appendix A with columns for: name, planning portfolio, full cost, expected in-service date, whether it is a “must do”, whether LTC is required.

Response:

a) Table 1 provides the requested data. The mandatory investments are identified in column (c), this column aligns with the categories in Exhibit 2, Tab 6, Schedule 2, Table 6.1-1. The investment in-service dates indicated by an asterisk are no longer required, please see response at Exhibit I.2.5-ED-106 and Exhibit I.2.6-ED-107 for more information. Exhibit I.2.6-CME-21 part b) provides a description of how Enbridge Gas reprioritizes its portfolio to work within the capital constraint.

Table 1
AMP Investments >$10 Million

Line No.	Investment ID	Appendix A Investment Name	AMP Planning Group	2023-2032 Forecast Including Overheads	2023-2032 Overhead Allocation	In Service Date	Subject to LTC
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
	Asset Class (EGI) - Compression Stations						
1	48715	Dawn C Compression Lifecycle	Significant Investments (>$10M) - Fixed Timing	$163,382,650	$38,382,650	2026	No
2	48732	Waubuno Compression Lifecycle	Value Driven - Fixed Timing	$ 20,113,719	$4,521,219	2025	Yes

Region	Operating Area (EGI)	Asset Class	Binary Screening (Pass/ Fail)	Cause of Binary Fail	Investment Code	Investment Name	In Service Date	223-232 Forecast (Includes overhead allocation)	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 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	**re**	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 a 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*		$ 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.	Completed	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.	Completed	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.	Planned						
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 main along Tremblay Road (and does not include the crossing at the Rideau River to Station #61171A).	On Hold		Technical Evaluation "On Hold" until further assessment from the E-DIMP Program confirms the project scope and timing.					

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit 2, Tab 6, Schedule 2, AMP, pp. 86-111 and p. 119

Question(s):

The steel main reliability model forecasts the number of annual leaks will increase steadily over the next 20 years. By 2040, Enbridge Gas predicts that the number of leaks will have increased by approximately 10-fold. 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.

Enbridge Gas has developed a Proactive Vintage Steel Replacement Program to mitigate the predicted future risk that results from some of Enbridge Gas'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. Enbridge Gas's 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.

a) Please provide the total costs associated with the Proactive Vintage Steel Replacement Program for the year 2023-2032.

b) Please provide the estimated cost of replacing the 5,100 km of Vintage Steel mains over the 20-year term.

c) Please indicate if Enbridge Gas intends to replace all vintage steel mains over an extended period or if some pipelines will be abandoned?

d) Considering the government's carbon reduction programs and the goal to significantly reduce greenhouse gas emissions, has Enbridge Gas assessed the possibility of abandoning some of the Vintage Steel Mains under a low carbon environment and meeting the needs through electrification or other alternatives? If not, please explain why.

e) Please indicate if Enbridge Gas has conducted any simulation or analysis to assess the impact on its distribution system if some of the Vintage Steel Mains identified for replacement are abandoned. If no such analysis has been done, please indicate if Enbridge Gas intends to do so.

f) If the vintage steel mains are replaced, does Enbridge Gas expect the assets to be used and useful for the next 40 years?

Response:

a) Between 2023 and 2032 it is estimated that the Proactive Vintage Steel Replacement Program spend will be approximately $1.208 billion, as per Exhibit 2, Tab 6, Schedule 2, page 119, Table 5.2.3-4: Distribution Pipe Capital Summary ($ millions). Please note that the referenced table also includes non-programmatic replacement spend in the years 2023 to 2026.

b) The estimated spend for the 20-year program is approximately $5.6 billion based on historical pipeline replacement costs. This estimate is based on replacing 253 km/year once the program has ramped up to its optimal pace.

c) Enbridge Gas intends to replace all vintage steel mains over an extended period of time; however, it will continue to assess the risk of stranded assets due to energy transition, as described in response at Exhibit I.1.10-STAFF-34 part a) and adjust its plan as required. Based on current reliability forecasts from the DIMP Risk Model, most of the Vintage Steel mains population outside of the 5,100 km that has been targeted in the first 20 years are predicted to remain in the Low-Risk region (please see Exhibit 2, Tab 6, Schedule 2, page 110, Figure 5.2-49: Vintage Steel Mains Selection Process) well into future years. Vintage Steel Mains will be targeted for replacement if their condition degrades to the point where risk escalates to a level that requires mitigation, as provided at Exhibit 2, Tab 6, Schedule 2, page 109, Section 5.2.3.6.3.2.

d-f) Enbridge Gas has not assessed the possibility nor completed any simulations or analysis to assess the impact on its distribution system if some of the mains targeted for replacement under the Vintage Steel Main Replacement program are abandoned. Please see response at Exhibit I.2.6-STAFF-70 part b) for additional details.

	life or maintain the current function of existing assets. Also included in this category are investments necessary to maintain compliance or address known safety/reliability risks that cannot otherwise be mitigated. Examples include integrity programs; compliance programs; relocation programs; component replacements and overhauls for stations, LNG, compressor and storage assets (required based on performance degradation, failures, risk, condition or obsolescence); pipeline replacements to address inoperable valves, and small distribution station replacements to address risks that cannot be addressed through component replacements.
Growth	**Gas Infrastructure – Growth – Customer Connections**: This investment category includes all costs associated with connecting new customers to Enbridge Gas's distribution, transmission and storage system, including costs for meters associated with new customer attachments. Community Expansion is included in this investment category.
	Gas Infrastructure – Growth – System Reinforcement: This investment category is required to maintain minimum system pressures so that demand for gas can be met during design day conditions.
Business Sustainment	**Business Sustainment**: This investment category is comprised of TIS, REWS and fleet investments including CNG station replacements/builds for Enbridge Gas's fleet.
Emission Reductions	**Emission Reductions**: This investment category relates to expenditures to reduce emissions, other than those emission reductions required for compliance reasons.
Energy Transition	**Energy Transition**: This investment category relates to increasing the use of hydrogen and RNG/CNG.

Table 2: Capital Expenditures – 2023 to 2032 /u

Investment Sub-Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Gas Infrastructure - Replacement - Reactive	51.2 M	60.7 M	40.6 M	44.1 M	56.6 M	72.4 M	58.3 M	61.4 M	76.7 M	58.9 M
Gas Infrastructure - Replacement - Proactive - Short Term (1y +)	353.9 M	147.5 M	283.7 M	126.1 M	153.5 M	60.6 M	60.9 M	63.0 M	66.6 M	62.5 M
Gas Infrastructure - Replacement - Proactive - Long Term (20y +)	1.9 M	1.4 M	0.9 M	11.8 M	18.5 M	94.0 M	146.6 M	208.7 M	270.7 M	320.5 M
Gas Infrastructure - Replacement - Proactive - Long Term Cost Effectiveness*	34.0 M	39.7 M	113.5 M	75.4 M	64.6 M	75.3 M	74.1 M	64.0 M	69.5 M	124.5 M
Gas Infrastructure - Sustainment	391.8 M	472.7 M	406.6 M	439.0 M	378.6 M	367.7 M	345.8 M	359.1 M	361.9 M	357.3 M
Gas Infrastructure - Growth - Customer Connection	325.0 M	333.6 M	285.9 M	296.7 M	294.8 M	269.6 M	261.3 M	261.6 M	254.5 M	243.0 M
Gas Infrastructure - Growth - System Reinforcemer	112.8 M	277.4 M	268.9 M	176.9 M	262.8 M	140.9 M	220.8 M	51.8 M	27.3 M	103.0 M
Business Sustainment	119.9 M	195.8 M	171.6 M	204.1 M	122.9 M	163.2 M	121.6 M	139.5 M	139.3 M	125.1 M
Emission Reductions	0.8 M	1.8 M	4.1 M	1.2 M	11.9 M	0.0 M	0.0 M	0.0 M	0.0 M	0.0 M
Energy Transition	38.4 M	134.1 M	55.0 M	31.5 M	28.0 M	35.7 M	25.0 M	25.0 M	25.0 M	25.0 M
Grand Total	**1429.9 M**	**1665.2 M**	**1630.5 M**	**1406.7 M**	**1392.3 M**	**1279.5 M**	**1314.5 M**	**1234.1 M**	**1291.5 M**	**1419.7 M**

4. Summary

28. Enbridge Gas has prioritized its capital expenditures over the 2013 to 2024 period in order to ensure the safety and reliability of the natural gas distribution system while supporting system growth. Enbridge Gas continues to follow established budget processes to prioritize capital expenditures and accommodate the majority of capital projects within approved base rates. Enbridge Gas provided a Capital Update provided at Exhibit 2, Tab 5, Schedule 4, on June 16, 2023, to address emerging cost pressures and evolving business requirements for 2023 and 2024 and has reprioritized projects accordingly to remain within the proposed constraints for capital expenditures. The evidence provided at Exhibit 2, Tab 5, Schedule 2 further describes the prioritized spend for the 2024 Test Year. The evidence provided at Exhibit 2, Tab 5, Schedule 3 summarizes the historical capital expenditures for EGD and Union under their individual IR terms and details the year-over-year capital expenditure variances for Enbridge Gas during the deferred rebasing term. /u

Table 4
Customer Attachments by Type Before Energy Transition Impact

	Community Expansion (CE)	Fuel Switching Other than CE	Homes in residential developments (subdivisions)	Single family dwellings (Apartment Ensuite)	Other
2020	564	5,535	30,106	5,305	2,423
2021	428	4,953	33,268	1,741	2,420
2022	314	4,834	30,641	4,279	2,574
2023	579	4,548	30,233	4,282	2,456
2024	1,257	4,640	29,508	4,222	2,342
2025	2,019	4,505	28,841	4,168	2,230
2026	1,802	4,371	28,211	4,119	2,120
2027	1,388	4,229	27,256	4,023	2,015
2028	1,053	4,102	26,057	3,892	1,910
2029	714	3,783	25,301	3,820	1,808
2030	630	3,673	24,567	3,749	1,709
2031	380	3,569	23,854	3,681	1,612
2032	363	3,474	23,166	3,613	1,517

/u

Table 4
Customer Attachments by Type Before Energy Transition Impact

	Community Expansion (CE)	Fuel Switching Other than CE	Homes in residential developments (subdivisions)	Single family dwellings (Apartment Ensuite)	Other
2020	567	5,535	30,106	5,305	2,423
2021	428	4,953	33,268	1,741	2,420
2022	314	4,128	37,583	1,973	2,133
2023	575	3,904	33,285	1,718	2,670
2024	566	3,582	32,761	1,712	2,572
2025	1,115	3,255	33,232	1,686	2,432
2026	1,461	2,904	33,763	1,668	2,338
2027	1,657	2,681	34,238	1,644	2,232
2028	1,574	2,386	34,091	1,592	2,120
2029	1,076	2,168	33,030	1,551	2,030
2030	739	1,918	32,060	1,505	1,897
2031	679	1,674	30,812	1,454	1,814
2032	390	1,519	29,652	1,418	1,742

94% and 82% were likely to replace their equipment with natural gas space and water heating equipment, respectively, which is similar to 2020 penetration rates (96% for space heating and 85% for water heating).[4]

19. Table 2 provides a summary of the energy transition assumptions that were used to adjust the general service forecast number of customer additions (new construction and replacements) and average number of customers (existing customers). Future customer forecasts will continue to consider government policy and market trends on an annual basis to develop adjustments specific to energy transition.

Table 2

Summary of Energy Transition Assumptions Affecting Customer Forecast – General Service

Line No.	Forecast Type	Energy Transition Assumption	Forecast Item Reference
1	Customer Addition – New Construction	A small segment of builders (<1%) voluntarily do not connect to natural gas network starting in 2023, increasing to an estimated 12.5% by 2032.	- Exhibit 3, Tab 2, Schedule 6, Attachment 1, - Asset Management Plan 2023-2032, Figures 5.1.4-1, and 5.1.4-2
2	Customer Addition – Replacement Conversions	Starting in 2030, 10% fewer existing homes (not previously heated with natural gas) convert to natural gas	- Exhibit 3, Tab 2, Schedule 6, Attachment 1 - Asset Management Plan 2023-2032, Figures 5.1.4-1, and 5.1.4-2
3	Average Number of Customers – Existing Customers	Equipment lifespan is estimated at 20 years, resulting in a 5% annual turnover rate. 10% of customers have only one gas appliance.[5] Starting in 2026, it is assumed that 10% of general service customers voluntarily replace with non-gas equipment at the end of equipment life, those with one appliance are assumed to disconnect from the natural gas network.	- Exhibit 3, Tab 2, Schedule 6, Attachment 2

[4] 2020 Residential: Single Family Natural Gas End Use Study.
[5] Based on 2019 and 2020 Residential Natural Gas End Use Survey.

Table 2
Customer Attachments (Before and After Energy Transition)* /u

	Before Energy Transition Assumptions				After Energy Transition Assumptions			
	Residential	Commercial	Industrial	Total	Residential	Commercial	Industrial	Total
2024	38,055	2,546	26	40,627	37,745	2,534	26	40,305
2025	38,173	2,406	26	40,605	37,510	2,382	26	39,918
2026	38,335	2,313	25	40,673	37,308	2,278	24	39,610
2027	38,563	2,208	24	40,795	36,841	2,154	23	39,018
2028	38,069	2,097	23	40,189	35,750	2,029	22	37,801
2029	36,749	2,007	23	38,779	33,948	1,927	21	35,896
2030	35,483	1,876	21	37,380	31,934	1,732	19	33,685
2031	33,940	1,793	21	35,754	30,224	1,649	19	31,892
2032	32,589	1,721	21	34,331	28,398	1,569	18	29,985
2033	31,350	1,652	21	33,023	27,315	1,507	18	28,840

*excludes CE

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit 2, Tab 6, Schedule 2, Asset Management Plan (AMP), pp. 66-75

Question(s):

The 2022-2032 customer connections capital expenditure was informed by the 2022 Long Range Plan (LRP) forecast without Energy Transition assumptions. When the 2022 LRP including Energy Transition forecast was produced, Enbridge Gas compared it to the 2022 LRP forecast without Energy Transition assumptions. The comparison showed that the Energy Transition assumptions reduced the capital expenditure forecast by $60,000 in 2024 and by $44 million over the 2024-2028 rebasing period. Enbridge Gas clarified that the AMP capital expenditures have not been revised to reflect the forecast with Energy Transition assumptions as the impact was minimal.

a) Please confirm that Enbridge Gas has not reflected the impact of Energy Transition in the proposed capital expenditures over the 2024 to 2028 period or in the proposed rate base for the 2024 Test Year. Please discuss your response.

b) Please provide the basis for the reduction of $44 million in capital expenditures over the 2024 to 2028 period to reflect Energy Transition assumptions.

Response:

The following response has been updated to reflect the Capital Update provided at Exhibit 2, Tab 5, Schedule 4, filed on June 16, 2023. /u

a) Enbridge Gas has not reflected the estimated impact of energy transition in the proposed Customer Connections Asset Class capital expenditures over the 2024 to 2028 period. However, for Distribution System Forecasting, energy transition assumptions are reflected (Exhibit 2, Tab 6, Schedule 2, page 69, Section 5.1.5.1). There are no impacts in any of the other asset classes.

For the 2024 Test Year, the total discrepancy in the capital forecast relating to Energy Transition assumptions not being considered in the Customer Connections Asset Class is $1.8 million. /u

b) The difference in the assumed capital expenditures required for customer connections are tabulated in Table 1.

Table 1
2024-2028 Customer Connections Capital Requirements
with and without Energy Transition

	2024	2025	2026	2027	2028	Total	
Required Capital without Energy Transition	238,675,320	238,545,114	239,078,774	239,387,911	235,132,110	1,190,819,229	/u
Required Capital with Energy Transition	236,832,600	234,769,423	233,697,979	234,745,169	230,502,934	1,170,548,105	/u
Total Additional Capital Reflected in AMP	1,842,720	3,775,691	5,380,795	4,642,742	4,629,176	20,271,124	/u

The reduction in capital was determined based on the difference between the customer attachment forecasts with and without energy transition assumptions, please see response at Exhibit I.2.6-ED-94, part b). /u

Enbridge Gas – Panel 10 – Customer Attachment Policies
Examination in Chief – Table 1

Customer Connections Capital Expenditure Supported by Different Revenue Horizons

Revenue Horizon	2024	2025	2026	2027	2028	Total	Reduction vs. 40 Year Revenue Horizon	CIAC per Customer
(Years)	($MM)	($MM)	($MM)	($MM)	($MM)	($MM)	($MM)	
40	304	248	258	254	250	1,314		
30	238	235	247	249	262	1,231	83	428
25	214	211	223	225	235	1,108	206	1,067
15	146	144	153	154	159	757	557	2,890
10	89	88	93	95	96	460	853	4,428

Note: 40 year revenue horizon reflects the Company's most updated capital forecast

ENBRIDGE GAS INC.

Accounting Entries for
Integrated Resource Planning (IRP) Operating Costs Deferral Account
Account No. 179-318

This account records incremental IRP general administrative costs, as well as incremental operating and maintenance costs and ongoing evaluation costs for approved IRP Plans. Operating costs associated with approved IRP Plans also includes all enabling payments to service providers, made as part of the IRP Plans. This account will also record offsetting avoided operating costs that relate to facilities that are delayed, avoided or downsized by an IRP Plan.

Simple interest is to be calculated on the opening monthly balance of this account using the OEB-approved EB-2006-0117 interest rate methodology. The balance of this account, together with carrying charges, will be disposed of in a manner designated by the OEB in a future rate application.

Account numbers are from the Uniform System of Accounts for Gas Utilities, Class A prescribed under the Ontario Energy Board Act.

Debit	-	Account No.179-318 IRP Operating Costs Deferral Account
Credit	-	Account No. 728 General Expense

To record, as a debit/(credit) in the account, incremental IRP general administrative costs, as well as incremental operating and maintenance costs (inclusive of enabling payments to service providers) and ongoing evaluation costs for approved IRP Plans.

Debit	-	Account No. 300 Operating Revenue
Credit	-	Account No.179-318 IRP Operating Costs Deferral Account

To record, as a debit/(credit) in the account, avoided operating costs that relate to facilities that are delayed, avoided or downsized by an IRP Plan.

Debit	-	Account No.179-318 IRP Operating Costs Deferral Account
Credit	-	Account No. 323 Other Interest Expense

To record, as a debit/(credit) in the account, interest expense on the opening monthly balance.

ENBRIDGE GAS INC.

Accounting Entries for
Integrated Resource Planning (IRP) Capital Costs Deferral Account
Account No. 179-319

This account records the actual annual revenue requirement of project costs eligible to be capitalized for inclusion in rate base as part of approved IRP Plans (where Enbridge Gas owns and operates the IRP alternatives). This account will also record offsetting avoided revenue requirement amounts already included in rates related to facilities that are delayed, avoided or downsized by an IRP Plan.

Simple interest is to be calculated on the opening monthly balance of this account using the OEB-approved EB-2006-0117 interest rate methodology. The balance of this account, together with carrying charges, will be disposed of in a manner designated by the OEB in a future rate application.

Account numbers are from the Uniform System of Accounts for Gas Utilities, Class A prescribed under the Ontario Energy Board Act.

Debit	-	Account No. 179-319 IRP Capital Costs Deferral Account
Credit	-	Account No. 300 Operating Revenue

To record, as a debit/(credit) in the account, the actual annual revenue requirement of project costs eligible to be capitalized for inclusion in rate base as part of approved IRP Plans (where Enbridge Gas owns and operates the IRP alternatives).

Debit	-	Account No. 300 Operating Revenue
Credit	-	Account No.179-318 IRP Operating Costs Deferral Account

To record, as a debit/(credit) in the account, avoided revenue requirement amounts already included in rates related to facilities that are delayed, avoided or downsized by an IRP Plan.

Debit	-	Account No. 179-319 IRP Capital Costs Deferral Account
Credit	-	Account No. 323 Other Interest Expense

To record, as a debit/(credit) in the account, interest expense on the opening monthly balance.

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 a anode installation is processed. The capital request is for 12 months.**	Complete	**Fail**	See investment description, IRPAs not appliable					
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 appliable					
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 appliable					
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**								

* in the Investment Name indicates a program item. Program items are unique as they represent numerous projects grouped together and budgeted in advance. This results in forecast spend appearing larger than it would at the project level and it also impacts the in-service dates

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit 2, Tab 6, Schedule 2, p.285

Question(s):

Enbridge Gas indicates that a technical evaluation has not yet been completed for all system needs in the AMP, and that it will provide an updated version of Appendix B in 2023 to document the progress of IRP evaluations for system needs.

a) Please clarify when this update will be provided, in relation to the schedule for this proceeding.

b) Please confirm that, for all projects in the 2023-2032 AMP that passed the binary IRP screening, Enbridge Gas would complete a technical evaluation of IRPAs, prior to implementing a solution (whether the default facility solution in the AMP or an IRPA). If not confirmed, please provide additional details as to the circumstances under which Enbridge Gas might implement the default facility solution without a technical evaluation of IRPAs, and the number/cost of projects that might be affected.

c) With reference to Appendix B, please provide a list of the projects that would fall into the indicated focus areas used to prioritize technical evaluations (investments with in-service dates of 2028 and prior, with highest costs and/or geographic areas with the highest forecast growth).

Response:

a) Please see Attachment 1 for an updated Appendix B as of March 8, 2023. Enbridge Gas expects to complete the remaining IRP technical evaluations by Q3 2023 for projects that have passed the Binary Screening in the AMP filed Oct 2022 and this analysis will incorporate the Capital Update provided at Exhibit 2, Tab 5, Schedule 4 filed June 16, 2023. /u

b) Confirmed.