2021-2025 Distribution System Plan Attachments

ATTACHMENT I

IESO Letter of Comment

IESO response to Entegrus Powerlines Inc.'s REG Investment Plan 2021 – 2025

In accordance with the Ontario Energy Board's (OEB) Chapter 5 filing requirements to submit a Distribution System Plan (DSP) with its Cost of Service application, on July 8, 2020, Entegrus Powerlines Inc. (Entegrus) sent its Renewable Energy Generation (REG) Plan as part of its DSP, to the Independent Electricity System Operator (IESO) for comment. The IESO has reviewed Entegrus' REG Plan and notes that it contains no investments specific to connecting REG for the Plan period 2021 - 2025.

The IESO notes that Entegrus' service territory is within four regional planning groups: London Area, Greater Bruce/Huron, Chatham-Kent/Lambton/Sarnia, and Windsor-Essex. For all of these regions the IESO confirms that Entegrus has been a participating member of the Working Groups[1]. The status of regional planning activities for these regions can be found on the IESO's website.

Entegrus' REG Plan, Section 3.1 Planned Investments to Facilitate Renewable Energy Generation Connections states: "Entegrus currently does not have a basis to anticipate significant changes to past REG accommodation trends. Accordingly, Entegrus is not proposing any capital investments to accommodate the needs of new or existing REG proponents over the period of 2021-2026."

The IESO submits that as Entegrus has no REG investments during the 5-year Distribution System Plan period, no comment letter from the IESO is required to address the bullets points in the OEB's Filing Requirements for Electricity Distribution Rate Applications - Chapter 5, Section 5.2.2 Coordinated Planning with Third Parties [2].

The IESO appreciates the opportunity provided to review the REG Plan of Entegrus, and looks forward to working together further throughout the regional planning processes.

[1] Working Group members along with the IESO and Hydro One (Distribution and Lead Transmitter): **Chatham-Kent/Lambton/Sarnia** – Entegrus, and Bluewater Power Distribution Corporation; **Greater Bruce/Huron** – Entegrus, ERTH Power Corp., Festival Hydro Inc., Wellington North Power Inc., and Westario Power Inc.; **London Area** – Entegrus, ERTH Power Corporation, London Hydro Inc., Tillsonburg Hydro Inc.; **Windsor-Essex** – Entegrus, E.L.K Energy Inc., EnWin Utilities Ltd., and Essex Powerlines Corporation.

[2] OEB's Filing Requirements for Electricity Distribution Rate Applications - Chapter 5, Section 5.2.2, page 10: https://www.oeb.ca/sites/default/files/Chapter-5-DSP-Filing-Requirements-20200514.pdf

ATTACHMENT J

Entegrus Powerlines Inc. 2019 Scorecard

Scorecard - Entegrus Powerlines Inc.

9/29/2020

Performance Outcomes	Performance Categories	Measures		2015	2016	2017	2018	2019	Trend	Target: Industry	Target: Distributor
Customer Focus Services are provided in a manner that responds to identified customer preferences.	**Service Quality**	New Residential/Small Business Services Connected on Time		99.50%	98.80%	98.48%	97.95%	98.04%	↓	90.00%	
		Scheduled Appointments Met On Time		94.00%	97.80%	99.38%	99.73%	99.53%	↑	90.00%	
		Telephone Calls Answered On Time		81.30%	68.70%	75.60%	71.01%	65.61%	↓	65.00%	
	Customer Satisfaction	First Contact Resolution		78%	79.3%	81%	81%	79%			
		Billing Accuracy		99.78%	99.84%	99.88%	99.90%	99.90%	↑	98.00%	
		Customer Satisfaction Survey Results		91	83.0	94	94	94			
Operational Effectiveness Continuous improvement in productivity and cost performance is achieved; and distributors deliver on system reliability and quality objectives.	**Safety**	Level of Public Awareness		82.00%	82.00%	83.00%	83.00%	81.00%			
		Level of Compliance with Ontario Regulation 22/04 [1]		C	C	C	NI	C	→		C
		Serious Electrical Incident Index	Number of General Public Incidents	0	0	0	2	1	↑		0
			Rate per 10, 100, 1000 km of line	0.000	0.000	0.000	1.618	0.805	↑		0.227
	System Reliability	Average Number of Hours that Power to a Customer is Interrupted [2]		1.18	0.51	1.72	1.89	1.73	↑		1.16
		Average Number of Times that Power to a Customer is Interrupted [2]		0.87	0.41	1.07	1.21	1.02	↑		0.87
	Asset Management	Distribution System Plan Implementation Progress		100	22	44	60.41	85.6			
	Cost Control	Efficiency Assessment		2	2	2	2	2			
		Total Cost per Customer [3]		$549	$567	$555	$563	$566			
		Total Cost per Km of Line [3]		$23,395	$24,291	$23,124	$26,787	$10,982			
Public Policy Responsiveness Distributors deliver on obligations mandated by government (e.g., in legislation and in regulatory requirements imposed further to Ministerial directives to the Board).	**Conservation & Demand Management**	Net Cumulative Energy Savings [4]		67.85%	99.03%	95.92%	98.87%	117.00%			94.35 GWh
	Connection of Renewable Generation	Renewable Generation Connection Impact Assessments Completed On Time		100.00%	100.00%	100.00%		100.00%			
		New Micro-embedded Generation Facilities Connected On Time		100.00%	100.00%	100.00%	100.00%	100.00%	→	90.00%	
Financial Performance Financial viability is maintained; and savings from operational effectiveness are sustainable.	**Financial Ratios**	Liquidity: Current Ratio (Current Assets/Current Liabilities)		1.69	1.67	1.36	1.34	1.41			
		Leverage: Total Debt (includes short-term and long-term debt) to Equity Ratio		1.40	1.44	1.33	1.22	1.20			
		Profitability: Regulatory Return on Equity	Deemed (included in rates)	9.85%	9.19%	9.19%	9.19%	9.19%			
			Achieved	9.92%	7.46%	7.64%	8.20%	10.58%			

1. Compliance with Ontario Regulation 22/04 assessed: Compliant (C); Needs Improvement (NI); or Non-Compliant (NC).
2. The trend's arrow direction is based on the comparison of the current 5-year rolling average to the distributor-specific target on the right. An upward arrow indicates decreasing reliability while downward indicates improving reliability.
3. A benchmarking analysis determines the total cost figures from the distributor's reported information.
4. The CDM measure is based on the now discontinued 2015-2020 Conservation First Framework. 2019 results include savings reported to the IESO up until the end of February 2020.

Legend:

5-year trend
↑ up ↓ down → flat

Current year
target met target not met

2019 Scorecard Management Discussion and Analysis ("2019 Scorecard MD&A")

The link below provides a document titled "Scorecard - Performance Measure Descriptions" that has the technical definition, plain language description and how the measure may be compared for each of the Scorecard's measures in the 2019 Scorecard MD&A:

http://www.ontarioenergyboard.ca/OEB/_Documents/scorecard/Scorecard_Performance_Measure_Descriptions.pdf

Scorecard MD&A - General Overview

Entegrus Powerlines Inc. ("Entegrus") owns, operates and manages the assets associated with the distribution of electrical power to approximately 59,800 customers in 17 Southwestern Ontario communities. The roots of Entegrus extend back to the formation of Chatham Hydro in 1914.

The communities serviced by Entegrus in 2019 are: Blenheim, Bothwell, Chatham (including a portion of the Township of Raleigh known as the "Bloomfield Business Park"), Dresden, Dutton, Erieau, Merlin, Mount Brydges, Newbury, Parkhill, Ridgetown, Strathroy, Thamesville, Tilbury, Wallaceburg, Wheatley and St. Thomas. Additional details are provided in the Entegrus Electricity Distribution License (ED-2002-0563).

On April 1, 2018, Entegrus amalgamated with St. Thomas Energy Inc. ("STEI"), a licensed electricity distributor operating within the City of St. Thomas. The merged electricity distributor continues as Entegrus. The scorecard results discussed herein relate to the combined 2019 results.

Entegrus monitors the scorecard measures on an ongoing basis and continuously seeks opportunities to improve its performance. The company is committed to meeting the needs of its customers both today and in the future. Entegrus is confident that its focus on customer outcomes will allow it to continue to meet or exceed performance targets.

Entegrus is committed to continuous year over year performance improvement for 2020 and beyond.

Service Quality

- **New Residential/Small Business Services Connected on Time**
  In 2019, Entegrus connected 98.04% of approximately 1,375 eligible low-voltage residential and small business customers (those utilizing connections under 750 volts) to its system within the five-day timeline prescribed by the OEB. This result was achieved despite a continuing increase in new residential and small business connections requested in 2019. For the five-year period from 2015 to 2019, Entegrus has consistently performed better than the industry target of 90% in this area.

- **Scheduled Appointments Met on Time**
  Entegrus scheduled approximately 2,360 appointments in 2019 to complete work requested by customers (where customer presence is required). Entegrus met 99.53% of these appointments on time. For the five-year period from 2015 to 2019, Entegrus has consistently performed better than the industry target of 90% in this area.

- **Telephone Calls Answered on Time**
  In 2019, Entegrus Customer Service received approximately 74,400 calls from its customers – over 296 calls per working day. In 65.61% of instances, Entegrus answered the call within 30 seconds or less. This result exceeds the OEB-mandated 65% target for timely call response. In 2019, Entegrus harmonized its customer information system across the organization. This resulted in some resource constraints during 2019. Going forward this will allow more flexibility to route calls and improve customer experience.

  Entegrus staffs its Customer Service Call Centre to meet the 65% target, without significantly exceeding it, in order to balance the need to prudently deploy resources in all areas of the business. For the five-year period from 2015 to 2019, Entegrus has consistently performed better than the industry target of 65% in this area.

Customer Satisfaction

- **First Contact Resolution**
  Prior to 2014, specific customer satisfaction measurements were not defined across the industry. In 2014, the OEB instructed all electricity distributors to review and develop measurements in these areas and begin tracking so that the results could be reported on the 2014 Scorecard. Currently, each electricity distributor is permitted to have different measurements of performance until such time as the OEB provides specific direction regarding a commonly defined measure.

  First Contact Resolution (“FCR”) traditionally represents a percentage of instances where a customer’s need is addressed at the time of their first point of contact on the matter. However, FCR can be measured in a variety of ways and further regulatory guidance will be necessary in order to achieve meaningful, consistent and comparable information across electricity distributors.

Entegrus believes that best practice is to measure FCR based on ongoing third-party surveys of a random sample of those customers who have recently contacted Entegrus. Accordingly, starting in 2014, Entegrus' FCR has been measured based on live agent transactional phone surveys conducted by a third-party service provider. To facilitate these surveys, throughout the year, Entegrus provides the third-party service provider with a report of all customers who had contacted Entegrus Customer Service by telephone within the previous two weeks.

The third-party service provider's telephone agents, in turn, contact and survey Entegrus customers. Customers are asked to rate various facets of their customer experience and are also asked if their issue (i.e. their reason for calling) was resolved on their first contact to Entegrus. In 2019, of the 500 customers surveyed, 395 customers indicated that their issue was resolved on the first call to Entegrus. This equates to the reported FCR figure of 79.0%.

Entegrus continues to maintain its high FCR results by implementing recommendations from the service provider. Accordingly, Entegrus has continued to engage the third-party service provider to assist with ongoing FCR measurement and customer service strategy improvements on specific issue types.

- **Billing Accuracy**
  Prior to 2014, a specific measurement of billing accuracy had not been defined across the industry. In 2014, the OEB instructed all electricity distributors to begin tracking a prescribed billing accuracy measure so that the results could be reported on the 2014 Scorecard.

  In 2019, Entegrus issued 693,989 bills and achieved a billing accuracy of 99.90%. This compares favourably to the prescribed OEB target of 98%.

  Entegrus continues to monitor its billing accuracy results and processes to identify opportunities for improvement.

- **Customer Satisfaction Survey Results**
  Similar to the FCR measure described above, the OEB introduced the Customer Satisfaction Survey Results measure beginning in 2014. At a minimum, electricity distributors are required to measure and report a customer satisfaction result every other year. At this time, the OEB is allowing electricity distributors the discretion as to how this measure is implemented. Starting in 2014, Entegrus engaged a third-party service provider to conduct annual (rather than bi-annual) Customer Satisfaction surveys.

  In 2019, the third-party service provider conducted a random telephone survey for the period September 30, 2019 to October 15, 2019, the service provider agents contacted a random sample of 400 complete Residential surveys and 100 complete Small Commercial surveys. Of the 500 customers surveyed (the denominator), 472 customers (the numerator) rated their Overall Satisfaction in the top 3 boxes. The survey asks customers questions on a wide range of topics, including: overall satisfaction with Entegrus, reliability,

customer service, outages, billing and corporate image.

Customer Satisfaction survey results remained steady at 94%. Customer Satisfaction is a key area of focus for Entegrus. Accordingly, Entegrus will continue to measure Customer Satisfaction annually, as opposed to the regulatory requirement to measure it every other year.

Safety

- **Public Safety**

  - **Component A – Public Awareness of Electrical Safety**

In 2015, in consultation with the Electrical Safety Authority ("ESA"), the OEB introduced this new public awareness survey measure. The survey is based upon a representative sample of each electrical distributor's service territory population and gauges awareness levels of key electrical safety concepts related to distribution assets. The survey provides a benchmark of levels of awareness including identifying gaps where additional education and awareness efforts may be required. In accordance with OEB requirements, the survey is conducted every other year. Accordingly, the survey results described below were completed for the 2019 scorecard will also be applicable for 2020 scorecard.

Entegrus conducted a public safety awareness campaign in the spring of 2020 utilizing local media and digital website content. Further, Entegrus continues to conduct: safety awareness through its ongoing work with the Chatham-Kent Children's Safety Village and the MySafeWork program, safety awareness briefings with first responders and visits to grade school classrooms to review electrical safety.

Entegrus engaged a third-party service provider to conduct stratified random telephone surveys of 600 Ontario residents, ages 18 or older, currently residing in the Entegrus service territory during the period from March 2, 2020 and March 16, 2020. The survey asked residents electrical safety questions and then an overall index score was calculated in accordance with a prescribed algorithm. Public Awareness of Electrical Safety results for 2019 were consistent with prior years at 81%.

  - **Component B – Compliance with Ontario Regulation 22/04**

Ontario Regulation 22/04 (Electrical Distribution Safety) establishes objective based electrical safety requirements for the design, construction, and maintenance of electrical distribution systems owned by licensed distributors. The regulation requires the approval of equipment, plans, specifications and inspection of construction before they are put into service. Entegrus is audited annually for compliance and was found to be compliant in 2019.

- **Component C – Serious Electrical Incident Index**

  This is measured as the number of non-occupational (general public) serious electrical incidents occurring on Entegrus' distribution system and reported to the ESA, expressed as a raw number and as the number per 1,000 km of line. Entegrus had no such incidents from 2014 to 2017. Entegrus experienced two incidents in 2018 and one incident in 2019. This incident involved a motor vehicle accident that resulted in broken poles and downed overhead wires.

System Reliability

- **Average Number of Hours that Power to a Customer is Interrupted**

  For this measure, the OEB establishes baseline targets based on the average of the distributor's performance for the period 2011 – 2015 (the baseline period is updated every 5 years). Entegrus' 2019 result of 1.73 is relatively consistent with the prior two year and is above the target of 1.16. This trend is a result of enhancements to Entegrus' outage reporting systems and aging infrastructure.

  Entegrus continues to view reliability of electricity service as a high priority. As further discussed below, Entegrus continued to make substantial progress on its Distribution System Plan ("DSP") implementation in 2019, as well as the design of a new combined and comprehensive DSP for 2021.

- **Average Number of Times that Power to a Customer is Interrupted**

  For this measure, the OEB establishes baseline targets calculated as the average of the distributor's performance for the period 2011 – 2015 (the baseline period is updated every 5 years). Entegrus' 2019 result of 1.02 is relatively consistent with the prior two years and is above the target of 0.87. This trend is a result of enhancements to Entegrus' outage reporting systems and aging infrastructure.

  Entegrus continues to view reliability of electricity service as a high priority. As further discussed below, Entegrus continued to make substantial progress on its DSP implementation in 2019, as well as the design of a new combined and comprehensive DSP for 2021.

Asset Management

- **Distribution System Plan Implementation Progress**

  Entegrus maintains DSP that adopts a proactive, balanced approach to distribution system planning, infrastructure investment and replacement programs to address immediate risks associated with end-of-life assets; manage distribution system risks; ensure the safe and reliable delivery of electricity; and balance ratepayer and utility affordability.

  The Entegrus-Main DSP was completed in 2015 and accepted by the OEB in 2016. The Entegrus-St. Thomas DSP was completed in 2014 and accepted by the OEB in 2015. Entegrus is currently working towards completing a combined and comprehensive DSP for 2021.

  Entegrus reports this metric based on percentage of actual life-to-date capital expenditures divided by the aggregate total DSP (5 year) capital expenditures. The Entegrus 2019 life-to-date actual capital expenditures were $37.7M (the numerator). The total DSP (5 year) capital expenditures were $44.0M (the denominator), inclusive of $38.4M representative of Entegrus-Main rate zone and $5.6M representative of the St. Thomas rate zone. This numerator and denominator equate to the reported DSP Implementation Progress figure of 85.6%.

  In 2019, the implementation focus of the DSP was on continued distribution system renewal, voltage conversions of sections of the system from 4.16 kV to 27.6 KV and deployment of smart grid technologies. System access requests were higher than anticipated, which drove incremental capital expenditures in 2019.

Cost Control

- **Efficiency Assessment**

  The total costs for Ontario local electricity distribution companies are evaluated based on econometric modeling conducted by a consultant (the Pacific Economics Group LLC) on behalf of the OEB to produce a single efficiency ranking. The electricity distributors are divided into five groups based on the magnitude of the difference between their respective individual actual and predicted costs over the past three years.

  In 2019, Entegrus' actual costs for 2017-2019 were 17.9% lower than the costs predicted by the OEB's consultant. For the eighth year in a row, Entegrus was placed in Group 2, where a Group 2 distributor is defined as having actual costs which are 10% to 25% lower than the costs predicted for the distributor. Group 2 is considered as "more efficient". In 2019, Entegrus ranked 15th out of 59 distributors in terms of cost performance results versus benchmark.

- **Total Cost per Customer**
  Total cost per customer is calculated as the sum of Entegrus' capital and operating costs, divided by the total number of customers that Entegrus serves. Entegrus' cost performance result for 2019 is $566 per customer, which represents a 0.53% increase over 2018.

- **Total Cost per Km of Line**
  This measure uses the same total cost that is used in the Cost per Customer calculation above. The total cost is divided by the kilometers of line that Entegrus operates to serve its customers, which equates to $10,982 per kilometer of line. For 2019 Entegrus had the opportunity to include secondary kilometer of lines in its annual reporting. Accordingly, the decrease in total cost per kilometer of line is due to the inclusion of secondary lines in the cost per kilometer calculation in 2019, whereas, only primary lines were included in 2018.

Conservation & Demand Management

- **Net Cumulative Energy Savings**
  The province launched a new Conservation First Framework ("CFF") on January 1, 2016 for the period 2016-2020. Entegrus' original allocated target was 56.8 GWh, which Entegrus achieved in the first year of the framework (2016). Subsequently, Entegrus entered into a target exchange in December 2017 with another distributor to acquire an additional target of 20 GWh, along with additional conservation funding for its customers. In 2018, Entegrus merged with STEI and acquired an additional 17.5 GWh of target. Accordingly, Entegrus' target for 2016-2020 Net Cumulative Energy Savings (kWh) is 94.35 GWh.

  Life-to-date at December 31, 2019, Entegrus achieved 117.00% of the amended Net Cumulative Energy Savings target. In March 2019, the provincial government announced the winddown of the conservation framework and the uploading of provincial conservation programs from the distributor to the IESO.

Connection of Renewable Generation

- **Renewable Generation Connection Impact Assessments Completed on Time**
  Electricity distributors are required to conduct Connection Impact Assessments (CIAs) within 60 days of the receipt of the application for a proposal to connect a mid-sized generation facility or 90 days of the receipt of an application to connect a large embedded generation facility.

  Entegrus successfully completed 4 CIAs in 2019 within the prescribed time. Since 2014, Entegrus has successfully completed all CIA's within the prescribed time limit.

- **New Micro-Embedded Generation Facilities Connected on Time**
  Electricity distributors are required to connect an applicant's micro-embedded generation facility (i.e. MicroFIT projects of less than 10kW or net metering projects) to its distribution system within five business days of the applicant informing the distributor that it has satisfied all applicable service conditions, received all necessary approvals and provided the distributor with a copy of the authorization to connect from the ESA. The minimum acceptable performance level for this measure is 90%.

  In 2019, Entegrus connected 2 new micro-embedded generation facilities within the prescribed time frame of five business days. Entegrus works closely with its customers and their contractors to address any connection issues to ensure the project is connected on time.

Financial Ratios

- **Liquidity: Current Ratio (Current Assets/Current Liabilities)**
  Liquidity is calculated by dividing Current Assets by Current Liabilities. This ratio is also known as Working Capital Ratio and measures an entity's ability to pay short-term financial obligations. As an indicator of financial health, a Liquidity Ratio of greater than 1 is considered good, as it indicates that the company can pay its short-term debts and financial obligations. Companies with a ratio of greater than 1 are often referred to as being "liquid". The higher the number, the more "liquid" and the larger the margin of safety to cover the company's short-term debts and financial obligations.

  The Entegrus current ratio was 1.41 in 2019. Entegrus goal is to maintain a Liquidity Ratio of more than 1.00. As noted above, this means that the organization has resources available in the short term to meet its short-term financial obligations.

- **Leverage: Total Debt (includes short-term and long-term debt) to Equity Ratio**
  The OEB uses a deemed capital structure of 60% debt, 40% equity for electricity distributors when establishing rates. This deemed capital mix is equal to a debt to equity ratio of 1.5 (60/40). A debt to equity ratio of more than 1.5 indicates that a distributor is more highly levered than the deemed capital structure. A high debt to equity ratio may indicate that an electricity distributor may have difficulty generating sufficient cash flows to make its debt payments. A debt to equity ratio of less than 1.5 indicates that the distributor is less levered than the deemed capital structure. A low debt-to-equity ratio may indicate that an electricity distributor is not taking advantage of the increased profits that financial leverage may bring.

  As demonstrated by its 2019 Leverage Ratio of 1.20, Entegrus continues to maintain a debt to equity structure that closely approximates the deemed 60% to 40% capital mix as set out by the OEB. Entegrus' strong financial position is further supported by its recent Standard & Poor's Rating Services rating of "A/Stable/--".

- **Profitability: Regulatory Return on Equity – Deemed (included in rates)**
  Entegrus' 2019 distribution rates were approved by the OEB and includes an expected (deemed) regulatory return on equity of 9.19%. The OEB allows a distributor to earn within +/- 3% of the expected return on equity. When a distributor performs outside of this range, the actual performance may trigger a regulatory review of the distributor's revenues and costs structure by the OEB.

- **Profitability: Regulatory Return on Equity – Achieved**
  Entegrus' achieved a 2019 Regulatory Return on Equity ("ROE") of 10.58%, which is within the +/-3% range of Deemed ROE allowed by the OEB.

Note to Readers of 2019 Scorecard MD&A

The information provided by distributors on their future performance (or what can be construed as forward-looking information) may be subject to a number of risks, uncertainties and other factors that may cause actual events, conditions or results to differ materially from historical results or those contemplated by the distributor regarding their future performance. Some of the factors that could cause such differences include legislative or regulatory developments, financial market conditions, general economic conditions and the weather. For these reasons, the information on future performance is intended to be management's best judgement on the reporting date of the performance scorecard and could be markedly different in the future.

ATTACHMENT K

St. Thomas Energy Inc. 2017

Scorecard

Scorecard - St. Thomas Energy Inc.

9/18/2018

Performance Outcomes	Performance Categories	Measures		2013	2014	2015	2016	2017	Trend	Target: Industry	Target: Distributor
Customer Focus Services are provided in a manner that responds to identified customer preferences.	Service Quality	New Residential/Small Business Services Connected on Time		100.00%	100.00%	100.00%	98.40%	95.72%	↓	90.00%	
		Scheduled Appointments Met On Time		100.00%	100.00%	100.00%	100.00%	100.00%	→	90.00%	
		Telephone Calls Answered On Time		76.50%	68.20%	74.60%	75.80%	77.26%	↑	65.00%	
	Customer Satisfaction	First Contact Resolution		100%	100%	100%	100%	100%			
		Billing Accuracy			99.91%	92.74%	99.95%	99.95%	↑	98.00%	
		Customer Satisfaction Survey Results		A A A+	B+ A A	B+ A A	B+, A, A	B+, A, A			
Operational Effectiveness Continuous improvement in productivity and cost performance is achieved; and distributors deliver on system reliability and quality objectives.	Safety	Level of Public Awareness				83.00%	83.00%	81.00%			
		Level of Compliance with Ontario Regulation 22/04 [1]		NI	NI	C	C	NC	→		C
		Serious Electrical Incident Index	Number of General Public Incidents	0	0	0	0	0	→		0
			Rate per 10, 100, 1000 km of line	0.000	0.000	0.000	0.000	0.000	→		0.000
	System Reliability	Average Number of Hours that Power to a Customer is Interrupted [2]		0.99	0.57	0.35	1.04	0.47	↑		0.62
		Average Number of Times that Power to a Customer is Interrupted [2]		1.42	1.58	1.04	1.49	0.58	↑		1.12
	Asset Management	Distribution System Plan Implementation Progress		100%	100%	100%	99.58%	121%			
	Cost Control	Efficiency Assessment		3	3	3	3	2			
		Total Cost per Customer [3]		$533	$516	$513	$534	$494			
		Total Cost per Km of Line [3]		$33,412	$33,823	$33,419	$38,032	$34,897			
Public Policy Responsiveness Distributors deliver on obligations mandated by government (e.g., in legislation and in regulatory requirements imposed further to Ministerial directives to the Board).	Conservation & Demand Management	Net Cumulative Energy Savings [4]				12.26%	37.27%	61.13%			17.51 GWh
	Connection of Renewable Generation	Renewable Generation Connection Impact Assessments Completed On Time		100.00%	100.00%		100.00%	100.00%			
		New Micro-embedded Generation Facilities Connected On Time		100.00%	100.00%	100.00%	100.00%	100.00%	→	90.00%	
Financial Performance Financial viability is maintained; and savings from operational effectiveness are sustainable.	Financial Ratios	Liquidity: Current Ratio (Current Assets/Current Liabilities)		1.42	1.17	1.09	1.36	0.84			
		Leverage: Total Debt (includes short-term and long-term debt) to Equity Ratio		0.83	0.77	0.71	0.65	0.31			
		Profitability: Regulatory Return on Equity	Deemed (included in rates)	9.58%	9.58%	9.30%	9.30%	9.30%			
			Achieved	10.77%	9.36%	11.64%	10.65%	11.60%			

1. Compliance with Ontario Regulation 22/04 assessed: Compliant (C); Needs Improvement (NI); or Non-Compliant (NC).
2. The trend's arrow direction is based on the comparison of the current 5-year rolling average to the distributor-specific target on the right. An upward arrow indicates decreasing reliability while downward indicates improving reliability.
3. A benchmarking analysis determines the total cost figures from the distributor's reported information.
4. The CDM measure is based on the new 2015-2020 Conservation First Framework.

Legend:

5-year trend: ↑ up ↓ down → flat

Current year: target met; target not met

2017 Scorecard Management Discussion and Analysis ("2017 Scorecard MD&A")

The link below provides a document titled "Scorecard - Performance Measure Descriptions" that has the technical definition, plain language description and how the measure may be compared for each of the Scorecard's measures in the 2017 Scorecard MD&A:

http://www.ontarioenergyboard.ca/OEB/_Documents/scorecard/Scorecard_Performance_Measure_Descriptions.pdf

Scorecard MD&A - General Overview

St. Thomas Energy Inc. ("STEI") is a licensed electricity distributor operating pursuant to license ED-2002-0523 and distributes electricity to approximately 17,500 customers in the City of St. Thomas. STEI's franchise area is primarily contained within the municipal boundaries of the city of St. Thomas and is about 33 square km in area. STEI is largely an urban service territory. STEI's distribution system is supplied by Hydro One Networks Inc. primarily from the Edgeware TS at a voltage level of 27.6 kV.

On April 1, 2018, STEI amalgamated with Entegrus Powerlines Inc. ("EPI"), a licensed electricity distributor operating in 16 communities in Southwestern Ontario. The merged electricity distributor continues as EPI. The scorecard results discussed herein relate to 2017, prior to the merger.

Service Quality

- **New Residential/Small Business Services Connected on Time**
  In 2017, STEI connected 95.72% of approximately 304 eligible low-voltage residential and small business customers (those utilizing connections under 750 volts) to its system within the five-day timeline prescribed by the Ontario Energy Board ("OEB"). This result was achieved amidst a significant increase in new residential and small business connections requested in 2017 (up 60% from 2016). For the five-year period from 2013 to 2017, STEI has consistently performed better than the industry target of 90% in this area.

- **Scheduled Appointments Met on Time**
  STEI scheduled approximately 620 appointments in 2017 to complete work requested by customers, including reading meters, making reconnections, and other requirements. STEI met 100% of these appointments on time, consistent with the 2016 result. For the five-year period from 2013 to 2017, STEI has consistently performed better than the industry target of 90% in this area.

  STEI's staff are aware of the obligations and are committed to exceeding the requirements for making appointments with our customers. Providing excellence in customer service is at the core of STEI's corporate philosophy, and the utility is consistently seeking new ways to foster meaningful two-way communication, expand on the range of service offerings and improve service convenience.

- **Telephone Calls Answered on Time**
  In 2017, STEI Customer Service agents received approximately 23,607 calls from its customers – over 94 calls per working day. In 77.26% of instances, an STEI agent answered the call within 30 seconds or less. This result exceeds the OEB-mandated 65% target for timely call response. For the five-year period from 2013 to 2017, STEI has consistently performed better than the industry target of 65% in this area.

  STEI recognizes the need to balance cost efficiencies with service quality in order to prudently deploy resources throughout the company.

Customer Satisfaction

- **First Contact Resolution**
  Prior to 2014, specific customer satisfaction measurements were not defined across the industry. In 2014, the OEB instructed all electricity distributors to review and develop measurements in these areas and begin tracking so that the results could be reported on the 2014 Scorecard. Currently, each electricity distributor is permitted to have different measurements of performance until such time as the OEB provides specific direction regarding a commonly defined measure.

  First Contact Resolution ("FCR") traditionally represents a percentage of instances where a customer's need is addressed at the time of their first point of contact on the matter. However, FCR can be measured in a variety of ways and further regulatory guidance will be necessary in order to achieve meaningful, consistent and comparable information across electricity distributors.

  STEI has defined FCR as any items that have been escalated to the OEB in which Board staff has confirmed STEI's resolution of the matter. In 2017, 100% of STEI's escalations to the OEB were effectively resolved in-house.

- **Billing Accuracy**
  Prior to 2014, a specific measurement of billing accuracy had not been defined across the industry. In 2014, the OEB instructed all electricity distributors to begin tracking a prescribed billing accuracy measure so that the results could be reported on the 2014 Scorecard.

  In 2017, STEI issued 209,374 bills and achieved a billing accuracy of 99.95%. This compares favourably to the prescribed OEB target of 98%.

  STEI continues to monitor its billing accuracy results and processes to identify opportunities for improvement.

- **Customer Satisfaction Survey Results**
  Similar to the FCR measure described above, the OEB introduced the Customer Satisfaction Survey Results measure beginning in 2014. At a minimum, electricity distributors are required to measure and report a customer satisfaction result every other year. At this time, the OEB is allowing electricity distributors the discretion as to how this measure is implemented. Starting in 2014, STEI engaged a third-party service provider to conduct bi-annual Customer Satisfaction surveys.

  STEI continues to have excellent Customer Satisfaction results. Based on the survey conducted in January and February 2017, STEI received an overall Customer Satisfaction rating of "A" with specific ratings of "B+" in Customer Care, "A" in Company Image and "A" in Management Operations. These ratings exceed the Ontario and Nation averages. The findings are based on telephone interviews with 400 respondents who manage their electricity account. The sample of the phone numbers was drawn randomly to ensure each number on the list had an equal opportunity of being included in the poll. The sample was stratified so that 85% of the interviews were conducted with residential customers and 15% with commercial customers.

  STEI continues to strive to provide superior customer service and commitment to our customers, which is reflected in the strong survey results. As noted in STEI's survey findings, 2017 has been a challenging year as the industry has faced increased scrutiny and media attention over hydro rates. Despite this challenging landscape, 89% of the STEI customers view STEI as trustworthy, as compared to the provincial average of 74%. Further, STEI received 91% in customer satisfaction related to reliability and 92% of respondents indicated that STEI delivers on its service commitments. Customer feedback suggested that STEI can continue to improve by providing enhanced customer interaction programs, technology to assist in account management, notification of power outages, improved billing communications and electricity literacy tools.

Safety

- **Public Safety**

  - **Component A – Public Awareness of Electrical Safety**
    In 2015, in consultation with the Electrical Safety Authority ("ESA"), the OEB introduced this new public awareness survey measure. The survey is based upon a representative sample of each electrical distributor's service territory population and gauges awareness levels of key electrical safety concepts related to distribution assets. The survey provides a benchmark of levels of awareness including identifying gaps where additional education and awareness efforts may be required. In accordance with OEB requirements, the survey is conducted every other year. Accordingly, the survey results described below for 2017 will also be applicable for 2018.

    STEI engaged a third-party service provider to conduct stratified random telephone surveys of 401 Ontario residents, ages 18 or older, currently residing in the STEI service territory during the period from March 6, 2018 and March 19, 2018. The survey asked residents electrical safety questions and then an overall index score was calculated in accordance with a prescribed algorithm. STEI continues

to be pleased with its index score result of 81%.

STEI conducted another public safety awareness campaign in the spring of 2018 utilizing local media and digital website content. Further, STEI conducts safety awareness through its ongoing visits to grade school classrooms to review electrical safety.

- **Component B – Compliance with Ontario Regulation 22/04**
  Ontario Regulation 22/04 (Electrical Distribution Safety) establishes objective based electrical safety requirements for the design, construction, and maintenance of electrical distribution systems owned by licensed distributors. The regulation requires the approval of equipment, plans, specifications and inspection of construction before they are put into service. STEI is audited annually for compliance.

  In 2017, STEI was found to not be compliant with Ontario Regulation 22/04 (Electrical Distribution Safety). This related to deficiencies in the following areas: update of the major equipment listing, spare transformer testing, and maintenance of inspection documentation. STEI is very committed to safety, and adherence to company procedures & policies. In response to the audit findings, STEI took immediate actions to correct these deficiencies and notified the ESA of this through a declaration of compliance. The ESA confirmed its satisfaction and accepted the declaration of compliance in May 2018.

- **Component C – Serious Electrical Incident Index**
  This is measured as the number of non-occupational (general public) serious electrical incidents occurring on STEI's distribution system expressed as a raw number and as the number per 100 km of line. STEI had no such incidents in 2013-2017 and will continue to make this an area of focus.

System Reliability

- **Average Number of Hours that Power to a Customer is Interrupted**
  For this measure, the OEB establishes baseline targets based on the average of the distributor's performance for the period 2010 – 2014 (the baseline period is updated every 5 years). STEI's 2017 result of 0.47 is below the target of 0.62. This favourable result is due to an ongoing initiative to upgrade of STEI's former delta 2.4 kV system and 13.8 kV system, as well as the lack of significant storm activity in St. Thomas in 2017.

  STEI continues to view reliability of electricity service as a high priority for its customers. In 2014, STEI finalized a Distribution System Plan ("DSP") that adopts a proactive, balanced approach to distribution system planning, infrastructure investment and replacement programs to address immediate risks associated with end-of-life assets; manage distribution system risks; ensure the safe and reliable delivery of electricity; and balance ratepayer and utility affordability.

- **Average Number of Times that Power to a Customer is Interrupted**
  For this measure, the OEB establishes baseline targets calculated as the average of the distributor's performance for the period 2010 – 2014 (the baseline period is updated every 5 years). STEI's 2017 result of 0.58 is below the target of 1.12. This favourable result is primarily due to the lack of significant storm activity in 2017.

  STEI continues to view reliability of electricity service as a high priority for its customers. In 2014, STEI finalized a DSP that adopts a proactive, balanced approach to distribution system planning, infrastructure investment and replacement programs to address immediate risks associated with end-of-life assets; manage distribution system risks; ensure the safe and reliable delivery of electricity; and balance ratepayer and utility affordability.

Asset Management

- **Distribution System Plan Implementation Progress**
  STEI's Distribution System Plan ("DSP") design document was completed in 2014 and submitted to the OEB in 2015 in conjunction with STEI's distribution rate rebasing application (EB-2014-0113). STEI reached a full settlement with the intervenors of record in November 2014, resulting in minimal changes to the DSP.

  Consistent with 2016, STEI continues to report this metric based on percentage of actual annual capital expenditures in the fiscal year divided by the DSP annual capital expenditures. The STEI 2017 actual capital expenditures were $2.646M (the numerator). The annual DSP capital expenditures were $2.178M (the denominator). This numerator and denominator equate to the reported DSP Implementation Progress figure of 121%. This increase is consistent with significant residential customer growth within STEI's service area, resulting in an increase in customer driven work.

Cost Control

- **Efficiency Assessment**
  The total costs for Ontario local electricity distribution companies are evaluated based on econometric modeling by a consultant (the Pacific Economics Group LLC) on behalf of the OEB to produce a single efficiency ranking. The electricity distributors are divided into five groups based on the magnitude of the difference between their respective individual actual and predicted costs over the past three years.

  In 2017, STEI's actual costs for 2014-2017 were 10.9% lower than the costs predicted by the OEB's consultant. For 2017, STEI improved from Group 3 to Group 2, where a Group 2 distributor is defined as having actual costs which are 10% to 25% lower than the costs predicted for the distributor. Group 2 is considered as "more efficient". In 2017, STEI ranked 21st out of 65 distributors in terms of cost performance results versus benchmark.

- **Total Cost per Customer**
  Total cost per customer is calculated as the sum of STEI's capital and operating costs, divided by the total number of customers that STEI serves. STEI's cost performance result for 2017 is $494 per customer, which represents a 7.5% decrease over 2016.

- **Total Cost per Km of Line**
  This measure uses the same total cost that is used in the Cost per Customer calculation above. The total cost is divided by the kilometers of line that STEI operates to serve its customers. STEI's 2017 rate is $34,897 per KM of line, an 8.2% decrease over 2016.

Conservation & Demand Management

- **Net Cumulative Energy Savings**
  The province launched a new Conservation First Framework ("CFF") on January 1, 2016 for the period 2016-2020. Under the new CFF, STEI's target for 2016-2020 Net Cumulative Energy Savings (kWh) is 17.51 GWh.

  In 2017, STEI combined its conservation plan with EPI and another distributor in the region to create an overall plan for the three distributors.

  Life-to-date at December 31, 2017, STEI has achieved 61.13% of the Net Cumulative Energy Savings target. STEI continues to focus on the conservation needs of all its customers. STEI assists medium to large commercial/industrial customers by engaging them on energy efficient opportunities and offering thorough support throughout the application process. STEI is in the process of adding Small General Service programs such as Small Business Lighting and the Business Refrigeration Incentive, to ensure all customer classes are afforded energy efficient program opportunities.

Connection of Renewable Generation

- **Renewable Generation Connection Impact Assessments Completed on Time**
  Electricity distributors are required to conduct Connection Impact Assessments (CIAs) within 60 days of the receipt of the application for a proposal to connect a mid-sized generation facility or 90 days of the receipt of an application to connect a large embedded generation facility.

  In 2017, STEI received a single request for a CIA and it was completed within the prescribed time limit. The completion of CIAs requires a significant amount of coordination with the developer and other third parties involved in the process. In 2015, STEI received no offers to connect. Since 2013, STEI has successfully completed all CIA's within the prescribed time limit.

- **New Micro-Embedded Generation Facilities Connected on Time**
  Electricity distributors are required to connect an applicant's micro-embedded generation facility (i.e. MicroFIT projects of less than 10kW) to its distribution system within five business days of the applicant informing the distributor that it has satisfied all applicable service conditions, received all necessary approvals and provided the distributor with a copy of the authorization to connect from the ESA. The minimum acceptable performance level for this measure is 90%.

  In 2017, STEI connected all 13 new micro-embedded generation facilities within the prescribed time frame of five business days. STEI works closely with its customers and their contractors to address any connection issues to ensure the project is connected on time.

Financial Ratios

- **Liquidity: Current Ratio (Current Assets/Current Liabilities)**
  Liquidity is calculated by dividing Current Assets by Current Liabilities. This ratio is also known as Working Capital Ratio and measures an entity's ability to pay short-term financial obligations.

  STEI's current ratio decreased from 1.36 in 2016 to 0.84 in 2017. This decrease is offset in terms of financial position by the reduction in leverage and corresponding additional funding capacity noted below.

- **Leverage: Total Debt (includes short-term and long-term debt) to Equity Ratio**
  The OEB uses a deemed capital structure of 60% debt, 40% equity for electricity distributors when establishing rates. This deemed capital mix is equal to a debt to equity ratio of 1.5 (60/40). A debt to equity ratio of more than 1.5 indicates that a distributor is more highly levered than the deemed capital structure. A high debt to equity ratio may indicate that an electricity distributor may have difficulty generating sufficient cash flows to make its debt payments.

  STEI's leverage ratio decreased from of 0.65 in 2016 to 0.31 in 2017. The lower leverage ratio means that STEI has reduced financial leverage and higher year over year funding capacity.

- **Profitability: Regulatory Return on Equity – Deemed (included in rates)**
  STEI's 2017 distribution rates were approved by the OEB and include an expected (deemed) regulatory return on equity of 9.30%. The OEB allows a distributor to earn within +/- 3% of the expected return on equity. When a distributor performs outside of this range, the actual performance may trigger a regulatory review of the distributor's revenues and costs structure by the OEB.

- **Profitability: Regulatory Return on Equity – Achieved**
  STEI's achieved a 2017 Regulatory Return on Equity ("ROE") of 11.60%, which is within the +/-3% range of Deemed ROE allowed by the OEB. This result represents an increase from the 2016 Regulatory ROE of 10.65%.

Note to Readers of 2017 Scorecard MD&A

The information provided by distributors on their future performance (or what can be construed as forward-looking information) may be subject to a number of risks, uncertainties and other factors that may cause actual events, conditions or results to differ materially from historical results or those contemplated by the distributor regarding their future performance. Some of the factors that could cause such differences include legislative or regulatory developments, financial market conditions, general economic conditions and the weather. For these reasons, the information on future performance is intended to be management's best judgement on the reporting date of the performance scorecard and could be markedly different in the future.

ATTACHMENT L

Entegrus Major Event Report, April 2018

Major Event Reporting
April 14, 2018

Date Filed: June 15, 2018

TABLE OF CONTENTS

PRIOR TO THE MAJOR EVENT

1. **Did the distributor have any prior warning that the Major Event would occur?**

   The initial weather forecast from media outlets in the days leading up to the Major Event were somewhat conflicting, but generally indicated that a heavy rain storm was possible for the weekend of April 14-15, 2018. On Friday, April 13, at 6:50 am, Environment Canada issued a weather statement for Southwestern Ontario, indicating that several rounds of rain and occasional thunderstorms were likely for April 14-15. It was further indicated that temperatures might dip below the freezing mark late on April 14, with the threat of freezing rain. Subsequently, at 7:01 am on April 14, 2018, Environment Canada issued a rainfall warning for Chatham-Kent, indicating that the rain would change to freezing rain late in the afternoon.

2. **If the distributor did have prior warning, did the distributor arrange to have extra employees on duty or on standby prior to the Major Event beginning? If so, please give a brief description of arrangements.**

   Entegrus serves 17 communities in Southwestern Ontario. The boundaries of the EPI service territory stretch from Wheatley in the southwest to Parkhill and St. Thomas in the northeast. The boundaries are non-contiguous, and the distance across the Entegrus service territory is approximately two hours travel time by vehicle. Accordingly, Entegrus operates three service centres, located in Chatham, Strathroy and St. Thomas. This structure enhances (through the availability of back up resources) response times to system needs during storms. Staff from all three operational centres were put on alert on the morning of Saturday, April 14 after the Environment Canada rainfall warning. Ultimately, staff from all three centres assisted with the restoration efforts later that day. In addition, Entegrus engaged in discussion on the morning of April 14 with neighbouring utilities regarding mutual assistance, although ultimately this was not required by Entegrus.

3. **If the distributor did have prior warning, did the distributor issue any media announcements to the public warning of possible outages resulting from the pending Major Event? If so, through what channels?**

   The weather forecasts from media outlets in the days leading up to the storm were somewhat conflicting. Subsequently, the storm escalated very quickly on the morning of April 14, with freezing rain arriving much earlier than indicated in the rainfall warning issued at 7:01 am that morning. Accordingly, Entegrus did not issue any public warnings prior to the event.

4. **Did the distributor train its staff on the response plans for a Major Event? If so, please give a brief description of the training process.**

   Entegrus provides continuous training to staff on the various levels of response required for a Major Event. Entegrus has an established Emergency Preparedness Plan ("EPP") providing details on how employees are called in and how staffing levels are balanced to cover rest time. The EPP is reviewed annually with employees.

   Entegrus has significant experience in providing mutual aid support to other areas experiencing severe storm damage. In recent years, Entegrus staff have assisted with restoration efforts in other parts of Ontario, as well as New York, New Jersey and Florida. This experience is invaluable when responding to Major Events.

5. Did the distributor have third party mutual assistance agreements in place prior to the Major Event? If so, who were the third parties (i.e., other distributors, private contractors)?

Yes, Entegrus has third party mutual assistance agreements in place through the Electricity Distributor Association ("EDA") Western Group which includes the following utilities:

- Bluewater Power Dist. Corp.
- E.L.K. Energy Inc.
- ENWIN Utilities Ltd.
- Erie Thames Powerlines Corp.
- Essex Powerlines Corp.
- Festival Hydro Inc.
- London Hydro Inc.
- Tillsonburg Hydro Inc.

Entegrus is also part of the Great Lakes Regional Mutual Assistance Group and the Canadian Electrical Association Mutual Assistance Group. Both of these groups have agreements in place to provide additional assistance during Major Events where needed and available.

As described in #18 below, in conjunction with the restoration of the Entegrus service territory, Entegrus staff provided mutual aid assistance to Hydro One Networks Inc. on April 16, 2018 to restore supply to the area surrounding Parkhill.

DURING THE EVENT

1. **Please explain why this event was considered by the distributor to be a Major Event.**

   The April 14, 2018 ice storm was considered a Major Event due to the number of customers experiencing a concurrent outage of greater than 15 minutes. Entegrus serves approximately 58,000 customers. At the peak of the Major Event in the afternoon of April 14, 2018, there were 12,597 customers without electricity, representing approximately 22% of Entegrus customers.

2. **Was the IEEE Standard 1366 used to identify the scope of the Major Event? If not, why not?**

   The Entegrus Major Event scope determination policy is based on the prescribed Ontario Energy Board guidance, in particular, option (c), the Fixed Percentage Approach[1]. This alternative defines a Major Event as a fixed percentage of customers affected (Entegrus has selected 10% as the threshold). Entegrus believes this option best aligns with the customer experience and is the easiest to apply and communicate. It also provides for ease of calculation in quickly determining an event's impact and thereby assists in streamlining internal reporting.

3. **Please identify the Cause of Interruption for the Major Event as per the table in section 2.1.4.2.5.**

   This event consisted of the following Cause Codes:

   - Adverse Weather (Cause Code 6)
   - Tree Contacts (Cause Code 3)
   - Defective Equipment (Cause Code 5)

[1] See Report of the Board, EB-2015-0182, Electricity Distribution System Reliability: Major Events, Reporting on Major Events and Customer Specific Measures, page 11

4. **Were there any declarations by government authorities, regulators or the grid operator of an emergency state of operation in relation to the Major Event?**

   No.

5. **When did the Major Event begin (date and time)?**

   The storm came from the southwest on the morning of April 14, 2018 and moved northeasterly through the Entegrus service territory. The first Entegrus community impacted was Chatham, with customers first experiencing outages at approximately 10:45am. As the storm continued to move northeast, the community of Strathroy was impacted, with the first Strathroy outages occurring at 11:52am. The 10% threshold of customers without power threshold was reached at approximately 11:54am on Saturday April 14. Thereafter, outages first commenced in the community of St. Thomas at 3:21pm.

6. **What percentage of on-call distributor staff was available at the start of the Major Event and utilized during the Major Event?**

   Entegrus had 100% of its on-call staff available during the outages. All of this staff was utilized.

7. **Did the distributor issue any estimated times of restoration (ETR) to the public during the Major Event? If so, through what channels?**

   Entegrus provided continual updates on outage and restoration efforts at each specific community level, as there were multiple concurrent outages throughout the Entegrus service territory. The updates were shown on the Entegrus website, including the outage map. Updates were also posted on Twitter and Facebook. All posts included information on investigation efforts, causes and ETRs (where possible). The updates also included safety information, as well as reminders to report downed power lines.

   The Entegrus website also contains an embedded Twitter feed to allow for customers who do not follow social media to receive updates.

8. **If the distributor did issue ETRs, at what date and time did the distributor issue its first ETR to the public?**

   Entegrus issued its first ETR on April 14, 2018 at 2:36pm.

9. **Did the distributor issue any updated ETRs to the public? If so, how many and at what dates and times were they issued?**

   Entegrus issued the following ETR updates for the various outages. Note that some of the ETRs on April 15 and April 16 relate to Loss of Supply, as more fully described in #18 below:

April 14th at 4:55pm	April 15th at 4:03pm	April 16th at 1:33am
April 14th at 5:49pm	April 15th at 5:12pm	April 16th at 1:50am
April 15th at 12:39am	April 15th at 5:31pm	April 16th at 8:25am
April 15th at 2:19am	April 15th at 9:14pm	
April 15th at 4:39am	April 15th at 9:33pm	

10. **Did the distributor inform customers about the options for contacting the distributor to receive more details about outage/restoration efforts? If so, please describe how this was achieved.**

    As noted in #7 above, Entegrus continually provided updates on outage and restoration efforts. These updates also included contact numbers, social media links and website addresses to receive more details about the outage/restoration efforts.

11. **Did the distributor issue press releases, hold press conferences or send information to customers through social media notifications? If so, how many times did the distributor issue press releases, hold press conferences or send information to customers through social media notifications? What was the general content of this information?**

    Entegrus did not issue press releases or hold press conferences. As noted in #7 and #10 above, Entegrus sent information to customers through social media notifications. Entegrus released approximately 37 social media updates over the course of 3 days.

12. **What percentage of customer calls were dealt with by the distributor's IVR system (if available) versus a live representative?**

    All inbound customer calls to Entegrus initially route to the IVR system. The customer then has an option to choose to speak to a live representative. Accordingly, 100% of all customer calls were initially dealt with by the IVR system.

13. **Did the distributor provide information about the Major Event on its website? If so, how many times during the Major Event was the website updated?**

    Yes, Entegrus included updates on its website. The website was updated 23 times during the Major Event.

14. **Was there any point in time when the website was inaccessible? If so, what percentage of the total outage time was the website inaccessible?**

    No.

15. **How many customers were interrupted during the Major Event? What percentage of the distributor's total customer base did the interrupted customers represent?**

    Entegrus had 16,190 customers interrupted during the Major Event. This represents approximately 28% of Entegrus customers.

16. How many hours did it take to restore 90% of the customers who were interrupted?

It took 6.8 hours to restore power to 90% of the customers who were interrupted.

17. Was any distributed generation used to supply load during the Major Event?

No.

18. Were there any outages associated with Loss of Supply during the Major Event? If so, please report on the duration and frequency of Loss of Supply outages.

There are no Loss of Supply outages included in the above-noted outage numbers, as Loss of Supply is to be normalized from Major Event calculations[2]. However, as restoration was nearing completion, the Entegrus communities of Parkhill and Ridgetown began experiencing outages related to Loss of Supply. Subsequently, Hydro One Networks Inc., which was experiencing multiple outages throughout its service territory, requested assistance from Entegrus crews on Monday, April 16, 2018 outside of Parkhill. Entegrus assisted with the restoration of power supply to Parkhill and the surrounding area later in the day.

19. In responding to the Major Event, did the distributor utilize assistance through a third party mutual assistance agreement?

No.

20. Did the distributor run out of any needed equipment or materials during the Major Event? If so, please describe the shortages.

No.

[2] See Report of the Board, EB-2015-0182, Electricity Distribution System Reliability: Major Events, Reporting on Major Events and Customer Specific Measures, page 12

After the Major Event

1. **What steps, if any, are being taken to be prepared for or mitigate such Major Events in the future (i.e., staff training, process improvements, system upgrades)?**

   Entegrus conducted a debriefing after the conclusion of the Major Event to review the successes and the areas of improvement. This will result in enhancements to continued staff training, including updates to the EPP to more fully describe requirements for St. Thomas. Further, Entegrus continues to upgrade its distribution system, which will also help with future resiliency.

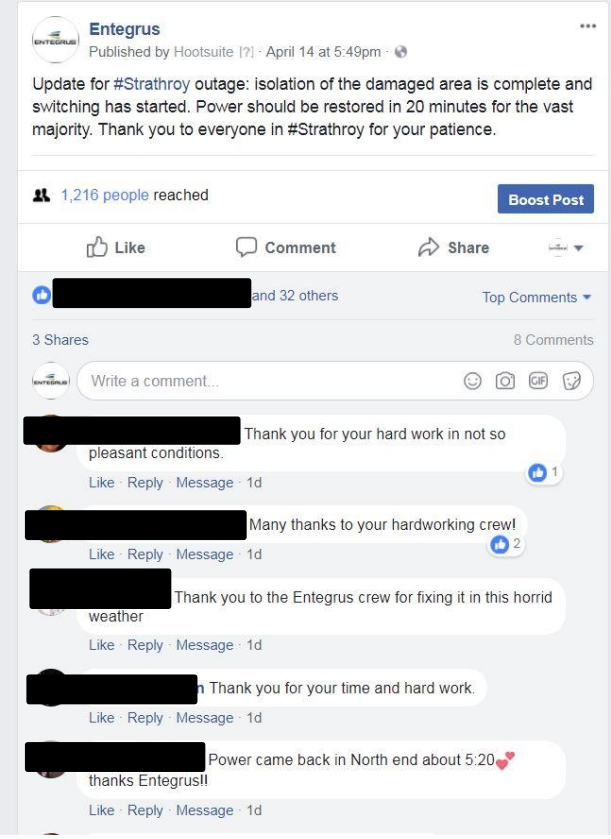
2. **What lessons did the distributor learn in responding to the Major Event that will be useful in responding to the next Major Event?**

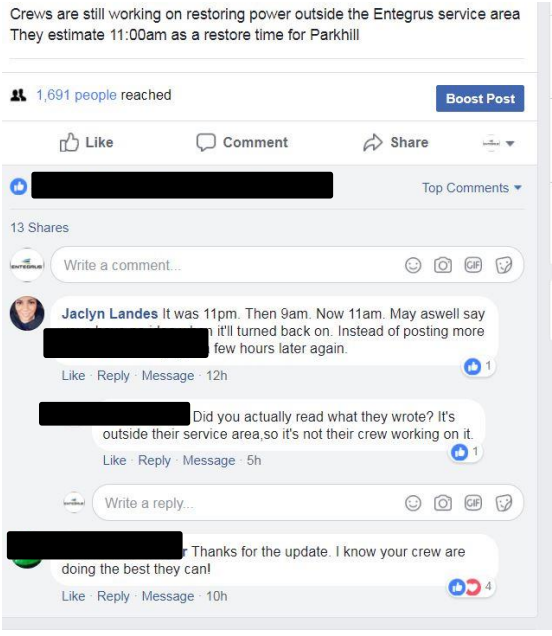
   Entegrus finalized its merger with St. Thomas Energy on April 1, 2018. Accordingly, valuable insight was gained from the Major Event with respect to organizing and coordinating the response of three operational centres with multiple crews. Entegrus has also identified an opportunity to utilize emergency radio channels to allow for improved communication between trucks across all operational centres.

3. **Did the distributor survey its customers after the Major Event to determine the customers' opinions of how effective the distributor was in responding to the Major Event? If so, please describe the results.**

   Entegrus did not complete a customer survey related to this Major Event. However, Entegrus did receive many messages from customers via social media containing feedback. Screenshots of these messages (with names redacted) have been included in Attachment A of this report.

ATTACHMENT A






Update on the Parkhill outage: there are a multitude of issues within Hydro One's service area affecting the town of Parkhill. Hydro One estimates power will be restored to the town by 9am Monday morning. Thank you.
2,552 people reached
Boost Post
Like
Comment
Share
Top Comments
14 Shares
Write a comment...
[redacted] Thanks , and thanks Hydro One for doing their best to get us lit up again. I'm sure the workers would like to be home and dry !
Like · Reply · Message · 8h
[redacted] Changed again. Now it's 11am. Waiting for another post changing the time again
Like · Reply · Message · 12h
[redacted]
Like · Reply · Message · 17h
[redacted]
Like · Reply · Message · 16h

ATTACHMENT M

Building Assessment – Chatham, August 2020

320 QUEEN STREET

August 18

2020

BUILDING CONDITION REPORT

Submission by:
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ENTEGRUS

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INDEX

Building Condition Review

320 Queen Street

Building Condition Review

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Executive Summary

ROA Studio Inc, along with associated consultants, was engaged to provide observations and report the physical conditions of the property located at 320 Queen Street, Chatham Ontario. This review addresses item that are significant for the continued operations of the facility in its current usage and occupancy, consistent with comparable properties of similar age.

The report observes the general physical condition of the subject property, material systems and components, and identifies deficiencies and any unusual features or inadequacies.

The consultant team visited the site on July 09, 2020 conducted a visual inspection of building systems. The site visit and report is a revised from the original building condition review completed in April of 2015.

The following building systems were reviewed and the following is our professional opinion of the found condition of the building:

Site Services	☑	Good	☑	fair	☐	Poor
Site Elements	☑	Good	☑	fair	☐	Poor
Building Exterior	☑	Good	☐	fair	☐	Poor
Windows & Doors	☐	Good	☑	fair	☐	Poor
Roofing | Skylight	☐	Good	☑	fair	☑	Poor
Interior finishes	☑	Good	☑	fair	☐	Poor
Structural systems	☑	Good	☐	fair	☐	Poor
Fire Protection	☑	Good	☐	fair	☐	Poor
Plumbing Systems	☑	Good	☐	fair	☐	Poor
Natural Gas	☑	Good	☐	fair	☐	Poor
HVAC Systems	☑	Good	☑	fair	☐	Poor
Electrical Systems	☐	Good	☑	fair	☐	Poor
Fire Alarm System	☑	Good	☐	fair	☐	Poor
Works Garage	☑	Good	☐	fair	☐	Poor

Opinions of Probable Costs

These opinions of probable costs are to assist the client in developing a general understanding of the physical condition of the subject property.

The following summarizes the cost per building systems.

Site Services	$	8,000.00
Site Elements	$	283,500.00
Building Exterior	$	11,000.00
Windows & Doors	$	7,000.00
Roofing | Skylights	$	700,500.00
Interior finishes	$	1,800.00*
Structural Systems	$	7,500.00
Fire Protection	$	98,000.00
Plumbing Systems	$	13,000.00*
Natural Gas	$	0.00
HVAC Systems	$	8,500.00*
Electrical Systems	$	41,000.00
Fire Alarm Systems	$	0.00
Works Garage | Electrical	$	16,000.00
1937 Building | Electrical	$	18,000.00
Total	$	1,213,800.00

*Refer to report, unit costs are provided for finishes and systems.

Opinions of probable costs should only be construed as preliminary budgets.

SECTION 1 PROJECT DETAILS

1.1 Purpose

ROA Studio Inc, along with associated consultants, was engaged to provide observations and report the physical conditions of the property located at 320 Queen Street, Chatham Ontario. This review addresses item that are significant for the continued operations of the facility in its current usage and occupancy, consistent with comparable properties of similar age.

The intent of this report is to determine anticipated capitol and maintenance cost over a five (5) to ten (10) year period. All inspections were non-destructive and based on visual inspections of representative portions of the various systems. This report should not be considered a guarantee or warranty of any kind. Unexpected repairs should still be anticipated.

1.2 Scope of Work

Observe the general physical condition of the subject property, observe material systems and components, and identify deficiencies and any unusual features or inadequacies observed by conducting specific or representative observations, as appropriate. Visually inspect the building systems based on representative samples to be review include but not limited to:

Site - Asphalt Paving, Concrete Curbing and sidewalks, Parking and exterior egress.

Site Services- Conduct a site inspection related to the existing servicing infrastructure and trench drain system. Determine possible causes of sewer back-ups into trench drain system and offer possible solutions to correct existing problems.

Building Envelope - facades and curtain wall system, glazing system, exterior sealants, exterior loading docks, doors, stairways, etc.

Roofing - Identify and observe the roof systems (exposed membrane and flashings) including, parapets, slope, drainage, etc. Observe for evidence and/or the need for material repairs, evidence of significant ponding, or evidence of roof leaks.

Interior Elements - common areas including, but not limited to, lobbies, corridors, assembly areas, offices and restrooms. Identify and observe typical finishes for flooring, ceilings, and walls.

Structural Systems - Perform structural design spot checks. Observe the building substructure, including the foundation system, building's superstructure and structural framing (floor framing system and roof framing systems).

Electrical Systems - Main electrical service, electrical panels, emergency lighting, fire alarm systems and emergency power systems.

Written Report - Subsequent to the visual inspection, prepare a comprehensive list of deficiencies and provide photo evidence of such deficiencies. A estimated budget cost to be associated with any corrective work required over a 5-10 year period.

Opinions of Probable Costs - are to be prepared for the suggested remedy of the material physical deficiencies observed. These opinions of probable costs are to assist the client in developing a general understanding of the physical condition of the subject property.

Opinions of probable costs are provided for material physical deficiencies and not for repairs or improvements that could be classified as: (1) cosmetic or decorative; (2) part or parcel of a building renovation program or tenant improvements/finishes; (3) enhancements to reposition the subject property in the marketplace; (4) for warranty transfer purposes; or a combination thereof.

Opinions of probable costs should only be construed as preliminary budgets. Actual costs may vary from the consultant's opinions of probable costs depending on such matters as type and design of suggested remedy, quality of materials and installation, manufacturer and type of equipment or system selected, field conditions, whether a physical deficiency is repaired or replaced in whole, phasing of the work (if applicable), quality of contractor, quality of project management exercised, market conditions, and whether competitive pricing is solicited.

1.3 Exclusions to Scope of Work

Providing an environmental assessment or opinion on the presence of any environmental issues such as asbestos, hazardous wastes, toxic materials, the location and presence of designated substances or mould.

Preparing engineering calculations (civil, structural, mechanical, electrical, etc.) to determine any system's, component's, or equipment's adequacy or compliance with any specific or commonly accepted design requirements or preparing designs or specifications to remedy any physical deficiency.

1.4 Conventions Used in this Report

GOOD - Indicates the component is functionally consistent with its original purpose but may show signs of normal wear and tear and deterioration.

FAIR - Indicates the component will probably require repair or replacement anytime within five years.

POOR - Indicates the component will need repair or replacement now or in the very near future.

MAJOR CONCERNS - A system or component that is considered significantly deficient or is unsafe and in need of prompt attention.

1.5 Documents Provided

The documents made available to the consultants by Entegrus to assist in the preparations of this report are as follows:

- Architectural Drawings by Lamb & Jorden Architect | Planner Dated 07/85 for 1986 addition. (PDF Format)
- Structural Drawings by Lamb & Jorden Architect | Planner Dated 07/85 for 1986 addition. (PDF Format)
- Mechanical & Electrical Drawings by Vanderwesten & Rutherford Limited Dated Aug/85 for 1986 addition. (PDF Format)
- Architectural Drawings by Westhoek Construction dated March, 2010 for front addition. (PDF Format supplied by Westhoek Construction)
- Architectural Drawings by Cianfrone Architect dated Jan 2012 for renovations. (PDF Format supplied by Westhoek Construction)
- Mechanical & Electrical Drawings by CK Engineering Services Ltd Dated Jan 2012 for renovations. (PDF Format supplied by Westhoek Construction)

1.6 Interview of Associated Persons

During the Site visit, Mr. Tim DeMaeyer and Mr. Gary Louzon was made available to provide information regarding history of work on premises.

1.7 Project Site & Building History

The project site is located on the west side of Queen Street in Chatham Ontario. The site neighbors railway tracks to the south, Raleigh Street to the west with residential properties to the north. The site has three (3) main structures, the main office facility, a works garage and a data centre.

The original two Storey building was constructed in 1937 as Chatham Hydro's line department and substation. In 1986, a major addition was constructed which form the majority of the facility today. A 150 m² addition to added to the north east corner in 2010 and major renovations to the second floor of the original 1937 building was completed in 2012. A new control room was added to the stores warehouse in 2018. This form the main office facility.

A works garage is situated to the south of the main office and was constructed in approx. 2005. The Data Centre is west of the works garage and was completed in 2010. The data centre is not reviewed as part of the project scope.

1.8 Building Description | Data

Main Office

- 1937 building includes partial basement, first floor warehouse space and second floor meeting and training spaces.
- 1986 & 2010 additions are a single storey, slab on grade construction containing office spaces and truck storage garage. The facility was constructed as a steel framing system with masonry infill. The office have brick veneer and the storage garage has metal siding finish.

Building Areas

Main Floor	4,235 m²
Second Floor	505 m²
Total	4,740 m²

OBC Classification

Group D - Office
Group F Division 2 - Garage

Works Garage

- Constructed in 2005.
- 1 single storey, slab on grade construction containing truck storage garage. The facility was constructed with masonry load bearing walls and wood trusses.

Building Areas

Total	630 m2

OBC Classification

Group F Division 2 - Garage

1.9 Site Survey Date & Conditions.

ROA Studio, along with consultants, visited the site on July 09. Temperatures had a high of 34°C and dry. Minimal rain to no rain occurred a week before the inspection.

SECTION 2 BUILDING SURVEY

2.1.1 Site Services

Description
The site services part of the review includes observations storm sewers, sanitary sewers, grading and fire hydrants. The trench drain in the truck bay was also reviewed as part of this section. It should be noted that physical testing, video inspections, or excavations of pipes was note included in the scope of work for this assignment.

The previous condition survey and report was completed on April 15, 2015. This review was conducted to build on the site service observations from that report and to advise of any recommended works completed and any new problems of corners that have arisen since then.

Sewer Systems	☑	Good	☑	fair	☐ Poor
Site Drainage	☑	Good	☑	fair	☐ Poor
Manholes | catch basins	☑	Good	☐	fair	☐ Poor
Trench Drain	☑	Good	☐	fair	☐ Poor

Recommendations | Observations

Raleigh Street Storm Outlet:
In accordance with the 2015 condition survey report the portion of the site is drained by a series of storm sewers that outlet into the combined sewer (300mm) on Raleigh Street. The back parking lot storm sewers range in size from 150mm to 525mm. In accordance with the building sewer plan (M-1R) the downstream storm sewer (200mm) is connected at Raleigh Street. The plan also indicates that there is a 150mm storm water restrictor is installed in the pipe (typically done to prevent downstream flooding). We were unable to verify whether this restrictor was in place or is condition as the manhole was not visible. The existing storm manholes and catch basins appear to be clean and functioning properly. There was no water sitting in the structures above the sumps. No blockage was observed in the pipe outlet. Most of the catch basins were fitted with an inverted tee (to prevent floating oily waster from entering the system). Strom manholes and catch basins should be inspected annually and cleaned if required.

Further to the recommendation from the 2105 report and if parking lot flooding continues to be an issue than the downstream manhole should be uncovered and the condition of the storm restrictor be verified

Queen Street Sewer Outlet:
The front portion of the site and all the site sanitary connections, from the building outlet, are to be 300mm combined sewer on Queen Street. According to the 2015 report flooding occurs due to the undersized sewer on Queen Street combined sewer (approximately 3 times a year). The most visible location for backups is in the courtyard area. It was not confirmed whether the previous consultant's recommendations to install a backflow preventer has been completed. During MTE's site visit o apparent problems with past flooding issues were noticed.

Water mains / Fire hydrants:
The site is serviced with a system of water mains and fire hydrants. The hydrants were observed to be in good condition. As noted above no tests were conducted to confirm whether the valves operated correctly.

It is recommended that the hydrants be tested and operated at least once per year to ensure that the valves will turn and water be flushed from the section of pipe.

Trench Drain Outlet:
As noted in the 2015 report there had been issues with these drains and it was confirmed that a broken pipe was the cause of the drainage issues. It appears that since the 2015 report was issued the trench drain issues has been resolved. Our observation during the site visit was that the trench drain were dry and clear of debris. No plugging was evident. We were not provided with updated plans or sketches of the repairs that appear to have been made.

Annual flushing is recommended and cleaning following heavy use periods (winter snow/slush events)

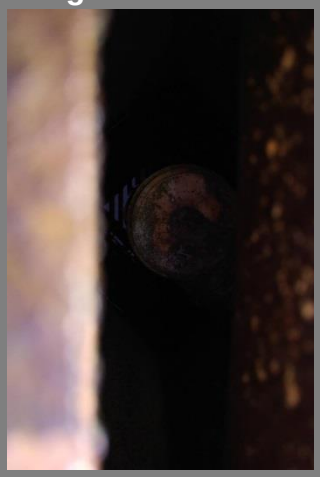
Opinion of Probably Cost

Allow $2,500 to located, verify and review condition of existing storm sewer and $4'500 complete investigation of flooding (if still a concern) and to access condition of restrictor.

Allow $500 for annual testing of fire hydrants

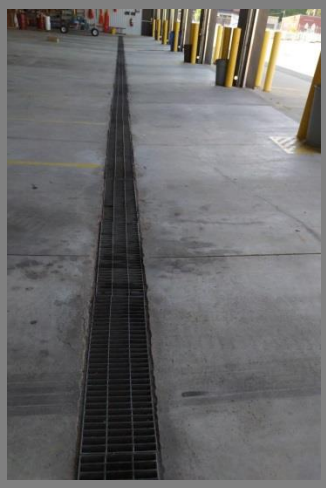
Allow $500 for flushing/cleaning during heavy use periods.

Images



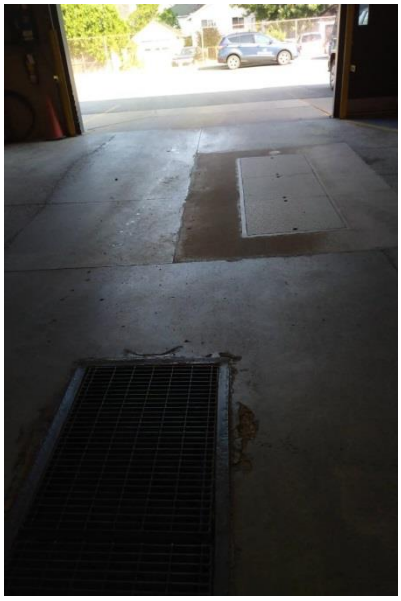
No Action: Sample od inverted tee in CB's
Location: Rear Storage Area

Trench drain cleaning required
Location: Repair garage



Trench Drain
Location: Repair Garage

Trench Drain in Truck Bay
Location: Truck Bay



Trench drain and oil interceptor
Location: Truck Bay

2.1.2. Site

Description
The site part of this review includes observations of exterior site work including concrete sidewalks, asphalt paving for driveways and parking areas and ground cover. It should be noted that physical testing and video inspections was note included in the scope of work for this assignment.

The previous condition survey and report was completed on April 15, 2015. This review was conducted to build on the site service observations from that report and to advise of any recommended works completed and any new problems of corners that have arisen since then.

Sidewalks	☑	Good	☐	fair	☐	Poor
Asphalt pavement	☑	Good	☑	fair	☑	Poor
curbing	☑	Good	☐	fair	☐	Poor
Ground cover	☑	Good	☐	fair	☐	Poor

General Comments

Asphalt Driveways and Parking Areas:

Overall the asphalt pavement in parking areas and laneways was in reasonably good shape. The back parking lot/storage area was the exception to this and is likely near its useable life. Considerable cracking and spalling was noted within this parking area. A new driveway and parking area appears to have been installed within the last number of years. The asphalt is in very good condition. There is some lateral cracking in this pavement near the north entrance to the employee parking lot.

It is recommended that the rear middle (large) parking area be replaced. The subsurface should be tested and inspected by a geotechnical professional and recommendations followed. The cracked sections in the new asphalt parking areas should be sealed to prevent the cracking from expanding or braking off. The holes and broken asphalt at the front of the employee entrance should be repaired.

Concrete Sidewalk and Curb:

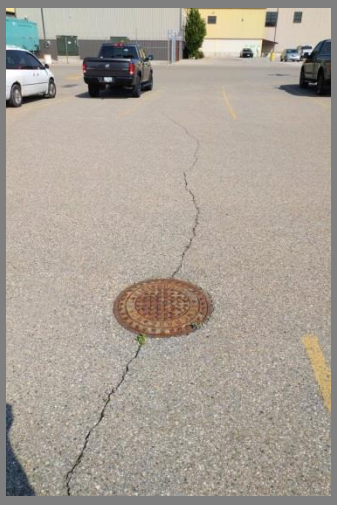
The concrete sidewalks are generally in a good condition. There are a few cracked blocks but do not appear to be tripping hazard. Generally, the curb is in good shape. Some cracks were observed but nothing that should lead to a priority repair.

Monitor cracked sections and if the cracks start to expand consideration should be given replacing the section. This is particularly important where the sections are uneven.

Opinion of Probable Cost
Allow $280’000 to inspect, remove and replace asphalt in south lot/storage area.
Allow $3’500 to complete repairs to cracks and holes in other parking areas.

Images


Asphalt in poor condition
Location: East Parking Area


Repair: Asphalt Cracking between CB’s
Location: East Parking Area Description


Monitor: Asphalt Cracking between CB’s
Location: New Pavement Area (east)

Images

Asphalt in poor condition
Location: South of Repair Garage

Asphalt and sidewalk generally in good condition
Location: Visitor parking area

Monitor/Repair: Cracking in concrete apron
Location: Rear of truck bay

Images

Repair: Small sink hole in asphalt & alligator cracking noted throughout
Location: East parking lot

Asphalt in poor condition (Since 2015 report)
Location: Northward of Repair garage

Repair: Joint between Driveway and Parking lot
Location: Raleigh St West Entrance

2.2.1 Building Exterior

Description
This section reviews the exterior cladding including wall coverings, eaves, soffits and flashings.

Brick Veneer	☑	Good	☐	fair	☐	Poor
Pre-fin Metal Siding	☑	Good	☐	fair	☐	Poor
Masonry Block	☑	Good	☐	fair	☐	Poor
Facia & Downspouts	☑	Good	☐	fair	☐	Poor
Sealants & Caulking	☐	Good	☑	fair	☐	Poor

General Comments
The exterior of the building is in generally good condition. Minor damage to Pre-finished metal siding in a few locations. Minor masonry block work had been repaird and painted since the previous report. The paint on exposed columns around the back truck bay area starting to peel. Some discolouration on brick was observed, main on the original building.

Recommendations | Observations

- Concrete Block damaged at covered parking has been repaired from 2015 report.
- Damaged Pre-finished siding (Several locations)
- Discolouring of Brick at 2nd storey, Recommend cleaning and monitoring.
- Scrape & Paint exposed structural columns

Opinion of Probable Cost
Allow $5,000 to clean and monitor brick at 1937 building
Allow $6,000 for painting of exposed columns

Images

Repair: Cooling tower Wall flashing capped since 2015.
Location: By Truck Bay

Some brick discoloration on cooling tower wall
Location: by Truck Bay

Repair: Rust forming on exposed columns

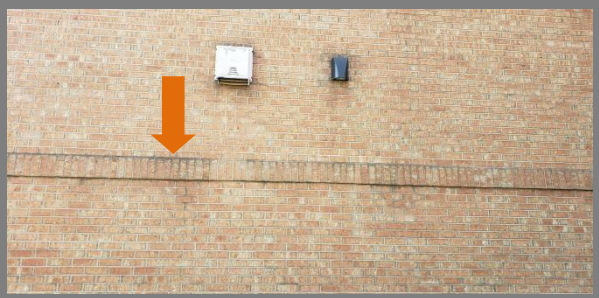
Images

Repair: Rust forming on exposed columns
Location: Various locations at Truck Bay

Repair: Rust forming on exposed columns
Location: Various locations at Truck

Repair: Siding Damaged
Location: At Loading Dock

Repair: Discolouring of brick
Location: 1937 Building



Repair: Discolouring of brick
Location: 1937 Building

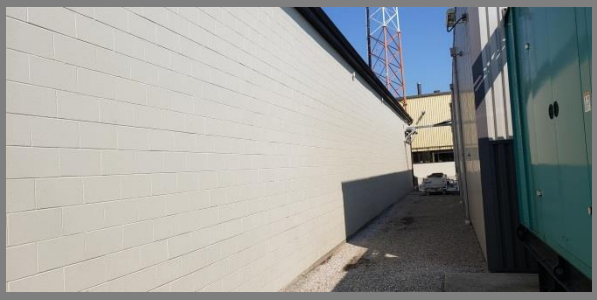
Lintel painted (repaired since 2015 report)
Location: Main Entrance

Images

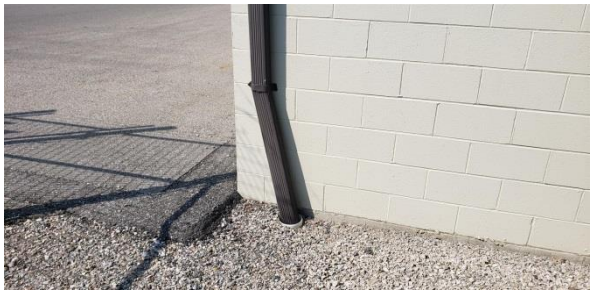
Birck repointed – no acton
Location: Main Entrance

Penetrations sealed
Location: West Courtyard wall

Sample: Brick to Siding Transition
Location: Courtyard



Exterior block of Works Garage
Location: Works Garage



Downspouts connected to sewer
Location: Works Garage

Repair: Paint Bollards due to rusting
Location: Works Garage

2.2.2 Windows | Exterior Doors

Description
This section reviews current state of the windows and doors in the buildings. This includes a visual inspection of the frames, sealing, glazing and hardware.

Window Frames	☐ Good	☑ fair	☐ Poor
Glazing	☑ Good	☐ fair	☐ Poor
Door & Frames	☐ Good	☑ fair	☐ Poor
Over Head Door & Frames	☐ Good	☑ fair	☐ Poor
Sealants | caulking	☐ Good	☑ fair	☐ Poor

General Comments
The aluminum window frames are original from the 1986 addition. Majority of the frames are in good conditions. The sealed units are original with the exception of the 2010 addition. The majority of the hollow metal doors have been re-pained since 2015 but are starting to show deterioration, most of the weather stripping is in fair condition. There are no windows in the works garage.

Recommendations | Observations

- Overhead Door Jambs were painted since 2015, rusting near bottom - monitor.
- Loading dock seals appear to be replaced in last few years, good condition.
- Door Frames in several areas are showing signs of rust.
- Brick repoint near front entrance was observed, no action.
- Alum Window Frames have some caps pulled apart.
- Sealant | caulking around doors & windows appears in good condition.
- A seal in the 2010 addition is falling out of frame.

Opinion of Probable Cost
Allow $5,000 for new doors and frames repairs
Allow $2,000 miscellaneous paint of frames

Images

Repair: Glazing seal
Location: 2010 Addition – North office

Repair: Gab in Aluminum Window Frame
Location: West 1986 Addition

Sample of Caulking
Location: 1986 Addition

Images

Frame gap repaired.
Location: Main office – 2010 addition

Sample Window Unit
Location: Courtyard

Repair: Gap in Window Frame
Location: 2010 Addition

Repair: Gap in weather stripping
Location: North door, Truck Bay

Rusting starting on Overhead Door Jamb
Location: Truck Bay

Repair: Rust on Door Frame
Location: Stores Loading Dock

Images

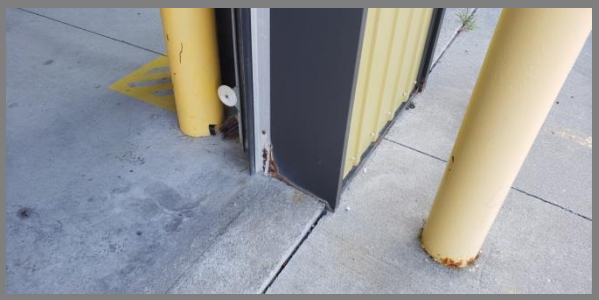
New seals around loading dock
Location: Shipping & receiving

Sample of interior view of window units
Location: Second Floor Meeting room

Sample: Boallards and overhead door openings
Location: Truck Bay

Repair: Door frame with rust starting
Location: Works Garage

Repair: Door frame with rust forming on inside
Location: Works Garage



Rust starting on overhead door frame.
Location: Works Garage

2.2.3 Roofing | Skylights

Description
This section reviews current state of roofing including the roofing material, parapets and drainage.

EPDM Roofing	☐	Good	☑	fair	☑	Poor
Single Ply Roofing	☑	Good	☐	fair	☐	Poor
Parapets	☐	Good	☑	fair	☐	Poor
Roof Drains	☐	Good	☑	fair	☐	Poor
Skylights	☐	Good	☑	fair	☐	Poor

General Comments - Main Office

The roof of the 1986 addition is original EPDM. According to report completed in 2015, the roof membrane joints were resealed approximately 8 years ago. It was observed that an area of approximately 50 square feet by the 2 storey roof / HVAC units was soft and one can conclude the insulation may be saturated / deteriorated. Further investigation is recommended to see extend of possible deterioration. No Sign of leaks were observed inside the building. Due to the age of the roofing system, the roof is nearing its useful life expectancy and is recommended to be replaced in the next 3-5 years.
Roof over 2010 addition is single ply membrane (TPO).
The roof of the two storey addition was inaccessible. Not reviewed.

Skylights in fair condition and due to age are recommended to be replace at the time of the roof replacement.

Recommendations | Observations

- Roof Seals were observed to have been resealed.
- Roof Drains clear of debris
- no visual sign of leaks in building.
- Skylights did not show evidence of leaking.
- Overflow suppers were clear of debris
- Replacement of 1986 EPDM roof and Skylights in 3-5 years.
- Roof Hatch has surface rusting on cover, recommend to scrap and paint.

General Comments - Works Garage

The roof of the works garage addition was inaccessible, visually inspected from Main Office. Sloped Steel roof in good condition.

Opinion of Probable Cost
Allow $675,000.00 for roof replacement
Allow $25,000.00 for Skylight Replacement
Allow $500.00 for painting of Roof Hatch.

Images

Skylight
Location: 1986 Addition

Overflow Scupper free of debris
Location: 1986 Addition

Roof Drain
Location: 1986 Addition

Images

Parapet cap flashing and sample seals
Location: 1986 Addition

Overflow Re-seal joint starting to show wear.
Location: 1986 Addition

Roof to High wall Condition
Location: 1986 Building

Area of “soft” roof area. Further investigation required
Location: 1986 Addition

Roof Access Hatch - Rusting
Location: 1986 addition

Single ply roofing Membrane
Location: 2010 Addition

2.3.1 Interior Finishes

Description
This section reviews the current state of interior finishes including ceilings, walls, flooring and interior doors.

Flooring	☐	Good	☑	fair	☐	Poor
Ceilings	☑	Good	☑	fair	☐	Poor
Doors	☑	Good	☑	fair	☐	Poor
Walls	☑	Good	☐	fair	☐	Poor

General Comments - Main Office

As an overview, the interior finishes of the building are in fair to good condition. The office space has been renovated in most areas except main reception area. The flooring is a combination of carpet, vinyl tile, concrete and ceramic tile. The walls consist of demountable partitions, concrete block and stud partitions. The floors are relatively level and the walls are relatively plumb. The ceilings are comprised of suspended acoustical ceiling systems and pre-fin linear metal ceiling at the reception area. The doors are in fair condition. Washroom have been renovated in the past few years and are in good condition. The interior finishes of the works garage are in good condition.

Major Concern
The existing basement (currently not occupied) has had multiple floods creating a potential hazardous environmental concern. (Further investigation in to any hazardous environmental concerns are outside the scope of this report) Recommend further investigation by Hazardous Material consultant to determine scope and costing. Basement was observed to have no changes since 2015.

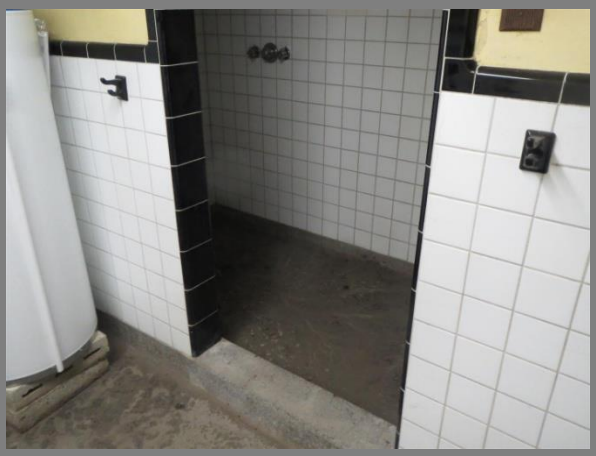
Recommendations | Observations

- Carpet in open office area is nearing its life expectancy
- VCT throughout majority of 1986 building is nearing its life expectancy
- Old Water damaged ceiling tile on second floor (no concern)

Opinion of Probable Cost
Allow $8.00 per square foot for replacement of carpet
Allow $15.00 per square foot for replacement of ceramic tile
Allow $5.00 per square foot for replacement of vinyl composite tile (vct)

Images

Major Concern: Capped floor drain. Sediment cover entire floor
Location: Basement



Major Concern: Basement flood. Sediment cover entire floor and unused shower.
Location: Basement

Major Concern: Plaster | Drywall removed at interior walls.
Location: Basement

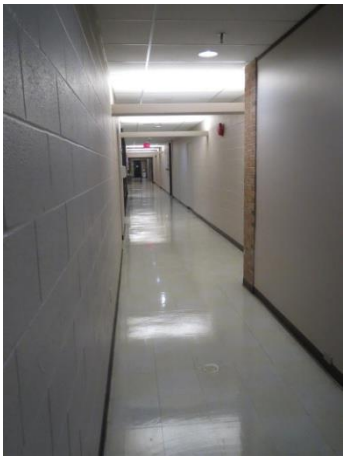
Images

Major Concern: un-occupied room - existing flood damage
Location: Basement

Floor transition at 1986 addition and 2010 Addition
Location: Main office

Ceramic tile in fair condition | nearing end of life cycle.
Location: Corridor look at main reception

Major Concern: water meter.
Location: Basement



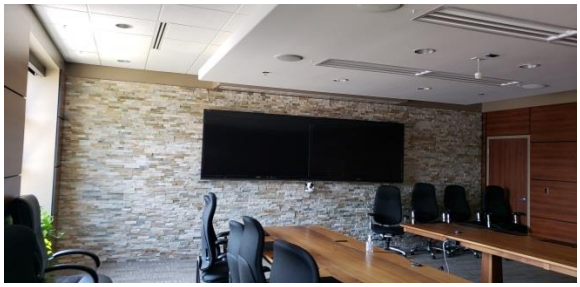
Existing VCT flooring in good condition
Location: Corridor outside cafeteria

VCT in fair condition | nearing end of life cycle.
Location: Corridor by drying room

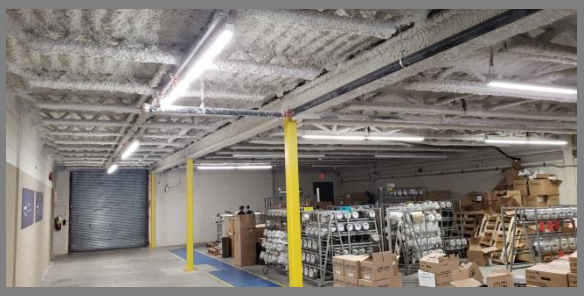
Images

VCT in fair condition.
Location: North Entrance by Control room

Flooring transition - VCT to Carpet
Location: Office and open office area



Board Room
Location: 2nd Floor



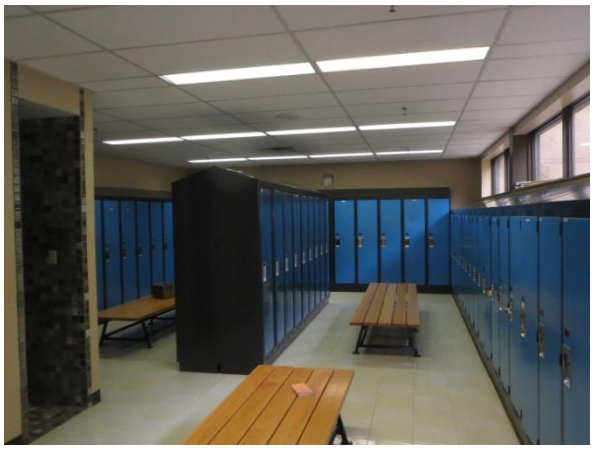
Concrete slab c\w painted walkways
Location: Meter Room

Concrete slab in good condition
Location: Truck Bay

Sample- finishes in good condition
Location: Metering Office

Images

Door in poor condition
Location: Stores area



Lockers | VCT flooring
Location: Men's change room

Washroom finishes | good condition
Location: Men's change room

Renovated washrooms | good condition
Location: 2nd floor men's washroom

Shower stall
Location: Men's change room

Sample: Meeting room.
Location: Second Floor

2.4.1 Structural Foundations

Description

This section covers the building foundations including the footing and foundation walls up to grade and slab on grade levels.

Foundations	☑	Good	☐	fair	☐	Poor
Block Walls	☑	Good	☐	fair	☐	Poor

General Comments - Main Office

The existing building drawings indicate foundations are comprised of reinforced concrete strip and spread footings. Foundation walls throughout the building consist of a combination of poured concrete and masonry construction. Basement foundation walls are concealed and could not be assessed. There are minimal building foundations exposed for assessment, therefore our comments pertain only to those portions of the foundations which are visible.
The slab on grade was covered by flooring throughout and its condition could not be assessed.

General Comments - Works Garage

The existing building drawings indicate the Works Garage foundations consist of concrete foundation walls and footings. Some localized concrete delamination was observed on the foundation wall exterior at the loading dock leveler at the southeast corner of the building. No other major deficiencies were observed. No cracks were observed in the masonry infill walls bearing on the foundations which could indicate potential foundation movement. Therefore, the foundations are presumed to be in good condition.

The slab on grade in the Works Garage is well sloped towards trench drains and exhibited some localized cracking throughout even with regular control joints in place. In the stores area, there is a long continuous crack running the length of the corridor between the Stores area and the new second floor Control Room. While these cracks do not present a structural concern, they do present a serviceability issue as the cracks can continue to widen and propagate over time and will further deteriorate the slab if not repaired.

Recommendations | Observations

- Route and seal all cracks in the slab on grade within the Stores and Works Garage

Opinion of Probable Cost

Allow $7500 for routing and sealing the slab on grade cracks.

Images

Slab on grade floor
Location: Works Garage

Loading Dock Leveler
Location: Loading Door

Location: Stores Corridor

Location: Outside Loading Dock

2.4.2 Structural Vertical Elements

Description
This section covers vertical elements such as building columns, walls and stairs.

Building Columns	☑	Good	☐	fair	☐	Poor
Masonry Walls	☑	Good	☐	fair	☐	Poor
Stairs	☑	Good	☐	fair	☐	Poor

General Comments - Main Office

The Main Office vertical structure is of structural steel construction. Where exposed to view, vertical elements include steel columns, non-load bearing masonry walls, and stairs of steel construction. Vertical elements were found to be in generally good condition.

Longitudinal and stepped cracking of the masonry walls noted in the previous building condition assessment have since been repaired. It is unclear if the cracks were cosmetically repaired or the source of the cracks had been identified and rectified.

General Comments - Works Garage

Similar to the Main Office, the Garage / Stores is of structural steel construction. Vertical elements include steel columns, masonry infill walls up to the first girt elevation, and stairs of concrete and steel construction. Vertical elements were generally observed to be in good condition.

Recommendations | Observations

- No Comment

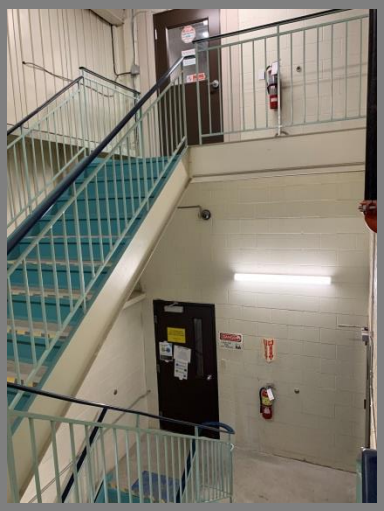
Opinion of Probably Cost

No Comment

Images

Location: Main Office

Location: covered parking



Location: Works Garage

2.4.3 Structural Floor | Roof elements

Description
This section covers the suspended floors, mezzanines and roof construction.

Suspended Floor	☑	Good	☐	fair	☐	Poor
Mezzanines	☑	Good	☐	fair	☐	Poor
Roof Construction	☑	Good	☐	fair	☐	Poor

General Comments - Main Office

Based on existing drawings, the majority of the Main Office area was constructed of metal roof deck on open web steel joists (OWSJs) on conventional structural steel framing. An area of the Main Office is the original two-storey building constructed in the 1930's and is comprised of wood decking and dimensional lumber on OWSJs on flat bottom riveted steel trusses.

The majority of the Main Office roof structure was concealed by acoustical tile and drywall ceilings and could not be accessed for assessment. In the original two-storey 1930's building, the roof structure in the second floor Conference Room was exposed to view and found to be in generally good condition. At the southeast corner of the Conference Room roof, the mortar joints of the exposed load-bearing brick wall supporting the OWSJ has been previously repointed. Directly under the joist bearing some localized mortar deterioration was noted. This does not present a structural concern, but the deteriorated mortar joints should be repointed.

General Comments - Works Garage / Stores

The existing roof construction in the Garage consists of metal roof deck on long span steel joists (LSSJs) on conventional structural steel framing. The roof structure was found to be in generally good condition.

There is a monorail system over the loading dock area hung from the roof of the Garage supporting a 1-ton electric lifting device. The monorail beam is not labeled with its rated lifting capacity.

The Stores area is two-storey structure comprised of many separate areas including the ground floor Stores and Meter Room, and the second floor Storage Room and Control Room and Conference Room. The new second floor Control Room has been constructed within the Stores area and consists of what appears to be plywood on composite metal deck on OWSJs and conventional structural steel framing. The second-floor structure has spray applied fireproofing installed so its condition could not be assessed.

The second floor of the original two-storey 1930's building over the Stores area supports the Conference Room above and is constructed of wood decking and dimensional lumber on OWSJs on structural steel framing. In one location a stair to the second floor was removed and the opening infilled with plywood and dimensional lumber.

General Comments – Works Garage / Stores

The second floor above the Meter Room is currently being used as a Storage Room. The construction appears to be plywood on composite metal deck on conventional structural steel framing. There are two roof penetrations in the Storage Room for ductwork that have no supplemental framing for reinforcement of the roof decking. In the Meter Room below, there is one floor penetration for ductwork that has no supplemental framing for reinforcement of the floor decking.
In the Storage Room is a set of double doors that open to the floor below for loading and unloading of materials. There appear to be three different attachment points that could be used for fall protection when the double doors are opened. A self-retracting lanyard is hung from one of the attachment points. It is not clear which of these attach points is to be used for fall protection, what is the procedure for tying off, whether they are to be used for travel restraint or fall arrest, or if they've been designed for the necessary loads.
There is a monorail system in the Stores area of the original 1938 building hung from the second-floor structure supporting a 1-ton electric lifting device. The monorail beam is not labeled with its rated lifting capacity.

Recommendations | Observations

- Analyze and certify the monorail beams for the rated lifting capacity.
- Analyze and certify the fall protection in the second-floor Storage Room.
- Reinforce around roof and floor penetrations in the second-floor Storage Room.

Opinions of Probably Cost

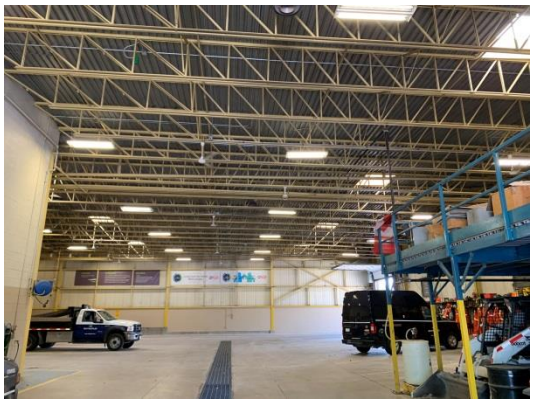
- Allow $3,000 for analysis and certification of the monorail beams.
- Allow $3,000 for analysis and certification of the fall protection system
- Allow $5,000 for reinforcement of the roof and/or floor around the duct penetrations

Images

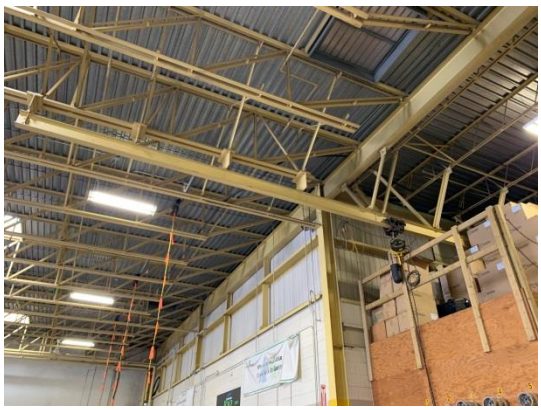
Wood decking and dimensional lumber on Steel OWSJs and steel trusses
Location: Main Office

Images

Mortar joint deterioration
Location: Main Office



Metal roof deck on long span steel joist
Location: Works Garage



Monorail lift system
Location: Works Garage

Images

Monorail lift system
Location: Stores area

Infill of removed stair
Location: Stores area

Fall protection system tie off points
Location: Storage room

Roof penetrations
Location: Storage room

2.5.1 Fire Protection

Disclaimer
A guided visual field review of the various existing building components was performed on Thursday, July 9, 2020 with the Architect, Consultants and Owner.

Original drawings and specifications for this building were made available prior to field review however.

During our examination of the building, no physical or destructive testing was performed. Comments and conclusions are therefore based on the visual and/or the apparent physical condition of the building elements. Any design an /or construction deficiencies that are not recorded in this report were not evident given the level of study undertaken. The Plumbing and Fire Protection portion of this report has been taken from the previous report in 2015 completed by V&R and modified to convey new findings, found on site.

Description
This section reviews Fire Protection related systems, including sprinkler, standpipe and fire extinguishers.

Sprinkler	☑	Good	☐	fair	☐	Poor
Fire Extinguishers	☑	Good	☐	fair	☐	Poor

General Comments - Main Office
The existing building is served by an 8" domestic/fire service entering through the mechanical room at the North end of the building. A sprinkler system and fire extinguishers are currently protecting the building and there is no standpipe present. The existing sprinkler system serving the building was installed in 1986. Fire protection system is isolated from the portable water system by the use of wet sprinkler alarm check valve. Current codes require separation between potable water and fire protection distribution with double check backflow preventer prevention device. 8" sprinkler main riser, off city street pressure is serving the sprinkler system. There are no fire pumps installed in this building. 4" Fire Department Connection is located on exterior wall facing Queen Street. This sprinkler system is all located in the mechanical room and consists of a single wet alarm valve and excess pressure pump. The buildings sprinkler system is a single sprinkler fire zone, controlled by supervised valve and flow switch. Some locations do not have sprinkler heads installed within the combustible ceiling cavity.

General Comments - Works Garage

Free standing Garage structure is not protected by sprinkler or standpipe system. Surface mounted fire extinguishers are located throughout the building.

Recommendations | Observations Cont'd

- Existing 1985 and 1937 building floor area 49,000 SF. Maximum floor area for single sprinkler system riser is 52,000sf, for light and ordinary hazard occupancies.
- Current codes require installation of backflow prevention device on fire service supply line.
- Installation of backflow preventer will affect hydraulic properties of existing sprinkler system
- Addition of fire pump may be required to compensate for additional pressure drop through the backflow preventer. Current incoming static water pressure measured at the alarm check valve is 56 PSI.
- Main office sprinkler system has been in service for 30 years. Replace or representative samples from one or more sample areas to be test where sprinklers have been in service for 50 years. Test sprinklers that were manufactured using fast-response elements which have been in service for 20 years. These sprinklers shall be test again every 10 years.
- Space under West Canopy is not sprinklers. Current codes require sprinkler installation under canopies where vehicles are parked.
- Two office rooms within Repair Garage do not have sprinklers installed.
- 1937 Basement and accessible Crawl Space are not sprinklered. Crawl Space Spinklering requirement will depend on the compartment size and access.
- Installation of 10 lbs Dry Chemical ABC Fire Extinguishers appears to be adequate for the Works Garage.

Opinion of Probably Cost

Allow $60,000 for new backflow preventer and additional fire pump.

Allow $15,000.00 for covered parking sprinkler installation

Allow $8,000 for Repair Garage sprinkler Installation

Allow $15,000 for Basement and accessible crawl space sprinkler installation

Images

Domestic/Fire main in the
Location: Mechanical Room

Surface mounted fire extinguisher
Location: Outside Electrical Room

Canopy
Location: Outside Main Shop

Basement
Location: Basement of 1937 Building

2.6.1 Plumbing | Domestic Water

Description
This section reviews Domestic Water related systems, including Domestic Cold Water, Domestic Hot Water and Domestic Hot Water Re-Circulation systems

Dom. Cold Water	☑	Good	☐	fair	☐	Poor
Dom. Hot Water	☑	Good	☐	fair	☐	Poor
Dom. HW Re-Circ	☐	Good	☑	fair	☐	Poor

General Comments - Main Office

Two domestic water services can be found at this facility, 8" domestic/fire service enters the building in the mechanical room. 2-1/2" pipe branches off the 8" to supply potable water to the building. This water service includes water meter and by-pass with isolation valve locked in close position. There is no backflow prevent installed to this main water line. A new backflow prevention device is required to be install as per current code (CSA B64.10)
1-1/4" main with water meter and backflow preventer entering from Queen Street is located in the basement of the 1937 structure, serving the basement and first floor level. There is not by-pass piping at this water service location. Branch piping is connected to main service upstream of the double check backflow preventer.
Mechanical equipment that has connections from the cold water make-up do not have backflow prevention devices that protect the potable water system within this building.
Domestic Hot Water serving the 1986 building is provided by two electric water heaters located in the boiler room. 110 US gal. storage tank water heater is a newer unit installed in 2015 and 120 US gal. storage tank is an older unit installed during 1986 construction. There is an additional 120 US gal storage tank location to the left of these units.
Domestic Hot Water Re-Circ. Pump is located in the Boiler room. Branch lines are shown as ½" Dia. this piping is too small for recirculation system. The minimum pipe size is ¾" Dia. This system design may cause hot water supply issues and failure to Re-Circ the hot water, due to the existing pipe size and improper balancing of the system.
1937 portion of the buildings Domestic Hot Water system is served by a small electrical 50 US gal. storage tank water heater. No Hot Water Re-Cric piping or pump appears to be present for this system. On the drawings for the 2012 renovation, it is indicated that a new Hot Water Re-Circ system was installed during the renovation in the basement.
There is existing lawn irrigation system installed around the property, the irrigation needs to have a backflow prevention device installed to provide separation from the potable water distribution system.

General Comments - Works Garage

Garage structure has ¾" DCW connection. The DCW is serving pressure washer and Hose BIBBs located around the building

Recommendations | Observations

- Installation of double check backflow preventer required on 1986 building water service.
- Installation of proper type backflow prevention devices required on CW make-up connections and lawn irrigation systems.
- Revision on DCW piping connection at 1937 building water service down steam of backflow preventer. Installation of water meter by-pass, with appropriate revisions of shut-off valve locations, required at the location.
- Balancing of DHW Re-Circ. System required to eliminate issued with hot water supply to lavatories in Women's Washroom.
- DHW temperature should be maintained about 60°C (140°F) at Water Heater, and water delivered at the faucet at a minimum of 50°C (122°F).
- Provide backflow prevention device on DCW supply.

Opinion of Probably Cost

Allow $7,500 for double check backflow preventer

Allow $2,000 per backflow prevention devices on CW makeup and lawn irrigation systems

Allow $3,000 for revisions to DCW piping connections in 1937 building.

Allow $500 per fixture for DHW temperature control.

Allow $500.00 for backflow preventer on DCW in Works Garage.

Images

Existing water meter
Location: Mechanical Room

Water meter
Location: 1937 building basement

Hot Water storage tank
Location: Boiler Room

2.6.2 Plumbing - Sanitary | Storm

Description
This section reviews Sanitary, Storm and Sump Pits systems related to the building.

Sanitary System	☐	Good	☑	fair	☐	Poor
Storm System	☐	Good	☑	fair	☐	Poor
Sump pits | pumps	☑	Good	☐	fair	☐	Poor

General Comments - Main Office

Multiple connections to site services are provided for sanitary and storm systems serving this building. Two sanitary drains serving the building, exit the North side of the 1986 building and connect to the storm sewer leaving at the east side of the building. These pipes connect to combined sewer that runs along Queen Street.
There is a storm connection located at the loading dock on the South side of the building. Storm water is collected through a catch basin located at low elevation of the ramp. Water is then pumped to up to higher level with a sump pump, where it is transferred to storm sewer system that is connected to the city's combined sewer system on Raleigh Street. There is a separate sanitary and storm system serving the 1937 building, which is connected and discharged to the combined sewer system on Queen Street. Some roof drains located on the roof of the 1986 building appear to not have weirs to control storm water drainage. Original drawings indicate all roof drain were to be installed with a means of storm water drainage control. Without weirs being installed to the roof drain, storm water issues may occur within the courtyard and surcharge within the city sewers as well.
During the 2015 investigation done by V&R the owner noted that the floor drains dry out and releases an odor throughout the building when the trench drain in the truck bay is pumped out. Nothing was discussed during the current investigation, if issue has not been resolved, further investigation is required.
Elevator sump pit is located next to the elevator shaft. Information on sump pit and pumps are unavailable.

General Comments - Works Garage

Garage structure sanitary system consists of trench drain with sediment interceptor.
Storm water is collected using exterior gutter and downspout system and discharged into underground storm sewer piping.

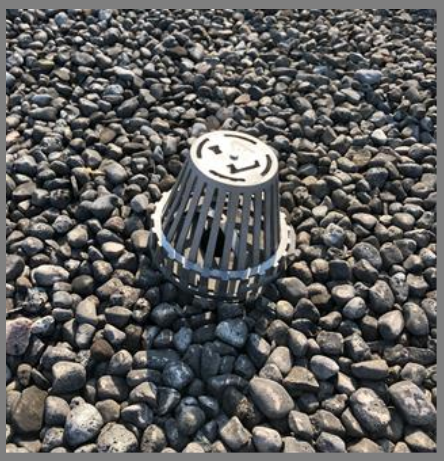
Recommendations | Observations

- Further investigation required to determine reasons behind sanitary and storm drainage issues.
- Existing sanitary and storm systems function properly, no revisions are required.

Opinion of Probable Cost

Allow $400 for each roof drain inserts (weir).

Images



Roof drain with weir flow control device
Location: Roof

Sump pit and man hole

1937 building basement shower drains

Exterior Storm water downspouts from Free Standing Garage

2.6.3 Plumbing Fixtures

Description
This section reviews plumbing fixtures

Plumbing Fixtures ☑ Good ☐ fair ☐ Poor

General Comments - Main Office

Plumbing fixtures appear to be in good condition.
The fixtures installed in this building are a combination of manual and electric fixtures.
Low flow tempered water electric faucets are provided in all of the main washrooms.
Shower heads may be designed with a high volume flow rate.
Barrier free fixtures are provided in the main washrooms.
Only one safety eyewash is installed in the male washroom. Another eyewash station is located in the corridor outside of the mechanical room. These stations appear to be in good condition.
Old style, high flow, fixtures are installed in the basement and level 1 of the 1937 building. Other manual fixtures are found in the single washroom connected to the repair shop.

General Comments - Works Garage

There are no plumbing fixtures installed within this building.

Recommendations | Observations

- Existing plumbing fixtures function properly, no revisions required.

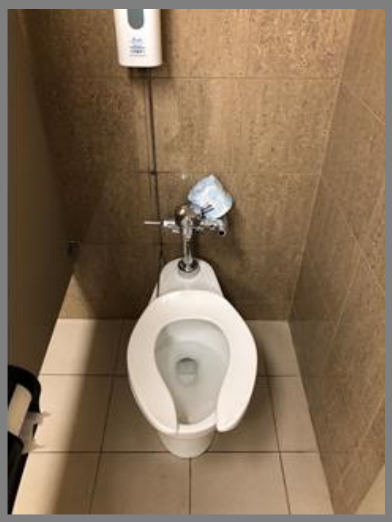
Opinion of Probable Cost

No Comments

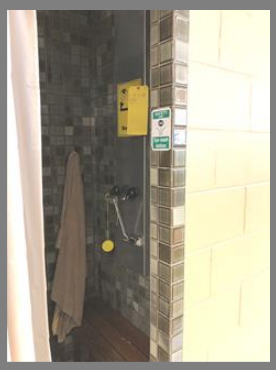
Images

Electric Lavatory and Urinals
Location: Second Floor Male Washroom

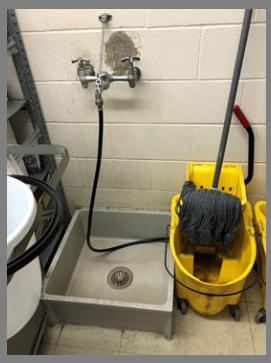
Images



Water Closet
Location: First Floor Male Washroom



Eyewash Station
Location: Male Washroom



Mop sink
Location: Janitor Room

Kitchen Sink
Location: First Floor Staff Room

2.6.4 Natural Gas

Description
This section reviews natural gas service

Natural Gas	☑	Good	☐	fair	☐	Poor

General Comments - Main Office

Natural gas meter is located outside the Northwest corner of the building under the canopy. Gas piping runs along exterior wall and up on the roof serving the gas fired roof top units.

General Comments - Works Garage

Natural gas supplies ceiling mounted heaters within this structure.

Recommendations | Observations

- Existing natural gas system functions properly, no revisions are required.

Opinion of Probable Cost

No Comments

Images

Gas meter
Location: Exterior of Building

Gas piping serving HVAC
Location: Roof

Gas fired heater
Location: Garage

2.6.5 Compressed Air

Description

This section reviews compressed air service

Natural Gas ☑ Good ☐ fair ☐ Poor

General Comments - Main Office

Air compressor in located inside truck bay at the north wall

General Comments - Works Garage

Air compressor is located in the north corner of this building

Recommendations | Observations

- Existing air system functions properly, no revisions are required.

Opinion of Probable Cost

No Comments

Images

Air compressor
Location: Truck Bay

Air compressor
Location: Free Standing Garage

2.6.5 Heating, Ventilation & Air Conditioning

Description

This section reviews the building's HVAC system and accessories.

Grilles, Diffusers & Louvers	☐	Good	☑	fair	☐	Poor
HVAC Roof Top Units	☑	Good	☐	fair	☐	Poor
HVAC Equipment	☐	Good	☑	fair	☐	Poor

General Comments

Two (2) gas-fired roof top units located on the upper roof, East side of the building were installed during the 2012 renovation to serve the second floor. Condensate from these units has been terminated directly onto the roof, where it is then drained to the existing roof drains. One (1) gas-fired roof top unit located on the lower roof, North side of the building was installed in 2010. Condensate from this unit terminates directly onto the roof, where it is then drained to the existing roof drain.
The existing gas furnace located on the second floor was installed in 2015.
Existing sanitary and general fans are located in multiple locations of the lower and upper roofs, as well as a few through the exterior walls. The majority of the exhaust fans were installed during the construction in 1986, motor condition unknown.
Four motorized wall louvers located west wall of the shop and two (2) motorized louvers through roof. The louvers through the roof were installed during the original construction in 1986.
Two (2) existing split A/C units on the upper roof, South side are 14 years old. Existing condensing unit located in the court yard serving the A/C unit was installed in 2012. Existing condensing unit on the lower roof, North side appears to be an older unit, age is unknown. Condensing unit located on North exterior wall outside of the shop is 11 years old. These units have an estimated service life of 15 years.
The closed circuit cooler unit is installed on grade at the north side of the building inside an enclosed area that is locked. The age of this unit is unknown, but appears to be in good condition. This unit serves the heat pump units within the building, which allows the units to provide heating to the building.
The original 1986 building is served by heat pump units throughout. The age and condition of these units are undetermined.
There is also an Energy Recovery Ventilator (ERV) unit located in the room with the furnace which appears to be a newer unit in good condition, age is unknown

General Comments – Garage

The heating in the Garage is from the ceiling mounted gas-fired infrared tube heaters and appear to be in good condition.

Recommendations/Observations

- Replacement of two existing rooftop A/C units is recommended due to the age of the units.
- Replacement of the existing heat pumps that are located in the original 1986 building is recommended.

Opinion of Probably Cost

Allow $3,000 each for new A/C units and refrigerant

Allow $6,500 each for new heat pumps

Images

Roof Top Unit

Exhaust fan through exterior wall
Location: Lower Roof

Images

Split AC Unit
Location: Roof

Exhaust Fan Hood
Location: Roof

Rusted Supply Fan Hood
Location: Roof

Images

Diffusers
Location: Main Building

Energy Recovery Ventilator

Closed Circuit Cooler

2.7.1 Electrical Service & Distribution

Description
This section reviews the Electrical Service and distribution.

Service & Distribution	☐	Good	☑	fair	☐	Poor

General Comments

The electrical service supplying power to the building is from a utility owned pad mount transformer located inside an outdoor equipment enclosure at the building's north end. The power is supplied from Queens Street at 27.6 kV, 3ø and transformed to 600V, 3ø. The 600V, 3ø electrical service comes underground into the building's electrical room from the utility owned pad mount transformer. The electrical service is rated at 800 Amp, 347/600 Volt, 3ø. The previous building condition report found the maximum load demand of the building to be 349kVA and, from a visual survey; it appears that no additional load has been added since the 2015 building condition report.

Recommendations | Observations

The building's service equipment is made by Federal Pioneer Electric and Square D which appears to be the original equipment installed in 1986. The Distribution equipment consists of distribution boards – type CDP, panel boards type NQ, NHDP and NBLP and disconnect switches. The building does not contain any motor control centers.

The electrical equipment was found generally to be in fair condition with no obvious signs or problems such as heating of terminations or excessive corrosion. Surface rust was found on two roof top unit disconnect switches. Building maintenance personnel reported no overloading or unusual tripping of breakers. Interior and exterior cable raceways appeared to be in good condition from visual inspection. An abandoned disconnect switch and cable raceway was found on the building roof from a piece of equipment that was removed sometime in the past. It's recommended to remove the abandoned disconnect switch and cable raceway from the roof and reseal wall penetrations.

Square D and Federal Pioneer are both part of Schneider Electric's product line with circuit breakers and spare parts for the type NQ, NHDP and NBLP equipment being available. Schneider Electric can also provide field service for both the Square D and Federal Pioneer equipment. The original circuit breakers for the CDP switchboard and distribution panel are longer procurable but mounting kits can be purchased with Square D lug-lug breakers.

The electrical distribution system will need to be replaced within 5 years with regular maintenance and servicing of equipment. It's recommended for all the original equipment to undergo a thermal imaging scan by a qualified contractor to look for hot spots and thermal signature. The distribution should also be closely monitored for flaking of paint, sticky circuit breakers or black spots on connections.

Opinion of Probable Cost

Allow $600 for removal of abandoned disconnect and raceway on roof.

Images

Abandoned Disconnect and Raceway
Location: Roof

Roof top Unit Disconnect
Location: Roof

2.7.2 Emergency Power

Description
This section reviews the emergency power systems.

Emergency Power	☑	Good	☐	fair	☐	Poor

General Comments

The electrical emergency power system in the building consists of a 450 kW (562.5 kVA), Cummins, 600V, 3ø diesel engine driven standby generator and Cummins Power Command Transfer switch rated for 800A. The entire electrical load of the building is backed up by the emergency power system.

Recommendations | Observations

The generator and automatic transfer switch both appeared to be in good condition. It's expected the generator can provide emergency power support for the maximum demand of the building. The most recent annual inspection summary of the generator system showed no abnormal issues. The generator's most recent load test on October 30, 2019 showed no failures at all loads applied. The emergency power system has a remaining capacity up to 80-100kVA. If a larger capacity is required from the emergency power system it's recommended to investigate a load shedding scheme. A visual inspection of the generator batteries showed no rust or corrosion on the terminals or leads.

Opinion of Probable Cost

No comment

Images

Automatic Transfer Switch

Generator fuel tank

2.7.3 Electrical Room & Generator Room

Description

This section reviews the electrical, mechanical, generator room equipment and electrical transformers.

Equipment	☐	Good	☑	fair	☐	Poor
Dry Transformers	☑	Good	☐	fair	☐	Poor

General Comments

The electrical room has numerous objects (cardboard boxes, ladders, etc.) on the floor within the electrical room. From visual inspection it appears the electrical and generator room both don't provide a one hour fire separation rating. The mechanical equipment is controlled by various magnetic starters and contactors in the electrical and mechanical rooms.

Recommendations | Observations

The code requires a 1m clearance space for secure footing about electrical equipment. It's recommended the various items being stored against electrical equipment in the electrical room be removed and stored elsewhere. A wall mounted dry type transformer is being used as a workstation table for the building's data communication system in the level 2 shipping & receiving area. It's recommended to stop using the transformer as a workstation table.

The magnetic starters and contactors are Klockner – Moellner product and are original to the 1986 building. They are supported by Eaton Corporation. It's recommended to replace the magnetic starters and contactors as this equipment is seeing support discontinued and they are nearing the end of their life.

All dry type transformers were found to be in good condition with a 5-10 year life expectancy but will need to the monitored with the same procedures as the distribution equipment.

Opinion of Probable Cost

Allow $7200 for replacement of magnetic starts and contactors.

Images

Mechanical Equipment Magnetic Starters

Transformer being used as a Work Station

2.7.4 Lighting

Description

This section reviews the buildings lighting and associated lighting control systems

Lighting ☑ Good ☐ fair ☐ Poor

General Comments

The majority of the lighting in the original 1986 building has been upgraded to LED lighting. The original 1986 building has occupancy sensors and the 2012 renovation area has multi button dimmer switches for lighting controls. The exterior lighting has been upgraded to LED lighting in all areas except for the courtyard, southwest parking area behind truck storage and down lights within the 1986 original building canopy.

Recommendations | Observations

The rooms/areas listed below have inefficient T-12 lamp fixtures. It's recommended to replace the rooms/areas listed below with LED lighting to improve the energy efficiency of the building and lighting performance.

1. Electrical Room
2. Generator Room
3. Mechanical/Boiler Room
4. Telephone Room

The three wall mounted light fixtures in the courtyard area are well beyond their life expectancy and need to be replaced. The fixtures are very rusty and don't appear to be operational. The HID fixture heads in the southwest parking lot are no longer as efficient as an LED light fixture. It's recommend to replace these light fixtures with new a new LED light fixture. The light poles have paint peeling around the base but the poles are generally in good condition.

Opinion of Probable Cost

Allow $3000 to upgrade from T-12 light fixtures to new LED light fixtures. Allow $1600 to replace courtyard light fixtures with new LED light fixtures. Allow $8100 to replace HID light fixture heads in southwest parking lot with LED light fixture heads.

Images

Light Fixture
Location: Courtyard

Light Fixtures
Location: Mechanical/Boiler Room

Light Fixtures
Location: Telephone Room

HID Light Fixtures
Location: Southwest Parking

2.7.5 Emergency Lighting

Description

This section reviews the building's emergency lighting system and exit signage.

Emergency Lighting	☑	Good	☑	fair	☐	Poor

General Comments

The emergency power system supports the entire building's lighting load providing more than adequate light levels according to code during a loss of power. The generator room contains one battery pack unit complete with two remote light heads to provide emergency lighting. Exit signage is provided throughout the building from LED illuminated signs.

Recommendations | Observations

The battery unit in the generator room is close to end of its life expectancy and will need to be replaced within the next 5 years. All exit signage is in good condition.

Opinion of Probable Cost

Allow $575 to replace the battery unit in the generator room.

2.7.6 Fire Alarm System

Description

This section reviews the building's fire alarm system.

Fire Alarm	☑	Good	☐	fair	☐	Poor

General Comments

The fire alarm system serving the building is a single stage conventional system with a Mircom FA – 1000 series panel located in the electrical room and a remote annunciator in the vestibule area.

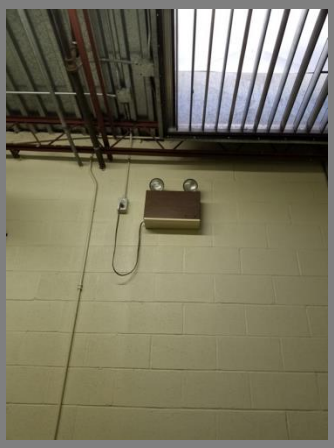
Recommendations | Observations

The fire alarm verification/testing reports from January 9/2019 show the fire alarm system is operational and transmitting a trouble signal to the signal receiving centre upon trouble. The fire alarm panel and annunciator both have spare capacity should additional zones be required. All detection and signaling field devices appear to be in good condition from visual inspection.

Opinion of Probable Cost

No Comments

Images

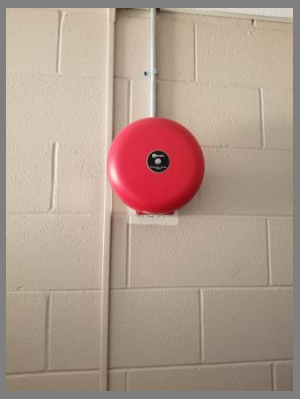


Emergency Lighting

Images

Fire Alarm Annunciator

Fire Alarm Panel



Fire Alarm Bell

2.7.7 Data & Communications Systems

Description

This section reviews the building's data & communication systems.

Communications ☑ Good ☐ fair ☐ Poor

General Comments

The communication system in the building is housed in multiple IT closets and rooms throughout the building. The IT closets and rooms contain various patch panels and switches within the IT racks. The communication and data is provided by a CAT6 communication structured cabling system. All IT racks and networking equipment belong to the Owner.

Recommendations | Observations

The communication and data system appeared to be in good condition from visual inspection.

Opinion of Probable Cost

No Comments

Images

Telephone/Communications Room

2.7.8 Door Access & Security Systems

Description

This section reviews the building's data & communication systems.

Communications ☑ Good ☐ fair ☐ Poor

General Comments

The door access control and security system is made up of: card readers, door strikes, door contacts, keypads, motion detectors and automatic door operators. The CCTV monitoring system has various cameras located around the exterior and in the interior of the building.

Recommendations | Observations

The door access control and security system appeared to be in good working condition. All automatic door operators tested were operational. Building staff indicated the CCTV monitoring system is operating correctly and all CCTV cameras appeared to be in good condition.

Opinion of Probable Cost

No Comments

Images

Exterior CCTV Camera

2.7.9 Works Garage - Electrical

Description

This section reviews the Works Garage Electrical systems.

Works Garage electrical	☑	Good	☐	fair	☐	Poor

General Comments

The electrical equipment in the Works Garage was installed in 2005 and is still in good condition. The lighting fixtures are suspended high bay T5 luminaires controlled from toggle switches. The works garage has a door access control and security system separate from the main building. An emergency lighting system and exit signage are also installed in the works garage.

Recommendations | Observations

All of the equipment and systems in the works garage are in good condition with the garage only being 15 years old. It's recommended to replace the T5 luminaries in the works garage with new high bay LED light fixtures to improve the energy efficiency of the garage.

Opinion of Probable Cost

Allow $16000 to replace the high bay light fixtures in the works garage.

2.7.10 1937 Building - Renovated in 2012 | Electrical

Description

This section reviews the 1937 building's electrical systems.

1937 Building Electrical	☐	Good	☑	fair	☐	Poor

General Comments

The 1937 portion of the building was the original portion of the building and the second floor went through an extensive renovation in 2012.

Recommendations | Observations

The second floor of the building is in good condition as it was renovated in 2012. The basement floor appears to be abandoned with all the electrical services, lights and electrical equipment in poor condition. All electrical equipment, lights and electrical services in the basement will need to be demolished and reinstalled with new technology if the basement space is to be used.

Opinion of Probable Cost

Allow $18000 to renovate the electrical systems and lights in the basement area.

Images

Light Fixtures
Location: Works Garage

Electrical Equipment
Location: Works Garage

Images

Location: 1937 Basement

2.7.11 Open Yard Equipment

Description
This section reviews the open yard equipment.

Yard Equipment ☑ Good ☐ fair ☐ Poor

General Comments

The yard equipment is surrounded by a brick enclosure wall with two gates. The Entegrus utility transformer, cooling tower and equipment disconnect switches are located inside the brick enclosure.

Recommendations | Observations

The equipment disconnect switches are in good condition as they have been replaced within the last 5 years. The utility transformer is starting to show surface rust on the enclosure.

Opinion of Probable Cost

No Comment.

Image

Utility Transformer

2.7.12 Receptacles & Switches

Description

This section reviews the Receptacles and switches.

Works Garage electrical ☑ Good ☐ fair ☐ Poor

General Comments

The building has toggle switches and wall/ceiling mounted occupancy sensors throughout to control the lighting loads. The exterior lighting is controlled by a timeclock/photocell and lighting contactors. There are grounded and isolated ground receptacles throughout the building. The exterior of the building has weatherproof receptacles on the wall spread around the building.

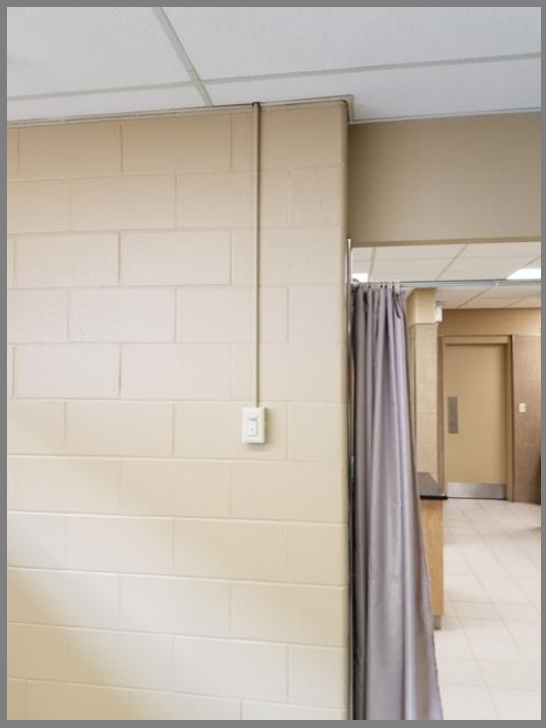
Recommendations | Observations

The lighting controls all appeared to be in good shape throughout the building. There was very minimal power bars and extensions cords present in the building, indicating an adequate number of receptacles are spread out within the building. The exterior receptacles are in weatherproof enclosures and in good condition.

Opinion of Probable Cost

No comments

Image



Wall Mounted Occupancy Sensor

2.7.13 Energy Consumption

Description

This section reviews the EV (Electrical Vehicle) charging Station.

Works Garage electrical	☑	Good	☐	fair	☐ Poor

General Comments

The building has EV charging stations on the north and east sides of the building. The EV charging stations are rated 30A, 120/208 Volt, 3ø and housed within NEMA 3R enclosures.

Recommendations | Observations

The EV charging stations have been recently installed and are in good condition. The EV charging stations are part of Schneider Electric's product line with spares parts and field support services both being readily available.

Opinion of Probable Cost

No comments

Images

EV Charging Station

2.7.13 Energy Consumption

The energy efficiency of the building could be improved by converting the T-12 lamps to LED lights. The shop areas are currently using electric heat which can cause high inefficiencies. Converting the electric heat to an alternate source will provide the owner with much better energy efficiency.

2.1 Opinions of Probable cost

The costing information presented here has been prepared from the engineers' experience and from past projects of a similar nature. The amounts given are opinions only and must not be taken as a guarantee of price. If guaranteed pricing is required then a full scope of work needs to be detailed and appropriate contractor(s) approached for a quotation.

2.2 Methodology

In preparation of this report, we gathered information of the existing electrical systems through the site visit and visual observations on July 9, 2020, reviewed the original drawings (1986), 2012 second floor renovation drawings and interviews with the operating personnel.

Note: Our review consisted only on visual inspection and no destructive testing was undertaken.

SECTION 3 LIFE SAFETY

3.1 Life Safety

General Comments

Although the intent of this report was not to address Life Safety compliance to the Ontario Building Code; during the visual site survey the following outline describes in brief various code infringements.

- There is no proper Fire separation around the mechanical and Electrical rooms.
- Door closure are not present on boiler room door
- Panic hardware not present on exit stairs in 1937 building. (Existing door knobs not code compliant)
- There is no proper floor to floor Fire Separation at combustible construction in 1937 building.

SECTION 4 Statement of Limitations

4.1 Statement of Limitations

The building condition assessment conducted was a visual assessment only. No physical, destructive testing or measurements of existing building structure were taken during the site visit. No assessment can be made where building structure and elements were either not exposed or easily accessible. Connections, fastenings and anchorage of building structure were not reviewed in detail. Existing structural and architectural drawings were provided for review but may not reflect the actual built construction**.** Comments and conclusions are therefore based on the visual and/or the apparent physical condition of the building elements. Any design and/or construction deficiencies that are not recorded in this report were not evident given the level of study undertaken.

The costing information presented here has been prepared from the engineers' experience and from past projects of a similar nature. The amount given are opinions only and must not be taken as a guarantee of price. If guaranteed pricing is required then the full scope of work needs to be detailed and appropriate contractor(s) approached for a quotation.

This study is intended for the client named and should not be distributed further without our consent.

Images

Flutes not sealed, penetrations not sealed.
No Fire Separation around mechanical | electrical rooms.

Door knob on exit door to be panic hardware.

No floor to floor fire separation present in 1937 building.

ATTACHMENT N

Building Assessment – St. Thomas, August 2020

135 Edward Street, St. Thomas

August 24

2020

BUILDING CONDITION REPORT

Submission by:
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Submission to:

ENTEGRUS™

320 Queen Street
Chatham, Ontario N7M 5K2

INDEX

Building Condition Review

320 Queen Street

Building Condition Review

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Executive Summary

ROA Studio Inc, along with associated consultants, was engaged to provide observations and report the physical conditions of the property located at 135 Edward Street, St Thomas, Ontario. This review addresses item that are significant for the continued operations of the facility in its current usage and occupancy, consistent with comparable properties of similar age.

The report observes the general physical condition of the subject property, material systems and components, and identifies deficiencies and any unusual features or inadequacies.

The consultant team visited the site on July 10, 2020 conducted a visual inspection of building systems.

The following building systems were reviewed and the following is our professional opinion of the found condition of the building:

Site Services	☑	Good	☐	fair	☐	Poor
Site Elements	☑	Good	☐	fair	☐	Poor
Building Exterior	☑	Good	☐	fair	☐	Poor
Windows & Doors	☑	Good	☐	fair	☐	Poor
Roofing | Skylight	☑	Good	☑	fair	☐	Poor
Interior finishes	☑	Good	☐	fair	☐	Poor
Structural systems	☐	Good	☑	fair	☐	Poor
Fire Protection	☑	Good	☐	fair	☐	Poor
Plumbing Systems	☑	Good	☐	fair	☐	Poor
Natural Gas	☑	Good	☐	fair	☐	Poor
HVAC Systems	☑	Good	☐	fair	☐	Poor
Electrical Systems	☑	Good	☐	fair	☐	Poor
Fire Alarm System	☑	Good	☐	fair	☐	Poor

Opinions of Probable Costs

These opinions of probable costs are to assist the client in developing a general understanding of the physical condition of the subject property.

The following summarizes the cost per building systems.

Site Services	$	1,500.00
Site Elements	$	2,500.00
Building Exterior	$	10,500.00
Windows & Doors	$	2,000.00
Roofing | Skylights	$	0.00
Interior finishes	$	12,000.00*
Structural Systems	$	0.00
Fire Protection	$	98,000.00
Plumbing Systems	$	20,000.00*
Natural Gas	$	3,500.00
HVAC Systems	$	5,000.00
Electrical Systems	$	172,000.00
Fire Alarm Systems	$	0.00
Total	$	327,000.00

*Refer to report, unit costs are provided for finishes and systems.

Opinions of probable costs should only be construed as preliminary budgets.

SECTION 1 PROJECT DETAILS

1.1 Purpose

ROA Studio Inc, along with associated consultants, was engaged to provide observations and report the physical conditions of the property located at 320 Queen Street, Chatham Ontario. This review addresses item that are significant for the continued operations of the facility in its current usage and occupancy, consistent with comparable properties of similar age.

The intent of this report is to determine anticipated capitol and maintenance cost over a five (5) to ten (10) year period. All inspections were non-destructive and based on visual inspections of representative portions of the various systems. This report should not be considered a guarantee or warranty of any kind. Unexpected repairs should still be anticipated.

1.2 Scope of Work

Observe the general physical condition of the subject property, observe material systems and components, and identify deficiencies and any unusual features or inadequacies observed by conducting specific or representative observations, as appropriate. Visually inspect the building systems based on representative samples to be review include but not limited to:

Site - Asphalt Paving, Concrete Curbing and sidewalks, Parking and exterior egress.

Site Services- Conduct a site inspection related to the existing servicing infrastructure and trench drain system. Determine possible causes of sewer back-ups into trench drain system and offer possible solutions to correct existing problems.

Building Envelope - facades and curtain wall system, glazing system, exterior sealants, exterior loading docks, doors, stairways, etc.

Roofing - Identify and observe the roof systems (exposed membrane and flashings) including, parapets, slope, drainage, etc. Observe for evidence and/or the need for material repairs, evidence of significant ponding, or evidence of roof leaks.

Interior Elements - common areas including, but not limited to, lobbies, corridors, assembly areas, offices and restrooms. Identify and observe typical finishes for flooring, ceilings, and walls.

Structural Systems - Perform structural design spot checks. Observe the building substructure, including the foundation system, building's superstructure and structural framing (floor framing system and roof framing systems).

Electrical Systems - Main electrical service, electrical panels, emergency lighting, fire alarm systems and emergency power systems.

Written Report - Subsequent to the visual inspection, prepare a comprehensive list of deficiencies and provide photo evidence of such deficiencies. A estimated budget cost to be associated with any corrective work required over a 5-10 year period.

Opinions of Probable Costs - are to be prepared for the suggested remedy of the material physical deficiencies observed. These opinions of probable costs are to assist the client in developing a general understanding of the physical condition of the subject property.

Opinions of probable costs are provided for material physical deficiencies and not for repairs or improvements that could be classified as: (1) cosmetic or decorative; (2) part or parcel of a building renovation program or tenant improvements/finishes; (3) enhancements to reposition the subject property in the marketplace; (4) for warranty transfer purposes; or a combination thereof.

Opinions of probable costs should only be construed as preliminary budgets. Actual costs may vary from the consultant's opinions of probable costs depending on such matters as type and design of suggested remedy, quality of materials and installation, manufacturer and type of equipment or system selected, field conditions, whether a physical deficiency is repaired or replaced in whole, phasing of the work (if applicable), quality of contractor, quality of project management exercised, market conditions, and whether competitive pricing is solicited.

1.3 Exclusions to Scope of Work

Providing an environmental assessment or opinion on the presence of any environmental issues such as asbestos, hazardous wastes, toxic materials, the location and presence of designated substances or mould.

Preparing engineering calculations (civil, structural, mechanical, electrical, etc.) to determine any system's, component's, or equipment's adequacy or compliance with any specific or commonly accepted design requirements or preparing designs or specifications to remedy any physical deficiency.

1.4 Conventions Used in this Report

GOOD - Indicates the component is functionally consistent with its original purpose but may show signs of normal wear and tear and deterioration.

FAIR - Indicates the component will probably require repair or replacement anytime within five years.

POOR - Indicates the component will need repair or replacement now or in the very near future.

MAJOR CONCERNS - A system or component that is considered significantly deficient or is unsafe and in need of prompt attention.

1.5 Documents Provided

The documents made available to the consultants by Entegrus to assist in the preparations of this report are as follows:

- Construction Drawings by Hira Ltd dated June 1993.

1.6 Interview of Associated Persons

During the Site visit, Mr. John Pattit was made available to provide information regarding history of work on premises.

1.7 Project Site & Building History

The project site is located on the south side of Edward street in St. Thomas, Ontario. The site neighbors commercial properties to the North and West, a park to the East and railroad tracks to the South. The site has One (1) main structure, that includes the main office and garage. The facility was built in approximately 1993 and has had renovations to the main office area.

1.8 Building Description | Data

Main Office

- 1993 building includes partial basement, first floor warehouse space and Garage

Building Areas

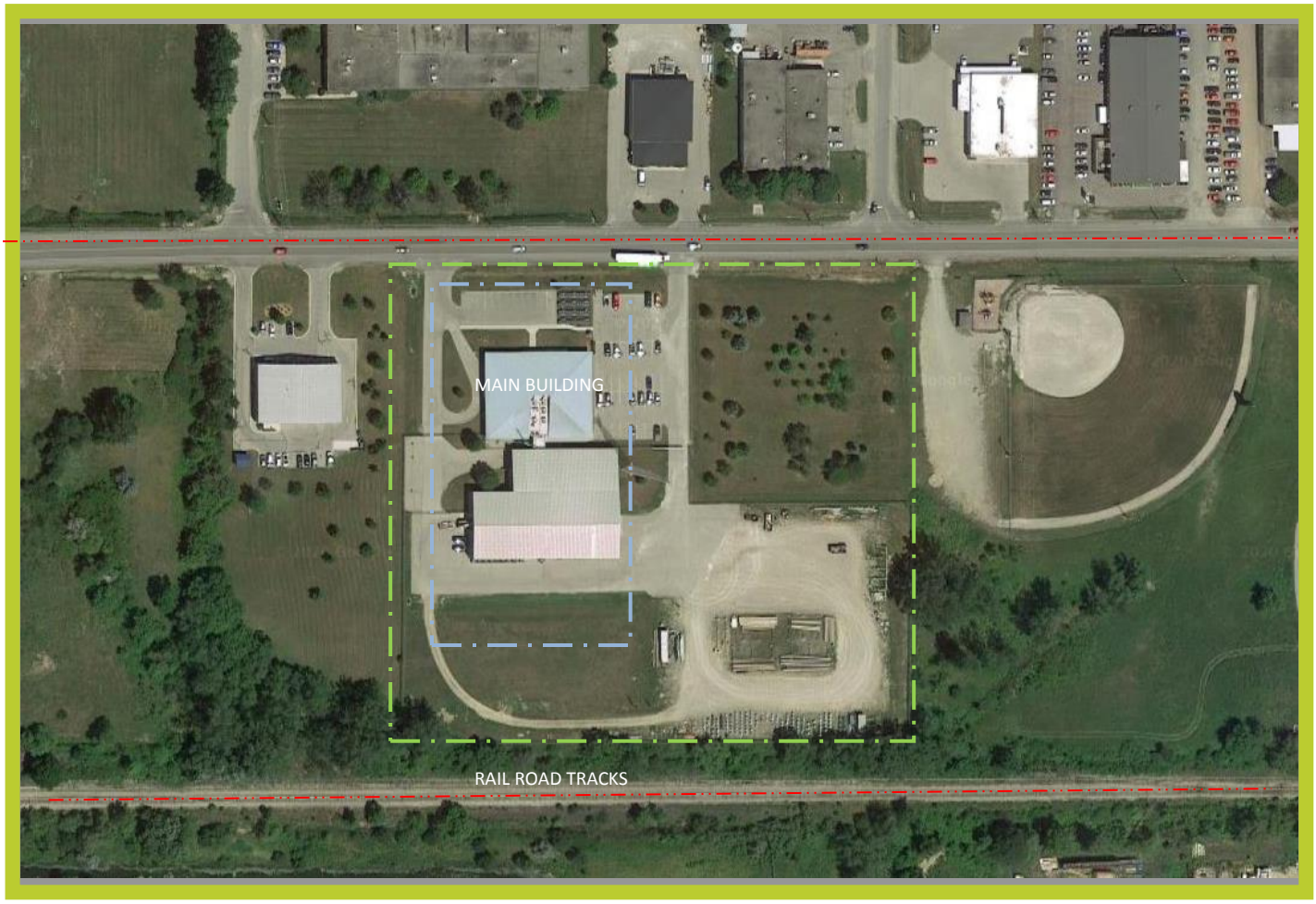
Main Floor Office	1,100 m²
Shop & Stores	2,000 m²
Total	3,100 m²

OBC Classification

Group D - Office
Group F Division 2 - Garage

1.9 Site Survey Date & Conditions.

ROA Studio, along with consultants, visited the site on July 10, 2020. Temperatures had a high of 34°C and dry. Minimal rain to no rain occurred a week before the inspection.



SECTION 2 BUILDING SURVEY

2.1.1 Site Services | Site

Description
The site service part of the review include observations for storm sewers, sanitary sewers, grading and fire hydrants. The trench drain in the truck bay was also reviewed as part of this

The site part of this review includes observations of exterior site work including concrete sidewalks, asphalt paving for driveways and parking areas and ground cover. It should be noted that physical testing and video inspections was note included in the scope of work for this assignment.
section.

Trench Drains	☑	Good	☑	fair	☐ Poor
Water Mains	☑	Good	☑	fair	☐ Poor
Sewer outlets	☑	Good	☐	fair	☐ Poor
Asphalt	☑	Good	☐	fair	☐ Poor

Recommendations | Observations

Garage Trench Drains
There are two trench drains in the garage area that run E-W the full length of the garage. Both trench drains are clean and appear to be in good condition. Some water was noted in the sump on the E side but not unusual.

No Changes required for these drains. They should be monitored and cleaned out as required.

Water mains / Fire hydrants:
The site is serviced with a system of water mains and fire hydrants. The hydrants were observed to be in good condition. As noted above no tests were conducted to confirm whether the valves operated correctly.

No Concerns with the fire hydrants or water service that could be observed. Hydrants should be tested annually.

Edward Street Sewer Outlet:
The building sanitary system outlets to the 200mm sanitary sewer on Edward Street along the east curb line of the visitor parking area. During MTE's site visit no apparent issues were observed.

The front visitor parking area and the employees parking area outlet to an existing storm sewer on Edward Street. The catch basin in the visitor parking lot and the CBs on the staff parking area appeared to be clean with only standing water to the sump level. No apparent issues we observed with this storm system.

No concerns were noted for these services. The storm catch basins should be cleaned every couple of months of debris and following winter snow thaw.

SWM – Storm Sewer Outlets
The majority of the site (except the front and employee parking area) drains to a storm water retention area west of the site. A series of ditches along the south edge of the back parking lot conveys the storm flows to this facility. A ditch inlet catch basin is located at the west end of the ditch area, all ditches and catch basins were checked to confirm proper operations. Only a minor amount of debris was noticed in the open ditches and the catch basins. The ditches were dry at the time of the inspection

The front and employee parking lot catch basins were checked for conditions and operation. All appeared to be in good condition with very minor debris and no standing water except in the bottom of the sumps.

No concerns were observed with the storm sewer system or catch basins in the parking lots. No concerns were observed with the rear storm water management system and the outlet to the municipal SWM system. The catch basins and open channel should be monitored for debris and plugging on a regular basis and following the winter snow thaw.

Asphalt Driveways and Parking areas:
The asphalt driveways and parking areas are in generally good condition. There are some minor cracks in some asphalt areas but generally the asphalt is in good condition and should have a quite a number of years of usable service life. At the time of the site visit there was construction being done on the building. Equipment was blocking the front area so limited review of the asphalt condition could be completed.

There is minor cracking of the asphalt in localized areas. These areas are identified in the photos. Although not major problems or causes for alarm, these areas should be repaired or patched to make sure the cracking does not get worse. The repairs generally will require filling of cracks with asphalt emulsion.

Opinion of Probably Cost

Allow $500/ yr for annual cleaning and flushing and following heavy rainfall events.

Allow $500 for annual testing of fire hydrants

Allow $500 for flushing/cleaning during heavy use periods.

Allow $1,200 for repair and sealing of damages or cracked asphalt

NOTE: See Appendix A for Site Photographs.

2.2.1 Building Exterior

Description
This section reviews the exterior cladding including wall coverings, eaves, soffits and flashings.

Masonry Veneer	☑	Good	☐	fair	☐	Poor
Pre-fin Metal Siding	☑	Good	☐	fair	☐	Poor
Masonry Block	☑	Good	☐	fair	☐	Poor
Facia & Downspouts	☑	Good	☐	fair	☐	Poor
Sealants & Caulking	☑	Good	☐	fair	☑	Poor

General Comments
The exterior of the building is in generally good condition. The architectural block had minor cracking and a few areas on the on the metal siding had some damage. Caulking at windows was in good shape however a few control joints on the Garage were deteriorated and needs repair.

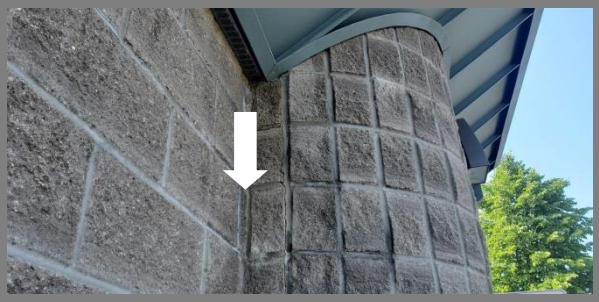
Recommendations | Observations

- Discolouring of architectural block. Recommend cleaning and monitoring.
- Minor mortar cracking by pay window
- Siding damaged above Stores loading dock
- Caulking at control joint failing
- A few penetrations did not have sealant
- Metal platform and stairs at loading dock rusting

Opinion of Probable Cost
Allow $5,000 to clean and monitor architectural block
Allow $2,500 for masonry repointing
Allow $1,500 for new sealants
Allow $1,500 for Exterior Paint

Images

Discoloration of Architectural Block



Minor cracking in architectural block

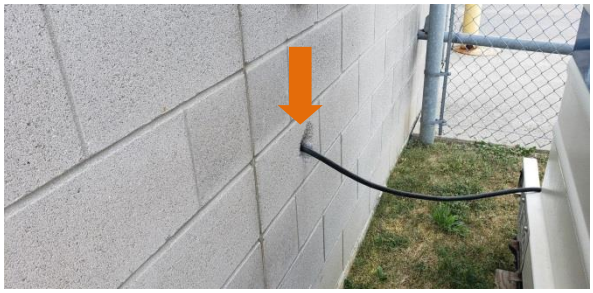
Repair: Rust forming loading dock stairs

Images

Repair: Rust forming on platform
Location: Loading Dock

Repair: Rust forming on exposed Stairs
Location: Loading Dock

Penetration missing sealant
Location: Garage



Repair: Block damaged for Temporary power to Trailier
Location: Garage

Repair: Discolouring of block
Location: Main Entrance

Sample: Garage Overall.

Images

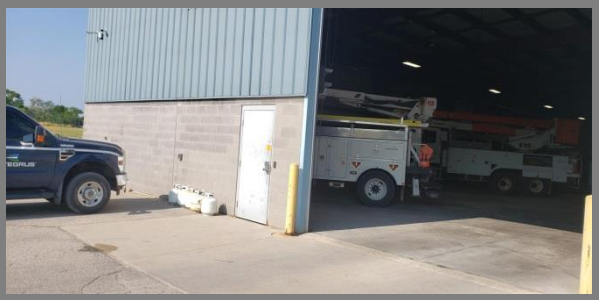
Moisture in Block by Garage, Monitor

Moisture in Block by Garage, Monitor

Repair: Control Joint Failing
Location: Garage

Repair: Control Joint Failing
Location: Garage

Metal Siding
Location: Garage



Siding and Block Sample
Location: Garage

2.2.2 Windows | Exterior Doors

Description
This section reviews current state of the windows and doors in the buildings. This includes a visual inspection of the frames, sealing, glazing and hardware.

Window Frames	☑	Good	☑	fair	☐	Poor
Glazing	☑	Good	☐	fair	☐	Poor
Door & Frames	☑	Good	☐	fair	☐	Poor
Over Head Door & Frames	☑	Good	☐	fair	☐	Poor
Sealants | caulking	☐	Good	☑	fair	☐	Poor

General Comments
The aluminum and hollow metal window frames are original. Majority of the frames are in good conditions. The sealed units are original. The majority of the hollow metal doors are starting to show deterioration, most of the weather stripping is in fair condition.

Recommendations | Observations
- Minor wear at loading dock overhead door frame, monitor and repaint.
- Door and door frames in several areas are showing signs of minor rusting.
- Aluminum Window Framing are in good condition

Opinion of Probable Cost
Allow $2,000 for bollard, door and frame painting

Images

Sample: Caulking in good condition
Location: Main Office

Monitor: Rust forming on window framing (Repaint)
Location: Main Office

Sample of Hollow Metal Windows and Aluminum Sill
Location: Main Office

Images

Sample: Thermal Units in good conditions
Location: Main office

Sample of Aluminum Windows and Sill
Location: Main Office

Sample: Glass block
Location: Main Office

Sample: Main Entrance doors
Location: Main Office

Sample of Aluminum Windows and Sill
Location: Main Office

Minor wear on Overhead door jambs
Location: Loading Dock

Images

Concrete at door deteriorating
Location: Garage

Bollard starting to rust
Location: Garage

Sample: Rust staring on door frame
Location: Garage

Repair: Door paint peeling
Location: Garage

Sample: Hollow Metal Window stool in good shape.
Location: Main Office Building

Sample: Aluminum Window stool in good shape.
Location: Main Office

2.2.3 Roofing | Skylights

Description
This section reviews current state of roofing including the roofing material, parapets and drainage.

Single Ply Membrane	☐	Good	☑	fair	☐	Poor
Metal Roofing	☑	Good	☑	fair	☐	Poor
Parapets	☑	Good	☐	fair	☐	Poor
Scuppers	☑	Good	☐	fair	☐	Poor
Skylights	☑	Good	☐	fair	☐	Poor

General Comments - Main Office

The roof of the building is majority pitched metal roofing with partial flat roof with single ply membrane. The roof is appears to be original to the building and is in good / fair condition. No Sign of leaks were observed inside the building. The roof over the staff outdoor patio was observed to be in good condition.

Skylights were observed from the ground and interior and appear to be in good condition.

Recommendations | Observations

- Flat roof had some leaf and debris, should be cleaned
- Roof scuppers clear of debris
- No visual sign of leaks in building.
- Skylights did not show evidence of leaking.
- Soffits, down spouts and eave troughs in good condition

Opinion of Probable Cost
No comments.

Images

Skylight
Location: Main Office

Sample: Single Ply Roofing Membrane
Location: Main Office

Sample: Single Ply Roofing Membrane
Location: Main Office

Images

Sample: Pitched metal Roofing
Location: Main Office

Sample: Pitched metal Roofing
Location: Over outside patio

Sample: Pitched metal Roofing
Location: Garage

Sample: Scuppers clear of debris
Location: Main office

Sample: Soffit and eave trough
Location: Main Office

Sample: Pitched metal Roofing
Location: Over outside patio

2.3.1 Interior Finishes

Description
This section reviews the current state of interior finishes including ceilings, walls, flooring and interior doors.

Flooring	☑	Good	☐	fair	☐	Poor
Ceilings	☑	Good	☐	fair	☐	Poor
Doors	☑	Good	☐	fair	☐	Poor
Walls	☑	Good	☐	fair	☐	Poor

General Comments - Main Office

As an overview, the interior finishes of the main floor building are in good condition. The main office area is currently under renovations to a significant portion and was not reviewed. After renovations, the area should be considered in good condition. The remaining flooring is a combination of carpet, vinyl tile, concrete and ceramic tile. The walls consist of gypsum board and painted finish. The floors are relatively level and the walls are relatively plumb. The ceilings are comprised of suspended acoustical ceiling systems and pre-fin linear metal ceiling in the garage. The doors are in fair condition. Washroom have are in good condition. The pre-engineered insulation lining in the garage is in fair condition with several rips and puncture holes.

The basement carpet in the one meeting space is in poor condition however it was noted this space is not currently utilized. The basement shows signs of water infiltration however according to representatives on site, the issue has been addressed. Recommendation is to monitor conditions.

Recommendations | Observations

- Repair pre-engineered insulation liner in garage.
- Repalce carpet in basement meeting room
- Monitor basement storage room where floor is cracked and previous water infiltration occurred.
- IT room flooring cracked at control joint. Refer to structural.

Opinion of Probable Cost
Allow $4,500.00 for pre-engineered insulation liner repair.
Allow $7,500.00 for new flooring.

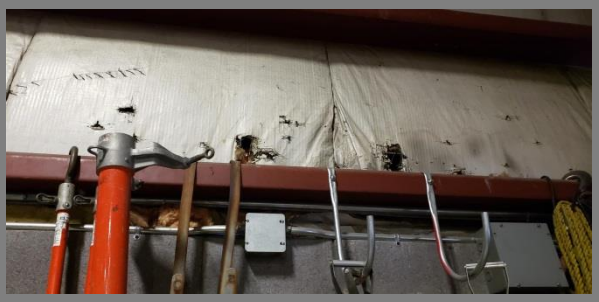
Images

Repair: Damaged pre-eng insulation liner
Location: Garage

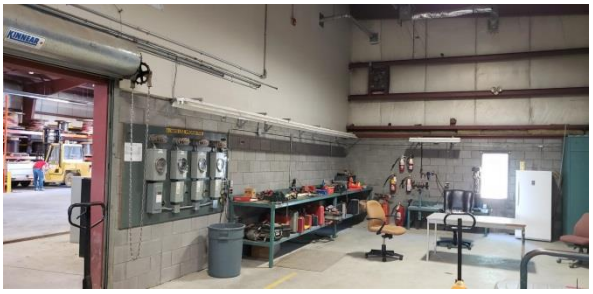
Sample: Garage area
Location: Garage

Repair: Damaged pre-eng insulation liner
Location: Garage

Images



Repair: Damaged pre-eng insulation liner
Location: Garage



Sample: Garage area
Location: Garage

Sample VCT flooring
Location: Main office

Sample of finishes
Location: Main Office

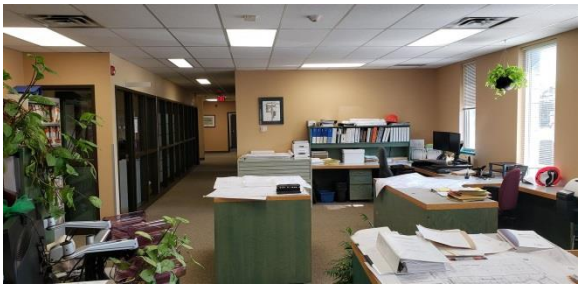
Sample of finishes
Location: Main Office

Sample of finishes in washrooms
Location: Main Office

Images

Carpet in Good condition.
Location: Office Area

Sample of finishes
Location: Main Office



Sample of finishes
Location: Main Office

Sample of finishes
Location: Main Office

Millwork in good condition
Location: Main Office staff room

Portion of office under renovations
Location: Main office

Images

Carpet in poor condition
Location: Basement meeting room

Carpet in poor condition
Location: Basement meeting room

Signs of water infiltration (monitor)
Location: Basement electrical room

Shower stall
Location: Basement change room

Sample of basement finishes
Location: Basement

Crack in IT room floor
Location: Main Office

2.4.1 Structural Foundations

Description
This section covers the building foundations including the footing and foundation walls up to grade and slab on grade levels.

Foundations	☑	Good	☐	fair	☐	Poor
Slab On Grade	☐	Good	☑	fair	☐	Poor

General Comments - Main Office
The existing building drawings indicate a full basement with reinforced concrete basement and foundations walls on strip footings with interior reinforced concrete columns on spread footings. Foundation walls are concealed and could not be assessed. Basement walls and interior columns were generally found to be in good condition except as noted below.

There is a full-height vertical crack through the interior basement walls between the Men's Washroom and the Corridor and between the Men's Washroom and the Stores area. The cracks are approximately aligned with each other in the north-south direction. Other smaller cracks were also noted in the Stores basement wall. The cracks could be a result of concrete shrinkage.

The basement slab on grade was found to have narrow map cracking throughout the basement that propagates through the epoxy flooring in some locations. This appears likely due to control joints that are spaced too far apart to adequately address shrinkage cracking of the concrete. In the basement electrical room, staining around the cracks suggests there may have been water infiltrating up through the cracks at some point in the past.

General Comments - Works Garage
The existing building drawings indicate the Stores and Garage foundations consist of concrete foundation walls and footings. No cracks were observed in the masonry infill walls bearing on the foundations which could indicate potential foundation movement. Therefore, the foundations are presumed to be in good condition.

The slab on grade in the works garage has good slope towards the trench drains. The south trench drain appears to have been recently reconstructed, but the north trench drain appears original and showed signs of concrete spalling and corroded trench drain grating. The slab on grade exhibited scaling and regular cracking throughout even with regular control joints in place. While these cracks do not present a structural concern, they do present a serviceability issue as the cracks can continue to widen and propagate over time and will further deteriorate the slab.

Recommendations | Observations
- Monitor the cracks in the basement walls.
- Routing and sealing the slab on grade cracks in the Garage only.

Opinions of Probable Cost
- Allow $7500 for routing and sealing the slab on grade cracks in the Garage only.

Images


Reconstructed trench drain in works garage

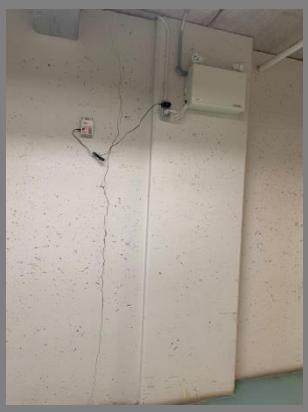

Existing trench drain in works garage


Slab on grade cracking and scaling Works Garage


Slab on grade map cracking Electrical room

Images

Cracks in Basement Walls



Cracks in Basement Walls

2.4.2 Structural Vertical Elements

Description
This section covers vertical elements such as building columns, walls and stairs.

Building Columns	☑	Good	☐	fair	☐	Poor
Masonry Walls	☑	Good	☐	fair	☐	Poor
Stairs	☑	Good	☐	fair	☐	Poor

General Comments - Main Office
The Main Office vertical construction is a combination of interior and exterior load-bearing masonry walls and some steel superstructure. Where exposed to view, vertical elements including steel columns, masonry walls, and stairs of concrete and steel construction were observed in generally good condition.

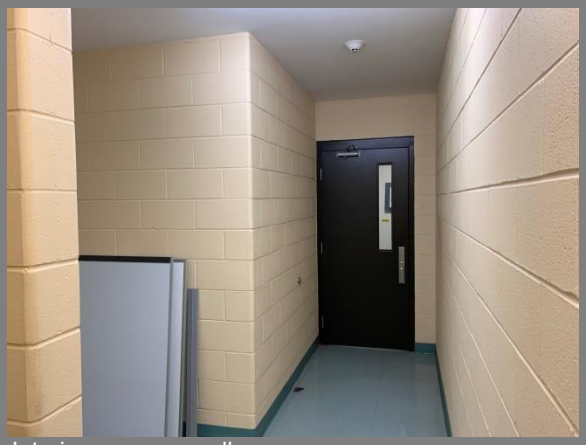
Isolated minor cracking in some of the infill masonry walls in the basement was observed which can indicate small settlements of the foundation; however no major deficiencies were observed.

General Comments – Garage / Stores
The Garage / Stores vertical construction is comprised of a pre-engineered rigid frame steel structure for the Garage with a pre-engineered lean-to structure for the Stores area. Vertical elements in the Garage / Stores area included pre-engineered steel building columns, infill masonry walls up to the first girt elevation and steel stairs in various locations. All construction was observed to be in generally good condition.

Recommendations | Observations
- No Comment

Opinion of Probably Cost
No Comment

Images


Interior masonry walls
Basement


Steel Stairs – Works Area


North Basement Stairs

2.4.3 Structural Floor | Roof elements

Description
This section covers the suspended floor and roof construction.

Suspended Floor	☑	Good	☐	fair	☐	Poor
Roof Construction	☑	Good	☐	fair	☐	Poor

General Comments - Main Office
Based on existing drawings, the roof construction consists of standing seam roof deck on flat bottom timber trusses on structural steel framing and load bearing masonry walls. The roof structure was concealed by acoustical tile and drywall ceilings and could not be accessed for assessment.

The suspended ground floor construction consists of a concrete topping on hollow core precast planks varying from 8" to 14" thick. The precast planks bear on the concrete basement walls and columns. The topping was partially exposed in the front office construction area and appeared to be in generally good condition. One crack was found in the IT room that had propagated through the vinyl floor tile. This crack is likely directly over a joint between precast planks and is the result of differential movement between the planks but is likely not a structural concern.

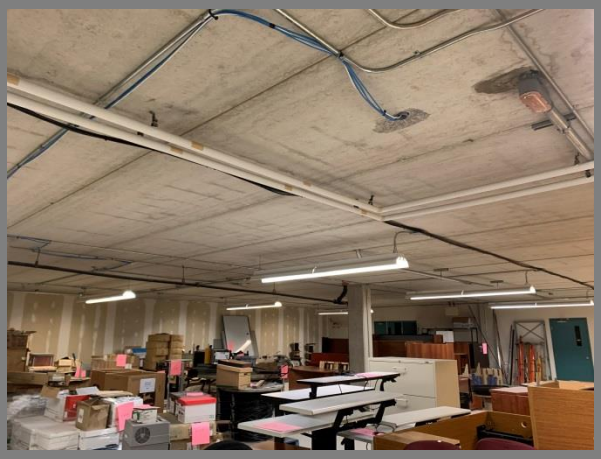
In the basement, two localized concrete spalls were noted on the precast concrete soffit; one in the Women's washroom and one in the corridor in front of the freight elevator. One localized crack in the precast soffit was found in the storage room in the southeast corner of the basement. None of these defects present any structural concerns.

General Comments - Garage / Stores
The Garage / Stores superstructure is comprised of a pre-engineered rigid frame steel structure for the Garage with a pre-engineered lean-to structure for the Stores area. The existing roof construction for the stores area is a standing seam roof on cold formed steel purlins on pre-engineered lean-to steel frames. The garage roof consists of a standing seam metal roof on cold formed steel purlins on a pre-engineered rigid frame steel structure. The stores and garage roof structures were found to be generally in good condition.

Recommendations | Observations
- No Comment

Opinion of Probably Cost
No Comment.

Images

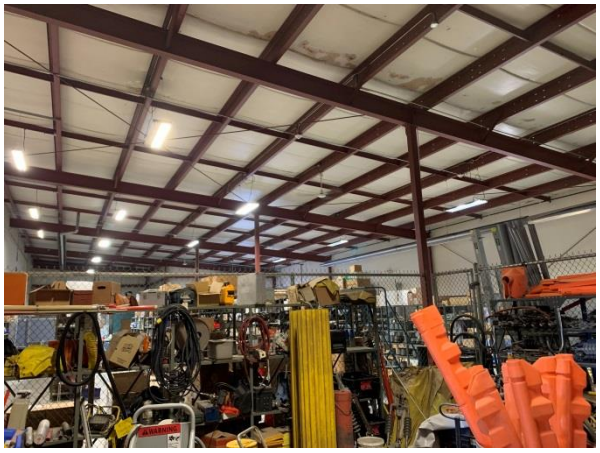


Suspended floor soffit: Main Storage Room

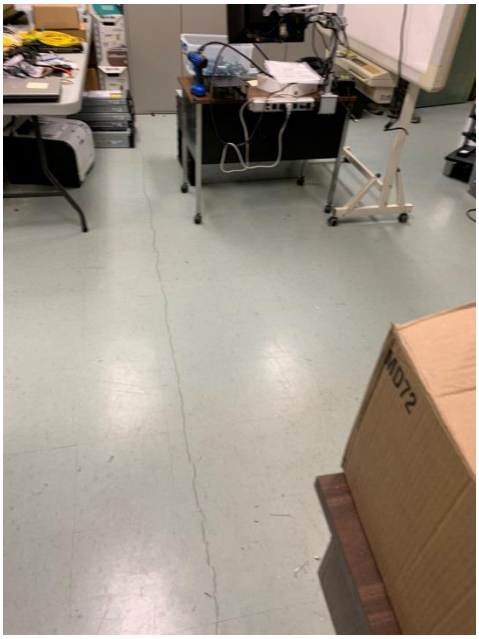
Suspended floor soffit: Women's washroom

Pre-engineered rigid frame structure: Works Garage

Images



Pre-Engineered lean-to structure: Stores area



Crack in suspended floor: IT work Room.

2.5.1 Fire Protection

Disclaimer
A guided visual field review of the various existing building components was performed on Friday July 10, 2020 with the Architect, Consultants and Owner.

Original drawings and specifications for this building were made available prior to field review however.

During our examination of the building, no physical or destructive testing was performed. Comments and conclusions are therefore based on the visual and/or the apparent physical condition of the building elements. Any design and/or construction deficiencies that are not recorded in this report were not evident given the level of study undertaken.

This study is intended for the client named and should not be distributed further without our consent.

Description
This section reviews Fire Protection related systems, including sprinkler, standpipe and fire extinguishers.

Sprinkler	☐	Good	☐	fair	☐ Poor
Stand Pipe	☐	Good	☐	fair	☐ Poor
Fire Extinguishers	☑	Good	☐	fair	☐ Poor

General Comments - Main Office
Existing building does not have a sprinkler or standpipe system. Fire extinguishers are present throughout the building and are readily accessible to public. Extinguishers observed were ABC dry chemical type and are appropriate for areas they are currently serving.

General Comments - Works Garage
Free standing Garage structure is not protected using sprinkler or standpipe system. Surface mount Fire Extinguishers are present throughout the Garage and Loading Bay and are readily accessible to public. Extinguishers observed were ABC dry chemical type and are appropriate for areas they are currently serving and new areas.

Recommendations | Observations Cont'd
- Found to be in good condition.
- Recommend that the fire extinguishers be tested if they have not been tested already this year.

Opinion of Probably Cost

Allow $60,000 for new backflow preventer and additional fire pump.

Allow $15,000.00 for covered parking sprinkler installation

Allow $8,000 for Repair Garage sprinkler Installation

Allow $15,000 for Basement and accessible crawl space sprinkler installation

Images

Fire Extinguishers
Location: Loading Bay

Fire Extinguisher
Location: Garage

2.6.1 Plumbing | Domestic Water

Description
This section reviews Domestic Water related systems, including Domestic Cold Water, Domestic Hot Water and Domestic Hot Water Re-Circulation systems.

Dom. Cold Water	☑	Good	☐	fair	☐	Poor
Dom. Hot Water	☑	Good	☐	fair	☐	Poor
Dom. HW Re-Circ	☑	Good	☐	fair	☐	Poor

General Comments - Main Office

Water is supplied by the municipal water source. Based upon review of the building the water main supporting the facility is along Edward Street. The incoming six inch (6") water supply was observed entering the basement in the north-east corner of the building (see Figure 4). This main splits and reduces down to a four inch (4") capped connection and a one and a half inch (1-½") domestic water pipe through a water meter before running along the basement ceiling and feeding domestic water heaters for the main building and garage. No backflow preventer was observed which is required as per current code and municipality (CSA B64.10).

Water piping throughout the building looks to be mainly original copper for small pipes and galvanized steel for larger piping. Small amounts of newer piping are present from renovations or repairs done in the past years. Expected service life for copper piping in this type of building is 35-40 years.

Domestic hot water supply to front office kitchenette and washroom is provided by a single electric water heater which is located in ceiling area of the Water Meter Room (see Figure 5). Capacity of this unit is 6 Gallons.

Domestic hot water supply to main building is provided by a single electric water heater which is located in the laundry room (see Figure 6). Capacity of this unit is 70 Gallons. Unit appears to have been installed in April of 2003 in place of an original gas fired unit. No thermostatic mixing valve was present on hot water supply which could expose occupants to the danger of scalding water.

Non-freeze wall hydrants and standard hose bibs located on exterior walls of the main building.

General Comments - Works Garage
Domestic hot water supply to garage is provided by a single conventional atmospheric gas water heater which is located in the garage (see Figure 7). Capacity of this unit is 40 Gallons. The unit appears to be the original from 1994.

- Accessibility to the water heater within the garage is difficult for maintenance.

Recommendations | Observations

- Replace all exposed ABS piping with proper copper, or code compliant plastics throughout the building.
- Recommend that all water, sanitary and storm piping insulation be repaired and or new insulation be installed where piping is replaced or missing to reduce amount of condensation build up on piping. Also recommended is replacement or repair of the domestic hot water piping, to ensure efficiencies are maintained to reduce heat loss in hot water piping.
- All water heaters do not have drainage present. Should be properly piped to the nearest drain. The water heater suspended within the water meter room 011 (see Figure 5) should be properly drained from the drain pan.
- Installation of Doublecheck backflow preventer required on existing building water service

Opinion of Probably Cost

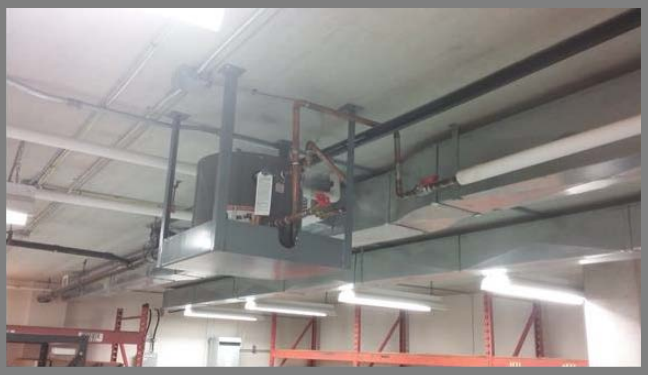
All pricing to be determined on total quantity and pricing at time of repair:

- Allow for doublecheck backflow preventer
- Allow for new hot water piping installation
- Allow for replacement of exposed ABS piping
- Allow for installation of drainage piping for existing water heater
- Allow for installation of drain pan under wall mounted water heater
- Allow for repaired piping insulation
- Allow for replaced piping insulation

Images

Existing Water Service Entering Building
Location: Basement Room 011

Images



Suspended Electrical Hot Water Heater
Location: Water Meter Room 011

Electric Hot Water Heater
Location: Laundry Room

Images

Gas Hot Water Heater
Location: Garage

2.6.2 Plumbing - Sanitary | Storm

Description
This section reviews Sanitary, Storm and Sump Pits systems related to the building.

Sanitary System	☑	Good	☐	fair	☐	Poor
Storm System	☑	Good	☐	fair	☐	Poor
Sump pits | pumps	☑	Good	☐	fair	☐	Poor

Sanitary System
Multiple connections to site services are provided for sanitary systems serving this building.

One eight inch (8") sanitary building connection exits the main building at the North end and connects with combined sewer running along Edward Street.

Underground sanitary piping condition is hard to evaluate. Typically, an estimate on 35-40 year replacement life is found to be acceptable with buildings of this type. It's suggested that the owner shall camera and cleanout the lines within the next couple of years to review condition of the piping.

Storm System
The main building is primarily drained with the use of an exterior gutter and downspout system and discharged onto property. There is a scupper drain utilized on the portion of flat roof where the roof top units are located which drains through an exterior downspout. There is minor pooling of water located at the scupper drain.

Weeping tile drains are collected in weeper sump pit located in north-west corner of building. Storm sump pump then discharges to a four inch (4") storm connection which exits north to the exterior where it connects to storm piping on exterior of building.

General Comments - Works Garage

Sanitary System:
Garage structure sanitary system consists of trench drain with oil interceptor. Oil interceptor complete with vents are located on exterior of the north face of garage.

Storm System:
Storm water is collected using exterior gutter and downspout system and discharged into underground storm sewer piping.

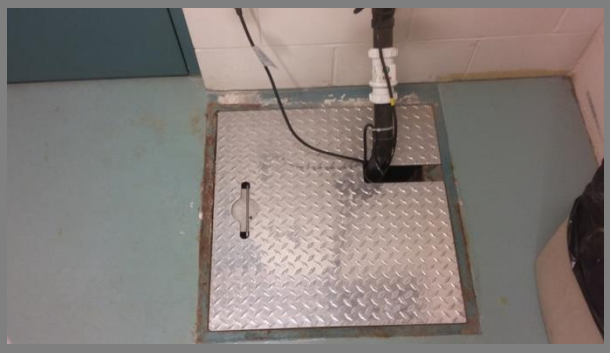
Recommendations | Observations
- Most piping found to be in good condition. Recommend Sump pit pump be investigated further to determine if existing pump and controls currently installed are operational or require servicing
- Replace all exposed ABS piping with proper copper, or code compliant plastics throughout the building.

Opinion of Probably Cost
All pricing to be determined on total quantity and pricing at time of repair:

- Allow for replacement of exposed ABS piping

Images

Weeping Tile Sump Pump
Location: Basement Room 002



Sump pit
Location: Drying Room

Exterior Storm Water Downspouts
Location: Exterior

2.6.3 Plumbing Fixtures

Description
This section reviews plumbing fixtures

Plumbing Fixtures ☐ Good ☑ fair ☐ Poor

General Comments - Main Office
Plumbing fixtures appear to be in good condition.
Manual fixtures are used throughout the main building at both ground floor and basement. Washroom located next to Board Room appears to be a newer renovation than the rest of the building. Existing shower heads may be higher volume flow rate.

Fixtures appear to be in working order with no immediate operational problems observed but appear to be the original fixtures installed during the buildings construction in 1994.

General Comments - Works Garage
Only one Safety Fixture, eyewash, is installed in the Garage next to the mop sink and two wash basins (see Figure 15 1nd 16). Eye was station drains onto floor and did not have an emergency mixing valve to temper the water.

Recommendations | Observations

- Plumbing fixtures found to be in good condition but for the most part have reached their suggested replacement life as evident with replacements that have already happened. Recommendation to replace plumbing fixtures or at the very least service and re-trim all non-barrier free fixtures is favored. Plumbing fixtures intended to be used for barrier free should be removed and replaced with appropriate and code compliant fixtures.
- Recommend to revise water supply to eyewash station to include an emergency thermostatic mixing valve to temper water to health and safety temperature standards.

Opinion of Probable Cost

- Allow $1200 per fixture
- Allow $2500 for revised water supply to eyewash station

Images

Wash Fountain
Location: Male Washroom Basement

Images

Urinals
Location: Male Washroom

Washroom Sinks
Location: Washroom

Wash Basins
Location: Basement

Mop Sink and Wash Basins
Location: Garage

2.6.4 Natural Gas

Description
This section reviews natural gas service

Natural Gas	☑	Good	☐	fair	☐ Poor

General Comments - Main Office
Natural gas meter is located outside along South side of the main building next to the loading bay. Gas piping runs up the exterior wall and onto the roof where it splits in order to supply the gas fired HVAC units located on the roof and the Garage. Minor rusting was observed on exterior gas piping.

A single three-quarter inch (3/4") gas line enters the main building down into the laundry room. The connection is currently supported on an electrical disconnect box capped and no longer serving gas fired water heater.

General Comments - Works Garage
Natural gas supplies ceiling mounted heaters within this structure.

Interior gas piping appears to be in good condition.

Recommendations | Observations
- Recommend that the current pipe supports on the roof be revised with approved supports sized accordingly to installation.
- A portion of the gas piping within the laundry room should be removed and properly capped in order to not interfere with other services.
- Existing natural gas system functions properly, no revisions are required.

Opinion of Probable Cost
- Allow $1500 for pipe supports on roof
- Allow $1000 for gas piping within laundry room
-

Images

Gas meter
Location: Exterior of Building

Images

Gas piping serving HVAC
Location: Roof

Gas fired heater
Location: Garage

2.6.5 Compressed Air

Description
This section reviews compressed air service

Compressed Air	☐	Good	☑	Fair	☐	Poor

General Comments - Main Office
Air compressor is located in the Loading Bay area. Air lines are run to several locations within the basement area. Most connections are complete with isolation valve, separator and regulator.

General Comments - Works Garage
Air compressor is located in the Loading Bay area. Air compressor appeared to be original.

Recommendations | Observations
Piping and equipment found to be in fair condition.

Images

Air compressor
Location: Basement

2.6.5 Heating, Ventilation & Air Conditioning

Description
This section reviews the building's HVAC system and accessories.

Grilles, Diffusers, and Louvers	☐	Good	☑	Fair	☐	Poor
HVAC Roof Top Units	☐	Good	☑	Fair	☐	Poor

General Comments – Main Building
All equipment listed here are as indicated on original construction drawings 1994.

Gas-fired roof top units located in a central location on the roof to the south end of the main building. Condensate drains have been replaced recently on all of the units and drain directly onto the roof and leave by way of a scupper drain located in the south-west corner of the roof area.

The main building and its office areas are split into zones served by the roof top units(AC-1-AC-6) located on the roof above. Air is distributed throughout these areas by ceiling mounted diffusers (see Figure 26). No additional supplement heating was observed in the building.

There are two exhaust fans (EF-1 and Ef-2) located on the flat roof south of the rooftop units location (see Figure 24) EF-1 serves the large washrooms on each level. EF-2 serves the Drying area in the basement. These fans appear to be the original fans installed in 1994, motor condition unknown

The washroom next to the boardroom is served by EF-3 located within the ceiling space above the washroom and vented out through the soffit to the east.
Two general ceiling mounted exhaust fans (EF-4 and EF-5) were not observed above the ceiling tiles. Grilles for these fans are located within the meeting room and operations respectively)

Additionally there are two exhaust fans located in the basement. EF-6 within room 006 and EF-7 within electrical room 009 as tagged on the original construction drawings. EF-6 is vented up through the south wall of the building. EF-7 is vented up to the same roof area through a louvre. These fans appear to be the original fans installed in 1994.

There are two Humidifiers located in the laundry room the one to the left is dated 1994 while the second one to the right is dated 2019 (see Figure 28).

2.6.5 Heating, Ventilation & Air Conditioning

General Comments – Garage
The heating in the Garage is from the ceiling mounted gas-fired infrared tube heaters. There are wall mounted exhaust fans located within the garage and loading dock areas with interlocked intake louvres.

Recommendations/Observations
Manufacturers dates for Rooftop units. Tags are as indicated on original construction drawings 1994.

- Roof top unit AC-1 (Sep 2010)
- Roof top unit AC-2 (Sep 2010)
- Roof top unit AC-3 (Sep 2010)
- Roof top unit AC-4 (Jan 2009)
- Roof top unit AC-5 (Jan 2011)
- Roof top unit AC-6 (Dec 2008)
- Exterior insulation on all exposed ducting has begun to deteriorate and should be removed and replaced.

Opinions of Probably Cost

- Allow $1000 to $2000 for replacement of exterior insulation
- Allow $500 to $1500 for budgetary replacement of exhaust fans

Images


HVAC
Location: Roof


Insulation of Roof Top Units
Location: Roof

Images


Split AC Unit
Location: Roof


Rusted Exhaust Fan Hoods And Water on Flat Roof
Location: Roof


Rusted Supply Fan Hood
Location: Roof


Humidifiers
Location: Laundry Room


Diffusers
Location: Main Building

2.7.1 Electrical Service & Distribution

Description
This section reviews the Electrical Service and distribution.

Service & Distribution	☐	Good	☑	Fair	☐	Poor
Dry Transformers	☐	Good	☐	Fair	☐	Poor

General Comments
The electrical service supplying power to the building is from a utility owned pad mounted transformer located outside at the building's north end. The power is supplied from Queens Street at 27.6 kV, 3ø and transformed to 600V, 3ø. The 600V, 3ø electrical service comes underground into the building's electrical room from the utility owned pad mounted transformer. The electrical service is rated at 400 Amp, 347/600 Volt, 3ø.

Recommendations | Observations
The building's service equipment is made by Commander and is the original equipment installation of 1994. The Distribution equipment is made by Commander, Square D, Siemens and Culter-Hammer. The Distribution equipment consists of distribution boards – type S8004T, panel boards type NBL and QL, hand-off-auto starters and disconnect switches. The building does not contain any motor control centers.

The electrical equipment was found generally to be in good condition with no obvious signs of problems such as heating of terminations or excessive corrosion. Surface rust was found on five of the rooftop unit's disconnect switches. Building maintenance personnel reported no overloading or unusual tripping of breakers. Interior and exterior cable raceways appeared to be in good condition from visual inspection.

Square D is part of Schneider Electric's product line with spare parts and field service for the hand-off-auto starters being readily available. New spare circuit breakers can no longer be purchased for the Commander panel boards but spare fuses can still be purchased for the Commander disconnects. Field service can still be provided for the Commander panel boards and disconnects by Eaton Corporation. Culter-Hammer equipment is under the product line of Eaton Corporation with spare circuit breakers, fuses and field service support being readily available. Siemens provides spare fuses and field service support for their product line with both being readily available.

The electrical distribution system will need to be replaced within 5-10 years with regular maintenance and servicing of equipment. It's recommended for all the original equipment to undergo a thermal imaging scan by a qualified contractor to look for hot spots and thermal signature. The distribution should also be closely monitored for flaking of paint, sticky circuit breakers or black spots on connections.

The dry type transformers in the building are made by Rex Manufacturing and Bemag. Field service support is readily available from both companies. All dry type transformers were found to be in good condition but will need to the monitored with the same procedures as the distribution equipment.

Opinion of Probable Cost
No Comment.

Images

Rusty Rooftop Disconnect Switch
Location: Roof

Electrical Service Switchboard
Location:

Rooftop Disconnect
Location: Roof

2.7.2 Emergency Power

Description
This section reviews the emergency power equipment condition.

Emergency Power	☑	Good	☐	Fair	☐ Poor

General Comments
The electrical emergency power system in the building consists of a 100 kW (125 kVA), Stamford, 600V,3ø diesel engine driven standby generator and Cutler-Hammer Automatic Transfer switch rated for 400A. The Generator had 99 hours of run time at the time of the site visit.

Recommendations | Observations
The generator and automatic transfer switch both appeared to be in good condition. The generator can provide emergency power support for the approximately 25% of the electrical service size. The most recent annual inspection summary of the system showed no issues. The generator's most recent 2 hour full load test on February 3, 2020 showed no failures. If a larger capacity of emergency power support is required from the emergency power system it's recommended to investigate a load shedding scheme. A visual inspection of the batteries showed no corrosion or rust on the terminals or wire leads.

Opinion of Probable Cost

No comment

Images

100 kW Generator
Location:

Images

400A Automatic Transfer Switch
Location:

2.7.4 Lighting & Controls

Description
This section reviews the buildings lighting and associated lighting control systems.

Lighting	☑	Good	☐	Fair	☐ Poor

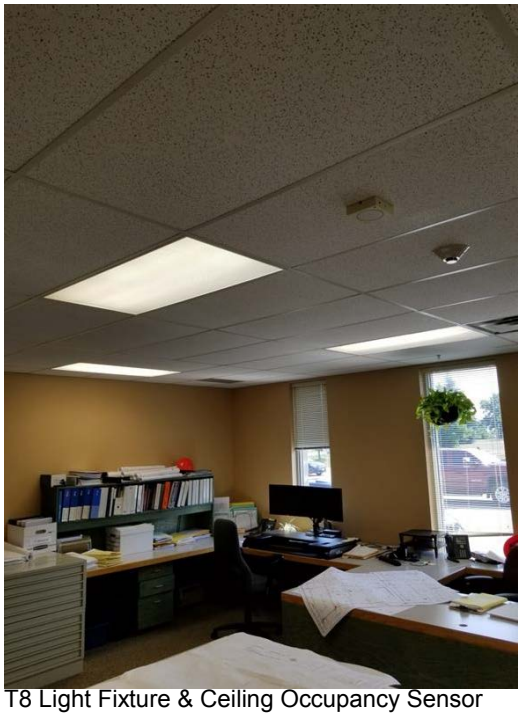
General Comments
The interior lighting is T8 lamp light fixtures controlled by occupancy sensors and toggle switches. The exterior lighting is LED light fixtures controlled by a time clock/photocell.

Recommendations | Observations
It's recommended to upgrade the interior lighting from T8 lamp fixtures to LED light fixtures. Upgrading the interior light fixtures to LED light fixtures will give the option to upgrade the lighting controls to low voltage lighting control technology at the same time. The upgraded lighting control and LED light fixtures will increase the energy efficiency of the building provide better performance.

The exterior lighting is in good condition as it has been recently upgraded to LED lighting. The timeclock controlling the exterior lighting is original to the building and appeared to be in good condition.

Opinion of Probable Cost
Allow $172 000 to upgrade from T-8 light fixtures to new LED light fixtures and upgrade lighting controls.

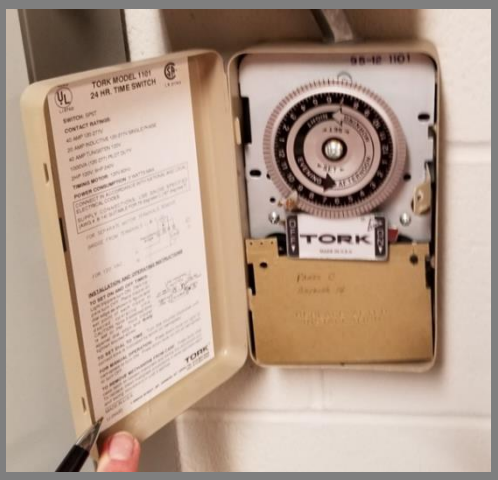
Images



T8 Light Fixture & Ceiling Occupancy Sensor
Location:

Images

Exterior LED Light Fixture
Location: Exterior



Time Clock
Location:

2.7.5 Emergency Lighting

Description

This section reviews the building's emergency lighting system.

Emergency Lighting	☑	Good	☐	Fair	☐ Poor

General Comments
The emergency lighting is supplied by remote light heads powered from battery packs spread throughout the building. The exit signage is LED illuminated.

Recommendations | Observations
The battery units, remote light heads and exit signage is in good condition with many of the units being recently updated.

Opinion of Probable Cost
No comment.

Images

Remote Light Head/Battery Pack

Exit Sign

2.7.6 Fire Alarm System

Description
This section reviews the building's fire alarm system.

Fire Alarm	☑	Good	☐	Fair	☐ Poor

General Comments
The fire alarm system serving the building is a single stage system with a Mircom Flexnet series panel located in the electrical room and a remote annunciator in the vestibule area.

Recommendations | Observations
The fire alarm system was completely replaced in 2018 and is in good condition. The fire alarm verification/testing certificate from February 25/2020 shows the fire alarm system is actively being monitored by the owner's security company for any trouble signals. The fire alarm panel has extra capacity remaining.

Opinion of Probable Cost
No Comment.

Images

Fire Alarm Annunciator

Speaker/Strobe Fire Alarm

2.7.7 Data & Communications Systems

Description

This section reviews the building's data & communication systems.

Communications	☑	Good	☐	fair	☐ Poor

General Comments

The communication system in the building is housed in multiple IT rooms and the electrical room. The electrical room contains various patch panels and switches within the IT rack. The communication and data system is provided by a CAT6 structured cabling system. All IT racks and networking equipment belong to the owner. The shop has a PA system with speakers spread throughout the shop area and a microphone in the stores office.

Recommendations | Observations
The communication and data system appears to be in good working condition from visual inspection. Building maintenance staff confirmed the PA system is operational and working correctly. The PA speakers and microphone are in good condition.

Opinion of Probable Cost

No Comments

2.7.8 Door Access & Security Systems

Description
This section reviews the building's door access & security systems.

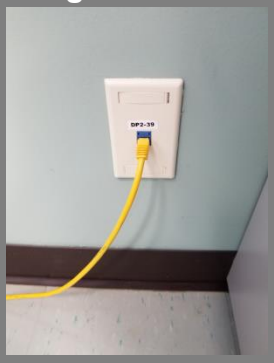
Door Access & Security	☑	Good	☐	fair	☐ Poor

General Comments
The door access control and security system is made up of: card readers, door strikes, door contacts, keypads, motion detectors and automatic door operators. The CCTV monitoring system has various cameras located around the exterior and interior of the building.

Recommendations | Observations
The door access control system is in good working condition except for the access door between the shop and administration building. The door strike is currently not locking correctly and building maintenance was already aware of the issue. All automatic door operators tested were operational. Building staff indicated the CCTV camera is operating correctly and all CCTV cameras appeared to be in good condition. The security system is in good condition and is remotely monitored by the owner's security contractor.

Opinion of Probable Cost
No Comment.

Images



Data Outlet

Exterior Data Outlet

Images

Access Door With Broken Door Strike

Motion Detector

Exterior CCTV Camera

2.7.9 Receptacles

Description

This section reviews the receptacles and switches.

Interior Receptacles	☑	Good	☐	fair	☐ Poor
Exterior Receptacles	☐	Good	☑	fair	☐ Poor

General Comments
The interior of the building has grounded receptacles spread throughout. The exterior of the building has weatherproof receptacles on the wall spread around the building and one on the roof. The shops are is equipped with cord reel receptacles to allow for the vehicles to be plugged in.

Recommendations | Observations
The interior and exterior receptacles on the walls of the building are in good condition. The equipment service receptacle on the roof needs to be replaced as the cover has broken off and water may leak in the receptacle causing a short circuit. There was very minimal power bars and extensions cords present in the building, indicating an adequate number of receptacles are spread out within the building. All cord reels in the shop area are in good condition.

Opinion of Probable Cost
Allow $400 to replace the broken receptacle on the roof.

2.7.10 Renovation Area

Description
This section reviews the current area under renovation.

General Comments
The interior of the building at North West corner is under renovation.

Recommendations | Observations
The renovation area was not examined during the site visit therefore no observations or recommendations are made.

Opinion of Probable Cost
The renovation area is not included in any probable cost included the electrical section of this report.

Images

Broken Receptacle Cover
Location: Roof

Cord Reel
Location: Garage

2.7.11 Energy Consumption
The energy efficiency of the building could be improved by converting the T-8 lamps to LED lights. Building maintenance staff confirmed the electricity bills are constant with no abnormal usage of electricity.

2.7.10 Opinions of Probable Cost
The costing information presented here has been prepared from the engineers' experience and from past projects of a similar nature. The amounts given are opinions only and must not be taken as a guarantee of price. If guaranteed pricing is required then the full scope of work needs to be detailed and appropriate contractor(s) approached for a quotation.

2.7.11 Methodology

In preparation of this report, we gathered information of the existing electrical systems through the site visit and visual observations on July 10, 2020, reviewed the original drawings (1994), and interviews with the operating personnel.

Note: Our review consisted only on visual inspection and no destructive testing was undertaken.

SECTION 3 LIFE SAFETY

3.1 Life Safety

General Comments

Although the intent of this report was not to address Life Safety compliance to the Ontario Building Code; during the visual site survey the following outline describes in brief various code infringements.

- There is no proper Fire separation around the mechanical and Electrical rooms.
- Door closure are not present on boiler room door
- Panic hardware not present on exit stairs in 1937 building. (Existing door knobs not code compliant)
- There is no proper floor to floor Fire Separation at combustible construction in 1937 building.

SECTION 4 Statement of Limitations

4.1 Statement of Limitations

The building condition assessment conducted was a visual assessment only. No physical, destructive testing or measurements of existing building structure were taken during the site visit. No assessment can be made where building structure and elements were either not exposed or easily accessible. Connections, fastenings and anchorage of building structure were not reviewed in detail. Existing structural and architectural drawings were provided for review but may not reflect the actual built construction. Comments and conclusions are therefore based on the visual and/or the apparent physical condition of the building elements. Any design and/or construction deficiencies that are not recorded in this report were not evident given the level of study undertaken.

The costing information presented here has been prepared from the engineers' experience and from past projects of a similar nature. The amount given are opinions only and must not be taken as a guarantee of price. If guaranteed pricing is required then the full scope of work needs to be detailed and appropriate contractor(s) approached for a quotation.

This study is intended for the client named and should not be distributed further without our consent.

Images

Flutes not sealed, penetrations not sealed.
No Fire Separation around mechanical | electrical rooms.

Door knob on exit door to be panic hardware.

No floor to floor fire separation present in 1937 building.

Trench Drain 1 – located in garage – clean and it good condition

Trench Drain 2 – located in garage – clean and it good condition. CB grate clean and in good condition

Back parking area, asphalt generally in good condition, some minor cracking. Cracks should be repaired and filled as a preventative measure

Back parking area, asphalt generally in good condition, some minor cracking. Cracks should be repaired and filled as a preventative measure

Employee parking area – asphalt generally in good condition

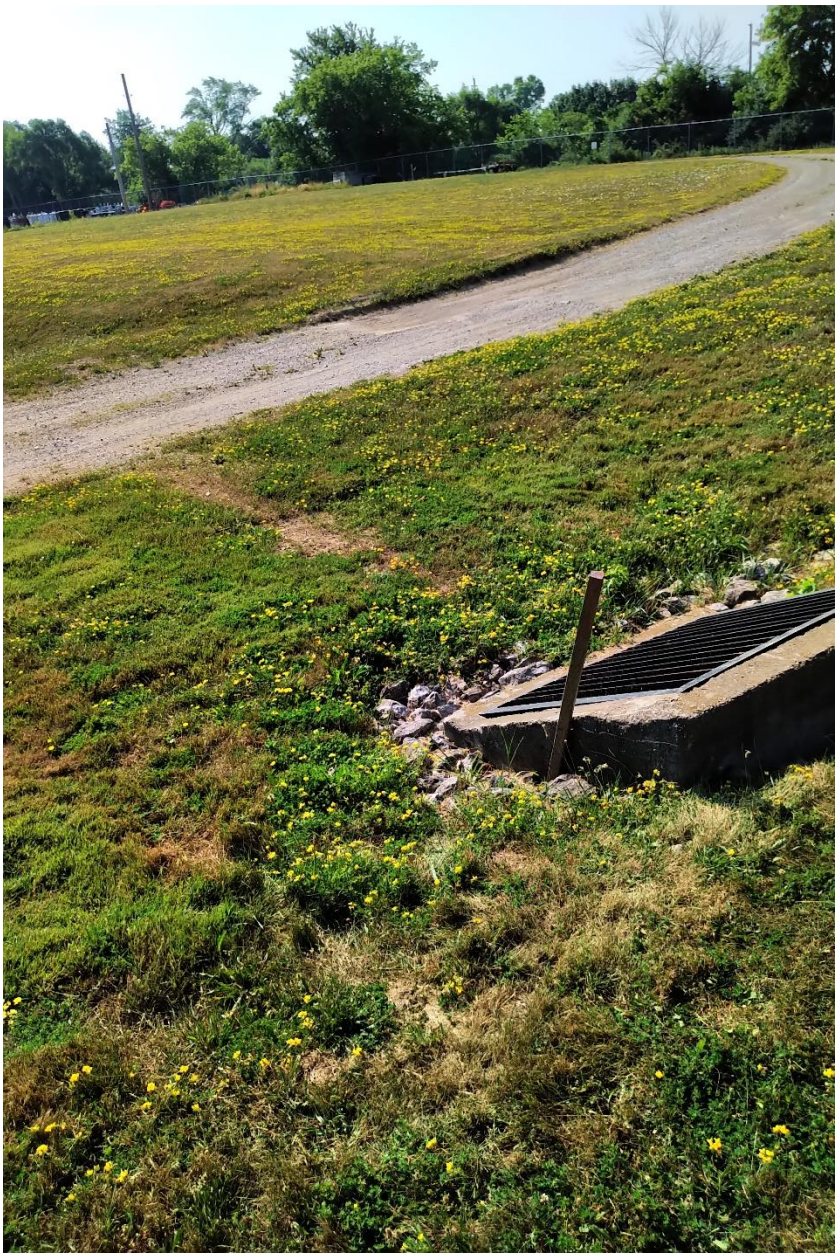
Back parking area, asphalt generally in good condition, some minor cracking. Cracks should be repaired and filled as a preventative measure

Back storage area – drainage functioning properly

Back parking lot- minor cracking observed. Repairs/ filling required as preventative maintenance measure

Back driveway and swale – no issues

DICB – SWM outlet - rear of building – no issues



DICB – SWM outlet - rear of building – no issues

Front driveway – asphalt cracking and some separation along joint. Repair required to stop further damage and separation

Front driveway – asphalt cracking and some separation along joint. Repair required to stop further damage and separation

Driveway loading dock – some asphalt settlement around area that appears to have been repaired. Monitor to ensure cracking or further settlement does not occur

Driveway loading dock – some asphalt settlement around area that appears to have been repaired. Monitor to ensure cracking or further settlement does not occur

Parking lot CB – no issues, water in sump area only

Parking lot CB – no issues, water in sump area only

Parking lot CB – no issues, water in sump area only

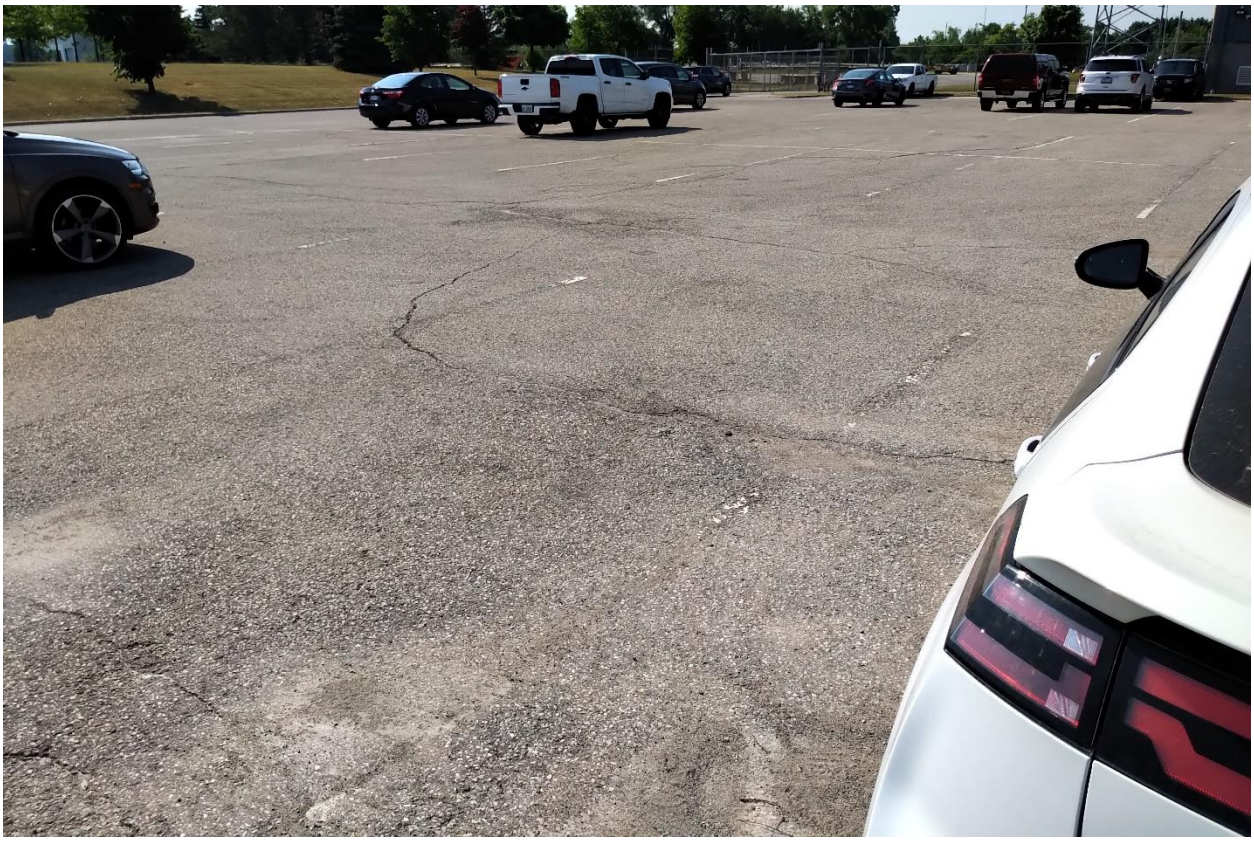
Visitor parking area – front entrance – some minor asphalt cracking. Curb in good shape

Front entrance and visitor parking – some construction occurring on day of visit. No asphalt issues or curb issues noted

Front of building – sanitary sewer service location. – no issues

CB in visitor parking – no issues, sump and CB clean of debris

CB in employee parking – no issues, some leaves and debris should be cleaned away



Employee parking – asphalt cracking noted in a few locations. Generally, asphalt in good shape. Minor repairs/ filling required. Monitor for further damage

Employee parking – asphalt cracking noted in a few locations. Generally, asphalt in good shape. Minor repairs/ filling required. Monitor for further damage

ATTACHMENT O

2021 Project Narratives

A. General Information						
Project/Activity	Commercial and Industrial Rebuild					
Project Number	1.1					
Investment Category	**System Access**					
Capital Cost (5.4.3.2 A.1)	$ 326,649					
Capital Contribution	$ 300,000					
Net Cost	$ 26,649					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

Attachments & Load Customer Demand Driven.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21	
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**		
	$ 81,662	$ 81,662	$ 81,662	$ 81,662		

Project Summary

The purpose of this project is to provide upgrades to Entegrus' Distribution System when necessary to continue to supply Commercial and Industrial customers. Entegrus has over 6,000 customers in the Commercial/Industrial Rate categories. Throughout the year a number of these customers require upgrades to the Entegrus Distribution System due to increased electrical load at their facilities.

Risk Identification & Mitigation (5.4.3.2 A.5)

The primary risk associated with this work is pacing. The number of commercial service rebuilds required is a function of economic growth in the communities served, and can vary dramatically between communities and between years. Entegrus confers with economic development and municipal planners to try and ascertain areas of growth. Historical pacing is a valuable part of this evaluation. The unpredictability in pacing is mitigated through inventory management practices for long-lead materials.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This project does not consider REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

Mandated Customer Driven Work.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

Targeted outcomes for this project include meeting all OEB mandated requirements regarding the timing of customer connections, as well as maintaining high customer satisfaction.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

The justifcation for the investment is mandated customer driven work and the requirement to meet all OEB mandated requirements regarding the timing of customer connections. The number of commercial service rebuilds required is a function of economic growth in the communities served, and can vary dramatically between communities and between years. Entegrus confers with economic development and municipal planners to try and ascertain areas of growth. Historical pacing is a valuable part of this evaluation and forecasted investment amount.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Unlike the "New Customer Connections: Commercial and Industrial" program, the costs of this program include the lifecycle-based renewal of assets serving the specific customers (e.g. overhead and underground primary feeder and transformation infrastructure). This program also captures costs associated with reinforcement of infrastructure to accommodate increased electrical load at the facilities of existing customers. The primary outcome for this project is to maintain Entegrus' distribution system to the standard required to supply electrical power to customers, while maintaining flexibility and reliability within the distribution system. Designing in this manner allows the utility to adapt to future challenges such as grid modernization and climate change.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. As a regulated requirement and element of good customer service, timely, safe connection of new commercial and industrial services is among Entegrus' top priorities.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

These rebuilds normally consist of primary pole line extensions, underground cable installation, and transformer upgrades. Exact scope of work will vary according to specific customer requests received. Connection standards are specified in the Conditions of Service and are utilized to control costs. If the specific circumstances present valid options for connection, these alternatives are discussed with the customer, understanding that certain choices may affect the cost of connection. The ultimate decision on how to proceed belongs to the Entegrus Engineering department.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

Rebuild of industrial and commercial services encourages economic sustainability/growth for the customer and community. Industrial and commercial services often attract new customers through employment opportunities. An increase in customer count allows Entegrus to scale its operations to obtain competitive equipment pricing and distribute fixed costs over a larger number customers, keeping costs down for all Entegrus customers.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

This project will not have a direct impact on reliability performance. However Entegrus' distribution system are designed to a standard required to supply electrical power to customers, while maintaining flexibility and reliability within the distribution system.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

There are no project alternatives, these projects and their respective connection timelines are mandatory as described in the DSC. In general, the lowest cost solution which meets Entegrus' technical requirements is selected unless customer preference drives a more costly solution (i.e. overhead vs. underground service). Costs are minimized through standard design, material and Entegrus work pratices.

Health and Safety (5.4.3.2 B2)

Connection standards are specified in the Conditions of Service. Modifications to the distribution system in order to meet customer demand work comply with Regulation 22/04.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Entegrus participates in four separate Regional Planning zones overseen by the IESO, and provides regular communication with upstream transmitter, local municipalities, and developers. Proactive participation and active communication allows Entegrus to accommodate customer demand by long term utility planning.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

This project does not address specific future technologies. This program captures costs associated with reinforcement of infrastructure to accommodate increased electrical load at the facilities of existing customers. Should certain circumstances require monitoring/control, provisions are captured in the rebuild design.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Access

Factors affecting the timing or priority of implementing the project (5.4.3.2 SA-A1.1)

There are no alternatives as to the timing or location of this customer driven work, given that the timelines are a function of the Distribution System Code requirements.

Factors relating to customer preferences or customer and third-party input (5.4.3.2 SA-A1.2)

If the specific circumstances present valid options for connection, these alternatives are discussed with the customer, understanding that certain choices may affect the cost of connection. The ultimate decision on how to proceed belongs to the Entegrus Engineering department.

Factors affecting the final cost of the project (5.4.3.2 SA-A1.3)

Exact scope of work will vary according to specific customer requests received, as such the factors affecting final cost also depend on the customer request. For example customer preference (i.e. overhead vs. underground service) is a factor affecting final cost of the project. In general, the lowest cost solution which meets Entegrus' technical requirements is selected unless customer preference drives a more costly solution.

Explanation of how controllable costs have been minimized (5.4.3.2 SA-A1.4)

Costs are minimized through standardized design, equipment and consistent construction process. Entegrus experience also allows for efficient completion of work.

Description of the planning objectives met by the project (5.4.3.2 SA-A1.5)

This program captures costs associated with reinforcement of infrastructure to accommodate increased electrical load at the facilities of existing customers. Entegrus considers long-term future growth when incorporating the design. The primary outcome for this project to maintain Entegrus' distribution system to the standard required to supply electrical power to customers, while maintaining flexibility and reliability within the distribution system.

Other project designs and implementation options considered (5.4.3.2 SA-A1.6)

There are limited alternative options for considering. Customer-demand work is mandatory. Entegrus completes work as requested by the customer.

Comparison of the least costly option and the most cost efficient option (5.4.3.2 SA-A1.7)

Entegrus completes work as requested by the customer. In general, the lowest cost solution which meets Entegrus' technical requirements is selected unless customer preference drives a more costly solution (i.e. overhead vs. underground service)

Results of final economic evaluation documented as per section 3.2 od the DSC (5.4.3.2 SA-A1.8) (where applicable)

Economic evaluations are completed when required as per the DSC. When completed, the results of the final economic evaluation vary per scope of work.

Nature and Magnitude of the system impacts of the project and costs of system modifications required to accommodate these impacts (e.g. REG Investment) (5.4.3.2 SA-A1.9) (where applicable)

The system impacts vary based on magnitude of the load request from the customer. In general, the lowest cost solution which meets Entegrus' technical requirements is selected unless customer preference drives a more costly solution (i.e. overhead vs. underground service)

A. General Information						
Project/Activity	Customer Connections: Commercial And Industrial					
Project Number	1.2					
Investment Category	**System Access**					
Capital Cost (5.4.3.2 A.1)	$ 105,754					
Capital Contribution	$ 84,636					
Net Cost	$ 21,118					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					
Not applicable as there are no capital contributions or costs recovery to the transmitter.						
Customer Attachments and Load (5.4.3.2 A.3)						
New attachments and load are customer demand driven.						
Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21	
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**		
	$ 26,439	$ 26,439	$ 26,439	$ 26,439		
Project Summary						
The purpose of this project is to connect new commercial/industrial customers to Entegrus' distribution system. Entegrus has over 6,000 customers in the Commercial/Industrial Rate categories. A new Commercial/Industrial customer is any customer that is not considered residential and generates a new account number. The nature of this connection varies depending on the specific circumstances of each service. Simple connections could require only the installation of a new meter, while more involved installations may involve pole line construction / underground work and placement of new transformation assets. Projected spending levels are based on recent historical spending amounts as well as customer requests and inquiries.						
Risk Identification & Mitigation (5.4.3.2 A.5)						
The primary risk associated with this work is pacing. The number of commercial service connections required is a function of economic growth in the communities served, and can vary dramatically between communities and between years. Historical pacing is a valuable part of this evaluation. The unpredictability in pacing is mitigated through inventory management practices for long-lead materials. A secondary risk with this is infrastructure capacity. Entegrus actively confers with economic development, municipal planners and regional planning to try and ascertain areas of growth. Unforseeable large single spot load requests can impose a risk for connecting the customer, as requests of this magnitude often require a new breaker position from upstream supply, contributing to cost and connection timeline.						
Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)						
Comparative information on expenditures for equivalent projects/activities are outlined in Section 4.4.4.						
REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)						
This project does not consider REG investments.						
Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)						
This project does not require leave to construct approval under Section 92 of the OEB Act.						
B. Evaluation criteria and information requirements for each project/activity						
Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)						
Mandated utility activity						
Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)						
Not applicable.						
Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)						
Targeted outcomes for this project include meeting all OEB mandated requirements regarding the timing of new customer connections, as well as maintaining high customer satisfaction						
Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)						
The justifcation for the investment is mandated customer driven work and the requirement to meet all OEB mandated requirements regarding the timing of customer connections. The number of commercial service connections required is a function of economic growth in the communities served, and can vary dramatically between communities and between years. Entegrus confers with economic development and municipal planners to try and ascertain areas of growth. Historical pacing is a valuable part of this evaluation and forecasted investment amount.						
Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)						
The primary outcome for this project to maintain Entegrus' distribution system to the standard required to supply electrical power to customers, while maintaining flexibility and reliability within the distribution system. Designing in this manner allows the utility to adapt to future challenges such as grid modernization and climate change.						
Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)						
Refer to Section 4.5 of the DSP for project rankings. As a regulated requirement and element of good customer service, timely, safe connection of new commercial and industrial services is among Entegrus' top priorities.						
Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)						
Primary pole line extensions, underground cable installation, and transformer installation are typically involved in this project. There is wide variability in the scope of work across the individual customer requests and the variability of requests from year to year, and therefore specific assets counts will also vary. Connection standards are specified in the Conditions of Service and are utilized to control costs. There are no alternatives as to the timing or location of this customer driven work, given that the timelines are a function of the Distribution System Code requirements. Where configuration alternatives are available, the utility discusses them with requesting customers and alerts them of any technical considerations or scope implications inherent in the available alternatives. The utility retains the final say as to the ultimate technical configuration of the new or modified facilities						
Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)						
New industrial and commercial connections encourages economic sustainability/growth for the customer and community. Industrial and commercial services often attract other new customers through employment opportunities. An increase in customer count allows Entegrus to scale its operations to obtain competitive equipment pricing and distribute fixed costs over a larger number customers, keeping costs down for all Entegrus customers.						
Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)						
This project will not have a direct impact on reliability performance. However Entegrus' distribution system are designed to a standard required to supply electrical power to customers, while maintaining flexibility and reliability within the distribution system.						

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

There are no project alternatives, these projects and their respective connection timelines are mandatory as described in the DSC. In general, the lowest cost solution which meets Entegrus' technical requirements is selected unless customer preference drives a more costly solution (i.e. overhead vs. underground service). Costs are minimized through standard design, material and Entegrus work pratices.

Health and Safety (5.4.3.2 B2)

Connection standards are specified in the Conditions of Service. Modifications to the distribution system in order to meet customer demand work comply with Regulation 22/04.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Entegrus participates in four separate Regional Planning zones overseen by the IESO, and provides regular communication with upstream transmitter, local municipalities, and developers. Proactive participation and active communication allows Entegrus to accommodate customer demand by long term utility planning.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

This project does not address specific future technologies. This project is differentiated from the Commercial and Industrial Rebuild program in that the purpose is to allow for the connection of new customers to Entegrus' system. Capital expenditures required to allow for electrical load expansion from existing Commercial and Industrial customers are captured separately. Should certain circumstances require monitoring/control, provisions are captured in the design.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Access

Factors affecting the timing or priority of implementing the project (5.4.3.2 SA-A1.1)

There are no alternatives as to the timing or location of this customer driven work, given that the timelines are a function of the Distribution System Code requirements.

Factors relating to customer preferences or customer and third-party input (5.4.3.2 SA-A1.2)

If the specific circumstances present valid options for connection, these alternatives are discussed with the customer, understanding that certain choices may affect the cost of connection. The utility retains the final say as to the ultimate technical configuration of the new or modified facilities.

Factors affecting the final cost of the project (5.4.3.2 SA-A1.3)

Exact scope of work will vary according to specific customer requests received, as such the factors affecting final cost also depend on the customer request. For example customer preference (i.e. overhead vs. underground service) is a factor affecting final cost of the project. In general, the lowest cost solution which meets Entegrus' technical requirements is selected unless customer preference drives a more costly solution.

Explanation of how controllable costs have been minimized (5.4.3.2 SA-A1.4)

Costs are minimized through standardized design, equipment and consistent construction process. Entegrus experience also allows for efficient completion of work.

Description of the planning objectives met by the project (5.4.3.2 SA-A1.5)

This project is differentiated from the Commercial and Industrial Rebuild program in that the purpose is to allow for the connection of new customers to Entegrus' system. Capital expenditures required to allow for electrical load expansion from existing Commercial and Industrial customers are captured separately. Primary pole line extensions, underground cable installation, and transformer installation are typically involved in this project. There is wide variability in the scope of work across the individual customer requests and the variability of requests from year to year, and therefore specific assets counts will also vary.

Other project designs and implementation options considered (5.4.3.2 SA-A1.6)

There are limited alternative options for considering. Customer-demand work is mandatory. Entegrus completes work as requested by the customer.

Comparison of the least costly option and the most cost efficient option (5.4.3.2 SA-A1.7)

Entegrus completes work as requested by the customer. In general, the lowest cost solution which meets Entegrus' technical requirements is selected unless customer preference drives a more costly solution (i.e. overhead vs. underground service)

Results of final economic evaluation documented as per section 3.2 od the DSC (5.4.3.2 SA-A1.8) (where applicable)

Economic evaluations are completed when required as per the DSC. When completed, the results of the final economic evaluation vary per scope of work.

Nature and Magnitude of the system impacts of the project and costs of system modifications required to accommodate these impacts (e.g. REG Investment) (5.4.3.2 SA-A1.9) (where applicable)

The system impacts vary based on magnitude of the load request from the customer. In general, the lowest cost solution which meets Entegrus' technical requirements is selected unless customer preference drives a more costly solution (i.e. overhead vs. underground service).

A. General Information						
Project/Activity	Customer Connections: Residential & Subdivision					
Project Number	1.3					
Investment Category	**System Access**					
Capital Cost (5.4.3.2 A.1)	$ 3,752,598					
Capital Contribution	$ 2,395,965					
Net Cost	$ 1,356,633					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

Entegrus expects to connect 14 new developments in 2021. Approximately 1,077 residential customers are impacted by this project, this represents 2% of Entegrus' residential customer base. Customer attachments and load may vary upon customer demand

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21	
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**		
	$ 938,149	$ 938,149	$ 938,149	$ 938,149		

Project Summary

The purpose of this project is to connect new Residential customers to Entegrus' distribution system. The majority of these new residential connections are located in new subdivisions that have been developed by third parties. Over the past several years Entegrus has received significantly more requests for residential subdivision connections than was the historical norm. This trend has been particularly prevalent in the Northeast region communities of St. Thomas, Strathroy and Mt. Brydges and – more recently – Chatham. For customers that require expansion to the distribution system in order to connect the development, this cost is also drawn from this budget.

Risk Identification & Mitigation (5.4.3.2 A.5)

The primary risks associated with this work is pacing. The number of commercial service rebuilds required is a function of economic growth in the communities we serve, and can vary dramatically between communities and between years. Entegrus confers with economic development and municipal planners to try and ascertain areas of growth. Historical pacing is a valuable part of this evaluation. The unpredictability in pacing is mitigated through inventory management practices for long-lead materials.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This project does not consider REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

Not applicable.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main driver for this project is Customer Requests. These projects are mandatory.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

The targeted outcomes for this project are to meet the requirements of the OEB regarding the timing and process for new customer connections, as well as the construction of new infrastructure required to supply electricity to new residential customers.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

The justifcation for the investment is mandated customer driven work and the requirement to meet all OEB mandated requirements regarding the timing of customer connections. The number of commercial service connections required is a function of economic growth in the communities served, and can vary dramatically between communities and between years. Entegrus confers with economic development and municipal planners to try and ascertain areas of growth. Historical pacing is a valuable part of this evaluation and forecasted investment amount.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

The primary outcome for this project to maintain Entegrus' distribution system to the standard required to supply electrical power to customers, while maintaining flexibility and reliability within the distribution system. Designing in this manner allows the utility to adapt to future challenges such as grid modernization and climate change.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. As a regulated requirement and element of good customer service, timely, safe connection of new commercial and industrial services is among Entegrus' top priorities.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

The scope of work for this project normally consists of primary pole line extensions, underground cable installation, and transformer installations. Exact scope of work will vary according to specific customer requests received. Connection standards are specified in the Conditions of Service and are utilized to control costs. Where configuration alternatives are available, the utility discusses them with requesting customers and alerts them of any technical considerations or scope implications inherent in the available alternatives. The utility retains the final say as to the ultimate technical configuration of the new or modified facilities

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

New residential connections encourages economic sustainability/growth for community. An increase in customer count allows Entegrus to scale its operations to obtain competitive equipment pricing and distribute fixed costs over a larger number customers, keeping costs down for all Entegrus customers.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

This project will not have a direct impact on reliability performance. However Entegrus' distribution system are designed to a standard required to supply electrical power to customers, while maintaining flexibility and reliability within the distribution system.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

There are no project alternatives, these projects and their respective connection timelines are mandatory as described in the DSC. In general, the lowest cost solution which meets Entegrus' technical requirements is selected unless customer preference drives a more costly solution (i.e. overhead vs. underground service). Costs are minimized through standard design, material and Entegrus work pratices.

Health and Safety (5.4.3.2 B2)

Connection standards are specified in the Conditions of Service. Modifications to the distribution system in order to meet customer demand work comply with Regulation 22/04.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Entegrus participates in four separate Regional Planning zones overseen by the IESO, and provides regular communication with upstream transmitter, local municipalities, and developers. Proactive participation and active communication allows Entegrus to accommodate customer demand by long term utility planning.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

This project does not address specific future technologies.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Access

Factors affecting the timing or priority of implementing the project (5.4.3.2 SA-A1.1)

There are no alternatives as to the timing or location of this customer driven work, given that the timelines are a function of the Distribution System Code requirements. Customer driven work is Entegrus' top priority.

Factors relating to customer preferences or customer and third-party input (5.4.3.2 SA-A1.2)

If the specific circumstances present valid options for connection, these alternatives are discussed with the customer, understanding that certain choices may affect the cost of connection. The utility retains the final say as to the ultimate technical configuration of the new or modified facilities.

Factors affecting the final cost of the project (5.4.3.2 SA-A1.3)

Exact scope of work will vary according to specific customer requests received, as such the factors affecting final cost also depend on the customer request. For example customer preference (i.e. overhead vs. underground service) is a factor affecting final cost of the project. In general, the lowest cost solution which meets Entegrus' technical requirements is selected unless customer preference drives a more costly solution.

Explanation of how controllable costs have been minimized (5.4.3.2 SA-A1.4)

Costs are minimized through standardized design, equipment and consistent construction process. Entegrus experience also allows for efficient completion of work.

Description of the planning objectives met by the project (5.4.3.2 SA-A1.5)

This project only captures costs associated with the connection of residential customers. Projects involving commercial or industrial customers are captured under other projects described elsewhere in this document

Other project designs and implementation options considered (5.4.3.2 SA-A1.6)

There are limited alternative options for considering. Customer-demand work is mandatory. Entegrus completes work as requested by the customer.

Comparison of the least costly option and the most cost efficient option (5.4.3.2 SA-A1.7)

Entegrus completes work as requested by the customer. As such Entegrus has no control over project cost options.

Results of final economic evaluation documented as per section 3.2 od the DSC (5.4.3.2 SA-A1.8) (where applicable)

For customers that require expansion to the distribution system in order to connect the development, this cost is also drawn from this budget. The developer’s capital contributions will be rebated per DSP rules.

Nature and Magnitude of the system impacts of the project and costs of system modifications required to accommodate these impacts (e.g. REG Investment) (5.4.3.2 SA-A1.9) (where applicable)

The system impacts vary based on magnitude of the load request from the customer. In general, the lowest cost solution which meets Entegrus' technical requirements is selected unless customer preference drives a more costly solution (i.e. overhead vs. underground service).

A. General Information						
Project/Activity	Delta-Wye Service Conversions					
Project Number	1.4					
Investment Category	**System Access**					
Capital Cost (5.4.3.2 A.1)	$ 252,885					
Capital Contribution	$ -					
Net Cost	$ 252,885					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

Entegrus has 74 customers with 3-Phase 3-Wire services being supplied by 3-Phase 4-Wire transformers. Entegrus planns to conver 31 customers in 2021, with the remainder being converted the following year.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	30-Jun-21
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**	
	$ 126,443	$ 126,443	$ -	$ -	

Project Summary

This program responds to the direction from Electrical Safety Authority to the industry to modify the existing Delta Wye transformer connection configurations. Entegrus expects to modify all the existing instances of this configuration over the first two years of the Forecast Period. The program is non-discretionary in nature with little flexibility in timing.

Risk Identification & Mitigation (5.4.3.2 A.5)

A primary risk with the project is access to external resouces to complete work conversions during high system access volume periods that consume metering resources. Additionally, there are long equipment lead times. These risks will be mitgatged through diligent planning and inventory management practices for long-lead materials

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This project does not consider REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main driver for this project is Mandated Service Obligations.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

This project is targeted to improve the safety of the distribution system for both the affected customers and the Entegrus metering staff.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

The justifcation for this investment is so the utility can remain compliant with the delta-wye conversion program mandated from the Electrical Safety Authority (ESA).

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

This program responds to the direction from Electrical Safety Authority to the industry to modify the existing Delta Wye transformer connection configurations. The affected customers must have the service converted from 3-Phase 3-Wire to 3-Phase 4-wire. This involves the installation of a service neutral conductor and a neutral block in the customer's main disconnect. It is targeted to improve the safety of the distribution system for both the affected customers and the Entegrus metering staff. Designing in this manner allows the utility to adapt to future challenges such as grid modernization and climate change.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. This is a mandated program to improve the safety of the distribution system and metering staff. As such is one of Entegrus' top priorities.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

The affected customers must have the service converted from 3-Phase 3-Wire to 3-Phase 4-wire. This involves the installation of a service neutral conductor and a neutral block in the customer's main disconnect. This project is targeted to improve the safety of the distribution system for both the affected customers and the Entegrus metering staff. This project only includes the reconfiguration of 3-phase 3-wire services fed from a 3-phase 4 wire transformer. Upgrades to service infrastructure for all other 3-phase customers are captured under the "Commercial Industrial Rebuild" project. Standardized work pratices and materials are utilized to minimize costs.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

Improved safety for affected customers and customer equipment

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

This project will have no impact on reliability performance.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

There are no project alternatives, this project is mandatory as directed by the ESA. Costs are minimized through standard design, material and Entegrus work pratices.

Health and Safety (5.4.3.2 B2)

This program responds to the direction from Electrical Safety Authority to the industry to modify the existing Delta Wye transformer connection configurations. This project is targeted to improve the safety of the distribution system for both the affected customers and the Entegrus metering staff.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Not Applicable

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

This project does not address specific future technologies.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Access

Factors affecting the timing or priority of implementing the project (5.4.3.2 SA-A1.1)

As this is a mandated program, Entegrus expects to quickly modify all the existing instances of this configuration over the first two years of the Forecast Period.

Factors relating to customer preferences or customer and third-party input (5.4.3.2 SA-A1.2)

This project is mandated by third-party input ESA. The utility & customer is obligated to comply.

Factors affecting the final cost of the project (5.4.3.2 SA-A1.3)

Factors affecting the final cost of the project vary per service. For example required material, construction, and service type are factor affecting final cost of the project. In general, the lowest cost solution which meets Entegrus' technical requirements & the ESA mandate is selected unless customer preference drives a more costly solution.

Explanation of how controllable costs have been minimized (5.4.3.2 SA-A1.4)

Costs are minimized through standardized design & equipment. This project only includes the reconfiguration of 3-phase 3-wire services fed from a 3-phase 4 wire transformer. Upgrades to service infrastructure for all other 3-phase customers are captured under the “Commercial Industrial Rebuild” project.

Description of the planning objectives met by the project (5.4.3.2 SA-A1.5)

Program implemented to meet delta-wye conversion as directed by ESA.

Other project designs and implementation options considered (5.4.3.2 SA-A1.6)

The ESA mandate enforces a wye service, as such there are little project design options considered. In general, the lowest cost solution which meets Entegrus' technical requirements is selected unless customer preference drives a more costly solution (i.e. overhead vs. underground service).

Comparison of the least costly option and the most cost efficient option (5.4.3.2 SA-A1.7)

In general, the lowest cost solution which meets Entegrus' technical requirements is selected unless customer preference drives a more costly solution (i.e. overhead vs. underground service).

Results of final economic evaluation documented as per section 3.2 od the DSC (5.4.3.2 SA-A1.8) (where applicable)

Not applicable.

Nature and Magnitude of the system impacts of the project and costs of system modifications required to accommodate these impacts (e.g. REG Investment) (5.4.3.2 SA-A1.9) (where applicable)

The modifications promote a safer working design while delivering the same quality of service. As the this is a mandated program, there are no alternatives to project costs.

A. General Information					
Project/Activity	Engineering Support Capital				
Project Number	1.5				
Investment Category	**System Access**				
Capital Cost (5.4.3.2 A.1)	$ 764,728				
Capital Contribution	$ -				
Net Cost	$ 764,728				
O&M Cost (5.4.3.2 A.1)	$ -				
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -				

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

This project captures capitalized labour overhead for Entegrus' projects such as Engineering supervision. Additionally, it captures the engineering effort completed early in the projects life cycle where specific project level tracking is not yet available. The number of customers potentially affect by a specific project varies according to the projects undertaken each year.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**	
	$ 191,182	$ 191,182	$ 191,182	$ 191,182	

Project Summary

This program captures the cost of capitalized overhead (such as engineering supervision) as well as the engineering effort early in the projects life cycle where specific project level tracking is not yet available. The primary driver for this project is to ensure public safety through compliance with construction standards and cost control through accurate job estimation.

Legacy Entegrus added incremental engineering resourcing in 2017 to assist with planning and design for the upcoming volume of "Fibre to the Home" projects.

Risk Identification & Mitigation (5.4.3.2 A.5)

The risk with not providing engineering support hampers Entegrus' ability to meet the needs of the new and existing customer base. While outsourcing to a third-party contractor represents a potential alternative of accomplishing the requisite activities, this approach is generally inconsistent with Entegrus' vision of building a strong core of internal specialists intimately familiar with the local system characteristics and capable of performing a wide range of analytical tasks. In addition, contracting the work is generally considered more costly than performing the work internally.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This project does not consider REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main driver for this project is Mandated Service Obligations.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

Since the project captures engineering effort for various capital projects, the exact outcomes are inherited from the other projects in this document, and will vary according actual customer requests received in some cases.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

As this project captures the engineering effort for each capital project, the exact number of assets associated with this project is inherited from the other projects in this document.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Over the Historical Period Entegrus has substantially increased the staffing complement of its distribution system engineers and technologists, following multiple retirements in a short span of time. Most of the staff resources captured by this program are used to support third-party requests and new customer connections. Having knowledgable resources will allow the distributor to adapt to future challenges such as grid modernization and climate change.

Legacy Entegrus added incremental engineering resourcing in 2017 to assist with planning and design for the upcoming volume of "Fibre to the Home" projects.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. The primary driver for this project is to ensure public safety through compliance with construction standards and cost control through accurate job estimation.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

There are no practical alternatives to performing the activities captured in the cost of this program. While outsourcing to a third-party contractor represents a potential alternative of accomplishing the requisite activities, this approach is generally inconsistent with Entegrus' vision of building a strong core of internal specialists intimately familiar with the local system characteristics and capable of performing a wide range of analytical tasks. In addition, contracting the work is generally considered more costly than performing the work internally. Standardized design, work practices and equipment are used to control system operation costs, ensuring the investment is cost-effective.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

Since the project captures engineering effort for various capital projects, the exact outcomes are inherited from the other projects in this document, and will vary according actual customer requests received in some cases.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

This project does not have a direct impact on reliability performance.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

While outsourcing to a third-party contractor represents a potential alternative of accomplishing the requisite activities, this approach is generally inconsistent with Entegrus' vision of building a strong core of internal specialists intimately familiar with the local system characteristics and capable of performing a wide range of analytical tasks. In addition, contracting the work is generally considered more costly than performing the work internally. Costs are minimized through standard design, material and Entegrus work pratices.

Health and Safety (5.4.3.2 B2)

The primary driver for this project is ensuring public safety through compliance with construction standards.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Unlike other support capital projects detailed elsewhere in this document, this project captures costs related specifically to the Engineering staff Entegrus employs. Most of the staff resources captured by this program are used to support third-party requests and new customer connections.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

This project does not address specific future technologies.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Access

Factors affecting the timing or priority of implementing the project (5.4.3.2 SA-A1.1)

Engineering support capital does not target a specific project. As such, the factors affecting the timing or priority vary.

Factors relating to customer preferences or customer and third-party input (5.4.3.2 SA-A1.2)

Engineering support capital does not address factories relating to customer preferences or customer and third-party input.

Factors affecting the final cost of the project (5.4.3.2 SA-A1.3)

While outsourcing to a third-party contractor represents a potential alternative of accomplishing the requisite activities, this approach is generally inconsistent with Entegrus' vision of building a strong core of internal specialists intimately familiar with the local system characteristics and capable of performing a wide range of analytical tasks. In addition, contracting the work is generally considered more costly than performing the work internally.

Explanation of how controllable costs have been minimized (5.4.3.2 SA-A1.4)

Engineering support allows for cost control through accurate job estimation, standardized design, equipment and construction practices.

Description of the planning objectives met by the project (5.4.3.2 SA-A1.5)

Since the project captures engineering effort for various capital projects, the exact planning objectives will vary per project. Generally speaking, ensuring public safety through compliance with construction standards.

Other project designs and implementation options considered (5.4.3.2 SA-A1.6)

Since Engineering Support Capital does not cover a specific project, project designs will and implementation will vary.

Comparison of the least costly option and the most cost efficient option (5.4.3.2 SA-A1.7)

Generally in Entegrus' experience contracting the work is considered more costly than performing the work internally. Since the project captures engineering effort for various capital projects, the exact outcomes are inherited from the other projects in this document, and will vary according actual customer requests received in some cases.

Results of final economic evaluation documented as per section 3.2 od the DSC (5.4.3.2 SA-A1.8) (where applicable)

Not applicable.

Nature and Magnitude of the system impacts of the project and costs of system modifications required to accommodate these impacts (e.g. REG Investment) (5.4.3.2 SA-A1.9) (where applicable)

Not applicable.

A. General Information						
Project/Activity	Third Party Attachments					
Project Number	1.6					
Investment Category	**System Access**					
Capital Cost (5.4.3.2 A.1)	$ 586,538					
Capital Contribution	$ 586,538					
Net Cost	$ -					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

As this work is driven by third-party requests, the number of assets installed will depend on actual requests received.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21	
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**		
	$ 146,634	$ 146,634	$ 146,634	$ 146,634		

Project Summary

Upon receiving a request for a third-party attachment to its distribution poles, Entegrus is required to facilitate that attachment. Entegrus' performs detailed asset inspections of its assets when a request for attachment is received in order to ensure that all upgrades that are undertaken as part of this project are truly necessary to support the safe attachment of third-party equipment. In many cases this requires Entegrus to perform upgrades to its distribution assets in order to allow for safe connection of third-party equipment. Entegrus has received numerous requests from telecom providers in recent years, particularly in the community of Chatham, for new attachments and anticipates more such requests throughout the Forecast Period.

Risk Identification & Mitigation (5.4.3.2 A.5)

The primary risk associated with this work is pacing. The number of third party requests can vary dramatically between communities and between years. Entegrus confers with economic development, municipal planners, and third party attachers to try and ascertain areas of growth. Historical pacing is also a valuable part of this evaluation. The unpredictability in pacing is mitigated through inventory management practices for long-lead materials and out-sourcing of work where applicable to accomdate request volume.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This project does not consider REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main driver for this project is Third Party Infrastructure Requirements.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

Targeted outcomes for this project include permitting compliant third-party attachments, as well as maintaining high customer satisfaction.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

The source of this investment is driven by third-party requests. Generally speaking, sharing assets through joint-use agreements is more cost effective then having each party install their own exclusive infrasture. For example Entegrus will permit third party attachments to Entegrus distribution poles through joint use agreements to enable communication service options to Entegrus customers. Historical trending and communication with third-party attachers are a valuable piece for forecasting the investment.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Entegrus' performs detailed asset inspections of its assets when a request for attachment is received in order to ensure that all upgrades that are undertaken as part of this project are truly necessary to support the safe attachment of third-party equipment. Designing in this manner allows the utility to adapt to future challenges such as grid modernization with emerging new technology.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. It is necessary to ensure that existing assets can support the safe attachment of third-party equipment.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

There are no alternatives as to the timing or location of this third-party driven work. Standardized design, work pratices and materials, along with joint use agreements are used to minimize system operation costs. Sharing assets (pole attachments) through joint-use agreements is more cost effective then having each third party install their own exclusive infrasture.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

The upgrades made to Entegrus' distribution plant as a result of this project has an impact in terms of improved reliability for some customers.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

The upgrades made to Entegrus' distribution plant as a result of this project can have a positive impact for customer reliability. Renewal of plant near end of life will avoid future unexpected interruption hours due to failed assets.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

There are no project alternatives, these projects are driven by third-party requests. In general, the lowest cost solution which meets Entegrus' technical requirements is selected unless customer preference drives a more costly solution (i.e. overhead vs. underground service). Costs are minimized through standard design, material and Entegrus work pratices.

Health and Safety (5.4.3.2 B2)

The primary driver for this project is to ensure that all upgrades undertaken as part of this project are truly necessary to support the safe attachment of third-party equipment.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

This project will ensure that Entegrus' distribution system is able to accommodate attachment of third-party equipment to its distribution poles.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

This project does not address specific future technologies. Entegrus provisions for third party attachements when applicable.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Access

Factors affecting the timing or priority of implementing the project (5.4.3.2 SA-A1.1)

The work performed as part of this project is based on third-party requests.

Factors relating to customer preferences or customer and third-party input (5.4.3.2 SA-A1.2)

Upon receiving a request for a third-party attachment to its distribution poles, Entegrus is required to facilitate that attachment. The scope of work for this project typically involves replacement and/or reconfiguration of overhead distribution poles, but various per third-party request.

Factors affecting the final cost of the project (5.4.3.2 SA-A1.3)

The factors affecting the final cost of the project vary based on the nature of the third-party request. For example plant near end of life will be replaced in preperation for third-party attachments, increasing the cost of project. An newer asset is typically already provisioned to accomdate a third-party attacher, reducing the costs to accomdate the request.

Explanation of how controllable costs have been minimized (5.4.3.2 SA-A1.4)

Costs are minimized through accurate job estimation, standardized design, equipment and construction practices.

Description of the planning objectives met by the project (5.4.3.2 SA-A1.5)

This project will ensure that Entegrus' distribution system is able to accommodate attachment of third-party equipment to its distribution poles.

Other project designs and implementation options considered (5.4.3.2 SA-A1.6)

Project designs may be considered, however the design alternatives vary based on the original request of the third-party attacher.

Comparison of the least costly option and the most cost efficient option (5.4.3.2 SA-A1.7)

In general, the lowest cost solution which meets Entegrus' technical requirements is selected unless the third party attacher drives a more costly solution. The ultimate design however will be at the utilities discrestion.

Results of final economic evaluation documented as per section 3.2 od the DSC (5.4.3.2 SA-A1.8) (where applicable)

Not applicable.

Nature and Magnitude of the system impacts of the project and costs of system modifications required to accommodate these impacts (e.g. REG Investment) (5.4.3.2 SA-A1.9) (where applicable)

Not applicable.

A. General Information						
Project/Activity	Critical Defect Replacements					
Project Number	2.1					
Investment Category	**System Renewal**					
Capital Cost (5.4.3.2 A.1)	$ 322,216					
Capital Contribution	$ -					
Net Cost	$ 322,216					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

This project cannot qualify a predetermined number of customers affected or affected load. Entegrus targets assets with low health index for replacement, although some conditions of assets are better captured through visual inspection.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21	
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**		
	$ 80,554	$ 80,554	$ 80,554	$ 80,554		

Project Summary

This project includes replacement of critical defective assets identified through routine inspection. The OEB mandates one third of the distribution system be inspected every year. This project is to replace critical defective assets identified through the inspection program which may pose an immediate danger to the public. This project covers all range of assets repairs to the electrical system that must be addressed immediately.

Risk Identification & Mitigation (5.4.3.2 A.5)

Assets identified as critical defective are in need of immediate replacement as they may pose a danger to the public. Access to immediate replacement material is a risk. This risk is mitigated through inventory management practices for long-lead materials.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

Not applicable, this project does not consider any REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main driver for investment for this project is Failure & Failure Risk. Repairing critically defective assets immediately are needed to maintain the reliability of the electrical grid and to safeguard the public.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

The main target outcome of this project is to maintain system reliability and avoid potential danger to the public. The routine inspection program ensures critically defective assets are captured and resolved

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

Entegrus targets assets with low health index for replacement, although some conditions of assets are better captured through visual inspection. There are little alternatives to consider for critical defective equipment. Assets identified as critical defective are in need of immediate replacement as they may pose a danger to the public.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Repairing critically defective assets immediately are needed to maintain the reliability of the electrical grid and to safeguard the public. A main outcome of this project is to maintain system reliability and avoid potential danger to the public.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. This project is a number one priority as the repairs avoid potential danger to the public.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

There are little alternatives to consider for critical defective equipment. Assets identified as critical defective are in need of immediate replacement. Standardized design, work pratices and materials are controls used to minimize cost. Generally these replacements are rather captured through regular working hours (where the defect does not pose danger to the public) to minimze labor costs.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

Repair of critically defective assets will allow Entegrus to continue serving electricity safely and reliability to all customers.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

This project targets replacing critical defective equipment, which aims to maintain system reliability.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

The majority of the critical defect repairs are replaced "like-for-like" and typically do not consider any alternatives. Some circumstances may arise where Entegrus will deviate from a "like-for-like" replacement to an engineering design to adopt todays safety standards or to provide additional provisions for future known projects. These repairs are on Entegrus assets only and typically are in immediate need of repair.

Health and Safety (5.4.3.2 B2)

The main target outcome of this project is to maintain system reliability and avoid potential danger to the public.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

This project does not target future technologies or operational requirements.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Renewal

Asset Performance-related operational targets & asset lifecycle optimization policies and practices (refer to 5.2.3 & 5.3.3) (5.4.3.2 SR-B1.a)

Asset operational targets align with asset lifecycle optimization policies and practices, as the majority of these assets are nearing end of useful life. Please refer to Asset Lifecycle Optimization Policies and Practices (5.3.3) in the DSP.

Information on the condition of the assets relative to their typical life-cycle and performance record (5.4.3.2 SR-B1.b)

This project covers all range of asset repairs to the electrical system. This project includes replacement of critical defective assets identified through routine inspection. The characteristic of each asset varies based on discovery of issue, but typically these repairs are assets nearing end of life whose replacement is better captured through visual inspection. Please refer to Asset Lifecycle Optimization Policies and Practices (5.3.3) in the DSP. Information on the condition of the assets relative to their to their typical life-cycle and performance record are captured in Section 5.3.2 of the DSP.

The number of customers in each class potential affected by failure of the assets (5.4.3.2 SR-B1.c)

This project cannot qualify a predetermined number of customers affected.

Quantitative customer impacts (5.4.3.2 SR-B1.d)

The quantitative customer impacts can not be predetermined as scope of work varies based on discovery of critical defects.

Qualitative customer impacts (5.4.3.2 SR-B1.e)

The qualitative customer impacts can not be predetermined as scope of work varies based on discovery of critical defects.

Value of customer impact in terms of characteristics of customers potentially affected by failure that have bearing on the criticality and/or cost of failure (5.4.3.2 SR-B1.f)

The value of customer impacts can not be predetermined as scope of work varies based on discovery of critical defects. However, there are little alternatives to consider for critical defect equipment, as replacement is to maintain system reliability and avoid potential danger to the public.

Factor affecting the Timing and Priority of Project (5.4.3.2 SR-B2)

The timing and priority of the project is based on discovery through inspection. The repairs are completed immediately.

Consequences for system O&M costs (5.4.3.2 SR-B3)

There is no impact to system O&M costs.

Impact on reliability performance and/or safety factors (5.4.3.2 SR-B4)

The main target outcome of this project is to maintain system reliability and avoid potential danger to the public.

Analysis of Project Benefits and Cost Comparing Alternatives to the Timing of the proposed Project (5.4.3.2 SR-B5)

There are little alternatives to consider for critical defective equipment. Assets identified as critical defective are in need of immediate replacement.

Like for Like Renewal Analysis, Alternatives Comparison (like for like vs. not like for like, timing, rate of replacements, etc.) (5.4.3.2 SR-B6)

The majority of the critical defect repairs are replaced "like-for-like" and typically do not consider any alternatives. Some circumstances may arise where Entegrus will deviate from a "like-for-like" replacement to an engineering design to adopt todays safety standards or to provide additional provisions for future known projects.

A. General Information						
Project/Activity	Emergency Response					
Project Number	2.2					
Investment Category	**System Renewal**					
Capital Cost (5.4.3.2 A.1)	$ 456,779					
Capital Contribution	$ -					
Net Cost	$ 456,779					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

This project cannot qualify a predetermined number of customers affected or affected load. The number of customers affected each year varies greatly as the intensity of the damage and its impact cannot be reliably predicted.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21	
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**		
	$ 137,034	$ 91,356	$ 91,356	$ 137,034		

Project Summary

This project includes unexpected repairs to the electrical system that must be addressed immediately. The costs include those related to repairs caused by storm damage, emergency tree trimming and on-call premiums. The ultimate objective is to reduce this emergency repair to continue to provide safe reliable power to Entegrus customers.

Risk Identification & Mitigation (5.4.3.2 A.5)

The risk with this project is the severity & quantity of repairs to the electrical system is unknown. In turn, the risk to access replacement material and resources required to make the repair. This risk is mitigated through inventory management practices for long-lead materials and emergency response planning.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

Not applicable, this project does not consider any REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main driver for this investment is System Capital Investment Support. Specifically, the repair and restoration of the system caused by storm damage. Restoration of customer service is a mandated activity and cannot be deferred.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

The main target outcome of this project is immediate restoration to the electrical grid. The ultimate objective is to reduce this emergency repair to continue to provide safe reliable power to Entegrus customers as outlined in Section 4.1.2.1.11

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

Uncontrollable external disturbances such as motor vehicle accidents and severe weather may damage assets in the distribution grid. Restoration of customer supply is a utility obligation and cannot be deferred. The number of emergency response repairs required is unknown and can vary dramatically between communities and between years. Historical data is a valuable part of this evaluation and forecasted investment amount.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Entegrus is diligent in its design to create a robust, resilient distribution grid to reliability serve power to Entegrus customers. However there are unexpected & unavoidable system repairs to the electrical system that must be addressed immediately caused by storm damage or external disturbances.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. This project is a priority as damage to the electrical system caused by storms cannot be deferred.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

During storm restoration, typical repairs are in a like for like configuration. Alternatives are evaluated based on the specific circumstances. For example where applicable, if power can be restored from an alternate configuration, and the damage equipment made isolated and safe, the restoration efforts may be delayed to regular working hours to reduce overtime labor costs.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

Emergency repair of assets will allow Entegrus to quickly restore power to all customers.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

During storm restoration, typical repairs are in a like for like configuration, however renewal of assets may result in improved future reliability.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

The majority of the emergency repairs are replaced "like-for-like" and typically do not consider any alternatives. Some circumstances may arise where Entegrus will deviate from a "like-for-like" replacement to an engineering design to adopt todays safety standards or to provide additional provisions for future known projects. These repairs are on Entegrus assets only and typically are in immediate need of repair.

Health and Safety (5.4.3.2 B2)

The main target outcome of this project is immediate restoration to the electrical grid. A major component of that restoration is safety. Rapid identification and isolation of damaged equipment allows Entegrus' staff to quickly begin the restoration process to restore service.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Storm restoration often involves coordination with upstream transmitter Hydro One. For major events, Entegrus maintains mutual aid agreements with neighboring utilities, as well as utilities with greater geographic separation.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

This project does not target future technologies or operational requirements.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Renewal

Asset Performance-related operational targets & asset lifecycle optimization policies and practices (refer to 5.2.3 & 5.3.3) (5.4.3.2 SR-B1.a)

Asset operational targets align with asset lifecycle optimization policies and practices; as assets damaged by storms have no more useful life. Please refer to Asset Lifecycle Optimization Policies and Practices (5.3.3) in the DSP.

Information on the condition of the assets relative to their typical life-cycle and performance record (5.4.3.2 SR-B1.b)

This project includes replacement of all assets damaged by storms. The characteristic of each asset varies based on severity of storm damage, but typically assets are replaced when they have no more useful life or pose a danger to the public. Please refer to Asset Lifecycle Optimization Policies and Practices (5.3.3) in the DSP. Information on the condition of the assets relative to their to their typical life-cycle and performance record are captured in Section 5.3.2 of the DSP.

The number of customers in each class potential affected by failure of the assets (5.4.3.2 SR-B1.c)

This project cannot qualify a predetermined number of customers affected.

Quantitative customer impacts (5.4.3.2 SR-B1.d)

The quantitative customer impacts can not be predetermined as scope of work varies based on storm damage.

Qualitative customer impacts (5.4.3.2 SR-B1.e)

The quantitative customer impacts can not be predetermined as scope of work varies based on storm damage.

Value of customer impact in terms of characteristics of customers potentially affected by failure that have bearing on the criticality and/or cost of failure (5.4.3.2 SR-B1.f)

The quantitative customer impacts can not be predetermined as scope of work varies based on storm damage. However there are little alternatives to consider for critical defect equipment, as replacement is to maintain system reliability and avoid potential danger to the public.

Factor affecting the Timing and Priority of Project (5.4.3.2 SR-B2)

The timing and priority of the project is based on emergency response. The repairs are completed immediately.

Consequences for system O&M costs (5.4.3.2 SR-B3)

There is no impact to system O&M costs.

Impact on reliability performance and/or safety factors (5.4.3.2 SR-B4)

The main target outcome of this project is immediate restoration to the electrical grid. A major component of that restoration is safety. Rapid identification and isolation of damaged equipment allows Entegrus' staff to quickly begin the restoration process to restore service.

Analysis of Project Benefits and Cost Comparing Alternatives to the Timing of the proposed Project (5.4.3.2 SR-B5)

Restoration of customer service is a mandated activity and cannot be deferred. Alternatives are evaluated based on the specific circumstances.

Like for Like Renewal Analysis, Alternatives Comparison (like for like vs. not like for like, timing, rate of replacements, etc.) (5.4.3.2 SR-B6)

The majority of the repairs are replaced "like-for-like" and typically do not consider any alternatives. Some circumstances may arise where Entegrus will deviate from a "like-for-like" replacement to an engineering design to adopt todays safety standards or to provide additional provisions for future known projects.

A. General Information						
Project/Activity	Metering Renewal					
Project Number	2.3					
Investment Category	**System Renewal**					
Capital Cost (5.4.3.2 A.1)	$ 1,394,325					
Capital Contribution	$ -					
Net Cost	$ 1,394,325					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

This project targets replacing 2,000 smart meters in 2021, impacting the same number of customers. Simultaneously, Entegrus will renew/re-seal other smart meters, as condition and age permit, to extend their lifecycle.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21	
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**		
	$ 348,581	$ 348,581	$ 348,581	$ 348,581		

Project Summary

The purpose of this project is to replace smart meters that have reached end of service life. Some of these meters require of replacement due to failure, damage or technical obsolescence. Where reasonable to do so, Entegrus prefers meters to be re-sealed and placed back into service. Meters are an integral part of the distribution grid for many reasons. Meters record consumption and demand, which enables Entegrus to provide accurate bills to customers. Smart meters measure power quality and allows Entegrus to target areas that need reinforcement. Meters are an integral component in Entegrus' Outage Management System, which enables Entegrus to have more efficient restoration efforts and better communication of outage information to customers through the company website. Over the 2021-2025 Forecast Period approximately 50% of Entegrus' fleet of smart meters will reach the end of their first re-seal period as specified by Measurement Canada. Management has determined that along with the large-scale replacement of the individual metering units, it is advisable to upgrade the AMI communication infrastructure (Network Servers, Signal Amplifiers, Network Controllers) and the Head-End System.

Risk Identification & Mitigation (5.4.3.2 A.5)

The 2021-2025 Forecast Period expenditures are predicated on a paced smart meter replacement and re-sealing strategy, which will require close monitoring against the risk of technological obsolescence and in-service failures due to the age of the Entegrus smart meter fleet. Specifically, approximately 50% of Entegrus' fleet of smart meters will reach the end of their first re-seal period as specified by Measurement Canada in 2021-2025. A primary risk with this project execution is timing to meet re-seal period and a secondary risk is the potential necessity to do a second re-sealing period for certain batches of meters. Further, long equipment lead-times, pandemic-related supply shortage (i.e. chip shortages) and available resources to facilitate the meter change outs may require Entegrus to outsource replacement work, increasing costs to maintain meter compliance. This risks are mitgated through diligent planning and inventory management practices for long-lead materials.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

Not applicable, this project does not consider any REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The drivers for this investment is regulatory compliance and operational efficiency (i.e. due to the risks of failure and technological obsolescence). The majority of meters replaced under this program will reach their first seal expiration in 2021-2025.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

The outcome of this project is to renew meters that are at end-of-life. This project is necessary to maintain a supply of electric metering infrastructure to measure consumption as required for new and existing electric services and meter failures. This project targets replacing 2,000 smart meters in 2021, impacting the same number of customers. Simultaneously, Entegrus will renew/re-seal other smart meters, as permissible, to extend their lifecycle as needed.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

The justification of this investment is non-discretionary work required to meet Measurement Canada rules. This project is necessary to maintain a supply of electric metering infrastructure to measure consumption as required for new and existing electric services and meter failures. This project targets replacing 2,000 smart meters in 2021, impacting the same number of customers. Forecasted investment is determined by metering replacment cost and quantity of meters to replace.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Management has determined that along with the large-scale replacement of the individual metering units, it is advisable to upgrade the AMI communication infrastructure (Network Servers, Signal Amplifiers, Network Controllers) and the Head-End System. Entegrus meter replacements will contribute towards creating a modernized grid with advanced meter functionality. As well as, the consolidation of the entire fleet of meters into one harmonized metering system, keeping O&M costs low.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. Meter replacements are a necessary asset for accurate billing of Entegrus customers and cannot be deferred.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

Where reasonable to do so, Entegrus prefers meters to be re-sealed and placed back into service. However some of these meters require replacement due to failure, damage or technical obsolescence. Measurement Canada requires seals to ensure accuracy and for this reason there are no alternatives to this project. The consolidation of the Entegrus metering system will increase operational efficiency and reduce the licensing costs required to maintain two systems.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

Replacement of meters ensure accurate billing of Entegrus customers. Meters are an integral component in Entegrus' Outage Management System, which enables Entegrus to have more efficient restoration efforts and better communication of outage information to customers through the company website.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

Meter replacements do not explicitly target reliability performance, but enable more efficient restoration efforts through better visibility in Entegrus' Outage Management System.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

Meters require Measurement Canada seals to ensure accuracy and for this reason there are no alternatives to this project. Over the 2021-2025 Forecast Period approximately 50% of Entegrus' fleet of smart meters will reach the end of their first re-seal period as specified by Measurement Canada. Further, Entegrus seeks to migrate its two legacy meter systems to one smart meter system across the service territory over time.

Health and Safety (5.4.3.2 B2)

Meter replacement is relatively routine work for Entegrus metering staff. All work must be done safely and Health & Safety best practices will be applied to this project.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

A substantial risk with continued operation of the legacy AMI infrastructure stems from its vulnerability to potential cybersecurity threats. As the overall volume of operating data and complexity of utility IT systems continue to increase, the impact of potential cybersecurity breaches continues to increase.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

Management has determined that along with the large-scale replacement of the individual metering units, it is advisable to upgrade the AMI communication infrastructure (Network Servers, Signal Amplifiers, Network Controllers) and the Head-End System. Entegrus seeks to ultimately harmonize to one smart meter system across the service territory. Meters are an integral part of the distribution grid for many reasons including billing, power quality monitoring and outage reporting.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Renewal

Asset Performance-related operational targets & asset lifecycle optimization policies and practices (refer to 5.2.3 & 5.3.3) (5.4.3.2 SR-B1.a)

Asset operational targets align with asset lifecycle optimization policies and practices; meters are replaced when they have reached end of service life.

Information on the condition of the assets relative to their typical life-cycle and performance record (5.4.3.2 SR-B1.b)

Measurement Canada specifies meter re-seal periods. Meters are replaced due to failure, damage or technical obsolescence, which is typically at end of useful service life. P

The number of customers in each class potential affected by failure of the assets (5.4.3.2 SR-B1.c)

This project targets replacing 2,000 smart meters in 2021, impacting the same number of customers.

Quantitative customer impacts (5.4.3.2 SR-B1.d)

The quantitative benefit to customers is the confidence in the accuracy and integrity of the data they are being billed on.

Qualitative customer impacts (5.4.3.2 SR-B1.e)

The qualitative benefit to customers is better communication of outage information to customers through the company website.

Value of customer impact in terms of characteristics of customers potentially affected by failure that have bearing on the criticality and/or cost of failure (5.4.3.2 SR-B1.f)

Metering replacements/re-seal are of high value for the customer. Replacements ensure accurate billing of Entegrus customers and allow for better communication of outage information. Smart meters will also assist Entegrus for measuring power quality.

Factor affecting the Timing and Priority of Project (5.4.3.2 SR-B2)

The timing and priority of the project is based on meters reaching their re-seal period as specified by Measurement Canada. Damaged meters are replaced as needed.

Consequences for system O&M costs (5.4.3.2 SR-B3)

Due to the merger Entegrus is currently operating two distinct smart metering networks and intends to begin migrating to a single system across the service territory during this timeframe, while ensuring that existing investments in metering infrastructure are not stranded.

Impact on reliability performance and/or safety factors (5.4.3.2 SR-B4)

Meter replacement is relatively routine work for Entegrus metering staff. All work must be done safely and Health & Safety best practices will be applied to this project. Meter replacements do not explicitly target reliability performance, but enable more efficient restoration efforts through better visibility in Entegrus' Outage Management System.

Analysis of Project Benefits and Cost Comparing Alternatives to the Timing of the proposed Project (5.4.3.2 SR-B5)

An accurate and reliable meter population is necessary to bill customers properly and on time of use rates. Meters require Measurement Canada seals to ensure accuracy and for this reason there are no alternatives to this project.

Like for Like Renewal Analysis, Alternatives Comparison (like for like vs. not like for like, timing, rate of replacements, etc.) (5.4.3.2 SR-B6)

Management has determined that along with the large-scale replacement of the individual metering units, it is advisable to upgrade the AMI communication infrastructure (Network Servers, Signal Amplifiers, Network Controllers) and the Head-End System. Further, Entegrus seeks to migrate its two legacy meter systems to one smart meter system across the service territory over time. Meters are an integral part of the distribution grid for many reasons including billing, power quality monitoring and outage reporting.

A. General Information						
Project/Activity	Miscellaneous System Renewal					
Project Number	2.4					
Investment Category	**System Renewal**					
Capital Cost (5.4.3.2 A.1)	$ 145,738					
Capital Contribution	$ -					
Net Cost	$ 145,738					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					
Not applicable as there are no capital contributions or costs recovery to the transmitter.						
Customer Attachments and Load (5.4.3.2 A.3)						
For 2021, this project is anticipated to directly impact 405 customers, with improvements to resiliency for an additional 1117 customers.						
Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21	
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**		
	$ 36,435	$ 36,435	$ 36,435	$ 36,435		
Project Summary						
In order to ensure that conversion work is able to be completed before a substation fails, Entegrus is beginning a program of life extension projects on selected substations where conversion is expected to take many years to complete either due to complexity, resiliency requirements or the remaining volume of work. Examples of work could include modernization of P&C equipment, transformer oil drying and egress cable life extension work (re-terminations, cable injection, etc.).						
Risk Identification & Mitigation (5.4.3.2 A.5)						
A risk with this project exeuction is reliance on third-party expertise. As substation assets age, Entegrus is introducing life extension programs. This risk will be mitgaged through consultation with multiple parties and fellow LDC feedback on contractor workmanship.						
Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)						
There is comparative information on expenditures for equivalent projects/activities, asset life extension is a new program to Entegrus.						
REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)						
Not applicable, this project does not consider any REG investments.						
Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)						
This project does not require leave to construct approval under section 92 of the OEB Act.						
B. Evaluation criteria and information requirements for each project/activity						
Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)						
The main driver for this investment is System Capital Investment Support. Asset life extension program within Entegrus substations.						
Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)						
Not applicable.						
Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)						
A targeted outcome is to extend the service life of Entegrus' substations through strategized improvements to enable the current pacing of conversion work to avoid rebuilding 4kV substations.						
Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)						
In order to ensure that conversion work is able to be completed before a substation fails, Entegrus is beginning a program of life extension projects on selected substations where conversion is expected to take many years to complete either due to complexity, resiliency requirements or the remaining volume of work. The forecasted expenditures are based upon specific targeted asset life extension.						
Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)						
In order to ensure that conversion work is able to be completed before a substation fails, Entegrus is beginning a program of life extension projects on selected substations where conversion is expected to take many years to complete either due to complexity, resiliency requirements or the remaining volume of work. This level of activity is beyond the pacing which can be maintained with Entegrus available funds and workforce.						
Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)						
Refer to Section 4.5 of the DSP for project rankings. Entegrus intends to extend the service life of Entegrus' substations through targeted improvements to enable the current pacing of conversion work to avoid rebuilding 4kV substations.						
Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)						
Given expected timeline to finish conversion, Entegrus has begun a program of active asset life extension at substations where the conversion horizon is expected to exceed the remaining service life. This program includes elements such as transformer oil drying and treatment, P&C modernization, communication equipment upgrades and egress cable injection among other elements as applicable to each station. These projects offer a cost-effective way to defer major station replacement costs while maintaining resiliency and reliability within the system until conversion can occur. This notable consideration provides additional objective support for continuing the conversion work at the maximum pace permissible by the utility's resources.						
Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)						
This project targets directly impacting 405 customers, with improvements to resiliency for an additional 1117 customers.						
Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)						
In order to ensure that conversion work is able to be completed before a substation fails, Entegrus is beginning a program of life extension projects on selected substations where conversion is expected to take many years to complete either due to complexity, resiliency requirements or the remaining volume of work. This investment at a minimum retains reliability for 405 customers, while provides additional resiliency for additional 1117 customers.						

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

The alternative to engaging in life extension activities is to advance conversion activities to ensure that work is complete prior to the stations reaching end of life. This level of activity is beyond the pacing which can be maintained with our available funds and workforce.

Health and Safety (5.4.3.2 B2)

These projects are aimed for extension of useful asset life at Entegrus substations. P&C enhancements can provide better protection of electrical assets; safeguarding of Entegrus line staff and the public.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

Modern P&C has enhanced protection features compared to existing electromechanical relays. Microprocessor-based protection allows for improved fault detection, reducing stress on aged system elements, control-room visibility and control options possible through the Entegrus SCADA system.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Renewal

Asset Performance-related operational targets & asset lifecycle optimization policies and practices (refer to 5.2.3 & 5.3.3) (5.4.3.2 SR-B1.a)

Asset operational targets align with asset lifecycle optimization policies and practices; assets are replaced when they have reached end of service life. However, given expected timeline to finish conversion, Entegrus has begun a program of active asset life extension at substations where the conversion horizon is expected to exceed the remaining service life.

Information on the condition of the assets relative to their typical life-cycle and performance record (5.4.3.2 SR-B1.b)

Please also refer to Asset Lifecycle Optimization Policies and Practices in Secion 3.3 in the DSP. Information on the condition of the assets relative to their to their typical life-cycle and performance record are captured in Section 3.2 of the DSP.

The number of customers in each class potential affected by failure of the assets (5.4.3.2 SR-B1.c)

For 2021, this project is anticipated to directly impact 405 customers, with improvements to resiliency for an additional 1117 customers.

Quantitative customer impacts (5.4.3.2 SR-B1.d)

Quantitative customer impacts are not available.

Qualitative customer impacts (5.4.3.2 SR-B1.e)

Asset life extensions will result in continued reliable distribution of electricity to Entegrus customers.

Value of customer impact in terms of characteristics of customers potentially affected by failure that have bearing on the criticality and/or cost of failure (5.4.3.2 SR-B1.f)

Customer impact is medium. The substations serve a mix of residential and commercial customers. Substation failure could results in prolonged outages. Although most Entegrus substations have backup capabilities from neighbouring substations, all substations are of the same relative vintage.

Factor affecting the Timing and Priority of Project (5.4.3.2 SR-B2)

Asset health index affects the timing of the project. This project is priority level four as substations are approaching end-of-life but do not require immediate replacement.

Consequences for system O&M costs (5.4.3.2 SR-B3)

Extension of Asset Life will result in reduced O&M, as reactive repairs are usually more expensive.

Impact on reliability performance and/or safety factors (5.4.3.2 SR-B4)

In order to ensure that conversion work is able to be completed before a substation fails, Entegrus is beginning a program of life extension projects on selected substations where conversion is expected to take many years to complete either due to complexity, resiliency requirements or the remaining volume of work. These projects are aimed for extension of useful asset life at Entegrus substations. P&C enhancements can provide better protection of electrical assets; safeguarding of Entegrus line staff and the public.

Analysis of Project Benefits and Cost Comparing Alternatives to the Timing of the proposed Project (5.4.3.2 SR-B5)

Analysis of Project Benefits & Alternatives addressed in Section B.

Like for Like Renewal Analysis, Alternatives Comparison (like for like vs. not like for like, timing, rate of replacements, etc.) (5.4.3.2 SR-B6)

A like for like replacement for substation transformers would not support the Entegrus conversion program. Entegrus' asset renewal philosophy involves converting all low voltage distribution prior to station refurbishment to allow it to be decommissioned instead of replaced. For this reason, Entegrus intends to extend asset life for areas expected to have prolonged conversion.

A. General Information						
Project/Activity	Operations Support Capital					
Project Number	2.5					
Investment Category	**System Renewal**					
Capital Cost (5.4.3.2 A.1)	$ 775,803					
Capital Contribution	$ -					
Net Cost	$ 775,803					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

The number of customers affected by this project varies based off proposed capital construction projects developed. This project does not directly impact customers, these costs are required for the successful planning and execution of capital construction projects.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**	
	$ 193,951	$ 193,951	$ 193,951	$ 193,951	

Project Summary

Operations Support includes all costs required to oversee construction activity associated with all capital construction projects carried out. This includes non-engineering salary and expenses associated with managing all other capital related activities at Entegrus. Historical spending and projected departmental labor and resource usage are used to forecast this budget.

Risk Identification & Mitigation (5.4.3.2 A.5)

The risk with not providing operations support hampers Entegrus' ability to meet the needs of the new and existing customer base. Utilities are subject to various regulations. Mitigation is by appropriate supervision of crews by trained and skilled supervisors supported by high quality policies and procedures. Failure to comply may result in Health and Safety Incidences, Ministry of Labor citations and damage to equipment or property.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

Not applicable, this project does not consider any REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main driver for this investment is System Capital Investment Support. These costs are to support safe construction execution as outlined in Entegrus' high quality polices, business and work practices.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

This project does not directly replace any assets. Specific costs incurred year-to-year depend on individual project scopes and any unforeseen circumstances that may take place. The outcome of this project is to execute all capital construction projects aligned with Entegrus' policies, procedures and business practice.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

Utilities are subject to various regulations. As a result, there are little alternatives to completion of safe work. These investments support appropriate supervision of crews by trained and skilled supervisors supported by high quality policies and procedures are capable of reducing Health and Safety Incidences, Ministry of Labor citations and damage to equipment or property. The forecasted investment is based upon historical spending, staffing levels and volumne of work.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

This project supports supervision of crews by trained and skilled supervisors, ensuring compliance with quality policies and procedures.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. All capital construction projects aligned with Entegrus' policies, procedures and business practices to ensure safe completion of work and cost effective execution.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

There are little alternatives to this work. Utilities are subject to various regulations, as a result an appropriate supervision of crews by trained and skilled supervisors supported by high quality policies and procedures are required for compliance. Operational costs are controlled through standardized design and operational work-practices.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

Standardization ensures cost-effective project delivery for customers and safe construction for the general public.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

This project does not explicitly target reliability performance. Standardization and safe construction practices aid in reliable service to Entegrus customers.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

Specific costs incur year-to-year depending on individual project scopes and any unforeseen circumstances that may take place. These costs are to support safe construction execution as outlined in Entegrus' polices, business and work practices.

Health and Safety (5.4.3.2 B2)

This project covers costs required to oversee construction activity associated with all capital construction projects carried out. This project supports safe construction execution as outlined in Entegrus' high quality polices, business and work practices. The outcome of this project is to execute all capital construction projects aligned with Entegrus' policies, procedures and business practices.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

This project supports future technological functionality and operational requirements through updating Entegrus policies, procedures and business practicies to most current utility standards. This project also covers safe construction execution for emerging technology such as automation and safe working use of modern distribution equipment.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Renewal

Asset Performance-related operational targets & asset lifecycle optimization policies and practices (refer to 5.2.3 & 5.3.3) (5.4.3.2 SR-B1.a)

This project does not directly replace any assets, therefore there are no Asset Performance-related operation targets & asset lifecycle optimization polices and practicies applicable.

Information on the condition of the assets relative to their typical life-cycle and performance record (5.4.3.2 SR-B1.b)

This project does not directly replace any assets, therefore there is no information on condition of assets relative to their typical life-cycle and performance record.

The number of customers in each class potential affected by failure of the assets (5.4.3.2 SR-B1.c)

Although this project does not have defined associated attributes, all customers benefit from the efficient, safe management of the utilities capital budget.

Quantitative customer impacts (5.4.3.2 SR-B1.d)

Quantitative customer impacts vary per capital project.

Qualitative customer impacts (5.4.3.2 SR-B1.e)

Qualitative customer impacts vary per capital project.

Value of customer impact in terms of characteristics of customers potentially affected by failure that have bearing on the criticality and/or cost of failure (5.4.3.2 SR-B1.f)

Customer impact is medium. Standardization, documentation and change management procedures reduce risks to both staff and the public and ensure cost effective completion of capital projects.

Factor affecting the Timing and Priority of Project (5.4.3.2 SR-B2)

Specific costs incurred year-to-year depend on individual project scopes and any unforeseen circumstances that may take place. As this project supports completion of safe work, it is a number one priority.

Consequences for system O&M costs (5.4.3.2 SR-B3)

Standardization of construction allows for more efficient maintenance of the distribution system.

Impact on reliability performance and/or safety factors (5.4.3.2 SR-B4)

This project does not explicitly target reliability performance. Standardization and safe construction practices aid in reliable service to Entegrus customers. This project covers costs required to oversee construction activity associated with all capital construction projects carried out. This project supports safe construction execution as outlined in Entegrus' high quality polices, business and work practices. The outcome of this project is to execute all capital construction projects aligned with Entegrus' policies, procedures and business practices.

Analysis of Project Benefits and Cost Comparing Alternatives to the Timing of the proposed Project (5.4.3.2 SR-B5)

The project benefits and cost comparing alternatives will vary per project. In general, operations support allows for cost control through accurate job estimation, standardized design, equipment and construction practices.

Like for Like Renewal Analysis, Alternatives Comparison (like for like vs. not like for like, timing, rate of replacements, etc.) (5.4.3.2 SR-B6)

This project does not consider any direct asset replacement, like for like renewal does not apply.

A. General Information						
Project/Activity	Pole Replacement					
Project Number	2.6					
Investment Category	**System Renewal**					
Capital Cost (5.4.3.2 A.1)	$ 505,659					
Capital Contribution	$ -					
Net Cost	$ 505,659					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

The number of customers affected by this project varies based off several factors; pole location, restoration capability for neighboring sections etc. In addition to a health-based assessment, Entegrus also targets poles which have a greater impact to reliability. Similarly affected load varies with the same criteria.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**	
	$ 126,415	$ 126,415	$ 126,415	$ 126,415	

Project Summary

The purpose of this project is to replace failed or end of life utility poles. Budgeting for this item is based on an assessment of asset health, principally identified by age, deterioration and failure. These poles are not part of a larger specific project; areas are identified and prioritized as required. Pole testing assists Entegrus with capturing a more accurate assessment of Entegrus' poles as outlined in Section 3.3.2

Risk Identification & Mitigation (5.4.3.2 A.5)

A risk with this project execution is having resources available to complete pole replacements during periods in which Entegrus encourters a large influx of system access requests (residential, commerical, industrial, third-party attachment) that absorb engineering & operation resources. These risks will be mitgated through out-sourcing of work to compliant third-parties.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This project does not consider any REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main investment driver for this project is system reliability.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

The outcome of this project is to renew utility poles that are at end-of-life. Entegrus strives on proactive pole replacement to minimize outages and public safety concerns. Replenishing near end-of-life poles are needed to maintain the integrity of the distribution grid and provide reliable power to Entegrus customers. Entegrus targets replacing approximately 390 poles per year.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

The poles replaced in this budget often show signs of decay, cavity, age and need to be proactively replaced. Budgeting for this item is based on the risk-based intervention planning methodology and tools discussed in detail in Sections 3.1.2 and 3.3.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

The number of customers affected by this project varies based off several factors; pole location, restoration capability for neighboring sections etc. In addition to a health-based assessment, Entegrus also targets poles which have a greater impact to reliability. A secondary pole serving a single customer will have less impact to feeder reliability than a pole located on a 3-phase feeder trunk, Entegrus prioritizes poles replaced in this program primarily based on safety, followed by asset health and system impact.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. Pole replacements are a necessary asset for delivery of electricity and safeguarding of the public. Priority for this project is based on an assessment of asset health, principally identified by individually identified safety risk, Health Index and impact of failure.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

The alternative to using poles is to migrate the distribution system to an underground model. Outside subdivisions, much of Entegrus' system is built using overhead designs. Overhead design is typically more cost-effective compared to underground, as such there is no initiative at Entegrus to migrate to an underground system at this time.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

Replacement of poles prior to failure is vital to providing reliable power to Entegrus customers.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

The alternative to completing this work is to move from a proactive to a reactive pole replacement model. This will result in a significant deterioration in system reliability, as well as increasing risk to our staff and the public.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

The alternative to using poles is to migrate the distribution system to an underground model. For distributing power; using underground cable. Most of the Entegrus' legacy system uses poles to distribute electricity. Converting to underground is not preferred due to the civil costs and would like run into space issues in certain denser urban areas the neighbour with Hydro One.

Health and Safety (5.4.3.2 B2)

Pole replacement is very routine work for Entegrus. There are no special considerations to consider. Pole replacements are a necessary asset for delivery of electricity and safeguarding of the public.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Entegrus regularly communicates with third parties & neighbouring utilities regarding pole replacements with joint use or third party attachers. However, this project only considers Entegrus cost for pole replacements. Engineering design for poles replaced under this program considers Entegrus' future capital plan, as well as all known work from municipal and joint use partners.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

When applicable, Entegrus may provision its design to allow for third party attachments to minimize future costs.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Renewal

Asset Performance-related operational targets & asset lifecycle optimization policies and practices (refer to 5.2.3 & 5.3.3) (5.4.3.2 SR-B1.a)

Asset operational targets align with asset lifecycle optimization policies and practices; poles are replaced when they have failed or reached end of life. Please refer to Asset Lifecycle Optimization Policies and Practices (3.3) in the DSP.

Information on the condition of the assets relative to their typical life-cycle and performance record (5.4.3.2 SR-B1.b)

Please refer to Asset Lifecycle Optimization Policies and Practices (3.3) in the DSP. Information on the condition of the assets relative to their to their typical life-cycle and performance record are captured in Section 3.2 of the DSP.

The number of customers in each class potential affected by failure of the assets (5.4.3.2 SR-B1.c)

The number of customers affected by failure of an asset varies based off several factors; pole location and electrical connectivity.

Quantitative customer impacts (5.4.3.2 SR-B1.d)

Quantitative customer impacts vary per pole replacement. The number of customers affected by this project varies based off several factors; pole location, restoration capability for neighboring sections. In addition to a health-based assessment, Entegrus also targets poles which have a greater impact to reliability. A secondary pole serving a single customer will have less impact to feeder reliability than a pole located on a 3-phase feeder trunk, as the 3-phase trunk serves more customers. In this instance it would be favorable to replace the 3-phase feeder pole under the assumption the secondary pole does not pose any danger to the public.

Qualitative customer impacts (5.4.3.2 SR-B1.e)

The qualitative customer impacts vary per pole replacement.

Value of customer impact in terms of characteristics of customers potentially affected by failure that have bearing on the criticality and/or cost of failure (5.4.3.2 SR-B1.f)

Customer impact varies based on "importance" of pole. In addition to health-based assessments, Entegrus also targets poles which have a greater impact to reliability. Targeting impactful poles on a proactive basis are needed to maintain a reliable grid for Entegrus customers.

Factor affecting the Timing and Priority of Project (5.4.3.2 SR-B2)

Priority for this project is based on an assessment of asset health, principally identified by age, deterioration and failure. Because poles have a relatively long useful life, strategic planning through asset management and routine replacement is a regular project for Entegrus.

Consequences for system O&M costs (5.4.3.2 SR-B3)

This program helps to control by O&M by maintaining system reliability. Poor reliability will result in increases in customer interaction and overhead activity, which will result in corresponding increases in O&M

Impact on reliability performance and/or safety factors (5.4.3.2 SR-B4)

In addition to a health-based assessment, Entegrus also targets poles which have a greater impact to reliability. A secondary pole serving a single customer will have less impact to feeder reliability than a pole located on a 3-phase feeder trunk, as the 3-phase trunk serves more customers. In this instance it would be favorable to replace the 3-phase feeder pole under the assumption the secondary pole does not pose any danger to the public. Pole replacement is very routine work for Entegrus. There are no special considerations to consider. Pole replacements are a necessary asset for delivery of electricity and safeguarding of the public.

Analysis of Project Benefits and Cost Comparing Alternatives to the Timing of the proposed Project (5.4.3.2 SR-B5)

For reactive elements of this project, the timing is non-discretionary, asset replacement is required in order to restore power to our customers. Deferral of assets identified for replacement through this program will result in an increase in reactive asset failures (and a decrease in system reliability), driving further cost.

Like for Like Renewal Analysis, Alternatives Comparison (like for like vs. not like for like, timing, rate of replacements, etc.) (5.4.3.2 SR-B6)

Poles replaced under this project proactively are engineered to account for all known future work in the area (Entegrus, municipal, joint use partner, etc.). Reactive replacements are typically performed like-for-like to ensure a swift restoration of service.

A. General Information						
Project/Activity	Transformer Replacement					
Project Number	2.7					
Investment Category	**System Renewal**					
Capital Cost (5.4.3.2 A.1)	$ 436,269					
Capital Contribution	$ -					
Net Cost	$ 436,269					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

The number of customers affected by this project varies based on number of customers connected on the secondary side. The number of customers and load affected varies based on scope of work.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**	
	$ 109,067	$ 109,067	$ 109,067	$ 109,067	

Project Summary

Transformers are a critical asset that provide power at a reduced secondary voltage for customers. This project targets all transformers (overhead & underground,, single and three phase) nearing end-of-life for replacement. Entegrus typically runs its distribution transformers to failure. This project includes both proactive replacement where a specific hazard has been identified, and reactive replacement. See Section 3.3 for additional discussion.

Risk Identification & Mitigation (5.4.3.2 A.5)

A risk with this project execution is having resources available to complete pole replacements during periods in which Entegrus encourters a large influx of system access requests (residential, commerical, industrial, third-party attachment) that absorb engineering & operation resources. These risks will be mitgated through out-sourcing of work to compliant third-parties.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This project does not consider any REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main driver for this investment is Failure & Failure Risk. Entegrus runs its distribution transformers to failure. In the event a transformer is identified with an unusual risk profile which merits proactive replacement (e.g. severe rust on a transformer near a municipal drain or body of water) it will be scheduled for replacement, with it's costs captured under this program. The purpose of this project is to replace failed or end of life transformers.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

The outcome of this project is to renew defective or failed transformers. Entegrus strives for proactive transformer replacement to minimize outages and safety concerns. The average number of assets targeted for replacement is approximately 113 per year.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

Replenishing near end-of-life transformers are needed to maintain the integrity of the distribution grid and provide quality power to Entegrus customers. The results from Section 3.2.3 (ACA) describe in detail the transformers in need of replacement based on asset health condition.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Transformers are a necessary asset for customer connections. This equipment has a very long lead time for delivery. This will be mitigated by developing the project plan and placing the equipment order well in advance. Entegrus strives for proactive transformer replacement to minimize outages and safety concerns.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. Transformer replacements are a necessary asset for delivery of electricity and safeguarding of the public. Priority for this project is based on an assessment of asset health, principally identified by age, deterioration and failure.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

There are no alternatives to this project. Transformers step high distribution voltage down to low voltage safe for end customer use. Transformers are a required investment to support customer connections. Purchases are made on an as needed basis. Standardized transformer sizes and large quanitity purcahses are used to control costs. Entegrus promotes high-efficiency units to reduce system losses and reduce climate change.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

Since Entegrus only replaces distribution transformers that have failed or are deemed to have failed via inspection, there is no alternative to allow deferral of the work. The net benefit to customers is improved system reliability.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

There are no alternatives to this project. Transformers step high distribution voltage down to low voltage safe for end customer use. Transformers are a required investment to support customer connections.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

There are no project alternatives. Transformers are a required electrical device to deliver safe service voltage levels to Entegrus customers. The scheduling of a transformer replacement is when a transformer fails or it has been deemed failed through inspection.

Health and Safety (5.4.3.2 B2)

Transformer replacement is very routine work for Entegrus. This project also targets the removal of pole-transformers and submersible style transformers. These legacy transformers have special safety requirements during maintenance. As a result, as these units are replaced a different style of transformer is preferred.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

When proactively replacing a transformer at end-of-life, Entegrus carries out an engineering study to determine the most appropriate transformer size in order to meet current demand (and account for future growth where applicable).

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Proactive planned transformer replacements can avoid oil leaks into the environment.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Renewal

Asset Performance-related operational targets & asset lifecycle optimization policies and practices (refer to 5.2.3 & 5.3.3) (5.4.3.2 SR-B1.a)

Asset operational targets align with asset lifecycle optimization policies and practices; transformers are replaced when they have failed or reached end of life. Please refer to Asset Lifecycle Optimization Policies and Practices (3.3) in the DSP.

Information on the condition of the assets relative to their typical life-cycle and performance record (5.4.3.2 SR-B1.b)

Please refer to Asset Lifecycle Optimization Policies and Practices (3.3) in the DSP. Information on the condition of the assets relative to their to their typical life-cycle and performance record are captured in Section 3.2 of the DSP.

The number of customers in each class potential affected by failure of the assets (5.4.3.2 SR-B1.c)

The number of customers affected by failure of an asset varies based off the number of customers connected on the secondary size of the transformer.

Quantitative customer impacts (5.4.3.2 SR-B1.d)

Quantitative customer impacts vary per transformer replacement.

Qualitative customer impacts (5.4.3.2 SR-B1.e)

Qualitative customer impacts vary per transformer replacement.

Value of customer impact in terms of characteristics of customers potentially affected by failure that have bearing on the criticality and/or cost of failure (5.4.3.2 SR-B1.f)

Customer impact is medium. Transformer failures localize outages to any customers connected on the secondary side of the transformer. Criticality of failure varies based on type and number of customer(s) served.

Factor affecting the Timing and Priority of Project (5.4.3.2 SR-B2)

Priority for this project is based on an assessment of asset health, principally identified by age, deterioration and failure. Because transformer have a relatively long useful life, strategic planning through asset management and routine replacement is a regular project for Entegrus.

Consequences for system O&M costs (5.4.3.2 SR-B3)

Entegrus runs its transformer to failure. As such there are limited maintenance costs over the course of the assets life.

Impact on reliability performance and/or safety factors (5.4.3.2 SR-B4)

Entegrus strives for proactive transformer replacement to minimize outages and safety concerns. Replenishing near end-of-life transformers are needed to maintain the integrity of the distribution grid and provide quality power to Entegrus customers. This project also targets the removal of pole-transformers. The Entegrus line staff has concerns with the tight space requirements while working on the units. As a result, Entegrus has been targeting the replacement of pole transformers with padmount transformers, an industry wide standard.

Analysis of Project Benefits and Cost Comparing Alternatives to the Timing of the proposed Project (5.4.3.2 SR-B5)

Transformer are a required asset for distrbution of electricity, as such there are little costs comparions to project alternatives. Entegrus runs transformers to failure, minimzing maintenace cost over the life span of the asset. In the event a transformer is identified with an unusual risk profile which merits proactive replacement (e.g. severe rust on a transformer near a municipal drain or body of water) it will be scheduled for replacement, with it's costs captured under this program.

Like for Like Renewal Analysis, Alternatives Comparison (like for like vs. not like for like, timing, rate of replacements, etc.) (5.4.3.2 SR-B6)

Entegrus carries out an engineering study to determine the most appropriate transformer size in order to meet current demand (and account for future growth) when assets are replaced proactively due to being deemed failed.

A. General Information						
Project/Activity	Voltage Conversion					
Project Number	2.8					
Investment Category	**System Renewal**					
	2021			**2024 incremental**	**2025 incremental**	
Capital Cost (5.4.3.2 A.1)	$ 3,201,015			$ 1,150,000	$ 1,150,000	
Capital Contribution	$ -			$ -	$ -	
Net Cost	$ 3,201,015			$ 1,150,000	$ 1,150,000	
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

The total number of customers affected by conversion projects vary per project. Entegrus strives to create cost-effective projects that target end-of-life assets and benefit the greatest number of customers.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**	
	$ 800,254	$ 800,254	$ 800,254	$ 800,254	

Project Summary

The purpose of this project is to convert areas in the Entegrus service areas that are supplied from 2.4/4.16KV to 16/27.6KV primary voltage and decommission substations. Entegrus' intent is to convert and modernize the distribution system in this area in order to minimize outages and power quality issues. 2.4/4.16kV assets involves the replacement of aged and deteriorated assets with modernized distribution equipment and targets replacement for assets nearing end of life. Entegrus originally targeted 4 conversions/stations decommissionings from 2021-2025, which breaks down to 3 from the SW Region and 1 from the NE Region.

In addition, in June/July of 2021, Entegrus conducted DSP customer engagment seeking customer feedback on faster paced line modernization, specifically related to the conversion/removal of an additional station by the end of 2025. The results of the survey indicated that customers supported a faster paced line modernization. In response to this survey, Entegrus intends to invest a $2.3M incremental over years 2024-2025 to allow for one additional substation conversion and decomissioning, regardless of other priorities. Accordingly, Entegrus will conduct 5 conversions/station decommissings from 2021-2025. The additional station decommissioning is planned for the NE Region.

Risk Identification & Mitigation (5.4.3.2 A.5)

Entegrus' asset renewal philosophy involves converting all low voltage distribution prior to station refurbishment to allow it to be decommissioned instead of replaced. One of the core risks with this program is that a station would fail while serving significant amounts of low voltage distribution requiring significant investment in station renewal. To mitigate this, timely completion of voltage conversion work is critical.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

Not applicable, this project does not consider any REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main driver for this investment is Functional Obsolescence, Substandard Performance & Failure Risk.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

Some of Entegrus' targeted outcomes with system conversion are power quality and reliability. As noted in Section 2.1.3.3, converting to 16/27.6kV provides the benefits of: loss reduction (i.e. through the use of higher rated conductors and retiring step-down transformers), plant standardization (i.e. avoid stocking inventory for two different voltage leves), outage risk reduction (i.e. through replacement of deteriorated materials and equipment), outage duration reduction (i.e. through conversion of underground feeder segments) and public safety enhancement (i.e. through removal of assets built to outdated standards). Conversion to 16/27.6kV also allows the benefits of modern automation.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

There are no special considerations. Conversion is routine work in the utility industry. Equipment deemed for conversion is approaching or has passed its useful life, and is subject to replacement according to Entegrus asset replacement policies. Forecasted expenditures are driven from Entegrus asset life cycle policies and procedures as desbrided in Section 5.3.2 & Section 5.3.3 of the DSP. Converting aged assets to 27.6kV are it allows for line loss reductions, modern automation installations, and reduces required inventory.

The justification for a faster paced line modernization, and specifically an extra conversion in 2024-2025, stems from DSP customer engagement feeback, whereby customers supported the incremental investment to convert and decommision the additional substation.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Entegrus strives to create cost-effective projects that target end-of-life assets and benefit the greatest number of customers as demonstrated in Section 3.3.2 of the DSP. Converting aged and deteriorated assets to the modern standard provides benefits to customers and avoids the need for ongoing maintenance to aging substations (after they are decommissioned).

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. Conversion is routine work in the utility industry. Conversion projects are target replace of assets nearing end of life and are strategically planned through Entegrus Asset Management processes.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

Entegrus considered the alternative of replacing the existing poleline to continue operating at 4kV (like for like). This alternative did not meet the needs and requirements of Entegrus' Voltage Conversion Plan. If this project is deferred it will cause a decrease in system reliability, increased OM&A costs and limit the possibility of implementing Smart Grid technology, accommodating REG connections, and the ability to serve electric vehicle chargers in this service area due to the limited capacity inherent in 4KV distribution.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

Converting aged assets reduces asset failure and minimizes outages. Conversion to 16/27.6kV also allows for modern automation for increased reliability to Entegrus customers.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

Entegrus considered the alternative of replacing the existing poleline to continue operating at 4kV (like for like). This alternative did not meet the needs and requirements of Entegrus' Voltage Conversion Plan. If this project is deferred it will cause a decrease in system reliability and limit the possibility of implementing Smart Grid equipment in this service area due to the limited availability of 4KV distribution automation equipment.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

This project considers voltage conversion of Entegrus assets, however where designs overlap with upstream transmitters (joint use arrangement), Entegrus consults accordingly. Entegrus considered the alternative of replacing the existing poleline to continue operating at 4kV (like for like). This alternative did not meet the needs and requirements of Entegrus' Voltage Conversion Plan. If this project is deferred it will cause a decrease in system reliabililty from aging assets that have failed. This being said, management will re-examine the timing of this project in 2024 based on prevailing circumstances at that time, including reliability metrics and the level of capital requirements at that time.

Health and Safety (5.4.3.2 B2)

Conversion is known work for Entegrus and is to be conducted using Health & Safety best practices. The scope of work associated with this program involves replacement of aged and deteriorated overhead and underground line assets operating at lower voltages (2-, 4-, or 8- kV) with new assets built to a modern 27.6 kV standard. The current standards and equipment provide safer working conditions and pose less risk to the public.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Where Entegrus assets belong on another entities assets (joint use agreement), Entegrus will consult accordingly.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

Entegrus' intent is to convert and modernize the distribution system to avoid needing to reinvest in major substation renewal, while simultaneously adding new capabilities and minimizing outages and power quality issues.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Renewal

Asset Performance-related operational targets & asset lifecycle optimization policies and practices (refer to 5.2.3 & 5.3.3) (5.4.3.2 SR-B1.a)

Asset operational targets align with asset lifecycle optimization policies and practices. Entegrus strives to create cost-effective projects that target end-of-life assets and benefit the greatest number of customers . Please refer to Asset Lifecycle Optimization Policies and Practices (3.3) in the DSP.

Information on the condition of the assets relative to their typical life-cycle and performance record (5.4.3.2 SR-B1.b)

Please refer to Asset Lifecycle Optimization Policies and Practices (3.3) in the DSP. Information on the condition of the assets relative to their to their typical life-cycle and performance record are captured in Section 3.2 of the DSP.

The number of customers in each class potential affected by failure of the assets (5.4.3.2 SR-B1.c)

The number of customers affected varies based on the scope of the conversion project. Entegrus strives to create cost-effective projects that target end-of-life assets and benefit the greatest number of customers

Quantitative customer impacts (5.4.3.2 SR-B1.d)

Quantitative customer impacts vary per conversion project.

Qualitative customer impacts (5.4.3.2 SR-B1.e)

Qualitative customer impacts vary per conversion project.

Value of customer impact in terms of characteristics of customers potentially affected by failure that have bearing on the criticality and/or cost of failure (5.4.3.2 SR-B1.f)

Criticality of failure varies based on types of customers connected to the low voltage network. Existing low voltage networks have a mix of residential and commercial customers including some municipal services.

Factor affecting the Timing and Priority of Project (5.4.3.2 SR-B2)

Priority for this project is based on an assessment of asset health, principally identified by age, deterioration and failure. Planning conversion work allows for a modernized distribution system and targets replacement for assets nearing end of life.

Consequences for system O&M costs (5.4.3.2 SR-B3)

System losses are lower in areas where conversion takes place. As Entegrus completes conversion of a voltage level, assets no longer need to be stocked for system maintenance, improving stock levels, and the number of unique items needing to be inventoried.

Impact on reliability performance and/or safety factors (5.4.3.2 SR-B4)

Some of Entegrus' targeted outcomes with system conversion are power quality and reliability. Converting to 16/27.6kV primary voltage reduces line losses. Converting aged assets reduces asset failure and minimizes outages. Conversion to 16/27.6kV also allows for modern automation for increased reliability. Work associated with this program involves replacement of aged and deteriorated overhead and underground line assets operating at lower voltages (2-, 4-, or 8- kV) with new assets built to a modern 27.6 kV standard. The current standards and equipment provide safer working conditions and pose less risk to the public.

Analysis of Project Benefits and Cost Comparing Alternatives to the Timing of the proposed Project (5.4.3.2 SR-B5)

Entegrus considered the alternative of replacing the existing poleline to continue operating at 4kV (like for like). This alternative did not meet the needs and requirements of Entegrus' Voltage Conversion Plan. If this project is deferred it will cause a decrease in system reliability, increased OM&A costs and limit the possibility of implementing Smart Grid equipment in this service area due to the limited availability of 4KV distribution automation equipment

Like for Like Renewal Analysis, Alternatives Comparison (like for like vs. not like for like, timing, rate of replacements, etc.) (5.4.3.2 SR-B6)

Conversion is planned work. Like for like renewals are not considered as the construction standards vary per operating voltage.

A. General Information						
Project/Activity	Metering Upgrades					
Project Number	3.1					
Investment Category	**System Service**					
Capital Cost (5.4.3.2 A.1)	$ 65,052					
Capital Contribution	$ -					
Net Cost	$ 65,052					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

Wholesale metering equipment inherently covers all customers within the Entegrus service territory. The meters included in this program feed approximately 25,000 customers.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**	
	$ 16,263	$ 16,263	$ 16,263	$ 16,263	

Project Summary

This program captures routine life-cycling (including periodic re-sealing and replacement) and upgrades to Entegrus' wholesale metering equipment. In addition to their role in the settlement process, these meters support additional functions. They are integrated into Entegrus' SCADA system, where they relay real-time information to the system operators on energy usage, system loading and power-quality. They also serve as a key data gathering point in support of Entegrus' power quality investigation program.

The second element of this program is the beginning of a lifecycle-paced migration from two disparate systems to a single, harmonized platform. This will be accomplished on a life-cycle basis, migrating areas as the bulk of their meters reach end-of-life, while repurposing meters with remaining service life to support areas where migration has not yet occurred.

Risk Identification & Mitigation (5.4.3.2 A.5)

A primary risk with this project execution is long equipment lead-times. Entegrus will mitgate these risks through inventory management practices for long-lead materials to maintain compliance with Measurement Canada requirements.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This project does not consider any REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main investment driver is System Reliability & Efficiency.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

Entegrus plans to reseal 37 of 66 wholesale meters that are set to expire at 27 separate locations over the Forecast Period. This program is the beginning of a lifecycle-paced migration from two disparate systems to a single, harmonized platform. This will be accomplished on a life-cycle basis, migrating areas as the bulk of their meters reach end-of-life, while repurposing meters with remaining service life to support areas where migration has not yet occurred.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

Wholesale meters are a required asset for their role in the settlemnt process. 37 of 66 wholesale meters are set to expire over this forecast period. As such, Entegrus is required to reseal these meters to maintain compliance with Measurement Canada and the IESO. The forecasted investment is based on the number of meters reaching seal expiry.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

This program captures routine life-cycling (including periodic re-sealing and replacement) and upgrades to Entegrus' wholesale metering equipment. In addition to their role in the settlement process, these meters support additional functions. They are integrated into Entegrus' SCADA system, where they relay real-time information to the system operators on energy usage, system loading and power-quality. They also serve as a key data gathering point in support of Entegrus' power quality investigation program.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. This projects rating reflects it being a compliance requirement.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

There are no alternatives to this project. However Entegrus intends to harmonize the two disparate systems into a single platform, reducing the inventory, licensing, hardware and software requirements to maintain two platforms. The consolidation of the two systems should result in a more cost-effective metering system. The upgrade of wholesale meters will introduce new features to improve system operation efficiency.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

The alternative to this project is an accelerated replacement to bring all meters into a single platform in advance of their lifecycle. Although having meters on a uniform platform brings benefits, a lifecycle approach has the lowest overall cost.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

There are no alternatives to this project, wholesale meters are mandatory to facilitate settlement. The upgrade of wholesale meters will introduce additional features that will improve Entegrus's ability to diagonse and respond to outages quicker, improving customer reliability.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)
Entegrus maintains ownership of the meters. Metering upgrades are often triggered by seal requirments, which are required to maintain compliance. In this forecast period, 37 of 66 wholesale meters are set to expire and will be scheduled for replacement during this time frame.
Health and Safety (5.4.3.2 B2)
Metering service is routine work for Entegrus. Metering service ensures that installed field equipment is safe for use and provides reliable, accurate, real-time data to Entegrus for Settlement and Operations use.
Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)
Wholesale metering equipment is contained within locked metering cabinets. Meter seals and door alarm contacts are installed and can be used to identify if a meter has been tampered with. For SCADA communication with wholesale meters, Entegrus uses secure well-recognized communication protocols over encrypted channels to protect meter information and ensure privacy. Entegrus actively monitors for vulnerabilities in its metering systems.
Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)
Meter resealing is required to maintain compliance with Measurement Canada and the IESO.
Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements
Entegrus will explore metering upgrades that provide enhanced power quality reporting and SCADA integration where applicable.
Environmental Benefits (5.4.3.2 B.5) (where applicable)
Not applicable.
Conservation and Demand Management (5.4.3.2 B.6) (where applicable)
Not applicable.

C. Category-Specific Requirements - System Service
Assessment of both the Project benefits and cost impacts for customers (5.4.3.2 SS-C1.1)
Meters require Measurement Canada seals to ensure accuracy and for this reason there are no alternatives to this project. An accurate and reliable meter population is necessary to bill customers properly and on time of use rates. An additional benefit is wholesale meters are integrated into the Entegrus SCADA system, where real-time information is passed to the Entegrus Control Room for system loading, power quality issues, and outage reporting.
Information on regional electricity infrastructure requirements and the distribution of benefits and responsibility of project costs, if applicable (5.4.3.2 SS-C1.2) (where applicable)
Not applicable.
Description of how advanced technology has been incorporated into the project (5.4.3.2 SS-C1.3) (if applicable)
Wholesale meters are integrated into Entegrus' SCADA system, where they relay real-time information to the system operators on energy usage, system loading and power-quality. Entegrus use secure well-recognized communication protocols over encrypted channels to ensure security and keep meter information private.
Identify reliability, efficiency, safety and coordination benefits and/or effect the Project will have on the distributor's system (5.4.3.2 SS-C1.4)
Please see project narrative sections 'Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)', 'Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)', & 'Health and Safety (5.4.3.2 B2)' above.
Identify and explain the factors affecting implementation timing and/or priority (5.4.3.2 SS-C1.5)
Timing of reseal is regulated as per Measurement Canada. In order to stay compliant with Measurement Canada and the IESO, Entegrus values this project as a number one priority.
Analysis of Project benefits and costs comparing the proposed project (5.4.3.2 SS-C1.6)
There are no alternatives for cost comparing to consider.
Identify qualitative factors relating to the proposed project and all alternatives (5.4.3.2 SR-C)
There are no project alternatives.

A. General Information						
Project/Activity	System Modernization and Planning					
Project Number	3.2					
Investment Category	**System Service**					
Capital Cost (5.4.3.2 A.1)	$ 436,228					
Capital Contribution	$ -					
Net Cost	$ 436,228					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

This project has an affect on all Entegrus customers and load.

Start Date (5.4.3.2 A.4)	1-Jan-21		**In Service Date (5.4.3.2 A.4)**	31-Dec-21	
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**	
	$ 109,057	$ 109,057	$ 109,057	$ 109,057	

Project Summary

This project includes investment in people, assets, equipment and software that enables a modernized distribution grid. This job also includes investments in modern automation which grants increased visibility and remote-control capability into the distribution grid for the control room operators. Investments in the control room, GIS and SCADA systems allow for enhanced monitoring and operational excellence.

Risk Identification & Mitigation (5.4.3.2 A.5)

A common risk with deploying any Smart Grid equipment is equipment communication. Entegrus services 17 communities spread throughout Southwestern Ontario, as a result, communication coverage is always an important topic when considering placement of modernized distribution equipment. Modern automation is an expensive asset but can provide a number of benefits to its customers. Entegrus is diligent in the planning and execution of automation projects and performs communication surveys to ensure communication (peer-to-peer and SCADA backhaul) is reliable.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

Not applicable, this project does not consider any REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main investment driver is System Reliability & Efficiency.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

The outcome of this project creates a modernized distribution grid to better serve Entegrus customers. Advanced asset management and engineering planning exercises ensure a cost-effective, flexible and resilient distribution system. This increasing penetration of distribution automation reduces outage time for customers.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

Asset Management and System planning exercises heavily leverage the ACA and the GIS system, while pulling in historical loading information from SCADA and the billing system. Forecast data is developed from historical trends, as well as local economic forecasts, industry trends, customer inquiries and high resolution demographic data among other sources.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Entegrus demonstrates a methodical approach in its planning of grid modernization deployments. Development of these projects rely heaviliy on the ACA and the GIS system, in conjunction with historical loading information from SCADA and the billing system. Forecast data is developed from historical trends, as well as local economic forecasts, industry trends, customer inquiries and high resolution demographic data among other sources. The collection of these various data sources help develop projects that are impactful to a majority of customers. These projects strive to deliver cost effective innovative solutions for it's customers with reliability performance issues. These deployments also designed with flexibility to adapt to future challenges, such as climate change and emerging technology used on a modernized grid.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. This project's ranking is derived from it containing a significant engineering component, which is required to maintain system sustainability.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

Modernization of the grid has a positive impact on system operation efficency and cost-effectiveness. Automated systems can more quickly detect and respond to outages without human intervention. For example, a historical Entegrus deployment improved a towns loss of supply reliability through deploying a team of reclosers that could automatically feed the town from an alternate supply. These targeted deployments improve reliability to Entegrus customers, reduce after-hour premium line crew truck rolls, provide more visibility to the Entegrus control room for grid diagnostic, and permit remote-controlled operations to field devices.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

This project has an overall benefit to all customers. Modernization of the GIS and SCADA system increases operational excellence. This reduces restoration time and increases the ability to communicate with customers. Some communities may benefit more in the interitem as Entegrus continues to deploy automation. Areas with poor reliability due to upstream supply are often targeted first for automation projects. Entegrus continues to commission equipment for automatic restoration in hopes to better serve Entegrus customers. Improvements in Asset Management, and system planning will continue to drive both cost and operational efficiencies.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

The outcome of this project creates a modernized distribution grid to better serve Entegrus customers. Automation will improve resilience and reliability, while advanced operational software will assist in directing line crews to speed repairs.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)
Entegrus is the owner automation assets. The design and deployment of automation projects are carried out to target specific reliability issues. For Entegrus, this has historically been remote communities suffering from loss of supply.
Health and Safety (5.4.3.2 B2)
This project is not intended to address a health and safety concern. However modern automation can eliminate the need for a person to operate a manual electrical switch. This reduces the chances of energized equipment causing harm to line personnel.
Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)
Entegrus actively monitors for vulnerabilities in its operational technology systems. It utilizes standard industry practices to provide security to data both in transit and at rest, as well as monitoring the physical security of all assets.
Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)
Entegrus regularly communications with it's upstream suppliers to ensure coordination operations where work with will interact between utilities. Additional engineering communication to coordinate projects including protective coordination.
Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements
Modern automation enables integration with Entegrus' future Survalent OMS. Entegrus recently deployed Survalent SCS Connectivity Import & Topology processor which creates a live dynamic representation of the Entegrus distribution grid. The Connectivity Import updates the map based on real-time feedback from switch controllers. If a switch opens, the Entegrus control room operators will be able to see the open event and the map will dynamically update to show affected customers. This greatly improves the operators ability to respond to outages. Entegrus is working towards a future Survalent ADMS.
Environmental Benefits (5.4.3.2 B.5) (where applicable)
Not applicable.
Conservation and Demand Management (5.4.3.2 B.6) (where applicable)
Not applicable.

C. Category-Specific Requirements - System Service
Assessment of both the Project benefits and cost impacts for customers (5.4.3.2 SS-C1.1)
Please see project narrative sections 'Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' & 'Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)' above.
Information on regional electricity infrastructure requirements and the distribution of benefits and responsibility of project costs, if applicable (5.4.3.2 SS-C1.2) (where applicable)
Not applicable.
Description of how advanced technology has been incorporated into the project (5.4.3.2 SS-C1.3) (if applicable)
Please see project narrative section 'Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements' above.
Identify reliability, efficiency, safety and coordination benefits and/or effect the Project will have on the distributor's system (5.4.3.2 SS-C1.4)
Please see project narrative sections 'Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)', 'Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)', & 'Health and Safety (5.4.3.2 B2)' above.
Identify and explain the factors affecting implementation timing and/or priority (5.4.3.2 SS-C1.5)
Please see project narrative sections 'Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)' & 'Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' above.
Analysis of Project benefits and costs comparing the proposed project (5.4.3.2 SS-C1.6)
Please see project narrative section 'Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' above.
Identify qualitative factors relating to the proposed project and all alternatives (5.4.3.2 SR-C)
Please see project narrative sections 'Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)', 'Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)', & Project Summary above.

A. General Information						
Project/Activity	System Reinforcement					
Project Number	3.3					
Investment Category	**System Service**					
Capital Cost (5.4.3.2 A.1)	$ 350,000					
Capital Contribution	$ -					
Net Cost	$ 350,000					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

The customers and load affected vary based on scope of System Reinforcement projects.

Start Date (5.4.3.2 A.4)	1-Jan-21		**In Service Date (5.4.3.2 A.4)**	31-Dec-21	
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**	
	$ 87,500	$ 87,500	$ 87,500	$ 87,500	

Project Summary

This project includes investments into new and existing assets to reinforce the distribution grid. Reinforcement consists of creating additional capacity through re-conductoring, or through creation of additional tie points between feeders to increase system resiliency. These projects allow Entegrus' system to better withstand peak loading, as well as improve resiliency to failures. It provides the control room more flexibility in system configuration for both planned and emergency maintenance and repair. A portfolio of 7 projects are currently contemplated across the service territory over the 5-year period. For 2021, a carry over project from 2020 along the western side of St. Thomas is being undertaken. This tie point will enable additional load transfer capacity between the 27M5 and 27M1 feeders, improving resiliency and peak load handling capabilities.

Risk Identification & Mitigation (5.4.3.2 A.5)

A primary focus in reinforcement is to increase available capacity for future customers. One of the major risks with reinforcement is project timing and customer commitment. Reinforcement projects typically address, large rapid amounts of growth that push equipment over their available nameplate capacity. The challenge having capacity readily available for future customers, while balancing infrasture cost and construction timing. These risks are mitgaged by having equipment reasonably to sized to meet customer demand and reserve capacity for known future projects and anticipated load growth.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This project does not consider any REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main investment driver is System Reliability & Efficiency.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

One outcome of this project is to reinforce the north region of the city of Chatham . This project will not only allow for increased resiliency, but it also provides Entegrus the ability to run high ampacity cable to accommodate upcoming growth. The scope of this project is investments in existing assets to create additional resiliency, future load growth, feeder tie-ins, and other enhance areas of the Entegrus distribution system in collaboration with its entities to provide the best service to Entegrus customers.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

Unprecedented residential customer growth in the former STEI community of St. Thomas, as well as high growth in other communities in the Entegrus northeast region, particularly Strathroy and Mt. Brydges, as described is a driving force for reinforcement. These customer-driven requests are a top priority and the primary justifcation for investment. The reinforment investments are based on forcasted economic development with municipal planners and similar historical capital investment.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Entegrus is diligent in communicating with applicable parties such as Regional Planning, municipal planners and upstream transmitters when planning for reinforcement investments. Entegrus also relies on the insights generated through the analytical activities completed as a part of its Asset Management process. External collaboration combined with Asset Managment processes help develop impactful projects that address areas concerned with capacity constraints, system reliability or resiliency. These projects are designed in a manner to address future challenges such as grid modernization or climate change.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. This project's rank is based on Entegrus' objective to provide operational excellence, be able to accommodate new customers and to continue to provide reliable service to existing ones.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

The scope of this project is investments in existing assets to create additional resiliency, future load growth, feeder tie-ins, and other improvements to the Entegrus distribution system. Studies on feeder loading in combination with future growth and operational feedback creates reinforcement projects that relieve system pressure to ensure reliability and resiliency. Reinforcement projects look at many alternatives, including non-wires options, before committing to a capital project.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

Studies on feeder loading in combination with future growth and operational feedback creates reinforcement projects that provide the most benefit to the majority of customers. The benefits of increasing resiliency correlates to Entegrus ability to serve its customers. Feeder tie-ins and reinforcement studies create greater operational flexibility and redundancy.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

Reinforcement projects strongly increase Entegrus' ability to respond to failures. The Entegrus control room having more flexibility in system configuration for both planned and emergency maintenance and repair, thus decreasing the frequency and duration of outages for Entegrus customers. The overall goal of the investment is to provide the best possible service to Entegrus customers.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

Entegrus is the owner of system reinforcement assets. The design and scheduling are typically driven by large areas of customer growth. In order to meet customer demand, investments are made to reinforce the distribution system. Entegrus plans to increase its roster and utilization of underground and overhead contractors over the 2021-2025 Forecast Period. This will provide additional operational flexibility, as although the rapid growth trend is expected to continue through 2021, its continuation throughout the remainder of the Forecast Period is currently difficult to predict given the circumstances of the pandemic.

Health and Safety (5.4.3.2 B2)

This project does not target any direct health and safety concerns. However increased resiliency better equips Entegrus to respond to equipment failures.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Entegrus relies on the insights generated through the analytical activities completed as a part of its Asset Management process, as well as the results of its collaboration with entities during the Regional Planning work. Entegrus participates in four separate Regional Planning zones overseen by the IESO, and provides regular communication with upstream transmitter, local municipalities, and developers. Proactive participation and active communication allows Entegrus to accommodate customer demand and future reinforcement areas by long term utility planning.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

Reinforcement not only targets increasing resiliency, but allows for future automation deployment. As mentioned Entegrus serves 17 communities spread out through Southwestern Ontario. Past projects have included completing a feeder-tie between two alternate supplies. The project was further enhanced by adding modern distributed automation, allowing the town to be automatically transferred to an alternate source upon loss of supply. This transfer is seamless to the customer and automated for the utility. Completing reinforcement projects can allow for future modern automation enhancements and provide key inroads in areas where little conversion work has been completed to date.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Service

Assessment of both the Project benefits and cost impacts for customers (5.4.3.2 SS-C1.1)

Please see project narrative sections 'Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' & 'Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)' above.

Information on regional electricity infrastructure requirements and the distribution of benefits and responsibility of project costs, if applicable (5.4.3.2 SS-C1.2) (where applicable)

Not applicable.

Description of how advanced technology has been incorporated into the project (5.4.3.2 SS-C1.3) (if applicable)

Please see project narrative section 'Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements' above.

Identify reliability, efficiency, safety and coordination benefits and/or effect the Project will have on the distributor's system (5.4.3.2 SS-C1.4)

Please see project narrative sections 'Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)', 'Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)', & 'Health and Safety (5.4.3.2 B2)' above.

Identify and explain the factors affecting implementation timing and/or priority (5.4.3.2 SS-C1.5)

Please see project narrative sections 'Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)' & 'Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' above.

Analysis of Project benefits and costs comparing the proposed project (5.4.3.2 SS-C1.6)

Please see project narrative section 'Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' above.

Identify qualitative factors relating to the proposed project and all alternatives (5.4.3.2 SR-C)

Please see project narrative sections 'Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)', 'Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)', & Project Summary above.

A. General Information

Project/Activity	System Automation				
Project Number	3.4				
Investment Category	**System Service**				
	2021			**2024 incremental**	**2025 incremental**
Capital Cost (5.4.3.2 A.1)	$ 109,797			$ 937,500	$ 312,500
Capital Contribution	$ -			$ -	$ -
Net Cost	$ 109,797			$ 937,500	$ 312,500
O&M Cost (5.4.3.2 A.1)					
Capital Contributions to Transmitters (5.4.3.2 A.2)					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

The customers and load affected vary based on scope of the automation project(s).

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**	
	$ 27,449	$ 27,449	$ 27,449	$ 27,449	

Project Summary

This project includes the deployment of automated switchgear. Entegrus has historically targeted remote communities with poor reliability due to loss of the supply. As capital conversion projects (4.16kV to 27.6kV) continue in large urban cities, the amount of customers supplied on a single feeder continues to increase as customer are transferred to the 27.6kV network. With today's voltage standards, multiple 4.16kV feeders from an embedded distribution station can be supplied by a single 27.6kV supply. Embedded 4.16kV substations inherently provided greater segmentation as the available capacity on a single feeder was greatly limited compared to a 27.6kV feeder. This project targets creating a modernized grid in larger urban communities by deploying automated switches that can automatically segment and restore through peer to peer communication.

In addition, in June/July of 2021, Entegrus conducted DSP customer engagment seeking feedback on implementing smart grid (automation) technology. The results of the survey indicated that customers supported an increase to medium intelligent switch density in Chatham & St. Thomas. In response to this survey, Entegrus will invest a total incremental amount of $1.25M (split 75%/25%) over the years 2024-2025 to install 11 additional automated switches in Chatham and 6 automated switches in St Thomas, which will result in a configuration of 1.5 switches per feeder in each community. In addition, the incremental capital will allow for software enhancements in the Entegrus control room to facilitate the switch deployment. Chatham and St. Thomas were chosen for this project as their community sizes, and the nature of their systems, support a larger number of feeders and system configuration which allows sufficient alternative pathways to create a dynamic distribution grid to optimize the benefits of automated switching. The switches will also help mitigate future reliability issues due to growth in both communities.

Risk Identification & Mitigation (5.4.3.2 A.5)

Risks associated with this project are centered on two areas, the first is around technical risk. This is fundamentally a technology project, and standard risks associated with technology projects apply here (e.g. cyber security, software bugs, machine-to-machine communication challenges, etc.). Best practice mitigations for technology projects of this type and scale are well understood and will be applied appropriately (e.g. project management techniques, communications path engineering, acceptance testing, collaboration with the IT department etc.).

This project will create a dynamic distribution grid, where a static grid existed prior. This introduces the second type of risk in this project. Ensuring that the additional complexity does not interfere with Entegrus operations staff visibility and sound understanding of the distribution system state so they may continue to operate safely while enjoying the full benefits of the project. Mitigation involves investments in back-office systems (SCADA) to ensure intuitive, easily understood information in system state is available across the enterprise, and a significant training effort across the operations group.

In preparation for the incremental spend over years 2024-2025, Entegrus will work with vendors to secure pricing and inventory. Proactive communication will mitgate any risks with equipment procurement and allow both parties insight into the automation deployment.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures of this magnitude does not exist. The project addresses modernizing an entire community of substainable size. Historical Entegrus Smart Grid deployments have targeted communities of 2000 customers or less. These historical deployments were often in remote communities embedded within an upstream distributor. The deployments targeting creating a loop between two radial supplies. In the event one supply is lost, the automation team can restore from the alternate. In years 2024/2025, Entegrus will invest an incremental spend to automate larger centralized communities. These deployments differ as the automation system will have the ability to restore from more than one supply. The intention is to create a dynamic self-healing distribution grid to increase reliability and system performance.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This project does not consider any REG investments.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main investment driver is System Reliability & Efficiency.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

One of the main outcomes with the 2021 project is increasing customer reliability in the city of Chatham. With continued conversion projects transferring customers from multiple 4.16kV feeders to a single 27.6kV feeder, the amount of customers per feeder continues to grow. This project targets providing improved segmentation on the seven 27.6kV feeders serving the city of Chatham. This intent of this project is to provide increased resiliency and reliability to all Chatham customers. One of the metrics used for tracking this are SAIDI & SAIFI statistics.

The additional 2024/2025 investment of $1.25M to create a dynamic distribution grid in Chatham and St. Thomas extends the above benefits further. Specifically, reducing outage duration by an estimate of about 15% - 20% and outage frequency >1 minute by an estimate of about 25% - 30%. The reliability reduction estimates were derived from an exercise which studied the affects of segmenting the four feeders serving St Thomas, and seven feeders serving Chatham. These communities were candidates for this project because the nature and size of their distribution systems facilitate the creation of full dynamic distribution grids. Further, the Chatham feeders are a moderate contributor to Entegrus reliability stats, and the St. Thomas feeders, while also contributing to reliability stats, will create future operational and reliability challenges due to the unprecedented growth in St. Thomas, if not addressed. The additional switch deployment aims to provide increased visibility and remote-operated control, allowing the Entegrus control to more quicker diagnose outages.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

Entegrus regularly generates reports that identify worst performing feeder reliability relative to all Entegrus feeders. These reports rank all Entegrus feeders based on a number of criteria including SAIDI, SAIDI, MAIFI, and historical trend. These reports in conjunction with feeders with larger customer counts and feeders targeted for accepting future conversion customers are candidates for automation. Historically Entegrus has targeted areas with poor reliability due to loss of supply. The recent trend has shown Chatham feeders such as the M21 with over 5000 customers are contributors to reliability performance. As such in 2020, Entegrus refurbished and re-deployed three automated switches to provide segmentation to the M21 feeder.

The 2020 project in Chatham demonstrated the feasability of automated switches on a single feeder in Chatham (M21). The additional 2024/2025 investment of $1.25M in switches, as described above, provides the opportunity to extend and realize the benefits of a full dynamic distribution grid in Chatham and St. Thomas.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Entegrus historically has targeted automation projects with poor reliability and implements systems that provide balance between cost and customer value. Historically this has been remote communities with poor reliability due to loss of supply. Entegrus is shifting its focus to address larger urban cities needing segmentation. This ensures as Entegrus continues to decommission 4.16kV substations, 27.6kV feeders are designed with equal segmentation, enhanced with automatic restoration. This increasing penetration of distribution automation reduces outage time for customers. The 2024/2025 extends this automation benefit into full dynamic distribution grids in Chatham and St. Thomas.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. This project's ranking is derived from the utilities responsibility to maintain system reliability.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

The modernized grid will provide system operation efficiencies. An autonomous grid will reduce outage time for customers. Improvements from this project to our back-office systems will provide better control room visibility, allowing Entegrus to respond quicker to outages. This modernized grid can also reduce utility after-hour premiums for outages that can be automatically restored.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

The two primary alternatives to this project would be:
A. Do Nothing: As Entegrus continues to migrate customers from the 4kV system to it's 27kV system, customers will experience a deterioration of reliability over time the segmentation in the system is reduced, resulting in larger outages. There would be little net benefits to customers as line crews will be required to manually restore, increasing outage duration, decreasing reliability.
B. Staged investment: Pricing on the equipment covered by this project is stable, indexing upward each year in line with other equipment types. Entegrus could choose to make this investment paced over several years. This adds to the technical complexity as differing vintages of equipment will be required to interoperate, and requires a move involved change management process, as multiple rounds of change and retraining required are present during the interim period. Overall, this leads to higher system cost. The net benefit to customers is an increase in reliaiblity. Automation can take an event that is momentary in nature and temporarily interrupt power instead of creating a sustained outage. Segementation reduces the size of outages, and can decrease the duration and frequency of sustained outages through momentary interruptions where applicable.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

The main intent of the 2021 project is to improve reliability performance for all Entegrus customers in Chatham, specifically outage duration.

The intent of the 2024/2025 project is to improve reliability performance for customers in the two largest communities that Entegrus serves, Chatham and St. Thomas, by levering the nature and size of their existing distribution systems to create full dynamic distribution grids. Specifically, reducing outage duration by an estimate of about 15% - 20% and outage frequency >1 minute by an estimate of about 25% - 30%.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

Entegrus is the owner of automation equipment. The design and scheduling is trigged by areas of poor reliability, in combination with insights generated through the analytical activities completed as a part of its Asset Management process. In this case, the city of Chatham is targeted for automation deployment. Two primary alternatives are discussed in Section 5.4.3.2 B.1.d.ii, please refer to this section. Entegrus is unable to complete a comparative cost analysis, as future outages are unknown. Generally speaking, Entegrus supports deploying projects that balance addressing customer reliability vs cost. Automation can reduce after-hour premium calls through automated restoration, improve customer reliability, and provide more visibility and control to the Entegrus control room.

Management will re-examine the timing of this project in 2024 based on prevailing circumstances at that time, including reliability metrics and the level of capital requirements at that time.

Health and Safety (5.4.3.2 B2)

There are no anticipated direct Health and Safety outcomes associated with this project. Secondary benefits of this project will be a reduction in local switching operations as more remote functionality becomes available. While manual switching operations are generally concidered safe, an undetected catestrophic equipment failure can place staff and the public at risk.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Entegrus actively monitors for vulnerabilities in its operational technology systems. It utilizes standard industry practices to provide security to data both in transit and at rest, as well as monitoring the physical security of all assets.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Entegrus regularly communicates with its upstream suppliers to ensure project coordination. Where needed, protective device coordination and automated restoration projects affecting the upstream supplier are discussed.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

Entegrus specifies modern, industry standard equipment and communications protocols. Entegrus monitors vendor end-of-production and end-of-support dates when specifying technology equipment for its projects to ensure support can be expected for the life of the equipment. This maximizes flexibility to address future needs, cyber security vulnerabilities or changes in best practice. To the maximum extent practicable, telemetry data from all devices capable of providing it is gathered into SCADA. This provides immediate operational benefit. The data is also archived in a Historian to assist the planning department with a rich historical data set when performing analysis.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - System Service

Assessment of both the Project benefits and cost impacts for customers (5.4.3.2 SS-C1.1)

Please see project narrative sections 'Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' & 'Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)' above.

Information on regional electricity infrastructure requirements and the distribution of benefits and responsibility of project costs, if applicable (5.4.3.2 SS-C1.2) (where applicable)

Not applicable.

Description of how advanced technology has been incorporated into the project (5.4.3.2 SS-C1.3) (if applicable)

Please see project narrative section 'Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements' above.

Identify reliability, efficiency, safety and coordination benefits and/or effect the Project will have on the distributor's system (5.4.3.2 SS-C1.4)

Please see project narrative sections 'Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)', 'Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)', & 'Health and Safety (5.4.3.2 B2)' above.

Identify and explain the factors affecting implementation timing and/or priority (5.4.3.2 SS-C1.5)

Please see project narrative sections 'Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)' & 'Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' above.

Analysis of Project benefits and costs comparing the proposed project (5.4.3.2 SS-C1.6)

Please see project narrative section 'Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' above.

Identify qualitative factors relating to the proposed project and all alternatives (5.4.3.2 SR-C)

Please see project narrative sections 'Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)', 'Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)', & Project Summary above.

A. General Information						
Project/Activity	Building					
Project Number	4.1					
Investment Category	**General Plant**					
Capital Cost (5.4.3.2 A.1)	$ 175,500					
Capital Contribution	$ -					
Net Cost	$ 175,500					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

All of Entegrus' customers are potentially impacted by these decisions as Entegrus' staff primarily work out of these operating centres. In particular the 9,105 customers formerly serviced from the Strathroy Operations Centre will now be served by the St. Thomas Operations Centre.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21	
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**		
	$ 43,875	$ 43,875	$ 43,875	$ 43,875		

Project Summary

This investment program captures the costs of upkeep and enhancements to Entegrus' Operating Centres. Key activities planned for the 2021-2025 timeframe include the St. Thomas building improvements to accommodate the consolidation with the former Strathroy operating center, HVAC improvements to the Chatham facility deferred from the Historical Period, and roof upgrades in Chatham, identified through the latest 3rd party building inspection. Other investments entail minor upgrades and refurbishment to support health and safety of Entegrus' staff and those visiting the utility's offices.

Risk Identification & Mitigation (5.4.3.2 A.5)

A risk with this project includes the migration of the Strathroy Operations Centre to the St Thomas Operations Centre. Strategic planning and investments in the St Thomas office will minimize operational challenges with the migration, and ultimately allow for a smooth closure of the Strathroy Operating center. The St. Thomas building modifications will enable the reduction of Entegrus' overall facilities footprint per employee and support the operational efficiencies gained from the closure of the previously leased Strathroy facility.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This investment does not consider any REG.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main investment driver is Non-System Physical Plant.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

The goal of this project is to maintain the existing Entegrus' operating standards according to all applicable building codes as well as to support Entegrus' business activities. An additional targeted outcome for the 2021 year is to consolidate the Strathroy and St Thomas operating centres.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

This investment program captures the costs of upkeep and enhancements to Entegrus' Operating Centres. The HVAC improvements and Chatham roof upgrades identified by a 3rd party building inspection had been previously deferred. Building maintenance can no longer be deferred. This program is expected to provide several benefits over simply maintaining the status quo. The HVAC systems servicing the Chatham facility are currently a mix of aged heat pumps and baseboard heating. Installation of contemporary equipment and conversion away from the electrical heat is expected to provide the utility with sustainable OM&A savings. The St. Thomas building modifications will enable the reduction of Entegrus' overall facilities footprint per employee and support the operational efficiencies gained from the closure of the previously leased Strathroy facility.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Building investments allow the utility to continue functioning efficiently to meet it's obligations as a utility. Building investments are required for providing a safe working environment for all Entegrus employees and continue operating as an essential service through severe weather or pandemics.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. This project's ranking is based on it's long term focus.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

This investment program captures the costs of upkeep and enhancements to Entegrus' Operating Centres. The HVAC improvements and Chatham roof upgrades identified by a 3rd party building inspection had been previously deferred. Building maintenance can no longer be deferred. This program is expected to provide several benefits over simply maintaining the status quo. The HVAC systems servicing the Chatham facility are currently a mix of aged heat pumps and baseboard heating. Installation of contemporary equipment and conversion away from the electrical heat is expected to provide the utility with sustainable OM&A savings. The St. Thomas building modifications will enable the reduction of Entegrus' overall facilities footprint per employee and support the operational efficiencies gained from the closure of the previously leased Strathroy facility.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

The St. Thomas building modifications will enable the reduction of Entegrus' overall facilities footprint per employee and support the operational efficiencies gained from the closure of the previously leased Strathroy facility. The net benefit to customers is these modifications will increase daily operational effectiveness and help align business practices to provide the same quality of service to any Entegrus customer supplied in either operating region.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

Building investments do not have a direct impact on reliability performance. However building enhancements may contribute to Entegrus' ability to respond to an outage, reducing duration of outages. For example, the re-design of the security gate to better manage traffic flow from the influx of operation personnel previously operating out of the Strathroy office.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

The alternative to performing facility maintenance is to relocate to a new facility, or build new. Both of these are expected to be a major expense compared to the cost of maintaining the existing buildings, which are currently meeting all of Entegrus' business needs.

Health and Safety (5.4.3.2 B2)

The goal of this project is to maintain the existing Entegrus' operating standards according to all applicable building codes as well as to support Entegrus' business activities. This is required to maintain safe working conditions for Entegrus employees.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

The HVAC systems servicing the Chatham facility are currently a mix of aged heat pumps and baseboard heating. Installation of contemporary equipment and conversion away from the electrical heat is expected to provide the utility with sustainable OM&A savings..

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - General Plant

Results of quantitative and qualitative analyses of the proposed project or program (5.4.3.2 GP-D1.1)

Please see project narrative section 'Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)' above.

Business Case documenting the justifications for expenditures, alternatives considered, long/short term benefits for customers and long/short term impact on distributor costs (5.4.3.2 GP-D1.2)

Please see project narrative section Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' above.

A. General Information						
Project/Activity	IT Hardware					
Project Number	4.2					
Investment Category	**General Plant**					
Capital Cost (5.4.3.2 A.1)	$ 160,000					
Capital Contribution	$ -					
Net Cost	$ 160,000					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

Not applicable.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**	
	$ 40,000	$ 40,000	$ 40,000	$ 40,000	

Project Summary

This program covers the costs of all physical equipment and infrastructure required to maintain and improve the utility's external and internal information technology capabilities. Annual expenditure targets include personal computing and communication devices (laptops, tablets, cellular phones), to office support hardware (monitors, printers), and back office equipment like servers and networking infrastructure. Benefits of modern and well-maintained IT hardware are the efficiency and flexibility across all utility activities, while preventing or mitigating cybersecurity threats. All equipment that Entegrus deploys is equipped with modern encryption and authentication capabilities. Aside from enabling secure and efficient operations, a core strategic goal underlying the hardware portfolio is to fashion a secure, flexible and robust infrastructure foundation that is capable to accommodate a variety of emerging technologies that Entegrus may explore and adopt in the coming years.

Risk Identification & Mitigation (5.4.3.2 A.5)

There are a number of risks associated with IT Hardware which include: Changes in the vendor marketplace (e.g. M&As affecting future offerings or support level); emerging cybersecurity threats and newest prevention and response practices; interoperability across major systems and versions; change management work to ensure attainment of targeted benefits; requirements driven by customers' own technology choices. Entegrus has had the benefit of seeing first-hand the implications of a variety of IT policy and strategy choices made by other utilities. Informed by these insights, Entegrus' own IT strategy is grounded in three pragmatic pillars that mitigate these risks, which are prioritizing in-house skill and knowledge enhancement over outsourcing; invest in cybersecurity to preserve business continuity; and maximize the value of core business applications over customized solutions.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This investment does not consider any REG.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main investment driver is Non-System Physical Plant.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

Up to date computers and networking systems promote corporate efficiency and accuracy within the engineering, billing, regulatory metering and operations departments. The investments made through this program will prevent higher down times on computer system, reducing the likelihood of errors in all of the above departments.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

Assets are replaced based on Entegrus' IT lifecycle policies. Alternative suppliers are regularly investigated at the beginning of each lifecycle. Since the technology landscape undergoes rapid evolution, the cyclical asset replacement timelines are frequently revisited, to ensure that they continue to meet Entegrus' requirements and reflect industry best practices.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Up to date computers and networking systems promote corporate efficiency and accuracy within the engineering, billing, regulatory metering and operations departments. The investments made through this program will prevent higher down times on computer system, reducing the likelihood of errors in all of the above departments. The 'do nothing' option is not a sustainable choice for this project. This will lead to untimely failures, lost data, lost productivity, cyber security incursions and ultimately poor customer service.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. This project directly impacts the majority of employees. There is also an indirect impact to customer since the computer systems affected by this project impact the customer-facing outage maps and customer information systems. The 'do nothing' option is not a sustainable choice for this project. This will lead to untimely failures, lost data, lost productivity and ultimately poor customer service.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

2021's IT hardware replacement program will be focused on expanding storage capability and throughput within our main data centre. This will involve deploying a new storage cluster and memory upgrades to core servers. There will be key lifecycle updates to user workstations with spending in this area projected to be 30% of our typical yearly spend. As well, desk phone devices will be upgraded in support of moving to a new phone system. Up to date computers and networking systems promote corporate efficiency and accuracy within the engineering, billing, regulatory metering and operations departments. The investments made through this program will prevent higher down times on computer system, reducing the likelihood of errors in all of the above departments. The 'do nothing' option is not a sustainable choice for this project. This will lead to untimely failures, lost data, lost productivity, cyber security incursions and

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

There is an indirect benefit customers since the computer systems affected by this project impact the customer-facing outage maps and customer information systems.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

This project does not directly impact reliability performance.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

Alternatives to all computers are analyzed each year and standards are developed. The Entegrus IT department continues to follow the life cycle replacement program that has been put in place. Since the technology landscape undergoes rapid evolution, the cyclical asset replacement timelines are frequently revisited, to ensure that they continue reflecting the value add.

Health and Safety (5.4.3.2 B2)

This project does not target any specific health and safety concerns.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Entegrus' Information Technology (IT) assets keep the utility connected, help make operations increasingly efficient, and protect its data from cybersecurity threats. Entegrus sees its IT portfolio as the most dynamic portion of its asset base, as the rapidly evolving technological landscape and changing customer expectations (articulated both directly and through government policy) have drastically altered the scale, scope and complexity of the Entegrus' IT systems over the past decade. With shorter useful lives than most other types of utility assets, IT hardware and software lifecycle decisions arise with a greater frequency, and are further complicated by factors that are less relevant to other utility plant.

Entegrus recognizes the impact that these additional considerations can have on the cost, complexity and performance of Entegrus' IT infrastructure. Moreover, having been involved in multiple M&A undertakings over the past two decades, Entegrus has had the benefit of seeing first-hand the implications of a variety of IT policy and strategy choices made by other utilities. Informed by these insights, Entegrus' own IT strategy is grounded in three pragmatic pillars: Prioritize in-house skill and knowledge enhancement over outsourcing; Investment in cybersecurity to preserve business continuity; and Maximizing the value of core business applications over customized solutions.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Recognizing that its IT operations and capital resources are limited, Entegrus maintains a pragmatic outlook on the optimal ways of enhancing the productivity across its business functions. Where evolving business needs can be addressed through better utilization of core business applications (i.e. the Microsoft Office suite), Entegrus seeks to avoid implementing purpose-built software solutions designed for a specific function. While maximizing the use of the core functions may entail offering enhanced implementation support to the user base, Entegrus sees doing so as a more prudent investment than procuring additional task-specific systems that complicate its IT environment and lead to incremental costs and additional vendor management effort. While this approach is not always practical, Entegrus seeks to make it as viable as possible by maintaining an aggressive version upgrade cycle. Doing so allows Entegrus IT staff to explore the incremental functionalities available in the newer versions to help their internal clients drive productivity gains with minimal incremental costs.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

Please see project narrative section 'Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)' above.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - General Plant

Results of quantitative and qualitative analyses of the proposed project or program (5.4.3.2 GP-D1.1)

Please see project narrative section 'Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)' above.

Business Case documenting the justifications for expenditures, alternatives considered, long/short term benefits for customers and long/short term impact on distributor costs (5.4.3.2 GP-D1.2)

Please see project narrative section Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' above.

A. General Information						
Project/Activity	IT Software					
Project Number	4.3					
Investment Category	**General Plant**					
Capital Cost (5.4.3.2 A.1)	$ 320,000					
Capital Contribution	$ -					
Net Cost	$ 320,000					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

Not applicable as there are no capital contributions or costs recovery to the transmitter.

Customer Attachments and Load (5.4.3.2 A.3)

Not Applicable.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21	
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**		
	$ 80,000	$ 80,000	$ 80,000	$ 80,000		

Project Summary

The Software program includes the licensing costs of new and existing software solutions used by Entegrus and the labour costs associated with periodic system upgrades and ongoing upkeep and support of the software portfolio. In addition to standard suite of office support applications, Entegrus maintains a number of sophisticated utility-specific solutions like those supporting the Metering, Customer Care and Billing, Control Centre and Asset Management functions, among others. Cybersecurity is a major priority for Entegrus, and it is actively monitoring and managing any potential vulnerabilities within its software portfolio.

Risk Identification & Mitigation (5.4.3.2 A.5)

There are a number of risks associated with IT Hardware which include: Changes in the vendor marketplace (e.g. M&As affecting future offerings or support level); emerging cybersecurity threats and newest prevention and response practices; interoperability across major systems and versions; change management work to ensure attainment of targeted benefits; requirements driven by customers' own technology choices. Entegrus has had the benefit of seeing first-hand the implications of a variety of IT policy and strategy choices made by other utilities. Informed by these insights, Entegrus' own IT strategy is grounded in three pragmatic pillars that mitigate these risks, which are prioritizing in-house skill and knowledge enhancement over outsourcing; invest in cybersecurity to preserve business continuity; and maximize the value of core business applications over customized solutions.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This investment does not consider any REG.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main investment driver is Non-System Physical Plant.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

Up to date software promotes corporate efficiency and accuracy within the engineering, billing, regulatory metering and operations departments. The investments made through this project will allow Entegrus to meet required customer and regulatory requirements and satisfaction levels.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

Software related projects will make up a significant part of the workplan for 2021. Key components of the Entegrus cyber security platform are up for renewal. Competitive analysis has already been performed and the intent is to stay with incumbent vendors. The typical cyber security software renewal is for a 3-year period as the rate of change in this area is especially quick. As well, the system that manages the Health and Safety training and document platform will no longer be supported by the vendor and needs to be upgraded. Finally, based on experiences from the pandemic, Entegrus will be replacing its phone system and customer contact centre software to support increased digital interactions with customers and support any potential flexible working arrangements. There will be an underlying theme of orchestration and automation in all these projects for 2021.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Entegrus recognizes the impact that additional considerations can have on the cost, complexity and performance of Entegrus' IT infrastructure. Moreover, having been involved in multiple M&A undertakings over the past two decades, Entegrus has had the benefit of seeing first-hand the implications of a variety of IT policy and strategy choices made by other utilities. The 'do nothing' option is not a sustainable choice for this project. This will lead to untimely failures, lost data, lost productivity and ultimately poor customer service. Alternatives to all software packages are analyzed each year, the most appropriate vendors and packages are made on a case-by-case basis. The decision is based on user preference, price, system access, hardware requirements and integration to existing packages when necessary.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. This project directly impacts the majority of employees. There is also an indirect impact to customer since the computer systems affected by this project impact the customer-facing outage maps and customer information systems. The 'do nothing' option is not a sustainable choice for this project. This will lead to untimely failures, lost data, lost productivity, cyber security incursions and ultimately poor customer service.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

Entegrus maintains a number of sophisticated utility-specific solutions like those supporting the Metering, Customer Care and Billing, Control Centre and Asset Management functions, among others. Cybersecurity is a major priority for Entegrus, and it is actively monitoring and managing any potential vulnerabilities within its software portfolio.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

There is an indirect benefit customers since the computer systems affected by this project impact the customer-facing outage maps and customer information systems. Having up to date computer software will allow faster customer response for staff using the CIS system and more accurate estimates for customer contributions from the engineering department. This project therefore has an impact on all customers who take advantage of these services

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

This project does not target reliability performance.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

Alternatives to all computers are analyzed each year and standards are developed. The Entegrus IT department continues to follow the life cycle replacement program that has been put in place. Since the technology landscape undergoes rapid evolution, the cyclical asset replacement timelines are frequently revisited, to ensure that they continue reflecting the value add.

Health and Safety (5.4.3.2 B2)

This project does not target any specific health and safety concerns.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Entegrus' Information Technology (IT) assets keep the utility connected, help make operations increasingly efficient, and protect its data from cybersecurity threats. Entegrus sees its IT portfolio as the most dynamic portion of its asset base, as the rapidly evolving technological landscape and changing customer expectations (articulated both directly and through government policy) have drastically altered the scale, scope and complexity of the Entegrus' IT systems over the past decade. With shorter useful lives than most other types of utility assets, IT hardware and software lifecycle decisions arise with a greater frequency, and are further complicated by factors that are less relevant to other utility plant:

Entegrus recognizes the impact that these additional considerations can have on the cost, complexity and performance of Entegrus' IT infrastructure. Moreover, having been involved in multiple M&A undertakings over the past two decades, Entegrus has had the benefit of seeing first-hand the implications of a variety of IT policy and strategy choices made by other utilities. Informed by these insights, Entegrus' own IT strategy is grounded in three pragmatic pillars:
Prioritize in-house skill and knowledge enhancement over outsourcing; Invest in cybersecurity to preserve business continuity; Maximize the value of core business applications over customized solutions.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Recognizing that its IT operations and capital resources are limited, Entegrus maintains a pragmatic outlook on the optimal ways of enhancing the productivity across its business functions. Where evolving business needs can be addressed through better utilization of core business applications (i.e. the Microsoft Office suite), Entegrus seeks to avoid implementing purpose-built software solutions designed for a specific function. While maximizing the use of the core functions may entail offering enhanced implementation support to the user base, Entegrus sees doing so as a more prudent investment than procuring additional task-specific systems that complicate its IT environment and lead to incremental costs and additional vendor management effort. While this approach is not always practical, Entegrus seeks to make it as viable as possible by maintaining an aggressive version upgrade cycle. Doing so allows Entegrus IT staff to explore the incremental functionalities available in the newer versions to help their internal clients drive productivity gains with minimal incremental costs.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

Please see project narrative section 'Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)' above.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - General Plant

Results of quantitative and qualitative analyses of the proposed project or program (5.4.3.2 GP-D1.1)

Please see project narrative section 'Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)' above.

Business Case documenting the justifications for expenditures, alternatives considered, long/short term benefits for customers and long/short term impact on distributor costs (5.4.3.2 GP-D1.2)

Please see project narrative section 'Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)' above.

A. General Information						
Project/Activity	Rolling Stock					
Project Number	4.4					
Investment Category	**General Plant**					
Capital Cost (5.4.3.2 A.1)	$ 805,000					
Capital Contribution	$ -					
Net Cost	$ 805,000					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

true-up dates and potential true-up payments.

Customer Attachments and Load (5.4.3.2 A.3)

Not Applicable.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21	
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**		
	$ 201,250	$ 201,250	$ 201,250	$ 201,250		

Project Summary

This program includes the costs of repair and replacement of Entegrus' fleet of vehicles and other specialized mobile equipment. Asset renewal decisions follow the lifecycle management methodology for the appropriate vehicle class discussed in Section 3.3.5. Given the physical span of Entegrus' service territory, it is imperative that its fleet remains in optimal operating condition to respond to outages, complete service requests and facilitate capital construction and maintenance activities. The main driver to the project is the replacement of end of life vehicles. The major expenditure for 2021 is the replacement of a radial boom derrick which is currently at end of expected life. This poses an increased risk of failure during use.

Risk Identification & Mitigation (5.4.3.2 A.5)

Access to safe and reliable vehicles are necessary to enable the timely, efficient completion of construction and maintenance activities on the distribution system. Failure to access safe and reliable vehicles hampers Entegrus ability to safely perform work on high voltage lines and respond to customer outages/emergency situations promptly.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This investment does not consider any REG.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main investment driver is System Capital Investment Support.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

The targeted outcome of this project is the continued safe and reliable operation of Entegrus' fleet of vehicle. Access to safe and reliable vehicles are critical for the day to day responsibilities of much of Entegrus' staff. This project will ensure that Entegrus' employees have access to the vehicles required to complete their work. This includes replacement of four fleet pickup trucks which have reached the end of their useful life. Addition of three fleet pickup trucks required to support new in-field employees. Replacement of 1 double bucket truck which has exceeded 15 years of service.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

Given the physical span of Entegrus' service territory, it is imperative that its fleet remains in optimal operating condition to respond to outages, complete service requests and facilitate capital construction and maintenance activities. The justification of these investments is vehicles approaching end of life due to their age or condition. The major expenditure this year is the replacement of a radial boom derrick which is currently at end of expected life.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Entegrus' service territory is rather expansive, it is imperative that its fleet remains in optimal operating condition to respond to outages, complete service requests and facilitate capital construction and maintenance activities.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. It is imperative that its fleet remains in optimal operating condition to respond to outages, complete service requests and facilitate capital construction and maintenance activities. The main driver to the project is the replacement of end of life vehicles. The major expenditure this year is the replacement of a radial boom derrick which is currently at end of expected life. This poses an increased risk of failure during use.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

In recent years Entegrus attempted to extend the lifecycle of their lighter vehicles from 7 up to 10 years. However, the pilot project revealed that doing so frequently leads to incurring major maintenance costs such as chassis or drivetrain overhauls, which reduced the financial rational for the extension of the lifecycle. For heavier vehicles, such as bucket trucks, Enetegrus will only consider refurbishment if it is determined that such investment will extend the life of the asset by a minimum of 5 years. The truck which is scheduled for replacement as part of this project is already 3 years beyond the typical useful life for this type of vehicle, therefore refurbishment will not provide sufficient life extension to justify the investment.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

Access to safe and reliable vehicles are necessary to enable the timely, efficient completion of construction and maintenance activities on the distribution system. The net benefit to customers is Entegrus being able to quickly respond to outages and complete construction in a safe manner.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

This project is the continued safe and reliable operation of Entegrus' fleet of vehicle which allows Entegrus to respond to outages as soon as possible.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)
Asset renewal decisions follow the lifecycle management methodology for the appropriate vehicle class discussed in Section 3.3.5.
Health and Safety (5.4.3.2 B2)
Reliable vehicles are critical for Entegrus' ability to safely perform work on high voltage lines.
Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)
Not applicable.
Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)
Not applicable.
Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements
Please see project narrative section 'Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' above.
Environmental Benefits (5.4.3.2 B.5) (where applicable)
Not applicable.
Conservation and Demand Management (5.4.3.2 B.6) (where applicable)
Not applicable.

C. Category-Specific Requirements - General Plant
Results of quantitative and qualitative analyses of the proposed project or program (5.4.3.2 GP-D1.1)
Please see project narrative section 'Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)' above.
Business Case documenting the justifications for expenditures, alternatives considered, long/short term benefits for customers and long/short term impact on distributor costs (5.4.3.2 GP-D1.2)
Please see project narrative section Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' above.

A. General Information						
Project/Activity	Tools					
Project Number	4.5					
Investment Category	**General Plant**					
Capital Cost (5.4.3.2 A.1)	$ 208,980					
Capital Contribution	$ -					
Net Cost	$ 208,980					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

true-up dates and potential true-up payments.

Customer Attachments and Load (5.4.3.2 A.3)

Not Applicable.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21	
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**		
	$ 52,245	$ 52,245	$ 52,245	$ 52,245		

Project Summary

This program captures cyclical purchases of various tools and implements used by Entegrus' crews in the course of their daily activities. Examples include testing equipment, presses, cutters, rubber goods, fault evaluation and infrastructure locating equipment, troubleshooting equipment, radio communication equipment and cable pulling implements. Replacement of major tools that come to end of life or have become outdated due to changing work practices, safety standards, or improved technology is necessary for the execution of work programs in a cost efficient and safe manner.

Risk Identification & Mitigation (5.4.3.2 A.5)

Access to safe and reliable tools are necessary to enable the timely, efficient completion of construction and maintenance activities on the distribution system. Failure to access safe and reliable tools hampers Entegrus ability to safely perform work on high voltage lines and respond to customer outages/emergency situations promptly.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This investment does not consider any REG.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main investment driver is System Capital Investment Support.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

The goal of this program is to ensure that Entegrus' crews have the tools and equipment needed to perform their work safely and effectively.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

Crew supervisors identify the replacement needs and discuss them with procurement personnel who undertake the purchases. Investment pacing and prioritization are contemplated case-by-case, depending on the current condition of equipment, expected utilization, and materiality of requisite investments. In addition, the project also includes the purchase of a new plotter as well as test equipment to support Entegrus' various smart grid/distribution protection projects. Replacement of major tools that come to end of life or have become outdated due to changing work practices, safety standards, or improved technology is necessary for the execution of work programs in a cost efficient and safe manner.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Replacement of major tools that come to end of life or have become outdated due to changing work practices, safety standards, or improved technology is necessary for the execution of work programs in a cost efficient and safe manner.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. It is imperative that tools remain in optimal operating condition to complete service requests and facilitate capital construction and maintenance activities.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

Given the variety of tools and implements that fall into this category and their low materiality, Entegrus does not consider it practical to maintain a formal asset lifecycle management framework for this group of assets. Accordingly, assets are replaced and replenished as needed – as they reach the ends of their useful lives or require replenishment in light of the anticipated work program.

Three scenarios are considered for each piece of equipment covered under this capital program.
1.) Not replace – Where the number of tools is identified as greater than is needed, decommissioning the asset is the default choice.
2.) Replace with newer technology – for assets where material improvements can be achieved in terms of compliance, safety or work efficiency, a new style asset will be provided, and the old will be decommissioned/scrapped.
3.) Like for like replacement – where the current asset is meeting all requirements, and replacement is required to maintain a suitable number for efficient operation, a like for like replacement is provided.

Decisions on the most appropriate scenario are made on a case-by-case basis as equipment is identified as being a candidate for replacement, retirement or upgrade.
Some purchases covered under this program are required to support needs which did not exist in prior years, in this case there is no option to refurbish or extend the life of equipment.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

Access to safe and reliable tools are necessary to enable the timely, efficient completion of construction and maintenance activities on the distribution system. The net benefit to customers is Entegrus being able to quickly respond to outages and complete construction in a safe manner.

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

This project is the continued safe and reliable operation of Entegrus' fleet of tools which allows Entegrus to respond to outages as soon as possible.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)
Please see project narrative section 'Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' above.
Health and Safety (5.4.3.2 B2)
Reliable tools are critical for Entegrus' ability to safely perform work on high voltage lines.
Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)
Not applicable.
Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)
Not applicable.
Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements
This project does not target future technological functionality and/or future operation requirements.
Environmental Benefits (5.4.3.2 B.5) (where applicable)
Not applicable.
Conservation and Demand Management (5.4.3.2 B.6) (where applicable)
Not applicable.

C. Category-Specific Requirements - General Plant
Results of quantitative and qualitative analyses of the proposed project or program (5.4.3.2 GP-D1.1)
Please see project narrative section 'Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)' above.
Business Case documenting the justifications for expenditures, alternatives considered, long/short term benefits for customers and long/short term impact on distributor costs (5.4.3.2 GP-D1.2)
Please see project narrative section Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' above.

A. General Information						
Project/Activity	Miscellaneous General Plant					
Project Number	4.6					
Investment Category	**General Plant**					
Capital Cost (5.4.3.2 A.1)	$ 305,000					
Capital Contribution	$ -					
Net Cost	$ 305,000					
O&M Cost (5.4.3.2 A.1)	$ -					
Capital Contributions to Transmitters (5.4.3.2 A.2)	$ -					

true-up dates and potential true-up payments.

Customer Attachments and Load (5.4.3.2 A.3)

The number of customers & load vary per project. The Blenheim station yard improvement affected 1080 customers. All customers are benefit from by station decommissioning and mobile station repair.

Start Date (5.4.3.2 A.4)	1-Jan-21			**In Service Date (5.4.3.2 A.4)**	31-Dec-21
Expenditure Timing for the Test Year (5.4.3.2 A.4)	**[●] Q1**	**[●] Q2**	**[●] Q3**	**[●] Q4**	
	$ 76,250	$ 76,250	$ 76,250	$ 76,250	

Project Summary

This project captures investments associated with the substation facilities. This encompasses costs associated with significant refurbishments, improvements, as well as decommissioning costs once the station has been retired from service. For 2021, specific activities include: Expanding the Station yard in Blenheim to accommodate the large Mobile station (From Legacy St. Thomas) which has a higher electrical rating but is physically larger than the legacy Entegrus unit, and removal of electrical equipment and assets from two retired electrical substations. This also covers repair of the smaller mobile station which was placed out of service in 2020 when it suffered significant damage to the switching and protection equipment from vandals who broke into the Chatham yard.

Risk Identification & Mitigation (5.4.3.2 A.5)

One of the main risks with this project is sourcing materials specific to the mobile station that was damaged. Periodic substation maintenance is a required activity. To prevent future damage, Entegrus may consider storing the mobile substation in enclosed building.

Comparative information on expenditures for equivalent projects/activities (5.4.3.2 A.6)

Comparative information on expenditures for equivalent projects/activities is outlined in Section 4.4.4.

REG Investment Details including Capital and OM&A costs (5.4.3.2 A.7)

This investment does not consider any REG.

Leave to Construct approval under Section 92 of the OEB Act (5.4.3.2 A.8)

This project does not require leave to construct approval under section 92 of the OEB Act.

B. Evaluation criteria and information requirements for each project/activity

Efficiency, Customer Value & Reliability - Investment Main Driver (5.4.3.2 B.1.a)

The main investment driver is Non-System Physical Plant.

Efficiency, Customer Value & Reliability - Investment Secondary Driver (5.4.3.2 B.1.a) (where applicable)

Not applicable.

Efficiency, Customer Value & Reliability - Investment Objectives and/or Performance Targets (5.4.3.2 B.1.a)

Investments target improvements or decommissioning work of station yards and facilities. Improvements will enable better use of mobile stations and decommissioning of retired substations.

Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)

Periodic substation maintenance is a required activity. Entegrus performs monthly inspections to identify items in need of both immediate and longer term remediation. Oil sampling is performed annually to monitor transformer health, and identify any emergent issues. Multi-year station maintenance schedules are maintained to ensure all stations receive timely maintenance.

Demonstrate Good Utility Practice in Reliability Planning (5.4.3.2 B.1.b)

Entegrus completes periodic substation maintenance as a part of its regular asset management program. Maintenace reduces the chances of an asset unexpectedly failing and promotes an extended useful life. Having a mobile susbtation readily available serves as a backup plan to address customer reliability in the unlikely event a substation fails. This option increases Entegrus's ability to adapt to future challenges, such as unexpected failures.

Efficiency, Customer Value & Reliability - Priority Level/Project Prioritization and Reasoning (5.4.3.2 B.1.c)

Refer to Section 4.5 of the DSP for project rankings. Periodic substation maintenance is a required activity. Deferral of this work will interfere with our ability to meet Entegrus obligations.

Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)

While the decommissioning of retired electrical substations could be deferred, doing so increases Entegrus costs while providing no benefit. The capabilities of the two mobile stations are materially different, and the cost of upgrading the larger St. Thomas mobile station exceeds the cost of repair of the damaged one.

Analysis of Project & Alternatives - Net benefits accruing to customers (5.4.3.2 B.1.d.ii)

Substation investments allow continued reliable service to Entegrus customers. The analysis of best alternative is described in (5.4.3.2 B.1.d.i)

Analysis of Project & Alternatives - Impact of the investment on reliability performance including frequency and duration of outages (5.4.3.2 B.1.d.iii)

Substation maintenance and repair of vandalized equipment has a direct impact on reliability performance. As such improvements to enable better use of mobile stations and decommissioning of retired substations are required for continued reliable service.

Project Alternatives (Design, Scheduling, Funding/Ownership) (5.4.3.2 B.1.d)

Please see project narrative section 'Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' above.

Health and Safety (5.4.3.2 B2)

Vandals create a serious health and safety concern for both Entegrus staff and the public. Copper ground theft is a common occurrence especially in Entegrus substations and mobile stations despite the equipment being enclosed in a locked secure area. In 2020 the Chatham mobile substation suffered significant damage to the switching and protection equipment from vandals who broke into the Chatham yard. Repairing vandalized damage in substations is mandatory for the safe use of equipment and linemen protection.

Cyber-Security, Privacy (5.4.3.2 B.3) (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.a) Recognized Standards, co-ordination with utilities, regional planning, and/or 3rd party providers (where applicable)

Not applicable.

Co-Ordination, Interoperability (5.4.3.2 B.4.b) Future technological functionality and/or future operational requirements

This project considers a potentional future operational requirement. Upon the unlikely failure of the Blenheim East substation, this project will permit Entegrus to easily deploy a mobile substation in a safe location to continue serving its customers until permenant repairs can be made.

Environmental Benefits (5.4.3.2 B.5) (where applicable)

Not applicable.

Conservation and Demand Management (5.4.3.2 B.6) (where applicable)

Not applicable.

C. Category-Specific Requirements - General Plant

Results of quantitative and qualitative analyses of the proposed project or program (5.4.3.2 GP-D1.1)

Please see project narrative section 'Efficiency, Customer Value & Reliability - Source and nature of the information used to justify the investment (5.4.3.2 B.1.a)' above.

Business Case documenting the justifications for expenditures, alternatives considered, long/short term benefits for customers and long/short term impact on distributor costs (5.4.3.2 GP-D1.2)

Please see project narrative section Analysis of Project & Alternatives - Effect of the investment on system operation efficiency and cost-effectiveness (5.4.3.2 B.1.d.i)' above.