DISTRIBUTION SYSTEM PLAN

2024

April 2024

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EXECUTIVE SUMMARY

This Distribution System Plan (DSP) has been prepared to support THI's rebasing rate application as required by the Chapter 5A (Small Utilities Distribution System Plan) filing requirements. It demonstrates that plans are in place to ensure Tillsonburg Hydro Inc. (THI) continues to meet customer expectations for safety, reliability, customer service, and cost. Consideration has been given regarding the expected development of the Town of Tillsonburg and future requirements for serving the anticipated growth in both load and generation customers.

THI is owned by the Town of Tillsonburg (sole shareholder) and operates as a "virtual" utility with a Master Services Agreement (MSA) in place with the Town to provide resources including facilities, fleet, IT, and personnel[1]. The close working relationship with the Town has allowed for synergies including the efficient use of resources while allowing THI to focus on providing a safe and reliable distribution system.

Customer surveys, completed in 2016, 2019 & 2021, consistently give THI high overall satisfaction ratings, as well as support for the pro-active asset replacement strategy currently in use that delivers a level of system reliability preferred by a majority of customers[2].

The main drivers of investments for the next five years is the replacement of infrastructure that is reaching end of life and posing reliability and potential safety risks (System Renewal) as well as feeder upgrades and reconfigurations (System Service) designed to achieve system operational objectives focused on efficiency and reliability. An Asset Management Plan (AMP)[3] was prepared in 2016 by an independent consultant, who identified the need for an increase in the level of asset replacement to avoid further deterioration of system reliability, and the need for enhancements in inspections, maintenance, and testing of assets to further assess their condition and failure risk. THI has acted on these recommendations, increasing the volume of work with a focus on asset replacements. This has resulted in a gradual reduction in the overall quantity of assets that have exceeded their life expectancy, and stable system reliability. The AMP was updated in 2022 by THI staff, and indicates slight improvements in the condition of THI assets overall as compared to the 2016 report.

Growth is expected to be minimal (about 1.25%[4]) and the existing supply (four 27.6 kV feeders from the Tillsonburg Transformer Station) should be adequate to meet future growth in load and generation, subject to upstream constraints (at the transmission level). Investment in System Access projects is expected to be similar to previous years while there will be some spending on System Service projects as investments are made to modernize the grid and improve system reliability and increase operating flexibility.

With fleet, facilities, and most of the IT services provided by the Town through the MSA, there are few planned investments in the General Plant category. The Regional Planning[5] reports identified that there were voltage issues at the Tillsonburg Transformer Station, and that the transmission lines that supplied Tillsonburg TS were approaching capacity. Several options were considered and the 2020 "*Needs*

[1] Throughout this document, references to THI "staff" and "employees" includes employees of the Town of Tillsonburg who work on behalf of THI through the MSA.
[2] See DSP Section 5.4.2.1 for details on the survey results and how they shape the DSP.
[3] See DSP Appendix D for the AMP.
[4] See DSP Appendix B for Regional Load Forecast from 2020
[5] See DSP Appendix B for the Regional Planning materials.

Assessment Report" noted Hydro One had initiated projects to install capacitor banks at Tillsonburg TS (to address the voltage issues), and to change the TS supply circuits (to address the capacity issue). These upgrades have since be completed and there will not be any future capital contribution required from THI for these upgrades.

Since the report was presented, Tillsonburg has had a lot of industrial & commercial interest in bringing business to the Town. Wile currently there are no firm commitments it is expected that some small industrial as well as Volkswagon battery plan spin off manufacturing will materialize in the coming years. The capacity issue at the TS level has been noted to become at full capacity. As a result THI staff are currently in discussions with Hydro One Transmission to discuss the need for future upgrades. Therefore it is likely that significant capital investments beyond current spending levels will be needed to increase the capacity for the growth should it materialize.

The distribution system is expected to evolve slowly over the next five years, which should see the complete elimination of 4 kV and the addition of more modern equipment that improve reliability and operating flexibility.

5.2 Distribution System Plans

Distributors are encouraged to organize the required information using the section headings indicated from here onwards.

The DSP's duration is a minimum of ten years in total, comprising of an historical period and a forecast period. The historical period is the first five years of the DSP duration, consisting of five historical years, ending with the bridge year. For distributors that have not filed a DSP within the past 5 years, the historical period is from the test year of a distributor's last cost of service application to the bridge year. The forecast period is the last five years of the DSP duration, consisting of five forecast years, beginning with the test year.

THI has prepared this DSP following the OEB Chapter 5A Filing Requirements for a Small Utility Distribution System Plan; headings and section numbers are in the order they are presented in Chapter 5A (*December 16, 2021 edition*). For clarity, each section starts with the actual text (*in italics and colour*) from Chapter 5A to clarify the scope and purpose of each section.

This DSP covers the historical period from 2019 to 2023, and the forecast period from 2024 to 2028; 2023 is the Bridge Year, and 2024 is the Test Year.

This DSP was developed in the last half of 2023 and beginning of 2024 using data that was current up to the end of 2023 (asset inspections, reliability analysis, load forecast). The DSP is a living document, subject to minor changes to reflect the most current information available. The Asset Management Plan was updated in 2023 with the most current information available at the time, and asset demographics were updated at the end of 2022.

5.2.1 Distribution System Plan Overview

The distributor must provide a high-level overview of the information filed in the DSP, which should include capital investment highlights and changes since the last DSP. Utilities are encouraged not to repeat details contained in the DSP, but rather provide a broad overview. A distributor should list out the objectives it plans to achieve through the DSP. This DSP will be used to inform and potentially support any requests for incremental capital module (ICM) funding during the 5-year DSP term.

5.2.1.a) Capital Investment Highlights

Historical Capital and O&M

	2019				2020				2021			
	Forecast $k	Actual $k	Variance $k	Variance %	Forecast $k	Actual $k	Variance $k	Variance %	Forecast $k	Actual $k	Variance $k	Variance %
System Access	$ 340	$ 581	$ 241	71%	$ 323	$ 289	-$ 34	-11%	$ 60	$ 438	$ 378	630%
System Renewal	$ 1,757	$ 1,569	-$ 188	-11%	$ 1,468	$ 1,668	$ 200	14%	$ 1,298	$ 1,075	-$ 223	-17%
System Service	$ 155	$ 193	$ 38	25%	$ 295	$ 223	-$ 72	-24%	$ 132	$ 111	-$ 22	-16%
General Plant	$ 85	$ 131	$ 46	54%	$ 97	$ 81	-$ 15	-16%	$ 72	$ 39	-$ 33	-46%
Total	$ 2,337	$ 2,474	$ 137	6%	$ 2,183	$ 2,261	$ 78	4%	$ 1,561	$ 1,662	$ 101	6%
Total O&M	$ 713	$ 855	$ 142	20%	$ 792	$ 859	$ 67	8%	$ 697	$ 735	$ 38	5%

	2022				2023				Five Year Historical Summary			
	Forecast $k	Actual $k	Variance $k	Variance %	Forecast $k	Actual $k	Variance $k	Variance %	Forecast $k	Actual $k	Variance $k	Variance %
System Access	$ 209	$ 633	$ 424	203%	$ 50	$ 43	-$ 7	-14%	$ 982	$ 1,984	$ 1,002	102%
System Renewal	$ 1,616	$ 914	-$ 702	-43%	$ 2,038	$ 1,831	-$ 207	-10%	$ 8,176	$ 7,057	-$ 1,120	-14%
System Service	$ 42	$ -	-$ 42	-100%	$ 447	$ 320	-$ 127	-28%	$ 1,072	$ 847	-$ 225	-21%
General Plant	$ 70	$ 35	-$ 35	-50%	$ 70	$ 32	-$ 38	-55%	$ 393	$ 317	-$ 76	-19%
Total	$ 1,937	$ 1,582	-$ 355	-18%	$ 2,605	$ 2,225	-$ 380	-15%	$ 10,623	$ 10,205	-$ 418	-4%
Total O&M	$ 698	$ 733	$ 35	5%	$ 706	$ 644	-$ 62	-9%	$ 3,606	$ 3,825	$ 220	6%

Forecast = THI Budget Amount, Excludes Capital Contributions
Actual = Excludes Capital Contributions
Variance $ = Actual - Forecast
Variance % = Variance $ / Forecast

5.2.1.b) Changes Since Last DSP

Tillsonburg Hydro has not previously submitted a formalized DSP.

This is the first DSP filed by THI, which is based on an Asset Management Plan (AMP) that was completely re-written in 2016 and updated in 2023. The most recent Cost of Service rate filing (EB-2012-0168), included work that THI has done on the distribution grid since 2000, following the results and recommendations of the Due Diligence Report created by Elecsar Engineering Ltd in 2000. THI has now converted almost all of the Town of Tillsonburg to 27.6 kV, with only small pockets of 4 kV distribution remaining, which is supplied by step-down transformers. During the conversion process, many of the aging assets (poles, insulators, transformers) were replaced and system reliability has remained acceptable.

The most significant change since the last COS filing is an overall increase in the pace and volume of asset replacements in the System Renewal Category. The 2016 AMP highlighted that assets were exceeding Maximum Useful Life (MUL) at a pace much faster than they were being replaced, and Reliability Analysis highlighted equipment failure as the main contributor to the increase in duration and frequency of outages. The customer surveys conducted in 2016, 2019 and 2021 affirmed THI's proactive replacement strategy and customers expressed overall support for increasing the level of investment in asset replacement. Spending on System Access has also increase due to a higher than expected demand for residential developments. System Service spending increased as THI has been making more investments to re-inforce the grid and improve switching capability through more feeder ties, and through some limited Smart Grid investments such as fault indicators and a system referred to as Smartmap (from Utilismart) that utilizes smart meter information to pinpoint outages and provide better outage statistics.

5.2.1.c) DSP Objectives

The DSP looks to allocate capital investments to achieve a balance of the following objectives:

- Maintain the safety of the distribution system for both the public and THI staff; System Renewal
- Meet mandated service obligations including new customer connections, meter maintenance, facility relocations; System Access
- the efficient replacement of assets at risk of failure as guided by the Asset Condition Assessment (ACA) and Asset Management Plan (AMP); System Renewal
- Meet customer expectations as informed by customer engagement activities.
- Ensure adequate capacity and reliability for new & existing customers; System Service
- Invest adequately in tools, equipment and software to enable the efficient execution of the above noted objectives; General Plant
- Achieve overall, long-term costs efficiency improvements & cost savings.

Mandated Service Obligations

The volume, cost and capital contributions associated with System Access projects (new and upgraded connections for load and generation customers, line relocations) is subject to external drivers. Recent announcements regarding the provincial focus to improve broadband access could result in some increased O&M spending for underground locates, and additional make-ready work for pole line connections. Fuel switching from natural gas to electricity as well as the electrification of transportation may have an impact on future demand, which could increase the pace of investments in System Access (as services to customers may need to be upgraded to allow for vehicle charging, new loads from heat

pumps) and System Service (investments to strengthen the grid, monitor feeder loading). THI has not made any allowance for these possibilities.

Asset Management Plan

A new Asset Management Plan (AMP) was completed by a third party contractor in early 2016 and updated in 2023 by THI staff to replace the previous plan that was focused on converting 4 kV distribution to 27.6 kV. The new AMP identified the need for an increase in the level of asset replacement to avoid further deterioration of system reliability, and the need for enhancements in inspections, maintenance, and testing of assets to further assess their condition and failure risk. As a result, THI increased the overall investment in System Renewal projects to address the aging infrastructure before assets fail and become safety concerns or begin to experience reliability issues. While the AMP identifies the expected average volume of work needed to be done annually, THI staff use the results of inspections, maintenance, testing, and performance to select the assets most at risk of causing issues, and determine if the assets need to be repaired, refurbished or replaced. THI currently relies on staff knowledge of the asset conditions to select areas for replacement (i.e. no formal asset condition value or "health index" is used). THI considered developing or adopting a more sophisticated approach to make this process less subjective, but given the relatively small size of the distribution system, staff are able to manage the assets fairly effectively (as evidenced by the overall reliability metrics). Therefore, THI could not justify an increase in capital or O&M spending to improve the asset management process by implementing a formal asset management system.

The Town of Tillsonburg has seen moderate to high growth in the past few years but this trend is expected to return to pre-2017 levels in the future. The existing bulk supply (27.6 kV feeders) should be adequate to meet future growth in load and generation, subject to upstream constraints (at the transmission level). Investments in System Access projects is expected to be similar to pre-2017 levels while there will be some increases in System Service projects as investments are made to modernize the grid and increase reliability and operating flexibility.

The MSA with the Town include the provision of fleet, facilities, and most of the IT services which means few planned investments in the General Plant category. The Regional Planning reports have noted issues at the Tillsonburg Transformer Station and several options were considered. The 2020 "*Needs Assessment Report*" noted work was underway to install capacitor banks at Tillsonburg TS and Hydro One would be changing the supply circuits. There will not be any capital contribution required from THI for these upgrades. These upgrades were completed in 2022.

Customer Engagement

THI has always been very connected to the community and customer base, utilizing the personal interactions at the front counter and telephone calls as a gauge for customer satisfaction and identifying customer concerns. The strong ties to the Town also facilitates additional customer interactions (water and sewer services) and the connection to Town Council provides another voice for customers to express their preferences regarding service quality and value. THI issued customer surveys in 2016, 2019, and 2021 to identify customer preferences and their overall satisfaction with THI. This DSP has been developed to address these preferences as well as meet the needs of the aging assets.

THI issued a customer survey in 2016[6] that identified the customers of THI were very satisfied with the service provided by THI (90% compared to Ontario average of 88%), and an overwhelming majority (92%) felt it was important that THI remain a local distributor of electricity to the community. Customers also favoured a pro-active approach to asset replacements (65%) vs run-to-failure (27%), recognizing the additional cost associated with the pro-active approach. There was also support to upgrade equipment to accommodate growth (57%) but marginal support to invest in automation and technology to reduce outage time (50%). With this in mind, THI focused on providing safe and reliable service to the community by gradually increasing the level of investment in System Renewal projects, as recommended by the 2016 AMP. To moderate the additional spending on System Renewal, THI deferred investments in System Service (such as an outage management system and grid automated devices).

In 2019, THI worked with other members of the CHEC Group[7] to issue another customer survey, which was awarded to a new vendor. With a different vendor, the benchmark metrics were different so the results of the 2016 and 2019 surveys cannot be directly compared. With the 2019 survey, THI scored an overall Satisfaction Index Score of 78.6%, compared to the other CHEC members who averaged 79.4%. For the Overall Satisfaction question[8], 89% were either very satisfied or somewhat satisfied with the services they receive from THI. This metric is comparable to the 2016 metric of 90% overall customer satisfaction rating[9]. The survey also revealed that customers are generally satisfied with the system reliability / frequency of outages (88% are either very satisfied or somewhat satisfied) and the system reliability / duration of outages (81% are either very satisfied or somewhat satisfied)[10].

In 2021, another survey was issued to the same vendor used in 2019. Overall, THI scored an overall Satisfaction Index Score of 80%, compared to the other CHEC members who averaged 79%. For the Overall Satisfaction question[11], 89% were either very satisfied or somewhat satisfied with the services they receive from THI. This metric is comparable to the 2016 metric of 90% overall customer satisfaction rating and the same as the 2019 survey. The survey also revealed that customers are very satisfied with the system reliability / frequency of outages (95% are either very satisfied or somewhat satisfied) and the system reliability / duration of outages (87% are either very satisfied or somewhat satisfied)[12]. Again, these metrics are as good as or slightly better than the 2019 survey, indicating that THI is continuing to meet customer expectations

Cost Savings

THI plans to continue to use the services of the Shareholder through the MSA to provide fleet, facilities, IT and personnel in a "virtual" utility model. While THI has not conducted any specific benchmarking to quantify the savings this provides to customers, THI has a lower than average OM&A cost per customer for all Ontario LDCs with fewer than 10,000 customers[13].

[6] The 2016 Customer Satisfaction Survey was conducted by Utility Pulse. See DSP Appendix A-1 for a copy of the 2016 Survey Summary.

[7] CHEC Group = Cornerstone Hydro Electric Concepts, is a group of sixteen local distribution companies in Ontario that formed to share resources and gain efficiencies while remaining independent. CHEC issued a competitive RFP for a customer satisfaction survey in 2019 and 2021 and Redhead Media Solutions was the selected vendor. See DSP Appendix A-2 for a copy of the 2019 Survey Summary.

[8] See page 7 of the 2019 Survey Summary in DSP Appendix A-2.

[9] See page 6 of the 2016 Survey Summary in DSP Appendix A-1.

[10] See pages 8 and 9 of the 2019 Survey Summary in DSP Appendix A-2.

[11] See page 9 of the 2021 Survey Summary in DSP Appendix A-3.

[12] See pages 10 and 11 of the 2021 Survey Summary in DSP Appendix A-3.

[13] Based on 2019 Scorecard Results, 17 LDCs, average OM&A = $421 per customer, THI = $403.

The shift to targeting assets at risk of causing safety or reliability issues based on asset condition is expected to keep capital spending at an appropriate level (which should be at a lower cost than replacing assets based solely on age or voltage level).

THI will continue to outsource specialized services such as civil infrastructure installation, MSP, meter sample testing, settlement services, and other work that exceeds internal capacity or expertise. By outsourcing these services, THI avoids the cost of hiring internal resources that may not be needed on a full-time basis.

Collaboration with other LDCs[14] for engineering standards, equipment specifications, and group purchasing will continue to be used when it fits with THI requirements. These collaborations also keep THI current on regulatory and industry changes and trends without the need to hire a full-time regulatory resource.

When practical, converting 4 kV to 27.6 kV will reduce system losses and the need for duplicate inventory items.

THI will leverage the smart meters to obtain more information about the status of the system (outages, low voltage), through a product called Smartmap[15].

THI does not have a formal strategy for grid modernization, distributed energy resources and climate change. However, THI has started some investments in "smart grid" projects such as the Smartmap[16] offering from Utilismart, and adding fault indicators to overhead lines. Participation in the Utilities Standards Forum will allow THI to make any necessary changes to grid construction standards to better adapt to the impact of climate change. THI works cooperatively with the transmitter – Hydro One – to ensure the grid can accept as much distributed energy resources as practical.

5.2.2 Coordinated Planning With Third Parties

A distributor must demonstrate that it has met the OEB's expectations in relation to coordinating infrastructure planning with customers, (e.g. large customers, subdivisions, developers, and municipalities) the transmitter, (e.g. Regional Infrastructure Planning) other distributors, the Independent Electricity System Operator (IESO) (e.g. Integrated Regional Resource Planning) or other third parties where appropriate. A distributor should explain whether the consultation(s) affected the distributor's DSP as filed and if so, a brief explanation as to how. For consultations that affect the DSP, a distributor should provide an overview of the consultation, relevant material used in the consultation, and where a final deliverable is available, attach a copy of the final deliverable.

The focus of this section is on local and Regional Planning activities. Details about engagement with customers is included in Section 5.2.1 c). The following Table summarizes the on-going consultations that THI engages in to ensure infrastructure planning is coordinated with relevant stakeholders.

[14] THI is a member of the Utilities Standards Forum (USF) which provides construction standards and related services, and Cornerstone Hydro Electric Concepts (CHEC) which provides finance, regulatory, other related services.

[15] See DSP Appendix C for details on Smartmap

[16] See DSP Appendix C for details about Smartmap.

Purpose of Consultation	Initiator	Other Participants	Deliverables – Scope and Timing	Impact to DSP
Regional Planning	Hydro One / IESO	Other LDCS in Region	5-year cycle, transmission/station level capacity & reliability planning	No impact. See Appendix D Regional Planning Reports
Load Forecasting – Total System	Hydro One	Hydro One	Total Load for THI Delivery Point, done annually	No impact.
Load Forecasting – Local Areas	THI	Municipal planners, local developers	Annual forecast of new customer connections, potential feeder extensions	No impact. "Normal" growth is reasonable and can be accommodated. Volume of new and upgraded connections to be similar to previous years.
Economic Development Office	THI/Town of Tillsonburg	Potential Customers & Developers	As needed - frequent interactions throughout the year	The Town of Tillsonburg is actively developing new industrial lands and looking to attract new industry. If/When, these tenants are requesting connection, larger scale investments will be needed to provide capacity.

Regional Planning

THI is included in the London Area Regional Planning group, which includes London Hydro, Entegrus, ERTH Power, Hydro One, the IESO and is led by Hydro One. Tillsonburg Hydro has participated in two (2) Regional Planning Cycles (2020 and 2022) and will continue to be an active contributor in future cycles.

In the 2015 regional planning cycle, needs were identified at the Tillsonburg TS, which resulted in low-voltage capacitor banks being installed in 2021 and switchyard component replacements in 2022 by Hydro One. As a result, THI was required to make upgrades to its wholesale metering installations located at the Tillsonburg TS; this was completed in 2021.

The most recent 2020 planning cycle did not identify any needs affecting the Tillsonburg TS or its transmission supply within the planning horizon. Therefore, THI is not anticipating any investment will be required within the period covered by this DSP submission because of Regional Planning initiatives.

Load Forecasting - Total System Load.

THI works closely with Hydro One (transmitter) and evaluates its Total System Load yearly to ensure that no supply constraints are present. This is completed at an aggregated (total) level as well as a feeder level.

Economic Development Office

THI has frequent communication with the Economic Development Office at the Town of Tillsonburg. This allows THI to not only be aware of large residential, commercial & industrial developments but also have important input on electrical servicing at an early stage.

Renewable Energy Generation (REG)

A distributor is expected to coordinate with the IESO in relation to REG investments and confirm if there are no REG investments in the region.

If there are REG investments proposed in the DSP, a distributor should demonstrate that it has coordinated with the IESO, other distributors, and/or transmitters, as applicable, and that the investments proposed are consistent with a Regional Infrastructure Plan. This coordination is demonstrated by a comment letter provided by the IESO.

There are no plans to make REG investments in the THI distribution system in the near future. Therefore, THI has not requested a letter of comment from the IESO.

5.2.3 Performance Measurement for Continuous Improvement

5.2.3.a) Distribution System Plan

Distributors are expected to summarize objectives for continuous improvement (e.g. reliability improvement, number of replaced assets, and other desired outcomes) the distributor set out to address in its last DSP and to discuss whether these objectives have been achieved or not. For objectives not achieved, a distributor should explain how it affects this DSP and, if applicable, improvements a distributor has implemented to achieve the objectives set out in this DSP Section 5.2.1.

THI uses the metrics identified in the annual Scorecard[17] to evaluate the overall effectiveness of internal processes and systems, and the distribution system to meet customer expectations.

The Scorecard metrics that are most relevant to the DSP are:

- Customer Satisfaction Survey Results
- System Reliability (SAIDI and SAIFI)
- DSP Implementation Progress
- Cost Control (Efficiency Assessment, Total Cost per Customer, Total Cost per km of Line)

THI has also adopted the additional Cost Control Metrics as outlined in Chapter 5 Appendix 5-A.
THI has grouped these metrics into the following two categories: Customer Oriented Performance, and Cost Efficiency.

5.2.3.b) Customer Oriented Performance Metrics

[17] Copies of the most recent Scorecards are included in DSP Appendix E.

Customer Satisfaction Survey Results

Purpose: Identify overall performance by THI in meeting customers' expectations to determine if changes need to be made.

Form: a third party conducts a survey every two years to determine the overall customer satisfaction with THI as their service provider. The results are measured as a percentage of respondents who are "very" or "fairly" satisfied with THI.

Motivation: Consumer, Regulatory and Corporate

System Reliability (SAIDI and SAIFI)

Purpose: Identify overall reliability performance experienced by customers to detect trends year over year, compare to peers and customer expectations.

Form: SAIDI is the average outage duration in hours experienced by the average customer, calculated as the total customer hours of outage divided by the total number of customers. SAIFI is the average outage frequency (number of outages) experienced by the average customer, calculated as the total number of customers affected by outages divided by the total number of customers.

Motivation: Consumer, Regulatory and Corporate

5.2.3.c) Cost Efficiency Metrics

DSP Implementation Progress

Purpose: Track completion of projects in annual capital budget to ensure these projects are being completed each year.

Form: The actual spending on capital projects is compared to the budget for each year, expressed as a percentage. Excludes the impact of customer contributions.

Motivation: Consumer, Regulatory and Corporate

Cost Control: Efficiency Assessment

Purpose: Track overall cost efficiency as measured by OEB (PEG) to ensure performance is improving.

Form: The assessment is given a numerical number with 1 as best, 3 as average, 5 as worst.

Motivation: Consumer, Regulatory and Corporate

*Cost Control: Total Cost per Customer**

Purpose: Track the average cost per customer to compare year over year trends.

Form: The total amount spent on capital, operating, and maintenance divided by the total number of customers.

Motivation: Consumer, Regulatory and Corporate

*Cost Control: Total Cost per km of Line**

Purpose: Track the average cost per km of line to compare year over year trends.

Form: The total amount spent on capital, operating, and maintenance divided by the total km of line.

Motivation: Consumer, Regulatory and Corporate

*Cost Control: Total Cost per MW**

Purpose: Track the average cost per MW to compare year over year trends.
Form: The total amount spent on capital, operating, and maintenance divided by the system peak load in MW.
Motivation: Consumer, Regulatory and Corporate

*Cost Control: CAPEX per customer**

Purpose: Track the average cost per customer to compare year over year trends.
Form: The total amount spent on Capital divided by the number of customers (as reported in the annual OEB Yearbook).
Motivation: Consumer, Regulatory and Corporate

*Cost Control: CAPEX per km of line**

Purpose: Track the average cost per km of line to compare year over year trends.
Form: The total amount spent on Capital divided by the total km of line.
Motivation: Consumer, Regulatory and Corporate

*Cost Control: OM&A per customer**

Purpose: Track the average cost per customer to compare year over year trends.
Form: The total amount spent on operating, and maintenance divided by the number of customers (as reported in the annual OEB Yearbook).
Motivation: Consumer, Regulatory and Corporate

*Cost Control: OM&A per km of line**

Purpose: Track the average cost per km of line to compare year over year trends.
Form: The total amount spent on operating, and maintenance divided by the total km of line.
Motivation: Consumer, Regulatory and Corporate

* These are the prescribed metrics outlined in Chapter 5 Appendix 5-A.

Service Quality and Reliability

Chapter 7 of the OEB's Distribution System Code outlines the OEB's expectations regarding Service Quality Requirements (SQR) for Electricity Distributors. A distributor is required to provide the reported SQRs for the last five historical years. A distributor should also provide explanations for material changes in service quality and reliability, and whether and how the DSP addresses these issues. The OEB expects any five-year declining trends in reliability for SAIDI and SAIFI to be explained. If a distributor has reliability targets established in a previously filed DSP, as described below, and under-performance should also be explained.

A completed Appendix 2-G, documenting both the Service Quality and Service Reliability indicators, must be filed. A distributor must confirm that data is consistent with the scorecard or must explain any inconsistencies.

A summary of performance for the historical period using the methods and measures (metrics/targets) identified and described above, and how this performance has trended over the period. This summary must include historical period data on.

- *All interruptions*
- *All interruptions excluding loss of supply*
- *All interruptions excluding Major Events and loss of supply for the following:*
    - *The distribution system average interruption frequency index (SAIFI)*
    - *System average interruption duration index (SAIDI)*

The applicant should also provide a summary of Major Events that occurred since the last Cost of Service (CoS) filing.

For each cause of interruption, a distributor should, for the last historical years, report the following data:

- *Number of interruptions that occurred as a result of the cause of interruption*
- *Number of customer interruptions that occurred as a result of the cause of interruption*
- *Number of customer-hours of interruptions that occurred as a result of the cause of the interruption*

Distributor Specific Reliability Targets

As established in the Report of the OEB: Electricity Distribution System Reliability Measures and Expectations, distributors' SAIDI and SAIFI performance is expected to meet the performance target set out in the Scorecard. A distributor who wishes to establish performance expectations based on something other than historical performance should provide evidence of its capital and operational plan and other factors that justify the reliability performance it plans to deliver. Distributors should also provide a summary of any feedback from their customers regarding the reliability of the LDC's distribution system.

Distributors who wish to use SAIDI and SAIFI performance benchmarks that are different than the historical average must provide evidence to support the reasonableness of such benchmarks.

Customer Oriented Performance Metrics

Customer Satisfaction Survey Results

2016 Survey: 90% of customers were "very" or "fairly" satisfied with THI.
2019 Survey: Customer Satisfaction Index 78.6% (0.8% less than average of peers).
2021 Survey: Customer Satisfaction Index 80% (1% greater than average of peers).
2023 Survey: Customer Satisfaction Index 79% (Equal to the average).

THI has set an internal target to maintain or slightly improve this ranking in the coming years. The next scheduled survey will be in 2025.

With respect to Service Quality and Reliability specifically, Tillsonburg Hydro received positive feedback in our 2023 Customer Satisfaction Survey which included both Residential and General Service <50kW customers.

- 93% NET satisfied with the number of power outages they experience.
- 88% NET satisfied with the time it takes to restore power when an outage occurs.
- 88% NET Satisfied with the quality of power delivered by Tillsonburg Hydro

These results are a slight deterioration from the results obtained in the 2021 Customer Satisfaction Survey.

System Reliability (SAIDI and SAIFI)

*** All Interruptions**

	2019	2020	2021	2022	2023
SAIDI	8.32	3.52	9.76	0.95	4.90
SAIFI	2.57	2.91	2.60	0.99	2.99

*** All Interruptions excluding Loss of Supply**

	2019	2020	2021	2022	2023	Target
SAIDI	1.69	1.69	0.53	0.95	0.21	1.22
SAIFI	1.02	1.02	0.37	0.99	0.26	1.16

The Target is set by the OEB, based on previous performance.

In June 2021, THI experienced a substantial Loss of Supply outage because of an animal contact within the Tillsonburg Transformer Station. The event affected all customers for approximately 7hrs and caused a drastic increase in the 2021 "All Interruptions" SAIDI & SAIFI reliability metrics. If this event were to be excluded from the metrics, SAIDI & SAIFI would have been 2.70 & 2.60 respectively.

In June 2020, THI experienced a significant windstorm, which created multiple outages to almost half of our customers. The event did not meet the threshold for a Major Event Day, but did account for 50% of SAIFI and 20% of SAIDI. Excluding this single event, the 2020 SAIDI would have been 0.99 and SAIFI would have been 0.51 (i.e. both values under Target).

Major Event Days

THI had a major event day on September 13th, 2021. A high wind event moved across southwestern Ontario including the THI and resulted in multiple events caused by broken trees/branches. THI monitors outages due to tree related contact and has determined that the current tree-trimming program is effective. THI will continue to work with the municipality and customers to remove trees at high risk of causing outages when possible.

System Reliability by Cause of Interruption

Number of Interruptions

Cause of Interruption	2019	2020	2021	2022	2023
0 - Unknown/Other	3	6	6	2	1
1 - Scheduled Outage	66	47	32	120	188
2 - Loss of Supply	3	3	3	0	3
3 - Tree Contacts	6	1	4	1	0
4 - Lightning	1	1	0	1	2
5 - Defective Equipment	15	9	8	7	10
6 - Adverse Weather	0	6	1	1	1
7 - Adverse Environment	0	0	0	0	0
8 - Human Element	0	1	0	0	0
9 - Foreign Interference	14	12	11	26	18

Number of *Customer* Interruptions

Cause of Interruption	2019	2020	2021	2022	2023
0 - Unknown/Other	47	147	184	41	2
1 - Scheduled Outage	1417	473	426	724	445
2 - Loss of Supply	14,860	14,434	17,488	0	22,977
3 - Tree Contacts	131	15	2,006	4453	0
4 - Lightning	42	1,500	0	1	6
5 - Defective Equipment	183	1,535	166	2,480	1463
6 - Adverse Weather	0	3,896	2	1	69
7 - Adverse Environment	0	0	0	0	0
8 - Human Element	2,269	1	0	0	0
9 - Foreign Interference	97	179	114	391	166

Number of *Customer-Hours* of Interruptions

Cause of Interruption	2019	2020	2021	2022	2023
0 - Unknown/Other	114	147	222	33	1
1 - Scheduled Outage	5,719	1,604	1,541	1,520	1,007
2 - Loss of Supply	54,547	13,883	72,236	0	32,249
3 - Tree Contacts	281	14	1,900	4,453	0
4 - Lightning	195	2,250	0	7	12
5 - Defective Equipment	350	3,335	261	1,220	531
6 - Adverse Weather	0	5,366	3	1	69
7 - Adverse Environment	0	0	0	0	0
8 - Human Element	379	1	0	0	0
9 - Foreign Interference	148	187	212	519	157

THI monitors and reports on reliability trends yearly and in general has achieved a slightly positive trend over the past five years with respect to SAIDI and SAIFI metrics. As noted above, a single event can significantly affect the outage statistics in a given year, so THI conducts regular analysis on reliability, including outages by cause for each year[18]. THI has not identified any concerns with reliability because of a specific cause type; Loss of Supply continues to be the leading cause of outages for THI customers and we will continue to work closely with Hydro One to improve the system in the Tillsonburg area

[18] See DSP Appendix F for more details on reliability.

Cost Efficiency Metrics

	2017	2018	2019	2020	2021	2022	Average
DSP Implementation : Capital Spending % of Budget[1]	-11%	25%	20%	8%	6%	-18%	5%
Efficiency Group	3	3	3	3	3	2	3
Total Cost / Customer	$264	$718	$748	$695	$686	$703	$636
Total Cost / km of Line	$14,183	37,620	$40,406	$40,648	$39,137	$39,997	$35,332
Total Cost / MW	$52,938	$71,880	$99,471	$97,668	$64,720	$61,308	$74,664
CapEx / Customer	$169	$231	$354	$345	$207	$189	$249
CapEx / km of Line	$9,088	$12,088	$19,145	$18,652	$11,957	$10,989	$13,653
O&M / Customer	$95	$134	$120	$120	$91	$88	$108
O&M / km of Line	$5,095	$7,044	$6,477	$6,505	$5,289	$5,087	$5,916

The target for DSP Implementation is +/-10%. Due to the impact that customer driven work has on overall spending in a given year, a five year trend is considered a better indicator of performance.

The target for the Efficiency Group ranking is to remain in Group 3 (average) and improve over time to Group 2.

The targets for the rest of the Cost Metrics are based on a gradual return to the average of the past five years. The 2016 AMP recommended an increase in capital spending on system renewal, to address the aging infrastructure concerns, and make improvements in reliability. As noted in Section 5.3.2, the additional investment in capital from 2017 to 2020 has improved the age demographics of the major asset categories, and reliability continues to meet customer expectations. Based on these indicators, THI expects it can reduce capital spending in the coming years and maintain the system such that reliability continues to be stable.

Service Quality Requirements (SQRs)

	2017	2018	2019	2020	2021	OEB Min. Std.
Low Voltage Connections	99.47	97.96	99.56	100	99.51	90%
High Voltage Connections	-	-	-	-	-	90%
Telephone Accessibility	84.57	88.18	84.59	-	-	65%
Appointments Met	100	100	98.44	99.36	98.21	90%
Written Response to Enquiries	100	100	100	92.31	92.86	80%
Emergency Urban Response	100	100	100	100	100	80%
Emergency Rural Response	-	-	-	-	-	80%

Telephone Call Abandon Rate	2.57	2.45	2.85	-	-	10%
Appointments Scheduling	99.10	98.71	97.08	98.79	99.25	90%
Rescheduling a Missed Appointment	-	-	100	100	100	100%
Reconnection Performance Standard	100	100	100	87.88	100	85%
New micro-Embedded generation Facilities Connected	-	-	100	-	100	80%
Billing Accuracy	99.36	99.73	99.83	99.80	97.60	98%

The table above is consistent with THI's RRR filing and shows that THI consistently exceeds the OEB's expectation concerning Service Quality Requirements.

5.3 Asset Management Process

A distributor must use an asset management process to plan, prioritize, and optimize expenditures. The purpose of the information requirements set out in this section is to provide the OEB and stakeholders with an understanding of the distributor's asset management process, and the links between the process and the expenditure decisions that comprise the distributor's capital investment plan.

5.3.1 Planning Process

The distributor must provide an overview of its planning process that has informed the preparation of the distributor's five-year capital expenditure plan. (A flowchart accompanied by explanatory text may be helpful)

A distributor should provide a summary of any important changes to the distributor's asset management process (e.g. enhanced asset data quality or scope, improved analytic tools, process refinements, etc.) since the last DSP filing.

As a municipally owned utility, THI works very closely with the Town of Tillsonburg and shares in their vision[19] "Tillsonburg is a family-friendly community known for its historic charm, thriving businesses and modern lifestyle amenities. It is a regional hub for employment, recreation and culture." This close working relationship with the municipality has resulted in a culture at THI that is very focused on customers.

In 2020, THI developed a Strategic Plan[20], which includes a Mission, Vision, Values and Objectives. The Mission of THI is to be "*A local energy distribution company committed to maximizing value to our stakeholders through innovative solutions.*" The Vision of THI is "*To deliver electricity through safe, dependable, cost-effective and environmentally responsible practices.*" The Values are "*Safety, People, Integrity, and Agility*". The Objectives are "*Corporate & Social Responsibility*", "*Leadership Responsibilities", "Customer Care", "Reliability", "Financial", "High Performance Teams*", and "*Risk Management*".

THI's Strategic Plan, the Vision of the Town of Tillsonburg, and the interactions with customers have led to the use of the AMP Objectives that are used to guide staff in the management of the distribution system assets. These Objectives are closely aligned with the OEB Performance Outcomes, summarized in the table below.

[19] 2014 Vision Statement.
[20] See DSP Appendix H

OEB Performance Outcomes	THI AMP Objectives[21]
Customer Focus	Safety, Reliability, Customer Care, Financial, Integrity, Agility
Operational Effectiveness	Safety, Reliability, Agility, High Performance Teams
Public Policy Responsiveness	Safety, Reliability, Corporate & Social Responsibility
Financial Performance	Financial, Risk Management, Corporate & Social Responsibility, Integrity

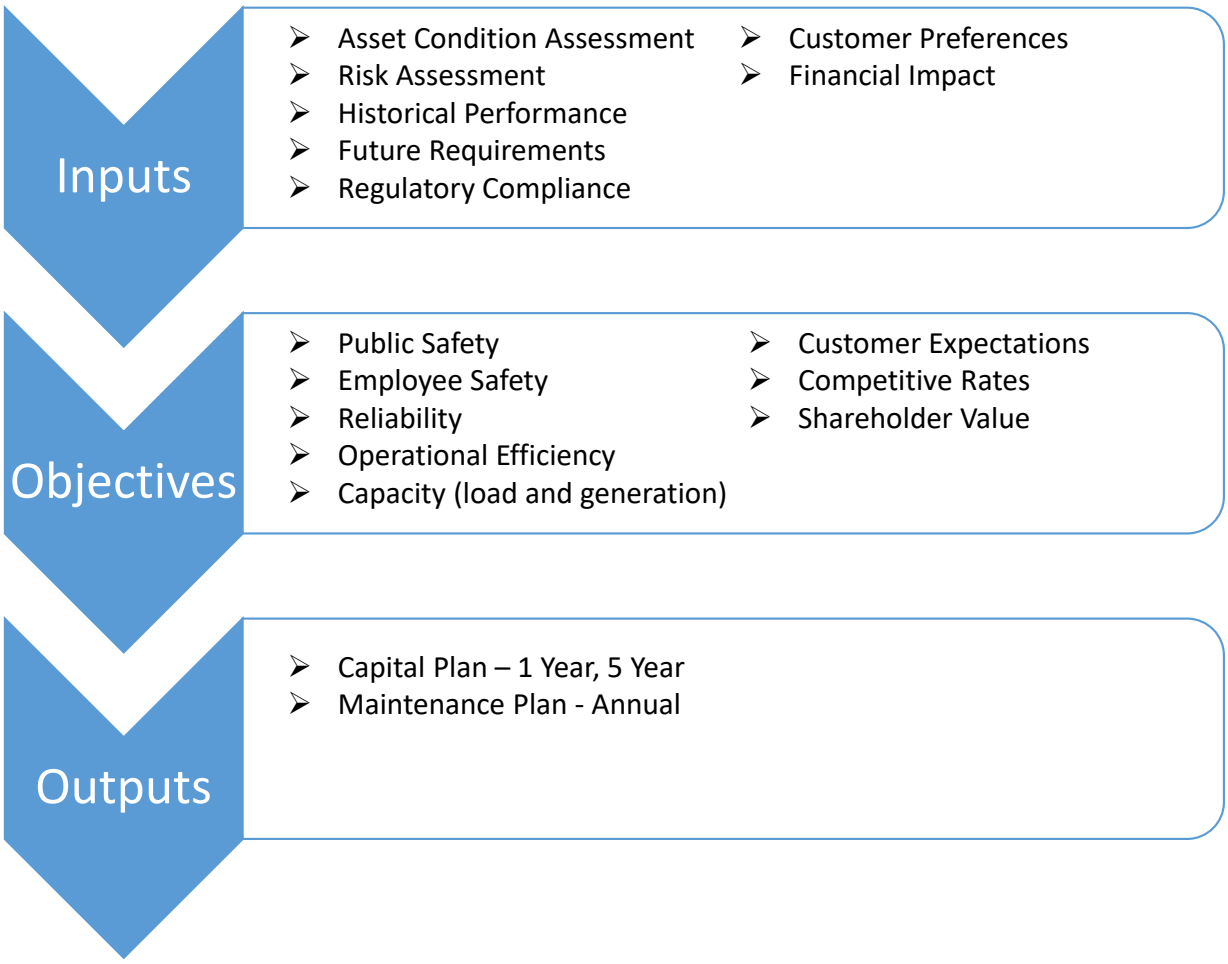
THI does not have a formal process to rank the Objectives but gives priority to those related to safety, reliability, and meeting customer expectations.

THI has a GIS that stores the basic asset information – location, age, type, and other details – as well as information regarding the asset condition based on observations of staff or contractors during inspections and testing (such as infrared scanning and pole testing).

Reliability information is stored in a spreadsheet that is used to determine outage statistics and determine if trends are developing. THI is planning to start using information from the smart meter system (via SmartMap) to further refine the accuracy of outage information, and to check for power quality issues such as high voltage or low voltage. This system will be rolled out and further leveraged within the forecast period.

The diagram below shows the inputs, objectives, and outputs of the Asset Management process.

[21] These Objectives are derived from the 2020 Strategic Plan – See DSP Appendix H.



5.3.1.a) Process

A distributor should provide the processes used to identify, select, prioritize (including reprioritizing investments over the five-year term), and pace the execution of investments over the term of the DSP. A distributor should be able to demonstrate that it has considered the correlation between its capital plan and customers' needs. A distributor should also demonstrate that it has considered the potential risks of proceeding/not proceeding with individual capital expenditures (e.g. the risk/benefit of a reactive service transformer replacement program instead of proactively replacing service transformers)

A distributor should consider, where applicable, assessing the use of non-distribution alternatives, cost-effective implementation of distribution improvements affecting reliability and meeting customer needs at acceptable costs to customers, other innovative technologies, and consideration of distribution rate funded Conservation and Demand Management (CDM) programs.

5.3.1.b) Data

A distributor should identify, describe and provide a summary of the data used in the processes above to identify, select, prioritize, and pace the execution of the investments over the term of the DSP (e.g. asset condition by major asset type and reliability information).

Inputs

Asset Condition Assessment:

THI uses a combination of internal staff and external contractors to inspect and where practical test the assets to determine physical condition. For most of the distribution system, the regular inspections and patrols are sufficient for staff to identify deficiencies and make an immediate determination if action is needed (e.g. obvious damage to a transformer requiring repair or replacement). As a small LDC, the experience and knowledge of the staff is able to provide the engineering and operations team with an overall assessment of different asset categories and highlight areas that require further study.

Wood poles are inspected and tested on a three year cycle (starting in 2016), and these results are used to identify immediate deficiencies and the overall condition of the wood pole population.

Substations were historically inspected and maintained by a third party on a 4-year cycle, and these results were used to identify immediate deficiencies and overall condition[22]. The last Distribution Transformer Station (MS-5) was decommissioned in 2022. The remaining pockets 4KV are fed from smaller stepdown transformers. All 4KV is planned to be converted through the duration of this document.

Risk Assessment:

Most of the risk assessment is done at the same time as condition assessment, with THI staff identifying areas or specific assets that pose a risk to safety, reliability, or capacity. High-risk items requiring immediate attention are addressed by staff as soon as practical. Other risk areas are brought to the attention of the engineering and operations team who incorporate these identified risks into the five-year capital plan. As an example, an increase in the number of broken poles resulted in the introduction of a formal pole-testing program in 2016 to identify at risk poles, and the quantity of broken poles has dropped to almost zero.

Historical Performance:

System reliability is the primary measure of how well the system performs. In general, reliability is in line with customer expectations. A brief report on reliability is included above, and is based on the past 5 years. THI has not been linking outages to specific feeders but anticipates it can start to rank feeders from worst to best, using the SmartMap system.

Future Requirements:

THI staff consult with municipal planners, developers and larger customers to gain an understanding of how fast load might increase in the Town, and where future development will occur.

Regulatory Compliance:

THI is a member of USF (Utilities Standards Forum) which is a group of LDCs that are focused on construction standards and compliance with ESA Regulation 22/04, as well as the CHEC Group (Cornerstone Hydro Electric Concepts) which is a group of fifteen local distribution companies in Ontario that formed to share resources and gain efficiencies while remaining independent. Both USF and the CHEC Group will alert member LDCs of regulatory changes that could affect their system planning, design, operation, and budgeting. THI uses these groups to identify the potential impacts of proposed regulatory changes and allow for them in the budgeting process.

[22] The substation maintenance program has ceased as the last remaining substation has been removed from service.

Customer Preference:

The main influence that customer preference has on the asset management process is their feedback on the overall acceptance of system reliability. THI uses this to gauge whether the current value proposition (level of reliability and service for cost) is appropriate, if they should be spending more to improve reliability (or customer service), or if they could spend less (potentially decreasing reliability or customer service). In general, THI customers find the current level of reliability is acceptable[23] so there are no plans to make investments specifically targeted at reliability improvements.

Financial Impact:

THI is aware that customers are concerned about the overall cost to them for the delivery of electricity, and THI seeks ways to provide maximum value to customers. The pacing of projects is adjusted to smooth spending and avoid fluctuations in rates year over year. When it is necessary to make a large purchase, the capital budget is adjusted to advance or defer projects so that annual spending is similar to previous years.

Objectives

Safety:

Ensuring public safety is the top priority for THI. When a safety concern or risk is identified, THI staff take immediate action to address the concern by taking appropriate steps, which could include an immediate change or a mitigation plan to address the safety concern but allow planned work to eliminate the problem. Proactively inspecting and testing system assets ensure they are in safe operating condition, and plans are in place to address potential safety risks before they become a problem. One example of this is pole testing, which was introduced in 2016 after a number of poles failed under normal operating conditions. The physical condition of wood poles can change in a few years and the problem may not always be visible. After an initial assessment of "at risk poles[24]" in 2016, an annual pole testing / inspection program was initiated to identify and address any immediate concerns, and provide a forecast of future pole replacements.

THI is equally concerned about the safety of their staff who work on and around the distribution assets. Providing employees with the appropriate tools (including vehicles such as line trucks) that are safe and reliable is one way that employees are kept safe. Identifying assets such as porcelain insulators, poletrans transformers, and open secondary conductors that are higher risk to workers allows the engineering and operations team to give the replacement of these assets priority when planning annual budgets.

Reliability:

The main objective for THI after addressing safety is to ensure the system provides an acceptable level of reliability to customers. THI's reliability objective is to keep the system performing at or better than the average of past five years. Customers have indicated the current level of reliability is acceptable. To achieve this objective, THI understands that a proactive approach to asset replacement is necessary. Thus, THI plans to ensure the pace of assets replacements remains in line with asset performance and age demographics. Regular inspection and testing allows THI to monitor the assets and prioritize those that need to be replaced before others.

[23] See pages 10 and 11 of the 2021 Survey Summary in DSP Appendix A-3.

[24] THI has identified poles installed before 1982 or poles with no known install date as "at risk".

Customer Care:

In addition to maintaining reliability, THI customers expect their LDC to respond to specific requests (such as new or upgraded services) promptly. Delivering on this expectation requires the annual capital budget be flexible, with some projects identified that can be deferred if customer driven work exceeds original estimates and cannot be accommodated within the existing schedule. Regular engagement with customers including formal surveys ensure that THI understands customer expectations.

Financial:

THI seeks to have rates comparable to peers and fair to customers, while addressing needed infrastructure upgrades and improving customer service. This objective is challenging to meet as pace of infrastructure upgrades was increased in recent years to accommodate the aging assets, and some customers are expecting more enhanced customer services such as self-serve options on the website and outage notification.

Risk Management:

THI continues to identify and manage risks in the distribution grid and the digital environment. This includes replacing aging infrastructure before it fails, and maintaining cyber security.

Corporate & Social Responsibility:

THI seeks to provide value to the Town of Tillsonburg (Shareholder) through not only dividends but also being an active partner in the community. The assets of THI provide the residents, businesses, and visitors to Tillsonburg with safe and reliable electricity. Thus maintaining a safe, reliable, and efficient distribution system satisfies the Shareholder and customers who are essentially the same group.

Agility, Integrity, High Performance Teams:

THI knows that the workforce is essential to meeting customer expectations and maximizing value to our stakeholders. This is accomplished by having an agile workforce who understand their roles and responsibilities within in the community, supported by a leadership team that promotes a positive culture. Employees are encouraged to find the best overall solutions to address aging infrastructure, maintain reliability, keep the public and workers safe, and exceed customer expectations.

Outputs

Capital Plan – 1 Year, 5 Year:

The main output of the Asset Management Plan is a forecast of capital investment by asset category. This forecast is an average amount of investment needed over the coming five years. It is used as a guideline for creating a 1 Year Capital Plan and a 5 Year Capital Investment forecast. The engineering and operations team uses the forecast to create an annual capital budget, taking into consideration other drivers such as the forecast of new customer connections and other initiatives. The actual projects selected will typically encompass the expected quantity of assets that need to be replaced, although there may be shifts from year to year, as it can be more efficient to replace all assets in a specific area than single assets across the system.

Maintenance Plan:

The AMP will also highlight any changes that need to be made in how the assets are maintained. This will typically be in recommended changes in the frequency and/scope of maintenance activities which may be influenced by the selection of and overall volume of capital projects. For example, the 2016 AMP recommended that THI start a comprehensive pole-testing program immediately to address the

increasing number of pole failures and prevent future outages. THI hired a third party to complete pole testing on all wood poles. The assets were broken down into 3 equally sized quantities. Completing one cycle per year over a 3 year period. Cycle 1 was completed in 2023. Cycle 2 & 3 planned for 2024 & 2025 respectively.

5.3.2 Overview of Assets Managed

Assessment of DSPs requires a comprehensive understanding of all aspects of the assets managed by a distributor. Distributors may vary in terms of the level of detail that it chooses to record for its distribution assets but the expectation is that in assessing the condition of major assets (e.g. station transformers and poles), solely using assert age is not sufficient.

A distributor should provide an overview of its distribution service area (e.g., system configuration; urban/rural; temperate/extreme weather; underground/overhead; fast/slow economic growth) pertinent for supporting its capital expenditures over the forecast period. A distributor should provide asset information (e.g., asset capacity and utilization; asset condition; asset risks; and asset demographics), by major asset type, that may help explain the specific need of the capital expenditures and demonstrate that a distributor has considered all economical alternatives. There should also be a statement as to whether or not the distributor has had any transmission or high voltage assets (> 50kV) deemed previously by the OEB as distribution assets, and whether or not there are any such assets that the distributor is asking the OEB to deem as distribution assets in the present application.

A distributor should also provide a description of whether the distributor is a host distributor (i.e., distributing electricity to another distributor's network at distribution-level voltages) and/or an embedded distributor (i.e., receiving electricity at distribution-level voltages from any host distributor(s)). The distributor must identify any embedded and/or host distributor(s). Partially embedded status (i.e., where part of the distributor's network is served by one or more host distributors but where the utility is also connected to the high voltage transmission network) must be clearly identified, including the percentage of load that is supplied through the host distributor(s). If the distributor is a host distributor, the distributor should identify whether there is a separate Embedded Distributor customer class or if any embedded distributors are included in other customer classes (such as GS > 50 kW).

5.3.2.a) General Overview

THI provides service to approximately 8,800 customers in the Town of Tillsonburg. The service area is 24 square kilometers and is almost entirely urban. Most of the distribution is overhead (around 68 km) with most residential subdivisions and commercial areas underground (about 72 km). The peak load is 37MW[25] and THI is surrounded by Hydro One distribution. A map of the Service Area and main feeder routes is included in DSP Appendix I.

Tillsonburg has weather patterns typical for southwestern Ontario. Although it has avoided the effects of ice storms and other severe weather systems in recent years, it is within close proximity of Lake Erie which can be a source of weather systems depending on the direction of prevailing winds.

Historical growth (pre-2017) has been slow, tempered by CDM activities and some economic slowdown that resulted in the closing of some factories. Customer driven work; primarily residential developments, increased significantly in 2017 to 2020, resulting in increased spending on System Access projects. THI expects any reasonably foreseeable growth can be adequately supplied by the four existing main feeders.

5.3.2.b) System Configuration & Utilization

Tillsonburg is supplied by a single transformer station (Tillsonburg TS) from which THI has four dedicated feeders (M5, M6, M7, and M8) operating at 27.6 kV. While each feeder is theoretically capable of supplying up to 20 MW each (more than enough for the 37 MW system peak), there are constraints at the transmission level. The Tillsonburg area is part of the London Area Regional Plan, which completed the second round Needs Assessment Phase in 2022 (see reports in DSP Appendix B). The previous Needs Assessment (2016) noted that the 115 kV transmission circuit that supplies the TS was expected to reach its thermal capacity and there were voltage issues at the Tillsonburg TS. The 2020 update noted that

[25] The 2022 peak was 37MW.

Hydro One was in the process of re-routing the transmission supply to address the thermal capacity concern and installing capacitor banks at the TS to address the voltage issues. These upgrades have recently been completed. In addition to this, there are also constraints related to operational flexibility and 300A or 15MW is a sufficient planning level. This allows feeders to be transferred efficiently from one to another to facilitate maintenance, upgrades and restore power during outages.

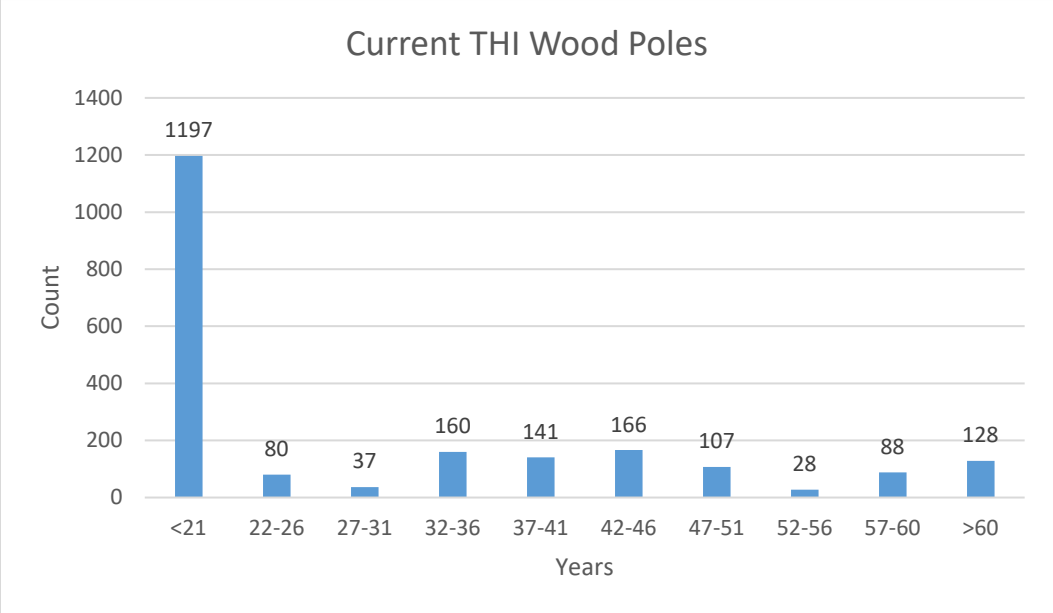
The system is primarily overhead with 67 km of overhead line and 77 km of underground. Most of the underground is in the commercial section and newer residential subdivisions.

5.3.2.c) Asset Service Profile

The following information is from GIS and was current as of the end of 2022.

Poles

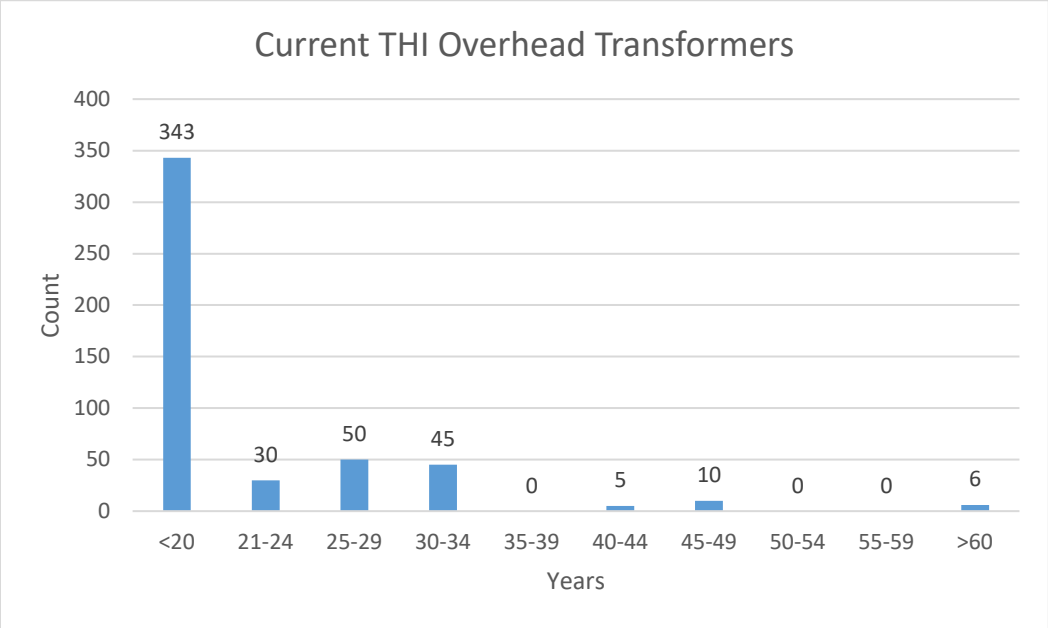
THI has a total of 2475 poles, of which 150 are concrete, 193 are metal, and 2132 are wood. The concrete and metal poles have a lifespan much greater than wood and are replaced when a visual inspection reveals defects. Since they make up a relative small percentage of the population, the concrete and metal poles have been excluded from the forecast of replacements during the next 10 years. The existing age distribution of wood poles is noted below. For reference, in 2016 the average age of a THI wood pole was 38, with 34% of the poles over 50 years old. By aggressively addressing aging poles since that time, the average age has decreased to 25 years old, with only 12% over 50 years old.



Using pole testing and inspection data, the condition of most of the poles has been assessed. Wood poles in poor condition currently make up 2.5% of the population. Wood poles in fair condition make up 24.5% of the population. Wood poles in good condition make up 73% of the wood pole population.

Overhead Transformers

THI has 489 pole mounted transformers in service. Of these, only 6 remain on the 4 kV system. The existing age distribution of overhead transformers is noted below.

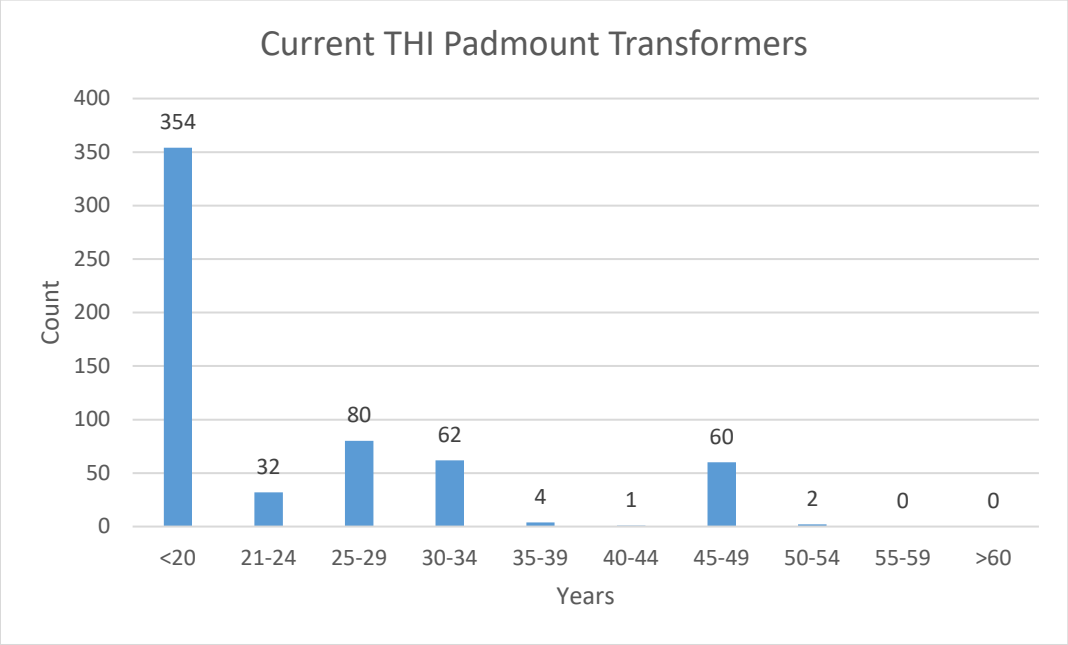


The condition of the overhead transformers has been assumed to be directly related to age. Units over 60 years old (assumed to be in poor condition) currently make up only 1% of the overhead transformer population. Units between 40 and 59 years old (assumed to be in fair condition) make up 3% of the population. Units 39 years old and newer (assumed to be in good condition) make up 96% of the population. These assumptions match random visual inspections of the units with only a few appearing to be in poor condition. The conversion of the older 4 kV system has eliminated a large quantity of the older transformer population.

Padmount Transformers

THI has 595 padmount transformers in service. Of these, only 49 remain on the 4 kV system. For analysis purposes, ages have been assigned to each transformer without a known age by using the age of the primary cable connected to it (if known), or the age of adjacent transformers.

The existing age distribution of overhead transformers is noted below.



Through in house testing and inspection, the condition of the padmount transformers is a combination of results from visual inspections done by staff, infrared inspections done by staff and directly related to age. Units that are identified of having critical deficiencies are addressed immediately. Age of unit then becomes the next metric. Units over 45 years old (assumed to be in poor condition) currently make up 10% of the population. Units between 25 and 45 years old (assumed to be in fair condition) make up 25% of the population. Units 24 years old and newer (assumed to be in good condition) make up 65% of the population.

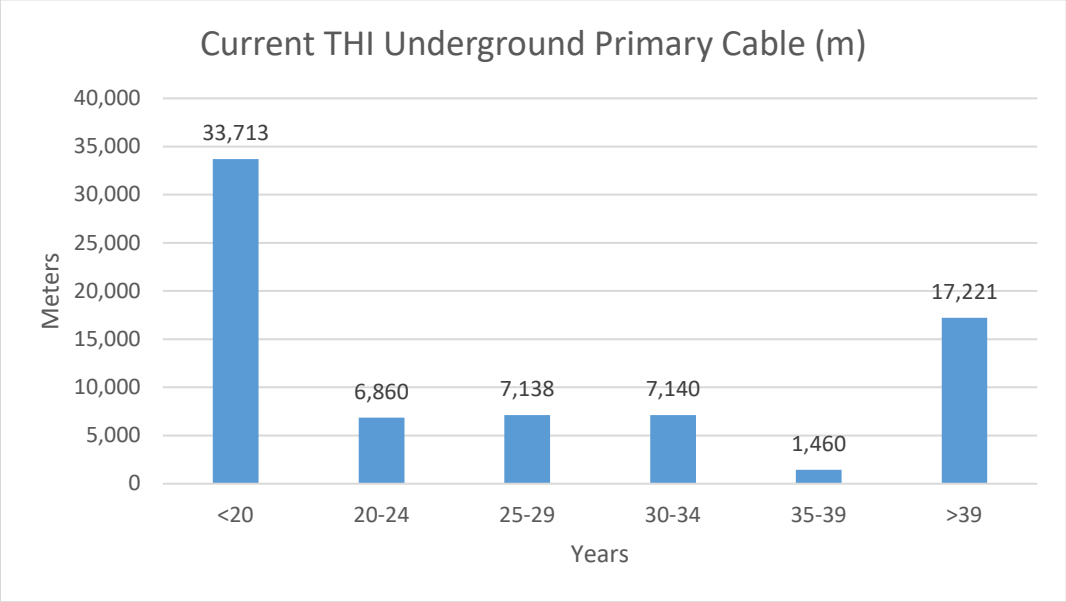
PoleTrans Transformers

THI has 31 poletrans transformers in service. These units are a combination street light pole with a built in transformer and connectors used for distribution in residential areas. Due to tight clearances, these units are considered to be a high safety risk to work on while energized, and most Ontario LDCs have been eliminating these types of units from their system. All 31 units are part of the 4 kV distribution system and are between 30 to 40 years old. THI is in the final stages of eliminating 4 kV from their system, thus further analysis of these units has not been conducted under the assumption they will be removed from the system in the next five years.

Primary Underground Cable

THI has a total of 73,532km of primary underground cable in service. Of this, 8,865km is on the 4 kV system and expected to be removed from service through voltage conversions in the near future. The data does not identify when tree-retardant (TR) cable became standard at THI, so it has been assumed that all cable installed prior to 1990 is non-TR with 1990 and new as TR.

The existing age distribution of primary underground cable is noted below.



Since the actual condition of primary cables is difficult to determine, the condition of the cables has been assumed to be directly related to age. Cables over 40 years old (assumed to be in poor condition) currently make up 23% of the population. Cables between 25 and 40 years old (assumed to be in fair condition) make up 22% of the population. Cables 24 years old and newer (assumed to be in good condition) make up 55% of the population. Approximately 50% of the cables over 40 years old are on the 4 kV system, and will be removed from service in the next five years.

Fleet and Facilities

THI does not own vehicles or buildings, since they are provided by the Town of Tillsonburg through a Master Services Agreement.

5.3.2.d) High Voltage Assets (>50kV)

Tillsonburg Hydro does not have any transmission or high voltage assets (>50kV) deemed previously by the OEB as distribution assets and is not currently asking the OEB to deem any such assets as distribution assets in its current application.

5.3.2.e) Host Distributor or Embedded Distributor

Tillsonburg Hydro is directly connected to the high voltage transmission network at the Tillsonburg TS and is neither a host distributor nor embedded distributor.

5.3.3 Asset Lifecycle Optimization Policies and Practices

An understanding of a distributor's asset lifecycle optimization policies and practices will support the regulatory assessment of system renewal investments and decisions to refurbish rather than replace system assets. Information provided should be sufficient to show the trade-off between spending on new capital (i.e., replacement) and life-extending refurbishment. A distributor should also be able to demonstrate that it has carried out system O&M activities to sustain an asset to the end of its service life (can include references to the Distribution System Code).

A distributor should explain the processes and tools it uses to forecast, prioritize, and optimize system renewal spending and how a distributor intends to operate within budget envelopes. For prioritizing capital expenditures, a distributor should help the reviewer understand the approaches a distributor uses to balance a customer's need for reliability and capital expenditure costs. A distributor should also demonstrate that it has considered the potential risks of proceeding/not proceeding with individual capital expenditures.

A distributor should provide a summary of any important changes to the distributor's asset life optimization policies and processes since the last DSP filing.

Instead of formal policies and procedures for optimizing asset lifecycles, THI relies on staff to make decisions that will allow assets to remain in service as long as possible without compromising safety and reliability.

The 4 kV conversion program that started in 2000 has generally addressed the end of life assets as the 4 kV components tended to be the oldest in the system. Proactively replacing these assets with 27.6 kV kept reliability stable and kept capital spending moderate and predictable. With the 4 kV conversion program ending in the next few years, and the increasing frequency of other components failing, THI has adopted a more pro-active strategy for asset sustainment.

The tables below show how each asset class is inspected and maintained, and the sustainment strategy.

Asset Type	Inspection Cycle[26]	Maintenance Plan[27]	Sustainment Strategy
Wood Poles[28]	Visual inspection once every 3 years	Sound and bore test as needed, 3 to 5 year cycle	Keep in service as long as physical condition and testing results (residual strength) permits
Pole Mount Transformers	Visual inspection once every 3 years	Infrared scan every year	Repair or replace if hot spots[29] or other damage or deterioration (oil leaks, excessive rust) is noted, otherwise run to failure
Padmount Transformers	Visual inspection once every 3 years	Infrared scan when opened for switching or other work (about every 3 to 5 years)	Repair or replace if hot spots or other damage or deterioration (oil leaks, excessive rust) is noted, otherwise run to failure
PoleTrans Transformers	Visual inspection once every 3 years	Infrared scan when opened for switching or other work (about every 3 to 5 years)	Repair or replace if hot spots or other damage or deterioration (oil leaks, excessive rust) is noted, otherwise run to failure; long term plan to eliminate via voltage conversions
Overhead Switches	Visual inspection once every 3 years	Infrared scan every year	Repair or replace if hot spots noted, otherwise run to failure
Padmount Switches	Visual inspection once every 3 years	Infrared scan when opened for switching or other work (about every 3 to 5 years)	Repair or replace if hot spots noted, otherwise run to failure
Primary Underground Cable	Visual inspection once every 3 years[30]	Infrared scan when transformer, switchgear or vault is opened, other work (about every 3 to 5 years)	Repair or replace if hot spots noted, otherwise run to failure

[26] Inspection cycles meet the minimums required by the Distribution System Code.
[27] THI does not have a standalone maintenance policy. The information provided is based on past practice.
[28] THI has limited quantities of steel and concrete poles which are inspected on the same cycle as wood poles, but are expected to last much longer than wood so no sustainment strategy has been developed for these assets.
[29] Infrared hotspots – temperature above ambient >30C requires immediate attention, >5C and <30C requires attention within three months, >1C and <5C to be monitored and re-scanned within 12 months
[30] Visual inspection of underground cables is limited to terminations and portions of cable visible in transformers, switchgear and vaults.

Asset Type	Inspection Cycle	Maintenance Plan	Sustainment Strategy
Primary Overhead Conductor[31]	Visual inspection once every 3 years	Infrared scan every year, tree trimming every 3 years	Run to failure or replace due to capacity restrictions.
Poleline Hardware (crossarms, pins, insulators, brackets, etc.)	Visual inspection once every 3 years	None	Run to failure or replace as part of line upgrade or rebuild.
Small Vehicles[32] (cars, vans, pickup trucks, trailers)	Visual inspection daily	Follow manufacturer's recommended schedule	Repair and maintain until maintenance/repair cost, reliability, and/or functionality become an issue.
Large Vehicles[33]	Visual inspection daily	Follow manufacturer's recommended schedule, additional testing every year for dielectric components	Repair and maintain until maintenance/repair cost, reliability, and/or functionality become an issue.
Meters	Visual inspection during disconnect /reconnect, troubleshooting, or other work nearby.	Testing and compliance sampling as per Measurement Canada requirements.	Keep in service until no longer able due to failure of unit or sample test of batch.

The Table above notes that most assets are run to failure or repaired/replaced when problems are identified through inspection and testing. It has been the experience at THI that few assets fail during normal use and cause a safety or reliability concern[34]. The scheduled inspections are augmented by patrols following an outage, and observations by staff while they conduct their daily tasks. Each year a portion of the system is replaced or upgraded due to reasons other than the condition of the assets – municipal projects (road widenings, deep service installation / replacement), customer / developer projects (new developments, subdivisions, upgrades), and capacity upgrades (re-conductoring, upgrade single phase to three phase).

To guide staff and contractors, THI uses the following criteria to help determine when an asset is replaced.

[31] Secondary conductors (overhead and underground) are not separately inspected or maintained, and are run to failure (replaced upon third fault – ie max of two repairs).

[32] THI Vehicles are owned by the Town and provided to THI through a Master Services Agreement and THI pays an hourly rate for vehicles. THI employees are responsible for advising the Town of any issues with vehicles and recommending replacements when necessary.

[33] THI Vehicles are owned by the Town.

[34] See DSP Appendix F for Reliability Analysis that identifies some assets that are more prone to failure.

Asset Type	Inspection Criteria	Maintenance Criteria	Evaluation
Wood Poles (including hardware)	Check for visible decay (pole top, at connections, at groundline), visible damage (large cracks, impact damage), loose or damaged hardware	Sound test to assess wood condition, bore test (measure shell thickness at groundline) if rot suspected.	Immediate replacement if pole broken, shell rot at groundline, excessive damage or decay at other locations, or less than 60% strength. Additional risk factors include location (quantity and voltage of circuits, on path to critical customers). Rated as fail (immediate replacement), poor (replace or re-test in 3 years), or good (inspect in 5 years).
Pole Mount Transformers	Check for oil leaks, cracked or damaged bushings, missing grounds, excessive rusting, and other damage.	Except for loose connections (noted as hotspots) and missing ground leads, these units will not be maintained in the field.	Replacement scheduled if rated as poor - bushings are cracked or damaged, oil is visibly leaking, tank rust is excessive, or large section of unit is hot under normal load (infrared). Units removed from service to be further evaluated to determine if they can be repaired or refurbished before scrapping.
Padmount Transformers	External check for oil leaks, excessive rusting, other damage, obstructions (vegetation), missing warning labels and locks.	Internal check for hot spots, oil leaks, excessive rusting, missing grounds. Field maintenance to be limited to minor paint touch ups, replacement of labels and locks, removal of obstructions, replacement of missing grounds.	Replacement scheduled if rated as poor - bushings are cracked or damaged, oil is visibly leaking, tank rust is excessive, large section of unit is hot under normal load (infrared). Units removed from service to be further evaluated to determine if they can be repaired or refurbished before scrapping.

Asset Type	Inspection Criteria	Maintenance Criteria	Evaluation
PoleTrans Transformers	External check for oil leaks, excessive rusting, other damage, obstructions (vegetation), missing warning labels and locks.	Internal checks only done if opening unit is necessary for other reasons – check for oil leaks, excessive rusting, overheated wires and connections. Field maintenance to be limited to replacement of labels and locks, removal of obstructions, repair or replacement of wires and connectors, replacement of missing grounds.	Unless unit fails or is expected to fail, keep in service until area is converted to 27.6 kV. Units with minor issues (small oil leaks, rusting, etc.) should be ranked as poor to give area priority in 4 kV conversion schedule.
Overhead Switches	Check for cracked or broken insulators, oil leaks, damaged connectors, loose hardware, rusting.	Field maintenance limited to three phase units expected to remain in service at least another 5 years. Hotspots to be assessed for repair / replacement.	Most single phase units identified with deficiencies will be replaced or eliminated. Three phase units to be field maintained if possible or replaced. Consideration given for units on circuits supplying critical customers, or if switch expected to be operated frequently. Three phase units removed from service to be further assessed to determine if they can be repaired, refurbished, or scrapped.
Padmount Switches (includes air-insulated switchgear, oil-insulated switchgear, vaults with junction bars)	External check for oil leaks, excessive rusting, other damage, obstructions (vegetation), missing warning labels and locks.	Internal check for hot spots, oil leaks, excessive rusting, missing grounds. Field maintenance to be limited to minor paint touch ups, replacement of labels and locks, removal of obstructions, replacement of missing grounds.	Replacement scheduled if rated as poor - bushings are cracked or damaged, oil is visibly leaking, tank rust is excessive, large section of unit is hot under normal load (infrared). Units removed from service to be further evaluated to determine if they can be repaired or refurbished before scrapping.

THI manages asset life cycle risk through the Asset Lifecycle Optimization process identified in the previous section. The regular inspections of the assets allow THI to identify assets at risk of failing, and take appropriate action. Priority is given to assets which pose a risk to safety and reliability, which typically results in the immediate replacement of the asset. THI monitors asset failure trends through the annual analysis of outage causes, which could lead to a prioritization of a particular asset class if needed.

In the past and over the next 3-5 years it is expected that THI will remain focused on replacing assets that are at or beyond their typical useful life, and this will primarily be accomplished by replacing 4kV assets to achieve multiple strategic objectives. As a result, minimal spending on the refurbishment of assets has been considered within this application. Over a longer time horizon (>5 years) THI will need to evaluate options like cable injection, wood pole treatments etc. as a cost effective solution to extend the life of its remaining ageing assets.

5.3.4 System Capability Assessment for Renewable Energy Generation

If a distributor has costs to accommodate and connect renewable generation facilities that will be the responsibility of the distributor under the DSC, and are therefore eligible for recovery through the provincial cost recovery mechanism set out in section 79.1 of the Ontario Energy Board Act, 1998, then a distributor should refer to Appendix A.

THI is currently not aware, or anticipating any REG connections within the DSP forecast period that will require cost recovery through the provincial cost recovery mechanism as described in the Section 79.1 of the OEB Act, 1998.

5.3.5 Rate-Funded Activities to Defer Distribution Infrastructure

The OEB has established Conservation and Demand Management Requirement Guidelines for Electricity Distributors (the CDM Guidelines)11 that allow electricity distributors to seek distribution rate funding for CDM programs and other initiatives for the purposes of avoiding or deferring infrastructure investments. These CDM Guidelines are being updated, and the new version will be effective for applications for 2023 rates.

Any application for CDM funding to defer infrastructure must include a consideration of the projected effects to the distribution system on a long-term basis and the forecast expenditures. Distributors must explain the proposed program in the context of the distributor's DSP or explain any changes to its system plans that are pertinent to the program. Distributors may apply to the OEB for funding through distribution rates for CDM projects as specified in the CDM Guidelines.

THI is not currently anticipating or proposing any rate funded CDM activities for the purposes of deferring infrastructure investments.

5.4 Capital Expenditure Plan

5.4.1 Capital Expenditure Summary

The purpose of the information filed under this section is to provide a snapshot of a distributor's capital expenditures over a 10 year period, including five historical years and five forecast years. Despite the multi-purpose character a project or program may have, for summary purposes the entire cost of individual projects or programs are to be allocated to one of the four investment categories on the basis of the primary (i.e. initial or trigger) driver of the investment. For material projects/programs, a distributor must estimate and allocate costs to the relevant investment categories when providing information to justify the investment, as this assists in understanding the relationship between the costs and benefits attributable to each driver underlying the investment.

In any event, the categorization of an individual project or program for the purposes of these filing requirements should not in any way affect the proper apportionment of project costs as per the DSC.

The distributor must provide completed appendices 2-AA and 2-AB along with the following information about a distributor's capital expenditures:

• An analysis of a distributor's capital expenditure performance for the DSP's historical period. This should include an explanation of variances by investment or category, including that of actuals versus the OEB-approved amounts for the applicant's last OEB-approved CoS or Custom IR application and DSP. A distributor should particularly explain variances in a given year that are much higher or lower than the historical trend.

• An analysis of a distributor's capital expenditures for the DSP's forecast period. For capital investments that have a project life cycle greater than one year, the proposed accounting treatment, including the treatment of the cost of funds for construction work-in-progress.

• An analysis of capital expenditures in the DSP's forecast period as compared to the historical period.

System O&M costs are also shown to reflect the potential impact, if any, of capital expenditures on routine system O&M. A distributor is expected to consider the reduction in O&M costs when planning capital investments. A description of the impacts of capital expenditures on O&M must be given for each year, or a statement that the capital plans did not impact O&M costs. A distributor must consider the trade-offs between capital and O&M when assessing alternative options to a capital investment.

A statement should be provided that there are no expenditures for non-distribution activities in the applicant's budget.

5.4.1.a) Summary of Historical Capital Expenditures (2013-2023)

THI has prepared the historical and forecast information described in Chapter 2, Appendix 2-AB. The format has been slightly altered to make it easier to read and follow. Total Historical Annual Capital Expenditures are in thousands of dollars. In Appendix 2-AA, for years 2013 to 2015, due to lack of historical data, THI is unable to provide a breakdown of capital investments beyond aggregate amounts per each of the OEB DSP investment categories. For these years (i.e. 2013 to 2015) THI has provided below, its list of material investments placed in-service during this period.

The following is a list of material investments THI has made for the period of 2013 to 2018, since its last rebasing application:

Year	OEB Investment Category	Total Investment ($ Thousand)	Material Investments
2013	System Access	$26,000	• New 3 ph service Eichenberg Motors • Marwood 35 Spruce st. New substation service • 157 Tillson ave New Service
	System Service	$270,000	• King St. Conversion. (Includes Queen St. & Durham)
	System Renewal	$ 274,000	• King St. Conversion. (Includes Queen St. & Durham) • Northview Dr.– Pole Line & Secondary Service Relocation. • Queen St. Apartments.
	General Plant	N/A	N/A
2014	System Access	$165,000	• 199 Lincoln st. • New Public School • Tilson Ave gas station

Year	OEB Investment Category	Total Investment ($ Thousand)	Material Investments
			• Metering Poing
	System Service	$39,000	• London Street M8 to M5 Feeder link
	System Renewal	$207,000	• North St Trailer Park stepdown conversion • Delevan Crescent Conversion • Lisgar ave & Fourth st. conversion • Cranberry Road Conversion • Sanders St. conversion
	General Plant	N/A	N/A
2015	System Access	$284,000	• Oxford St. Tim Hortons • New Public School • Baldwin Place Phase 9A • Glendale West Subdivision • Annondale 7 Phase 2 • New residential services
	System Service	$79,000	• Clearview Feeder Tie • Baldwin M8 To M5 Feeder Tie • Hwy #/Bell Mill Sideroad Crossing
	System Renewal	$230,000	• Broadway Misc Teardown Conversion • Third St. Conversion • Sanders St. Tennis Courts Conversion • North st., Pole line removal. • Decommissioning MS 4 • Lisgar Ave Conversion
	General Plant	N/A	N/A
2016	System Access	$153,900	• London St - M8 to M5 Feeder Link • Bell Mill Side Road - Hwy #3 crossing
	System Service	$341,500	• Clearview Feeder Tie • Baldwin M8 To M5 Feeder Tie • Hwy #/Bell Mill Sideroad Crossing
	System Renewal	$15,370	• Broadway Misc Teardown Conversion • Third St. Conversion • Sanders St. Tennis Courts Conversion • North st., Pole line removal
	General Plant	$12,700	• SMART GRID implementation
2017	System Access	$613,000	• Potters Road - East of Tracks • 27.6kV M-8 Extension - John Pound Road • Lisgar Ave. Apartments • Lisgar Heights Subdivision
	System Service	$21,100	• Centennial - Van Norman Dr
	System Renewal	$537,900	• Stoney Crt • Centennial - Van Norman Dr

Year	OEB Investment Category	Total Investment ($ Thousand)	Material Investments
			• Misc conversion Upgrades
	General Plant	$45,800	• SMART GRID implementation
2018	System Access	$612,400	• Hayhoe New subdivision • 27.6kV M-8 Extension - John Pound Road
	System Service	$67,300	• Developer SOLAR Projects
	System Renewal	$851,700	• Rolling Meadows Subdivision - Phase 1
	General Plant	$112,700	• SMART GRID implementation

The following table provides a summary of investments THI has made since its last rebasing for the period of 2019 to 2023, including Total Historical Annual Capital Expenditures in percent of Total:

	Actual Spending per Year $k					
OEB Category	**2019**	**2020**	**2021**	**2022**	**2023**	**Avg**
System Access	$ 581	$ 289	$ 438	$ 633	$ 43	$ 397
System Renewal	$ 1,569	$ 1,668	$ 1,075	$ 914	$ 1,831	$ 1,411
System Service	$ 193	$ 223	$ 111	$ -	$ 320	$ 169
General Plant	$ 131	$ 81	$ 39	$ 35	$ 32	$ 63
Total	$ 2,474	$ 2,261	$ 1,662	$ 1,582	$ 2,225	$ 2,041

	Actual Spending per Year %					
OEB Category	**2019**	**2020**	**2021**	**2022**	**2023**	**Avg**
System Access	23%	13%	26%	40%	2%	0.2
System Renewal	63%	74%	65%	58%	82%	0.7
System Service	8%	10%	7%	0%	14%	0.1
General Plant	5%	4%	2%	2%	1%	0.0
Total	100%	100%	100%	100%	100%	1.0

Over the historical period, the percentages within each category have varied, primarily in response to fluctuations in customer driven work (System Access). To ensure THI had sufficient resources to complete the customer driven work, projects in other categories were deferred or reduced in scope. The overall capital spending in each year has been increasing due to a significant increase in customer driven work as well as a planned increase in spending on System Renewal and System Service, in response to the recommendations found in the 2023 Asset Management Plan (see DSP Appendix D).

5.4.1.b) Summary Historical Capital Variances

The following is a summary of the historical capital expenditures, highlighting variances in Forecast vs. Actual and the impacts on O&M Spending.

Historical Capital and O&M																
	2019				2020				2021							
	Forecast $k	Actual $k	Variance $k	Variance %	Forecast $k	Actual $k	Variance $k	Variance %	Forecast $k	Actual $k	Variance $k	Variance %				
System Access	$ 340	$ 581	$ 241	71%	$ 323	$ 289	-$ 34	-11%	$ 60	$ 438	$ 378	630%				
System Renewal	$ 1,757	$ 1,569	-$ 188	-11%	$ 1,468	$ 1,668	$ 200	14%	$ 1,298	$ 1,075	-$ 223	-17%				
System Service	$ 155	$ 193	$ 38	25%	$ 295	$ 223	-$ 72	-24%	$ 132	$ 111	-$ 22	-16%				
General Plant	$ 85	$ 131	$ 46	54%	$ 97	$ 81	-$ 15	-16%	$ 72	$ 39	-$ 33	-46%				
Total	$ 2,337	$ 2,474	$ 137	6%	$ 2,183	$ 2,261	$ 78	4%	$ 1,561	$ 1,662	$ 101	6%				
Total O&M	$ 713	$ 855	$ 142	20%	$ 792	$ 859	$ 67	8%	$ 697	$ 735	$ 38	5%				
	2022				2023				Five Year Historical Summary							
	Forecast $k	Actual $k	Variance $k	Variance %	Forecast $k	Actual $k	Variance $k	Variance %	Forecast $k	Actual $k	Variance $k	Variance %				
System Access	$ 209	$ 633	$ 424	203%	$ 50	$ 43	-$ 7	-14%	$ 982	$ 1,984	$ 1,002	102%				
System Renewal	$ 1,616	$ 914	-$ 702	-43%	$ 2,038	$ 1,831	-$ 207	-10%	$ 8,176	$ 7,057	-$ 1,120	-14%				
System Service	$ 42	$ -	-$ 42	-100%	$ 447	$ 320	-$ 127	-28%	$ 1,072	$ 847	-$ 225	-21%				
General Plant	$ 70	$ 35	-$ 35	-50%	$ 70	$ 32	-$ 38	-55%	$ 393	$ 317	-$ 76	-19%				
Total	$ 1,937	$ 1,582	-$ 355	-18%	$ 2,605	$ 2,225	-$ 380	-15%	$ 10,623	$ 10,205	-$ 418	-4%				
Total O&M	$ 698	$ 733	$ 35	5%	$ 706	$ 644	-$ 62	-9%	$ 3,606	$ 3,825	$ 220	6%				
	Forecast = THI Budget Amount, Excludes Capital Contributions															
	Actual = Excludes Capital Contributions															
	Variance $ = Actual - Forecast															
	Variance % = Variance $ / Forecast															

Over the historical period, THI has managed to keep actual spending on capital within 4% of forecast spending and actual spending on O&M within 6% of forecast spending. As noted in the next section, the spending within the various categories for the capital programs have varied from budget, primarily due to external forces.

Impact of Capital Investments on O&M Costs

There are no specific investments that are planned to target a quantifiable impact on O&M costs. Replacing aging assets that are most at risk of failure should continue to keep unplanned failures and emergency repairs at the existing level. When practical, voltage conversions will reduce system losses. Using the "virtual" utility model and outsourcing should minimize costs by using resources only when required and keeping overheads low. Sharing fleet, facilities, and IT with the Town helps both entities minimize cost to customers / residents.

While THI considers potential reductions in O&M costs when reviewing options for capital expenditures, there were no capital projects initiated that were expected to have a significant impact on O&M costs. There is an expectation that the System Renewal projects will replace assets at risk of failure which should prevent some unplanned outages (and related costs), but it is not practical to identify any direct correlation between these capital projects and O&M spending. Likewise, some of the System Service projects are expected to reduce the time needed to identify outage locations, but the overall impact to O&M costs would be minor. Overall, THI anticipates that O&M costs should remain stable (subject to inflation increases and efficiency gains) as investments continue to be made in System Renewal and System Service projects. Therefore, in the following sections, there is no additional analysis on the potential impact to O&M costs.

5.4.1.c) Historical Variances by Category

Since the majority of THI's projects tend to be relatively small, they have been grouped into programs and presented below in their respective categories. The reasons for variances within the program for each year are noted in the tables below. A summary for each category has also been provided to note the overall variance for the five year historical period.

System Access

2019	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Municipal Driven Works	0	26	0	0%	Fairview Road Re-construction
Developer / Customer Driven Works	245	504	285	106%	large number of development and customer driven projects
Meters & Devices	95	51	-44	-46%	pre-purchased meters for 2020 re-verification replacements
Total	340	581	241	71%	

2020	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Municipal Driven Works	0	0	0	0%	
Developer / Customer Driven Works	184.3	162.1	-22.2	-12%	Large number of development & customer driven projects. Deferral of Industrial Park phase 1 project
Meters & Devices	137.6	126.6	-11	-8%	pre-purchased meters for TS metering in 2021
Total	321.9	288.7	-33.2	-10%	

2021	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Municipal Driven Works	0	82	0	0%	Industrial Park Phase 1 Project
Developer / Customer Driven Works	0	273	273	100%	Large quantity of customer requests & developments
Meters & Devices	60	83	23	38%	TS Metering project
Total	60	438	296	630%	

2022	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Municipal Driven Works	13	17	0	0%	Project started earlier than expected
Developer / Customer Driven Works	142	483	341	240%	Large quantity of customer requests & developments
Meters & Devices	54	133	79	146%	Inventory levels increased due to possible re-verification failures that never materialized.
Total	209	633	420	203%	

2023	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Municipal Driven Works	0	0	0	0%	
Developer / Customer Driven Works	50	43	-7	-14%	Recoverable spend of 43
Meters & Devices	0	43.6	-43.6	100%	Increased inventory levels due to long lead times
Total	50	86.6	-50.6	73%	

Five Years	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Municipal Works	13	125	112	862%	Higher number of requests
Developer Works	621.3	1465.1	843.8	136%	More than expected
Meters & Devices	346.6	437.2	90.6	26%	Meters for Ts not in budget Inventory levels increased due to lead times
Total	980.9	2027.3	1046.4	107%	

The largest spending variance was related to Municipal driven work which exceeded forecast spending by $112,000 over the five year period. Developer driven/Customer work exceeded forecast spending by $90,600, Spending on new metering for the feeders at the Tillsonburg TS has also added some unexpected spending in recent years.

As noted in Section 5.4.2 b), expenditures in System Access were 11% higher than expected due to increased demand in municipal driven work. This is expected to return to pre-2019 levels in the coming years, although this could change depending on market conditions.

System Renewal

2019	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Small Upgrades	0	0	0	0%	
Underground Rebuilds	1047	1084	37	4%	Increased scope of Devonshire conversion
Main Feeders	325	152.1	-172.9	0%	
Overhead Line Rebuilds	385	332.9	-52.1	-14%	Wabash Pole/Conductor upgrade/ less contractor work than anticipated
Total	1757	1569	-188	-11%	

2020	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Small Upgrades	0	0	0	0%	
Underground Rebuilds	1009.2	1130.3	121.1	12%	increase in scope
Main Feeders	0	0	0	0%	
Overhead Line Rebuilds	458.8	538.3	79.5	17%	replaced more poles than expected
Total	1468	1668.6	200.6	14%	

2021	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Small Upgrades	0	0	0	0%	
Underground Rebuilds	709.3	579	-130.3	-18%	Long lead times on transformers, Didn't change as many as planned
Main Feeders	308.7	229.5	-79.2	0%	TS Meter Point relocation
Overhead Line Rebuilds	279.7	266	-13.7	-5%	Pole & Conductor upgrades, Storm damage
Total	1297.7	1074.5	-223.2	-17%	

2022	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Small Upgrades	0	0	0	0%	
Underground Rebuilds	711.9	272.2	-439.7	-62%	Scope of job scaled back/deferred
Main Feeders	304.4	238.8	-65.6	0%	Partial rebuild of an inaccessible feeder. Contractor costs for stringing on Overtime
Overhead Line Rebuilds	600.4	403	-197.4	-33%	Some jobs deferred
Total	1616.7	914	-702.7	-43%	

2023	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Small Upgrades	0	0	0	0%	
Underground Rebuilds	1768.6	1636.1	-132.5	-7%	Contractor cost came in lower than predicted
Main Feeders	0	0	0	0%	
Overhead Line Rebuilds	269	194.4	0	-28%	Fewer poles changed than planned
Total	2037.6	1830.5	-207.1	-10%	

Five Years	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Small Upgrades	0	0	0	0%	
Underground Rebuilds	5246	4701.6	-544.4	-10%	Conversion projects
Main Feeders	938.1	620.4	-317.7	0%	Improvements done to gain better redundancy in the distribution system
Overhead Line Rebuilds	1992.9	1734.6	-258.3	-13%	Some projects deferred to accommodate System Access Work.
Total	8177	7056.6	-1120.4	-14%	

The increase in spending in System Renewal per year over the past five years was in response to the 2016 AMP which noted that THI had been underspending on asset replacements and needed to increase the pace of asset replacements to ensure a safe a reliable supply to customers. Actual spending was 14% less than forecast, primarily the result of deferring parts of some of the larger voltage conversion projects (overhead and underground) so that the customer driven work could be completed.

Expenditures in System Renewal were 14% less than budget, as some projects were deferred to accommodate System Access work. There was a planned increase in overall investments in System Renewal projects, from $0.5M to $1.5M which was the result of the 2016 Asset Management Plan. The 2016 AMP (see DSP Appendix D) noted that historical spending on System Renewal was much less than what was needed to keep pace with aging infrastructure. Based on that report, THI has been increasing

the budget for System Renewal project each year to get to the existing level of $1.5M. THI plans to reduce spending on System Renewal in the coming years since previous years investments have addressed a significant volume of aging infrastructure. Each year, THI monitors system reliability and pole testing results, and these will be used to determine when the budget for System Renewal needs to be adjusted.

System Service

2019	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Feeder Ties & Capacity Upgrades	20	107.7	0	0	completion of deferred projects
Faulted Circuit Indicators	20	1.1	-18.9	-95%	deferred
Automation - Switches and Systems	115	84.3	-30.7	-27%	actual cost less than budget
Total	155	193.1	-49.6	25%	

2020	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Feeder Ties & Capacity Upgrades	0	191.3	191.3	100%	completion of deferred project
Faulted Circuit Indicators	22.5	0	-22.5	-100%	deferred
Automation - Switches and Systems	135	32	-103	-76%	first phase of Utilismart Smart Map & MVI switch replacement deferred
Total	157.5	223.3	65.8	42%	

2021	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Feeder Ties & Capacity Upgrades	0	84	84	100%	
Faulted Circuit Indicators	0	0	0	0%	
Automation - Switches and Systems	79	27	-52	-66%	Material lead times extended
Total	79	111	32	41%	

2022	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Feeder Ties & Capacity Upgrades	42	0	-42	-100%	Job Deferred
Faulted Circuit Indicators	0	0	0	0%	
Automation - Switches and Systems	0	0	0	0%	
Total	42	0	-42	-100%	

2023	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Feeder Ties & Capacity Upgrades	314.8	211.3	-103.5	-33%	Primary extension job deferred.
Faulted Circuit Indicators	0	0	0	0%	
Automation - Switches and Systems	131.9	108.2	0	-18%	MVI switch project scaled back
Total	446.7	319.5	-103.5	-28%	

Five Years	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Feeder Ties & Capacity Upgrades	376.8	594.3	217.5	58%	Projects focusing on redundancy & Reliability
Faulted Circuit Indicators	42.5	1.1	-41.4	-97%	Testing of previous products performance prior to purchasing more
Automation - Switches and Systems	460.9	251.5	-209.4	-45%	Project scale backs
Total	880.2	846.9	-33.3	-4%	

System Service investments have increased over the historical period as THI has been making more investments to improve the distribution grid. Additional feeder ties are being made to allow for a more flexible system and minimize the scope of unplanned outages. Automation such as fault indicators, smarter switching devices, and the SmartMap application have been added to allow us to locate problems faster, which provides better service to our customers. For the forecast period, THI plans to continue with a similar level of investment, to gradually make our system more automated and more reliable.

GENERAL PLANT

2018	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Tools & Equipment	50	34.6	-15.4	-31%	purchased fewer tools than budgeted
Information Technology	275	78.1	-196.9	-72%	costs under budget
LTLT	0	0	0	0%	
Total	325	112.7	-212.3	-65%	

2019	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Tools & Equipment	50.0	35.0	-15	-30%	
Information Technology	35.0	96.0	61	0%	ESRI Canada - Consulting $25.8K, ERTH - Capicorn Interface $5.6K, ELSTER - Netsense Software $58.8K
Total	85.0	131.0	46	54%	

2020	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Tools & Equipment	56.5	49.0	-7.5	-13%	Purchase of pole boss
Information Technology	40.0	32.0	-8	0%	
Total	96.5	81.0	-15.5	-16%	

2021	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Tools & Equipment	56.5	36.0	-20.5	-36%	
Information Technology	15.0	2.7	-12.3	0%	
Total	71.5	38.7	-32.8	-46%	

2022	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Tools & Equipment	40.0	13.8	-26.2	-66%	
Information Technology	30.0	21.3	-8.7	0%	
Total	70.0	35.1	-34.9	-50%	

2023	Forecast $k	Actual $k	Variance $k	Variance %	Comments
Tools & Equipment	50.0	25.6	-24.43	-49%	Purchase of a 2nd service saver
Information Technology	20.0	6.0	0	-70%	Job Costing Module - Delay
Total	70.0	31.6	-24.43	-55%	

Five Years	Forecast $k	Actual $k	Variance $k	Variance %
Tools & Equipment	253.0	159.4	-93.63	-37%
Information Technology	140.0	158.0	18.03	13%
Total	393	317.4	-75.6	**-19%**

Most of the General Plant purchases are covered in the Master Services Agreement (MSA) with the Town of Tillsonburg (such as vehicles, buildings, office equipment, etc), and not directly charged to THI since they are typically shared assets. As such, THI has not typically included a large budget amount for General Plant purchases.

General Plant spending has historically been minimal, as most of these assets (fleet, facilities, IT) are provided by the Town of Tillsonburg through a Master Services Agreement. This trend is expected in the forecast period.

5.4.1.4 Forecast Capital Expenditures (2024-2028)

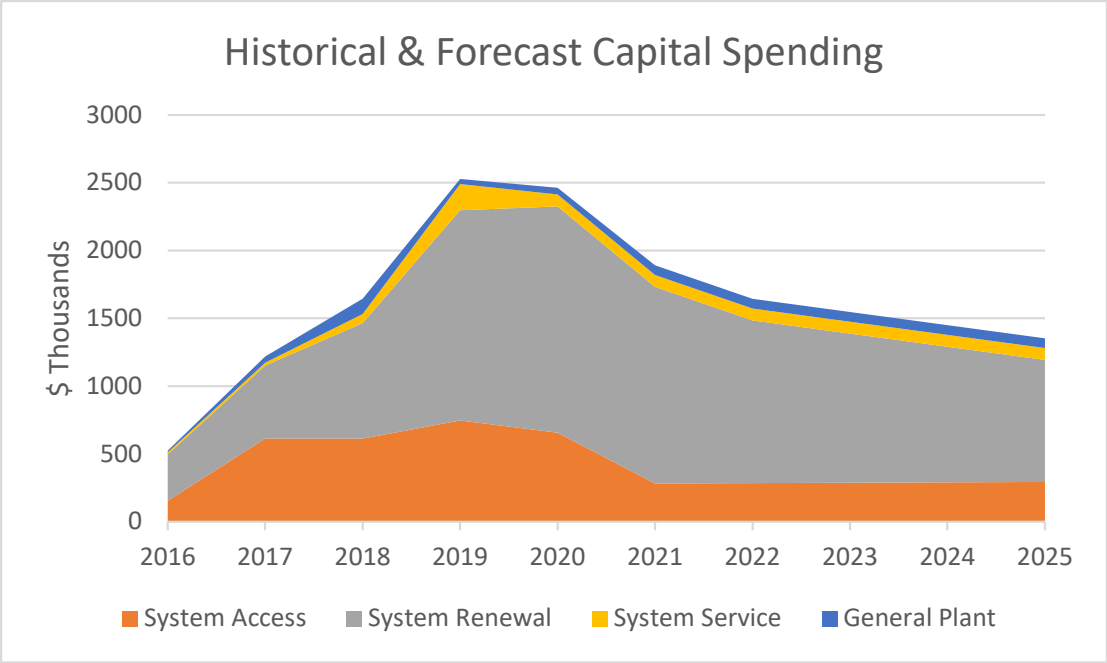
Total Forecast Annual Capital Expenditures in thousands of dollars

	Forecast Spending $k per Year					
OEB Category	**2024**	**2025**	**2026**	**2027**	**2028**	**Avg**
System Access	$ 149	$ 209	$ 198	$ 455	$ 469	$ 296
System Renewal	$ 1,161	$ 1,525	$ 1,106	$ 1,121	$ 1,154	$ 1,214
System Service	$ 749	$ 442	$ 539	$ 615	$ 633	$ 596
General Plant	$ 75	$ 75	$ 75	$ 55	$ 57	$ 67
Total	$ 2,134	$ 2,251	$ 1,919	$ 2,245	$ 2,313	$ 2,172

	Forecast Spending % per Year					
OEB Category	**2024**	**2025**	**2026**	**2027**	**2028**	**Avg**
System Access	7%	9%	10%	20%	20%	13%
System Renewal	54%	68%	58%	50%	50%	56%
System Service	35%	20%	28%	27%	27%	28%
General Plant	4%	3%	4%	2%	2%	3%
Total	100%	100%	100%	100%	100%	100%

Total Forecast Annual Capital Expenditures in percent of Total

For the forecast period, THI is anticipating that customer driven work will return to a more normal level, something close to an average of 2016 and 2017, and only increase by 1% per year (based on the most recent Regional Planning forecast). THI is aware of many planned large residential developments, as a result THI is projecting an increase to its system access spending due to the expected active housing market. As noted in Section 5.2.3c, investments in System Renewal are expected to decrease since some of the end-of-life assets have been addressed. Going forward, System Renewal should account for approximately 50% of the total annual budget for the forecast period. There are no plans at this time to alter the forecast amounts for System Service and General Plant, so these amounts have remained relatively consistent for the forecast period.



The following table details material investments forecasted for the period of 2024 to 2028:

Year	OEB Investment Category	Total Investment	Material Investment
2024	System Access	$149,000	• William St UG Conversion is a rear yard overhead secondary pole line that has now become inaccessible due to the growth in the Oak Park development. Relocating it to u/g front yard. • QTR Rd Reconductoring is upgrading an existing feeder from 3/0 to 336 wire size. This will provide us with better redundancy on paralleling our feeders. • John Pound Phase I & II – upgrades and existing end of life pole line with new poles and 3/0 to 336 upgrade. Phase II is building a feeder tie to gain 2 separate feeder paths to the new industrial park VIP ph2. • Valleyview Dr. Primary Extension – extending a single phase feeder line to relocate a transformer more central for customers. Previous under voltage conditions under high loads • Meter Replacements - annual re-verification. Also increased inventory levels due to long lead times • Lisgar Heights Phase III – 4kv to 27.6kv conversion. Transformers are end of life and considered a safety risk. Moving from Pole Transformers to pad mount. New Primary conductors throughout and partial secondary conductor replacement. • Fairground – A pocket of 4kv overhead & underground. Conversion to remove a bank of Stepdown Transformers from our system. • Townline Rd Feeder Upgrade PHI – end of life poles & upgrading 3/0 to 336 conductor for better redundancy in the industrial park. • End of Life Poles – replacement of end of life assets & any pole deficiencies found during our annual pole inspections. • Vintage UG Replacements – Installing new primary UG conductor to eliminate legacy direct buried T splice installations. Cable is at end of life • Porcelain Switch & Insulator Changes – removal of all porcelain in our distribution system due to outage stat failures & unsafe working conditions • System air removal – removal of conductor and poles from relocation of assets in 2023New Development - Potters Gate ph 4,Cranberry rd estates, Oak Park Estates, Rolling Meadow North, The Bridges, Rolling Meadows vacant land condos, block 39 West Wind • New Connections – New residential connections
	System Renewal	$1,161,000	
	System Service	$749,000	
	General Plant	$75,000	

			• Technical Services – Customer driven - 1030 progress dr. Scheps Bakery, 25 Maple Lane,360 West commercial plaza, 5 Woodcock County Well service
2025	System Access	$209,000	• Annondale Conversion PhI – combination of pole & pad mounted transformers. 4kv to 27.6kv conversion. End of life replacements & eliminating safety concerns • Townline Rd PHII - end of life poles & upgrading 3/0 to 336 conductor for better redundancy in the industrial park. • Vintage Tx Replacements – replace end of life assets. Asset management plan says to change 6 per year to be able to keep up to aging infrastructure. • End of Life Poles - replacement of end of life assets & any pole deficiencies found during our annual pole inspections. • Baldwin St. Feeder upgrade – end of life asset replacement • Cedar St Feeder upgrade – end of life asset replacement • Tillsonburg TS replacements - Main Feeder cables at end of life. • Cable Injection – Rejuvenating end of life u/g cables to extend the usable life • Fairground easement – Easement clean up from conversion job in 2024
	System Renewal	$1,525,000	
	System Service	$442,000	
	General Plant	$75,000	
2026	System Access	$198,000	• Annondale Conversion Phase II – Continuation of Phase I, combination of pole & pad mounted transformers. 4kv to 27.6kv conversion. End of life replacements & eliminating safety concerns • Vintage Tx Replacements – replace end of life assets. Asset management plan says to change 6 per year to be able to keep up to aging infrastructure. • End of Life Poles - replacement of end of life assets & any pole deficiencies found during our annual pole inspections. • Young St. North Pole replacements – end of life poles • Borden Cres Removals – Eliminate the feeder through this rural area. Became redundant due to the build of John Pound Rd Feeder. • Broadway Pole Replacement – End of life asset replacement • Trottier Sub Pole Replacement - end of life poles • Cable Injection - Rejuvenating end of life u/g cables to extend the usable life
	System Renewal	$1,106,000	
	System Service	$539,000	
	General Plant	$75,000	

2027	System Access	$455,000	• Hwy #3 Pole Replacement – End of life asset replacement • Borden Cres Removals – Eliminate the feeder through this rural area. Became redundant due to the build of John Pound Rd Feeder • Broadway Pole Replacement – End of life asset replacement • Trottier Sub Pole Replacement - end of life poles • Cable Injection - Rejuvenating end of life u/g cables to extend the usable life
	System Renewal	$1,121,000	
	System Service	$615,000	
	General Plant	$55,000	
2028	System Access	$469,000	• Continuation of Annondale Conversion Phase II – Continuation of Phase I, combination of pole & pad mounted transformers. 4kv to 27.6kv conversion. End of life replacements & eliminating safety concerns • Vintage Tx Replacements – replace end of life assets. • End of Life Poles - replacement of end of life assets & any pole deficiencies found • Continuation of end of life poles • Young St. North Pole replacements • Feeder updates/replacements • Cable Injection - Rejuvenating end of life u/g cables to extend the usable life
	System Renewal	$1,154,000	
	System Service	$633,000	
	General Plant	$57,000	

5.4.1.5 Non-Distribution Activities

THI confirms that there are no expenditures for non-distribution activities in this DSP (this includes historical and forecast periods).

5.4.2 Justifying Capital Expenditures

As indicated in Chapter 1, the onus is on a distributor to provide the data, information and analyses necessary to support the capital-related costs upon which the distributor's rate proposal is based. Filings must enable the OEB to assess whether and how a distributor's DSP delivers value to customers, including by controlling costs in relation to its proposed investments through appropriate optimization, prioritization and pacing of capital-related expenditures. A distributor should also keep pace with technological changes and integrate cost-effective innovative investments and traditional planning needs such as load growth, asset condition and reliability.

A distributor must not only provide information to justify each individual investment, but also the total amount of its proposed capital expenditures. A distributor should provide context on how its overall capital expenditures over the next five-years, as a whole, will achieve the distributor's objectives. Particularly, a distributor should comment on lumpy investment years and rate impacts of capital investments in the long-term.

THI strives to achieve its strategic objectives while balancing the various inputs into the capital expenditure plan. THI looks at the following areas to justify the capital expenditure plan and properly pace & prioritize its spending levels.

5.4.2.1 Customer Engagement

As a smaller, community based LDC, THI does not have an extensive, formal program to solicit information from their customers to identify preferences which would be taken into account during the preparation of the capital plan. Instead, THI relies on all staff to be their customer engagement agents to deliver customer satisfaction, and bring attention to customer complaints, concerns, and expectations.

THI issued a customer survey in 2016[35] that identified the customers of THI were very satisfied with the service provided by THI (90% compared to Ontario average of 88%), and an overwhelming majority (92%) felt it was important that THI remain a local distributor of electricity to the community. Customers also favoured a pro-active approach to asset replacements (65%) vs run-to-failure (27%), recognizing the additional cost associated with the pro-active approach. There was also support to upgrade equipment to accommodate growth (57%) but marginal support to invest in automation and technology to reduce outage time (50%). With this in mind, THI focused on providing safe and reliable service to the community by gradually increasing the level of investment in System Renewal projects, as recommended by the 2016 AMP. To moderate the additional spending on System Renewal, THI deferred investments in System Service (such as an outage management system and grid automated devices).

In 2019, THI worked with other members of the CHEC Group[36] to issue another customer survey, which was awarded to a new vendor. With a different vendor, the benchmark metrics were different so the

[35] The 2016 Customer Satisfaction Survey was conducted by Utility Pulse. See DSP Appendix A-1 for a copy of the 2016 Survey Summary.

[36] CHEC Group = Cornerstone Hydro Electric Concepts, is a group of sixteen local distribution companies in Ontario that formed to share resources and gain efficiencies while remaining independent. CHEC issued a competitive RFP

results of the 2016 and 2019 surveys cannot be directly compared. With the 2019 survey, THI scored an overall Satisfaction Index Score of 78.6%, compared to the other CHEC members who averaged 79.4%. For the Overall Satisfaction question[37], 89% were either very satisfied or somewhat satisfied with the services they receive from THI. This metric is comparable to the 2016 metric of 90% overall customer satisfaction rating[38]. The survey also revealed that customers are generally satisfied with the system reliability / frequency of outages (88% are either very satisfied or somewhat satisfied) and the system reliability / duration of outages (81% are either very satisfied or somewhat satisfied)[39].

In 2021, another survey was issued to the same vendor used in 2019. Overall, THI scored an overall Satisfaction Index Score of 80%, compared to the other CHEC members who averaged 79%. For the Overall Satisfaction question[40], 89% were either very satisfied or somewhat satisfied with the services they receive from THI. This metric is comparable to the 2016 metric of 90% overall customer satisfaction rating and the same as the 2019 survey. The survey also revealed that customers are very satisfied with the system reliability / frequency of outages (95% are either very satisfied or somewhat satisfied) and the system reliability / duration of outages (87% are either very satisfied or somewhat satisfied)[41]. Again, these metrics are as good as or slightly better than the 2019 survey, indicating that THI is continuing to meet customer expectations

These survey results coupled with the results of the updated AMP have resulted in a more aggressive and proactive approach to addressing aging infrastructure during the forecast period, increasing the level of investment in the System Renewal category. Concerns about the overall cost of electricity tempered the spending to allow for moderate rate increases and collaboration with other LDCs to review lower cost options for asset renewal such as using silicone injection on underground primary cable, and implementing some distribution automation to improve reliability for the commercial / industrial areas. THI has continued to issue customer surveys through a third party retained by a competitive bidding process with other CHEC Group members. The results of these surveys are included in DSP Appendix A, and Section 5.2.1 b describes how these results have shaped this DSP.

5.4.2.2 Risk Assessment

Historically, THI used the 4 kV conversion program to address the at risk end of life components, and the annual budgets were adjusted to levelize spending. While this was generally effective, with the 4 kV conversion program concluding, THI has started a more proactive approach to identifying and mitigating risk.

Most of the risk assessment takes place during routine system inspections, as outlined in Section 5.3.3a. Staff will identify components that are a safety or reliability risk, and either immediately replace them or consult with engineering to determine the best replacement option given other factors such as planned work in the area. Items of moderate risk (rusting transformers for example) would be noted on the paper inspection reports and checked during the next inspection cycle.

for a customer satisfaction survey in 2019 and Redhead Media Solutions was the selected vendor. See DSP Appendix A-2 for a copy of the 2019 Survey Summary.

[37] See page 7 of the 2019 Survey Summary in DSP Appendix A-2.

[38] See page 6 of the 2016 Survey Summary in DSP Appendix A-1.

[39] See pages 8 and 9 of the 2019 Survey Summary in DSP Appendix A-2.

[40] See page 9 of the 2021 Survey Summary in DSP Appendix A-3.

[41] See pages 10 and 11 of the 2021 Survey Summary in DSP Appendix A-3.

The annual reliability analysis and the AMP also point to other potential risks associated with aging infrastructure, to give THI a longer view of the possible work that may be needed in the coming 5 years to keep the system safe and reliable.

5.4.2.3 Project Drivers by Category

System Access: The two main drivers for this category have historically been and are expected to continue to be new and upgraded services for customers and infrastructure relocations to accommodate municipal projects. While there have been significant fluctuations in the past five years, the average over the five year forecast is expected to be consistent although market conditions will dictate the actual volume of work.

System Service: The main drivers for this category are investments made to make the 27.6 kV main feeders into a more robust grid with the flexibility to serve major load areas with more than one supply point, and investments in technology to improve the reliability and flexibility of the system. The forecast for the next five years is expected to be more than the previous five years as THI is beginning to focus on system operational objectives that target efficiency, performance and reliability.

System Renewal: The main drivers for this category are the condition of the assets and the risks they impose on the safety and reliability of the grid. The level of investments in this category for the next five years is expected to slightly decrease since large quantities of end-of-life assets have already been replaced.

General Plant: The main driver for this category on the on-going replacement of non-distribution assets (tools and equipment, THI specific IT assets).

5.4.2.4 System Development Expectations

As noted in 5.3.2b, the existing distribution system[42] should adequately support any growth for load and generation (subject to transmission constraints being addressed). The industrial area of Tillsonburg is primarily in the south end of town, while the feeders originate near the north end. These customers are often adversely affected by faults upstream, and THI has started making additional investments in feeder ties and switches that will enable them to transfer this industrial area to an alternate feeder if the main feeder has an outage. With the recent removal of the transmission level constraints for generation, THI may need to make some investments to allow for larger DG applicants, but at this time, there are no known projects that require any changes.

5.4.2.5 Investment Prioritization

[42] THI has four 27.6 kV feeders, each capable of supplying 20MW of load. Using an n-1 contingency criteria, this provides an approximate maximum peak load capacity of 60MW, which is much more than the recent system peak of 37MW.

The process to allocate the total budget between the various categories is not formally document but follows a regular pattern each year.

The THI General Manager provides a high level, total capital spending target for the coming year and five year forecast. This target is based on historical spending, potential impact to rates, financial capacity, and the previous year's budget discussions which would include an expected volume of System Renewal and System Service work driven by the AMP, System Access work driven by customer requests (new and upgraded connections, asset relocations to accommodate municipal work), and any General Plant work to accommodate internal requirements (that are not covered in the MSA with the Town).

The Engineering and Operations Team assemble a preliminary list of projects along with budget estimates that are expected to address the aging infrastructure needs, along with estimates for System Access work (customer connections, line relocations), System Service work (feeder ties, automated switches), and any General Plant projects (such as tools, equipment, and LDC-specific IT). Generally, the initial list of projects creates a budget that exceeds both the spending target and the ability of THI to complete within a typical year. The projects are reviewed and prioritized to meet the spending target and capacity of internal and external resources.

Priority is given to projects that address mandated obligations (such as connecting new customers), safety risks (such as failing porcelain switches, rotting poles) and reliability risks (such as isolated sections of 4 kV with no backup supply), followed by projects that improve overall system performance (such as feeder ties and smart grid investments) and improvements in internal processes (such as software to identify areas of low voltage using smart meter data). These priorities are based on what THI understands to be the preferences of customers as noted during informal interactions as well as through the recent survey.

In the event that the revised project list results in a budget amount that exceeds the spending target set by the General Manager, additional analysis is done to determine the incremental impact to customer rates and the GM will use these results to either recommend further projects be deferred or scaled back, or to recommend a budget increase to the THI Board of Directors.

The THI Board of Directors have the final decision on the overall budget amount that is approved for the coming year. The GM will provide the Directors with background information such as reliability reports, the AMP, pole testing results, recent outages, and customer feedback to support the Budget Recommendation.

REG Prioritization

THI does not have a separate process for REG prioritization. Historically, upstream constraints (transmission line and TS) have limited the number and size of applications, and the distribution system of THI is expected to accommodate any reasonably foreseeable REG projects.

Non-Distribution Alternatives

Since THI does not have any capacity or operation constraints on the distribution system, THI does not need to consider using non-distribution alternatives to relieve a capacity or operational constraint. The Regional Planning Process, led by Hydro One and the IESO may consider these at a transmission level. All load growth forecasts include a reasonable expectation of on-going CDM activity.

5.4.2.1 Material Investments

The focus of this section is on projects/programs that meet the materiality threshold set out in Chapter 2A of the Filing Requirements for Electricity Distribution Rate Applications. However, distributors are encouraged in all instances to consider the applicability of these requirements to ensure that all investments proposed for recovery in rates, including those deemed by the applicant to be distinct for any other reason (e.g., unique characteristics; marked divergence from previous trend) are supported by evidence that enables the OEB's assessment according to the evaluation criteria set out below. The level of detail filed by a distributor to support a given investment project/program should be proportional to the materiality of the investment. The following are guidelines on the information to be provided for any material investment.

A. General Information on the project/program

A distributor needs to provide information about the investment, which includes the need, scope, key project timings (including key factors that affect timing), total expenditures (including capital contributions and the economic evaluation as per section 3.2 of the Distribution System Code, as applicable), comparative historical expenditures, investment priority, alternatives considered, and the cost benefit of the recommended alternative. As well, a description of the innovative nature of the investment, if applicable, should be included.

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

The OEB evaluates material investments based on the outcomes set out in section 5.0.2. Efficiency, customer value, reliability, and safety are the primary criteria for evaluating any material investment.

A distributor should demonstrate the need for the investment, which generally should be related to a distributor's asset management process. There could also be instances where the need is to address safety, cyber security, grid innovation, environmental, statutory obligations, or regulatory obligations. A distributor should provide adequate support in justifying the need for investments that are not outcomes of the asset management process.

Justifying an investment can be demonstrated through evidence of accepted utility practices or cost-to-benefit analysis of alternatives. It is also helpful to show past costs for similar Investments and the outcomes the distributor observed to support the requested capital investments. Where a capital investment substantially exceeds the materiality threshold (e.g., CIS, GIS, new office building) the distributor should file a business case documenting the justifications for the expenditure, alternatives considered, benefits for customers (short/long term), and impact on distributor costs (short/long term).

A distributor should consider opportunities to defer or avoid future infrastructure through CDM, as described in the CDM Guidelines. To propose a CDM initiative funded through distribution rates, a distributor should provide the number of years the proposed CDM program would be in place and the number of years that the required infrastructure would be deferred, a cost-to-benefit analysis, and if advance technology has been incorporated.

Consistent with the OEB's objective of facilitating innovation in the electricity sector, innovative projects and programs may receive special consideration. Innovation has broad meaning: it can relate to the use of a new technology, or new ways in which to use existing technologies. It could also include innovative business practices, including relationships with others to enhance services to customers and share costs.

The distributor should explain how the innovative project is expected to benefit its customers, such as improved reliability, enhanced customer services, conservation and demand management, efficient use of electricity, load management, greater efficiency through grid optimization, lower rates (long-term or short-term), enhanced customer choice, or any other benefit consistent with the OEB's mandate and policies. Projects that allow for testing before deploying at scale or provide valuable data and/or learnings are encouraged. Distributors can seek guidance through the OEB's Innovation Sandbox prior to proposing a project.

Strategy for Cost-Effective Modernization

THI relies on LDC partners (via USF and the CHEC Group) and suppliers to cost-effectively provide customers with access to their data through our website (https://www.tillsonburghydro.ca/). Customers can register to access their information, monitor their usage, and make payment arrangements. THI has

not implemented any mechanisms to provide customers with real-time metering data, but customers do have access to “next day” metering information and “Green Button” access. THI will continue to collaborate with others on future initiatives that could provide real-time access to metering data, provided they are cost-effective and requested by our customers.

THI has not made any specific investments to facilitate the integration of distributed generation, distributed energy resources and more complex loads.

THI has started making investments in smart grid technology, such as fault indicators and SmartMap, which is expected to provide customers with an outage map within the forecast period. No material investments into modernization efforts are projected within the application period; THI intends to further leverage investments that have previously been made such as the SmartMap program.

Appendix A – DSP Customer Engagement

Appendix A-1 – 2016 Customer Survey

Appendix A-2 – 2019 Customer Survey

Appendix A-3 – 2021 Customer Survey

Appendix A-4 – 2023 Customer Survey

Appendix B-1 – 2020 Needs Assessment Report London Area

Appendix B-2 – 2022 London Area - Regional Infrastructure Plan

Appendix C – Utilismart “Smartmap”

Appendix D – Asset Management Plan

Appendix E – THI Scorecards

Appendix E-1 – 2016 Scorecard

Appendix E-2 – 2017 Scorecard

Appendix E-3 – 2018 Scorecard

Appendix E-4 – 2019 Scorecard

Appendix F – Reliability Analysis 2017 to 2022

Appendix F – Reliability Analysis 2017 to 2022

Summary:

Note: THI has not historically tracked outages by feeder. This data should be available using the Utilismart Smart Map within the forecast period. With this in mind, it was determined it was not worth the effort to manually review outage records to determine the worst performing feeder prior to 2022.

Generally, THI's system reliability is close to target and meets customer expectations. Fluctuations from year to year are expected due to weather effects and the random nature of animal contacts and equipment failures.

The biggest contributor to SAIFI and SAIDI is Loss of Supply. With a single transformer station (Tillsonburg TS) and only four supply feeders, a single feeder outage affects about 25% of the service area, often for long durations (30 minutes to several hours). Through Regional Planning, this poor performance has been noted and plans are in place to re-supply the TS from a more reliable transmission circuit.

The biggest contributor to SAIFI and SAIDI within THI control (excludes Loss of Supply, Major Event Days, and Scheduled) is Defective Equipment and Adverse Weather. These two causes have resulted in 50% of the number of outages, 54% of the number of customers interrupted, and 69% of the customer hours of interruption.

The contributing factors for Defective Equipment outages are diverse, such as pole fires, cable faults, porcelain switch failures, and other minor components. There is insufficient data to accurately determine an overall trend for Defective Equipment causes, but it is reasonable to assume that many of these components are simply failing at end of life. The 2016 and 2021 Asset Management Plan noted that the pace of asset replacement was insufficient to match the aging demographics of the assets, and THI has taken steps to increase investment in System Renewal Projects.

The main contributor to Adverse Weather outages has been both ice storms and high wind events. Although these events are impossible to control it is recommended that THI continue to harden its system through System Renewal spending to increase its resiliency during adverse weather events.

In addition, Foreign Interference outages continues to be a noticeable cause of outages. This is typically caused by animal contacts, with squirrels the dominant animal type. Tillsonburg has a notable amount of green space with the Town, providing a habitat for squirrels to thrive. THI should continue with best practices for animal proofing overhead distribution systems.

It is worth noting that outages due to Tree Contacts are very infrequent, and have a negligible contribution to SAIDI and SAIFI. This suggests the tree trimming program is effective and should be continued.

Recommendations:

1. Continue to focus annual capital investment plans on system renewal projects, targeting the highest risk assets (based on age, actual condition, impact to customers).

2. Continue to pursue best practices for preventing animal contacts.
3. Maintain present practices for tree trimming.

Reliability Summary Information:

Summary by Year:

2017						
Cause Code	**# of Interruptions**	**# Customer Interrupted**	**# Customer Hours Interruption**	**Total Customer Base**	**SAIDI**	**SAIFI**
0	1	1	1	7191	0.0001	0.0001
1	23	512	1184	7191	0.1647	0.0712
2	2	5230	549	7191	0.0763	0.7273
3	3	35	63	7191	0.0088	0.0049
4	1	40	110	7191	0.0153	0.0056
5	17	7209	6654	7191	0.9253	1.0025
6	1	3	3	7191	0.0004	0.0004
7	0	0	0	7191	0.0000	0.0000
8	0	0	0	7191	0.0000	0.0000
9	10	139	185	7191	0.0257	0.0193
Total	**58**	**13169**	**8749**	**7191**	**1.22**	**1.83**
Total (Less LOS; code 2)	**56**	**7939**	**8200**	**7191**	**1.14**	**1.10**

2018						
Cause Code	**# of Interruptions**	**# Customer Interrupted**	**# Customer Hours Interruption**	**Total Customer Base**	**SAIDI**	**SAIFI**
0	3	7268	493	7281	0.0677	0.9982
1	28	901	1759	7281	0.2416	0.1237
2	2	14676	1651	7281	0.2268	2.0157
3	0	0	0	7281	0.0000	0.0000
4	1	23	19	7281	0.0026	0.0032
5	18	5458	8014	7281	1.1007	0.7496
6	4	2409	2409	7281	0.3309	0.3309
7	0	0	0	7281	0.0000	0.0000
8	1	1	1	7281	0.0001	0.0001
9	30	569	593	7281	0.0814	0.0781
Total	**87**	**31305**	**14939**	**7281**	**2.05**	**4.30**
Total (Less LOS; code 2)	**85**	**16629**	**13288**	**7281**	**1.83**	**2.28**

2019						
Cause Code	**# of Interruptions**	**# Customer Interrupted**	**# Customer Hours Interruption**	**Total Customer Base**	**SAIDI**	**SAIFI**
0	3	47	114	7412	0.0154	0.0063
1	66	1417	5719	7412	0.7716	0.1912
2	3	14860	54547	7412	7.3593	2.0049
3	6	131	281	7412	0.0379	0.0177
4	1	42	95	7412	0.0128	0.0057
5	15	183	350	7412	0.0472	0.0247
6	0	0	0	7412	0.0000	0.0000
7	0	0	0	7412	0.0000	0.0000
8	1	2269	379	7412	0.0511	0.3061
9	14	97	148	7412	0.0200	0.0131
Total	**109**	**19046**	**61633**	**7412**	**8.32**	**2.57**
Total (Less LOS; code 2)	**106**	**4186**	**7086**	**7412**	**0.96**	**0.56**

2020						
Cause Code	**# of Interruptions**	**# Customer Interrupted**	**# Customer Hours Interruption**	**Total Customer Base**	**SAIDI**	**SAIFI**
0	6	147	147	7614	0.0193	0.0193
1	47	473	1604	7614	0.2107	0.0621
2	3	14434	13883	7614	1.8234	1.8957
3	1	15	14	7614	0.0018	0.0020
4	1	1500	2250	7614	0.2955	0.1970
5	9	1535	3335	7614	0.4380	0.2016
6	6	3896	5366	7614	0.7048	0.5117
7	0	0	0	7614	0.0000	0.0000
8	1	1	1	7614	0.0001	0.0001
9	12	179	187	7614	0.0246	0.0235
Total	**86**	**22180**	**26787**	**7614**	**3.52**	**2.91**
Total (Less LOS; code 2)	**83**	**7746**	**12904**	**7614**	**1.69**	**1.02**

2021						
Cause Code	**# of Interruptions**	**# Customer Interrupted**	**# Customer Hours Interruption**	**Total Customer Base**	**SAIDI**	**SAIFI**
0	6	184	222	7872	0.0282	0.0234
1	32	426	1541	7872	0.1958	0.0541
2	3	17448	72236	7872	9.1763	2.2165
3	4	2006	1900	7872	0.2414	0.2548
4	0	0	0	7872	0.0000	0.0000
5	8	166	261	7872	0.0332	0.0211
6	1	2	3	7872	0.0004	0.0003
7	0	0	0	7872	0.0000	0.0000
8	0	0	0	7872	0.0000	0.0000
9	11	114	212	7872	0.0269	0.0145
Total	**65**	**20346**	**76375**	**7872**	**9.70**	**2.58**
Total (Less LOS; code 2)	**62**	**2898**	**4139**	**7872**	**0.53**	**0.37**

2022						
Cause Code	**# of Interruptions**	**# Customer Interrupted**	**# Customer Hours Interruption**	**Total Customer Base**	**SAIDI**	**SAIFI**
0	2	41	33	8160	0.0041	0.0050
1	120	724	1520	8160	0.1863	0.0887
2	0	0	0	8160	0.0000	0.0000
3	1	4453	4453	8160	0.5457	0.5457
4	1	1	7	8160	0.0009	0.0001
5	7	2480	1219	8160	0.1494	0.3039
6	1	1	1	8160	0.0001	0.0001
7	0	0	0	8160	0.0000	0.0000
8	0	0	0	8160	0.0000	0.0000
9	26	391	519	8160	0.0636	0.0479
Total	**158**	**8091**	**7752**	**8160**	**0.95**	**0.99**
Total (Less LOS; code 2)	**158**	**8091**	**7752**	**8160**	**0.95**	**0.99**

Summary by Cause:

Number of Interruptions								
Cause Code	**Name**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Total**
0	Unknown/Other	1	3	3	6	6	2	21
1	Scheduled Outage	23	28	66	47	32	120	316
2	Loss of Supply	2	2	3	3	3	0	13
3	Tree Contacts	3	0	6	1	4	1	15
4	Lightning	1	1	1	1	0	1	5
5	Defective Equipment	17	18	15	9	8	7	74
6	Adverse Weather	1	4	0	6	1	1	13
7	Adverse Environment	0	0	0	0	0	0	0
8	Human Element	0	1	1	1	0	0	3
9	Foreign Interference	10	30	14	12	11	26	103

Number of Customer Interruptions								
Cause Code	**Name**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Total**
0	Unknown/Other	1	7268	47	147	184	41	7688
1	Scheduled Outage	512	901	1417	473	426	724	4453
2	Loss of Supply	5230	14676	14860	14434	17448	0	66648
3	Tree Contacts	35	0	131	15	2006	4453	6640
4	Lightning	40	23	42	1500	0	1	1606
5	Defective Equipment	7209	5458	183	1535	166	2480	17031
6	Adverse Weather	3	2409	0	3896	2	1	6311
7	Adverse Environment	0	0	0	0	0	0	0
8	Human Element	0	1	2269	1	0	0	2271
9	Foreign Interference	139	569	97	179	114	391	1489

Number of Customer Hours of Interruptions								
Cause Code	**Name**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Total**
0	Unknown/Other	1	493	114	147	222	33	1010
1	Scheduled Outage	1184	1759	5719	1604	1541	1520	13327
2	Loss of Supply	549	1651	54547	13883	72236	0	142866
3	Tree Contacts	63	0	281	14	1900	4453	6711
4	Lightning	110	19	95	2250	0	7	2481
5	Defective Equipment	6654	8014	350	3335	261	1219	19833
6	Adverse Weather	3	2409	0	5366	3	1	7782
7	Adverse Environment	0	0	0	0	0	0	0
8	Human Element	0	1	379	1	0	0	381
9	Foreign Interference	185	593	148	187	212	519	1844

Ranked Controllable Causes (Excludes Loss of Supply and Scheduled Outages):

Number of Interruptions - Ranked by Total (Highest to Lowest)									
Cause Code	**Name**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Total**	**% of Total**
9	Foreign Interference	10	30	14	12	11	26	103	44%
5	Defective Equipment	17	18	15	9	8	7	74	32%
0	Unknown/Other	1	3	3	6	6	2	21	9%
3	Tree Contacts	3	0	6	1	4	1	15	6%
6	Adverse Weather	1	4	0	6	1	1	13	6%
4	Lightning	1	1	1	1	0	1	5	2%
8	Human Element	0	1	1	1	0	0	3	1%
7	Adverse Environment	0	0	0	0	0	0	0	0%

Number of Customer Interruptions - Ranked by Total (Highest to Lowest)									
Cause Code	**Name**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Total**	**% of Total**
5	Defective Equipment	7209	5458	183	1535	166	2480	17031	40%
0	Unknown/Other	1	7268	47	147	184	41	7688	18%
6	Adverse Weather	3	2409	0	3896	2	1	6311	15%
3	Tree Contacts	35	0	131	15	2006	4453	6640	15%
8	Human Element	0	1	2269	1	0	0	2271	5%
4	Lightning	40	23	42	1500	0	1	1606	4%
9	Foreign Interference	139	569	97	179	114	391	1489	3%
7	Adverse Environment	0	0	0	0	0	0	0	0%

Number of Customer Hours of Interruptions - Ranked by Total (Highest to Lowest)									
Cause Code	**Name**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Total**	**% of Total**
5	Defective Equipment	6654	8014	350	3335	261	1219	19833	50%
6	Adverse Weather	3	2409	0	5366	3	1	7782	19%
3	Tree Contacts	63	0	281	14	1900	4453	6711	17%
4	Lightning	110	19	95	2250	0	7	2481	6%
9	Foreign Interference	185	593	148	187	212	519	1844	5%
0	Unknown/Other	1	493	114	147	222	33.25	1010.25	3%
8	Human Element	0	1	379	1	0	0	381	1%
7	Adverse Environment	0	0	0	0	0	0	0	0%

Appendix G – 2021 Capital Program

2023 CAPITAL SUMMARY

	Project Name	Labour Estimate ($)	Labour Estimate (hrs)	Fleet Estimate ($)	Fleet Estimate (hrs)	Material Estimate	Contractor Estimate	BUDGET ESTIMATE
SR	Rolling Meadows Remainder	24,470	372	16,368	558	44,000	110,350	195,188
SR	Lisgar Heights Phase II - Distribution	31,574	480	12,720	480	136,000	622,500	802,794
SR	Lisgar Heights Phase II - Servicing	72,095	1,096	48,224	1,644	100,000	277,500	497,819
SS	Fairgrounds Conversion	3,157	48	1,680	48	31,000	-	35,837
SR	Vintage UG - T-Splice Replacements	6,315	96	2,544	96	21,875	4,000	34,734
SR	Vintage TX Replacements	29,601	-	19,800	-	123,150	5,000	177,551
SR	Porcelain Switches & Insulator Changes	13,156	200	4,400	150	15,000	-	32,556
SS	MVI Replacement	7,894	120	3,520	120	110,000	10,500	131,914
SS	MS5 De-commissioning	10,525	160	5,600	160	-	18,000	34,125
SR	End of Life Poles	46,046	700	21,100	700	71,250	7,125	145,521
SS	Spruce St Remainder	39,468	200	18,450	200	50,000	48,750	156,668
SS	Cedar St - 336AL Feeder Upgrade	19,734	300	12,300	400	31,250	3,125	66,409
SR	System Air Pole Replacement (Rouse St Phase	19,734	300	8,800	300	55,000	7,500	91,034
SS	Valleyview Dr - Primary Extension	6,578	100	4,400	150	10,000	1,000	21,978
SR	Andover Secondary Relocations	4,736	72	3,168	108	2,500	50,000	60,404
	Sub Total:	**335,083**	**4,244**	**183,074**	**5,114**	**801,025**	**1,165,350**	**2,484,532**
SA	Technical Services	150,110	1,382	100,408	3,423	633,845	113,450	997,813
SA	New Development	74,726	1,736	49,984	1,704	587,500	75,000	787,210
	Grand Total:	**559,919**	**7,362**	**333,466**	**10,241**	**2,022,370**	**1,353,800**	**4,269,555**

SA System access investments are modifications (including asset relocation) to a distributor's distribution system a distributor is obligated to perform to provide a customer (including a generator customer) or group of customers with access to electricity services via the distribution system.

SR System renewal investments involve replacing and/or refurbishing system assets to extend the original service life of the assets and thereby maintain the ability of the distributor's distribution system to provide customers with electricity services

SS System service investments are modifications to a distributor's distribution system to ensure the distribution system continues to meet distributor operational objectives while addressing anticipated future customer electricity service requirements.

GP General plant investments are modifications, replacements or additions to a distributor's assets that are not part of its distribution system including land and buildings, tools and equipment, rolling stock and electronic devices and software used to support day to day business and operations activities.

2024 Capital Program

Category	Project Name	Total Cost
System Renewal	Lisgar Heights Phase III - Distribution	$ 471,029
System Renewal	Lisgar Heights Phase III - Servicing	$ 228,069
System Renewal	Fairgrounds Conversion	$ 184,177
System Renewal	Townline Rd - Feeder Upgrade PH I	$ 83,853
System Renewal	Vintage UG replacements-t splice Clearvalley Dr.	$34,734
System Renewal	Porcelain Switch & Insulator Changes	$16,278
System Renewal	System Air Removal	$10,416
System Renewal	End of Life Poles	$ 102,997
	Sub-Total	**$1,131,553**
System Access	New Development & Connections	$ 648,329
System Access	Meter Replacement	$ 26,027
	Sub-Total	**$674,356**
System Service	William St UG Conversion	$ 91,527
System Service	QTL Rd Reconductoring	$ 446,361
System Service	John Pound Rd PHI - Feeder Upgrade	$ 173,659
System Service	John Pound Rd PHII - Feeder Tie	$ 15,518
System Service	Valleyview Dr – Primary Extension	$21,978
	Sub-Total	**$749,043**
General Plant	Tools, Shop & Garage Equipment	$ 30,000
General Plant	Furniture & Office Equipment	$ 25,000
General Plant	Computer Software - Job Cost Module GP	$ 20,000
	Sub-Total	**$75,000**
	SUB-TOTAL	**$2,629,952**
	Contributed Capital	**-$495,952**
	TOTAL	**$2,134,000**

Investment Category:	**System Renewal**
Capital Project Name:	Lisgar Height Phase III - Distribution
Drivers:	Safety, Reliability, End of Life, Conversion
Asset Type(s):	End-of-Life Pole Replacement, 4KV to 27.6KV Conversion. Porcelain Switches / Insulators, Vintage TX Replacements,
Total Capital Cost (2021):	$471,029
Start Date:	January 1st 2022
End Date:	December 30th 2024

A. General information of the project/activity

The 2023 AMP recommended an annual average replacement of approximately 1.6km of primary with a focus on the remaining 4 kV distribution system. Most of the 4 kV system is in excess of 40 years old. Replacing front yard legacy pole transformers with dead front pad mount transformers.. This area is one of the last sections of 4 kV to be converted. This project encompasses 2.6KM of primary cable replacement. In 2019 the installation of a 1 MVA stepdown transformer was installed to service this smaller pocket of 4kv. Upon completion of this project. We will be able to remove the 2019 “temporarily” installed 1MVA stepdown tx. Leaving this portion of the legacy 4kv system completely converted. Installing the stepdown transformer in 2019 was driven by feeding our pockets of 4kv with smaller transformers to be able to remove our last distribution station transformer, MS-5.

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

1. Efficiency, Customer value, Reliability

The main drivers for this project are safety and reliability due to risk of failure. Replacing these assets proactively will maintain the level of safety and reliability preferred by our customers. Proactive replacement is more efficient and less costly than reactive replacement.

2. Safety

These investments are directly linked to public and worker safety, as they eliminate assets that could fail unexpectedly and in an uncontrolled manner that could create hazards such as energized powerlines near or on the ground, flying debris, and oil leaks.

3. Cyber-security, Privacy

Not applicable.

4. Co-ordination, Interoperability

All new assets will meet current construction and safety standards, using standardized equipment.

5. Economic Development

Not applicable.

6. Environmental Benefits

In the event of transformer failures (including leaks due to rusting), oil can be spilled on the ground and into storm drains. Proactively replacing at-risk transformers reduces this risk.

C. Category-specific requirements for each project/activity

System Renewal:

Projects in this category are prioritized by their risk of failure and impact to safety and reliability. Regular inspections and testing (such as pole testing and infrared cameras to detect hotspots) are used to identify and prioritize assets requiring replacement.

Investment Category:	**System Renewal**
Capital Project Name:	Lisgar Heights Phase III - Servicing
Drivers:	Safety, Reliability, End of Life Replacement.
Asset Type(s):	4KV to 27.6KV Conversion. Replacing front yard pole transformers with dead front pad mount transformers. Replacing end of life secondary service conductor to property line or next best location, site specific.
Total Capital Cost:	$228,069
Start Date:	January 1st 2022
End Date:	December 30th 2024

A. General information of the project/activity

The 2023 AMP recommended an annual average replacement of approximately 0.94km of secondary conductor, with a focus on the remaining 4 kV distribution system. Most of the 4 kV system is in excess of 40 years old. This area is one of the last sections of 4 kV to be converted. This project encompasses 3.2KM of secondary cable replacement. This project will provide a raceway from the transformer to each lot and replace the secondary conductor to that location at minimum. In some instances the cable will go directly to the meter base. In other cases the secondary cables will be new to the most practical location on each lot. Case by case on site decision.

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

1. Efficiency, Customer value, Reliability

The main drivers for this project are safety and reliability due to risk of failure. Replacing these assets proactively will maintain the level of safety and reliability preferred by our customers. Proactive replacement is more efficient and less costly than reactive replacement.

2. Safety

These investments are directly linked to public and worker safety, as they eliminate assets that could fail unexpectedly and in an uncontrolled manner that could create hazards such as energized powerlines near or on the ground, flying debris, and oil leaks.

3. Cyber-security, Privacy

Not applicable.

4. Co-ordination, Interoperability

All new assets will meet current construction and safety standards, using standardized equipment.

5. Economic Development

Not applicable.

6. Environmental Benefits

In the event of transformer failures (including leaks due to rusting), oil can be spilled on the ground and into storm drains. Proactively replacing at-risk transformers reduces this risk.

C. Category-specific requirements for each project/activity

System Renewal:

Projects in this category are prioritized by their risk of failure and impact to safety and reliability. Regular inspections and testing (such as pole testing and infrared cameras to detect hotspots) are used to identify and prioritize assets requiring replacement.

Investment Category:	**System Renewal**
Capital Project Name:	Fairgrounds Conversion
Drivers:	Safety, Reliability, Conversion, End of Life Replacement
Asset Type(s):	4KV to 27.6KV Conversion. End-of-Life (EOL) Poles, Porcelain Switches / Insulators, Vintage TX Replacements.
Total Capital Cost (2021):	$184,177
Start Date:	January 1st 2023
End Date:	December 30th 2024

A. General information of the project/activity

This project is to convert from 4kv to 27.6kv a small segment of a combination of overhead & underground assets that have reached end of life. This conversion project will replace 1 overhead transformer and 2 pad mounted transformers. Once converted to 27.6kv, this project will eliminate a legacy bank of stepdown transformers as well as an end of life pole mounted primary metering unit. Therefore eliminating one smaller pocket of 4kv in our system.

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

1. Efficiency, Customer value, Reliability

The main drivers for this project are safety and reliability due to risk of failure. Replacing these assets proactively will maintain the level of safety and reliability preferred by our customers. Proactive replacement is more efficient and less costly than reactive replacement.

2. Safety

These investments are directly linked to public and worker safety, as they eliminate assets that could fail unexpectedly and in an uncontrolled manner that could create hazards such as energized powerlines near or on the ground, flying debris, and oil leaks.

3. Cyber-security, Privacy

Not applicable.

4. Co-ordination, Interoperability

All new assets will meet current construction and safety standards, using standardized equipment.

5. Economic Development

Not applicable.

6. Environmental Benefits

In the event of transformer failures (including leaks due to rusting), oil can be spilled on the ground and into storm drains. Proactively replacing at-risk transformers reduces this risk.

C. Category-specific requirements for each project/activity

System Renewal:

Projects in this category are prioritized by their risk of failure and impact to safety and reliability. Regular inspections and testing (such as pole testing and infrared cameras to detect hotspots) are used to identify and prioritize assets requiring replacement.

Investment Category:	**System Renewal**
Capital Project Name:	Townline Rd. - Feeder Upgrade Phase I
Drivers:	Safety, Reliability
Asset Type(s):	End-of-Life (EOL) Poles, Porcelain Switches / Insulators, Vintage TX Replacements.
Total Capital Cost (2021):	$83,853
Start Date:	January 1st 2024
End Date:	December 30th 2024

A. General information of the project/activity

This project is replacing end of life poles as well as upgrading conductor size form 3/0 to 336. Prior years of visual pole inspections noted poor condition of wooden cross arms with tracking on porcelain insulators. Prior years we have been changing cross arms and porcelain insulators to fiberglass arms and polymer insulators. This project will re-use previously replaced assets and install new poles & conductor.

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

1. Efficiency, Customer value, Reliability

The main drivers for this project are safety and reliability due to risk of failure. Upgrading conductor size will allow us to better perform switching operations to maintiain redundancy in our system. Replacing these assets proactively will maintain the level of safety and reliability preferred by our customers. Proactive replacement is more efficient and less costly than reactive replacement.

2. Safety

These investments are directly linked to public and worker safety, as they eliminate assets that could fail unexpectedly and in an uncontrolled manner that could create hazards such as energized powerlines near or on the ground, flying debris and customer outages.

3. Cyber-security, Privacy

Not applicable.

4. Co-ordination, Interoperability

All new assets will meet current construction and safety standards, using standardized equipment.

5. Economic Development

Not applicable.

6. Environmental Benefits

Not applicable.

C. Category-specific requirements for each project/activity

System Renewal:

Projects in this category are prioritized by their risk of failure and impact to safety and reliability. Regular inspections and testing (such as pole testing and infrared cameras to detect hotspots) are used to identify and prioritize assets requiring replacement.

Investment Category:	**System Renewal**
Capital Project Name:	Vintage U/G Replacements – T-splice (ClearValley Dr.)
Drivers:	Safety, Reliability, Efficiency
Asset Type(s):	End of Life, U/G Primary cable,
Total Capital Cost (2021):	$34,734
Start Date:	January 1st 2024
End Date:	December 30th 2024

A. General information of the project/activity

The 2023 AMP recommended an annual average replacement of approximately 1.6km of primary with a focus on the remaining 4 kV distribution system. In prior years an u/g cable rejuvenation program took place injecting 16kv u/g primary cables to gain more useful life out of them. In doing so, we could not inject through a splice or T splice. This project was to directionally drill where required to install new 16kv primary cable to remove the T-splice installation. This project directly replaces end-of-useful-life cables deemed to be an immediate reliability and safety concern.

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

1. Efficiency, Customer value, Reliability

The main drivers for this project are safety and reliability due to risk of failure. Replacing these assets proactively will maintain the level of safety and reliability preferred by our customers. Proactive replacement is more efficient and less costly than reactive replacement.

2. Safety

These investments are directly linked to public and worker safety, as they eliminate assets that could fail unexpectedly and in an uncontrolled manner that could create hazards such as energized powerlines near or on the ground, flying debris, and oil leaks.

3. Cyber-security, Privacy

Not applicable.

4. Co-ordination, Interoperability

All new assets will meet current construction and safety standards, using standardized equipment.

5. Economic Development

Not applicable.

6. Environmental Benefits

In the event of a pole failure, transformers oil can be spilled on the ground and into storm drains. Proactively replacing assets eliminates this. Replacement of end of life poles also uses pole treatment methods that are more environmentally friendly as compared to historical treatments.

C. Category-specific requirements for each project/activity

System Renewal:

Projects in this category are prioritized by their risk of failure and impact to safety and reliability. Regular inspections and testing (such as pole testing and infrared cameras to detect hotspots) are used to identify and prioritize assets requiring replacement.

Investment Category:	**System Renewal**
Capital Project Name:	Porcelain Switch & Insulator Changes
Drivers:	Safety, Reliability, Efficiency
Asset Type(s):	End of Life,
Total Capital Cost (2021):	$16,278
Start Date:	January 1st 2024
End Date:	December 30th 2024

A. General information of the project/activity

This project was put in place to replace porcelain insulators and porcelain switches due to outages caused by defective porcelain equipment. This project directly replaces end-of-life assets that are deemed to be an immediate reliability and safety concern.

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

1. Efficiency, Customer value, Reliability

The main drivers for this project are safety and reliability due to risk of failure. Replacing these assets proactively will maintain the level of safety and reliability preferred by our customers. Proactive replacement is more efficient and less costly than reactive replacement.

2. Safety

These investments are directly linked to public and worker safety, as they eliminate assets that could fail unexpectedly and in an uncontrolled manner that could create hazards such as energized powerlines near or on the ground, flying debris, and oil leaks.

3. Cyber-security, Privacy

Not applicable.

4. Co-ordination, Interoperability

All new assets will meet current construction and safety standards, using standardized equipment.

5. Economic Development

Not applicable.

6. Environmental Benefits

Not Applicable.

C. Category-specific requirements for each project/activity

System Renewal:

Projects in this category are prioritized by their risk of failure and impact to safety and reliability. Regular inspections and testing (such as infrared camera inspections to detect hotspots) are used to identify and prioritize assets requiring replacement.

Investment Category:	**System Renewal**
Capital Project Name:	System Air Removal
Drivers:	Safety, Reliability, Efficiency
Asset Type(s):	End of Life,
Total Capital Cost (2021):	$10,416
Start Date:	January 1st 2024
End Date:	December 30th 2024

A. General information of the project/activity

This project was carryover work from 2023. This project was to remove the old overhear primary wire and poles that were rebuilt in 2023. This project directly replaces end-of-life assets that are deemed to be an immediate reliability and safety concern.

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

1. Efficiency, Customer value, Reliability

The main drivers for this project are safety and reliability due to risk of failure. Replacing these assets proactively will maintain the level of safety and reliability preferred by our customers. t.

2. Safety

These investments are directly linked to public and worker safety, as they eliminate assets that could fail unexpectedly and in an uncontrolled manner that could create hazards such as energized powerlines near or on the ground, flying debris, and oil leaks.

3. Cyber-security, Privacy

Not applicable.

4. Co-ordination, Interoperability

All new assets will meet current construction and safety standards, using standardized equipment.

5. Economic Development

Not applicable.

6. Environmental Benefits

Not Applicable.

C. Category-specific requirements for each project/activity

System Renewal:

Projects in this category are prioritized by their risk of failure and impact to safety and reliability. Regular inspections and testing (such as infrared camera inspections to detect hotspots) are used to identify and prioritize assets requiring replacement.

Investment Category:	**System Renewal**
Capital Project Name:	End of Life Pole Replacements
Drivers:	Safety, Reliability, Efficiency
Asset Type(s):	End of Life Poles
Total Capital Cost (2021):	$102,997
Start Date:	January 1st 2024
End Date:	December 30th 2024

A. General information of the project/activity

The 2016 & 2023 AMP recommended an annual average replacement of 19 wood poles, Annual inspections and a review of outage causes aid in the prioritization of poles requiring replacement before they fail in service. This project directly replaces end-of-life poles deemed to be an immediate reliability and safety concern.

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

1. Efficiency, Customer value, Reliability

The main drivers for this project are safety and reliability due to risk of failure. Replacing these assets proactively will maintain the level of safety and reliability preferred by our customers. Proactive replacement is more efficient and less costly than reactive replacement.

2. Safety

These investments are directly linked to public and worker safety, as they eliminate assets that could fail unexpectedly and in an uncontrolled manner that could create hazards such as energized powerlines near or on the ground, flying debris, and oil leaks.

3. Cyber-security, Privacy

Not applicable.

4. Co-ordination, Interoperability

All new assets will meet current construction and safety standards, using standardized equipment.

5. Economic Development

Not applicable.

6. Environmental Benefits

In the event of a pole failure, transformers oil can be spilled on the ground and into storm drains. Proactively replacing assets eliminates this. Replacement of end of life poles also uses pole treatment methods that are more environmentally friendly as compared to historical treatments.

C. Category-specific requirements for each project/activity

System Renewal:

Projects in this category are prioritized by their risk of failure and impact to safety and reliability. Regular inspections and testing (such as pole testing and infrared cameras to detect hotspots) are used to identify and prioritize assets requiring replacement.

Investment Category:	**System Access**
Capital Project Name:	New Developments, Commercial Services & Customer Requests
Drivers:	Capacity, Reliability, Flexibility
Asset Type(s):	Various, depending on location
Total Capital Cost (2021):	$674,424 (78% funded through capital contributions, Net Capital $149,000)
Start Date:	January 1st 2024
End Date:	December 30th 2024

A. General information of the project/activity

This project covers all new residential and commercial services, as required throughout the year.

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

1. Efficiency, Customer value, Reliability

The main driver for this project are the connections of customers.

2. Safety

Not applicable.

3. Cyber-security, Privacy

Not applicable.

4. Co-ordination, Interoperability

All new assets will meet current construction and safety standards, using standardized equipment.

5. Economic Development

This project will provide capacity to connect new customers in Tillsonburg, contributing to the growth of the local economy.

6. Environmental Benefits

Not applicable.

C. Category-specific requirements for each project/activity

System Access:

Projects in this category are driven by customer demand for new services or increased capacity requirements. THI is expecting a contribution of 72% for these connections.

Investment Category:	**System Access**
Capital Project Name:	Metering
Drivers:	Capacity, Reliability
Asset Type(s):	Meters, including primary metering
Total Capital Cost (2021):	$26,027
Start Date:	January 1st 2024
End Date:	December 30th 2024

A. General information of the project/activity

This project covers new meters for new customers, and replacement meters that are at end of life or fail testing.

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

1. Efficiency, Customer value, Reliability

The main drivers for this project are the connections of customers and maintaining accurate metering.

2. Safety

Not applicable.

3. Cyber-security, Privacy

The technology used will be industry-standard and comply with requirements for cyber-security and customer privacy. THI outsources the specification and testing of these devices.

4. Co-ordination, Interoperability

All new assets will meet current construction and safety standards, using standardized equipment.

5. Economic Development

This project will connect new customers in Tillsonburg, contributing to the growth of the local economy.

6. Environmental Benefits

Not applicable.

C. Category-specific requirements for each project/activity

System Access:

Projects in this category are driven by customer demand for new services or increased capacity requirements.

Investment Category:	**System Service**
Capital Project Name:	William St. UG Conversion
Drivers:	End of Life, Reliability, Flexibility
Asset Type(s):	Overhead secondary/Underground Primary Conductor,
Total Capital Cost (2021):	$91,527
Start Date:	January 1st 2024
End Date:	December 30th 2024

A. General information of the project/activity

This segment of overhead secondary feeds rear yard and due to the growth of a neighboring subdivision, the accessibility to this asset is impossible by truck. This project will install front yard 16 kv u/g primary cable & transformers, adding new secondary conductor, thus feeding the customers by front yard.

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

1. Efficiency, Customer value, Reliability

The main drivers for this project are end of life, flexibility, and reliability due to undersized conductors. Replacing these assets will allow for future connections of customers.

2. Safety

These investments are linked to public and worker safety, as they eliminate assets that could fail unexpectedly leaving repairs to be a lengthy process due to inaccessibility.

3. Cyber-security, Privacy

Not applicable.

4. Co-ordination, Interoperability

All new assets will meet current construction and safety standards, using standardized equipment.

5. Economic Development

6. Environmental Benefits

Not applicable.

C. Category-specific requirements for each project/activity

<u>System Service:</u>

Projects in this category are driven by growth in demand for new services or increased capacity requirements.

Investment Category:	**System Service**
Capital Project Name:	QTL Rd. Reconductoring
Drivers:	Capacity, Reliability, Flexibility
Asset Type(s):	Overhead Primary Conductor
Total Capital Cost (2021):	$446,361
Start Date:	January 1st 2024
End Date:	December 30th 2024

A. General information of the project/activity

This section of the grid needs to be upgraded to a larger conductor size to accommodate the development of the Van Norman Innovation Park (VIP). This project will provide a more balanced way to perform switching operations and provide reliability to our system. This project will largely require an outside contractor to perform this work. Internally we do not have the tools available to us.

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

1. Efficiency, Customer value, Reliability

The main drivers for this project are capacity and reliability due to undersized conductors. Replacing these assets will allow for future connections of customers and provide better switching capability for our customers.

2. Safety

These investments are indirectly linked to public and worker safety, as they eliminate assets that could fail unexpectedly if overloaded.

3. Cyber-security, Privacy

Not applicable.

4. Co-ordination, Interoperability

All new assets will meet current construction and safety standards, using standardized equipment.

5. Economic Development

This project will provide capacity and redundancy to connect new customers in the Van Norman Innovation Park, contributing to the growth of the local economy.

6. Environmental Benefits

Not applicable.

C. Category-specific requirements for each project/activity

<u>System Service:</u>

Projects in this category are driven by growth in demand for new services or increased capacity requirements.

Investment Category:	**System Service**
Capital Project Name:	John Pound Rd. Phase I - Feeder Upgrade
Drivers:	Capacity, Reliability, Flexibility
Asset Type(s):	Overhead Primary Conductor
Total Capital Cost (2021):	$173,659
Start Date:	January 1st 2024
End Date:	December 30th 2024

A. General information of the project/activity

This section of the grid needs to be upgraded to a larger conductor size to accommodate the development of the Van Norman Innovation Park (VIP).

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

1. Efficiency, Customer value, Reliability

The main drivers for this project are capacity and reliability due to undersized conductors. Replacing these assets will allow for future connections of customers. This project will allow us to have 2 feeders at the point of connection to the VIP. Providing customers with 2 feeder redundancy if necessary.

2. Safety

These investments are indirectly linked to public and worker safety, as they eliminate assets that could fail unexpectedly if overloaded.

3. Cyber-security, Privacy

Not applicable.

4. Co-ordination, Interoperability

All new assets will meet current construction and safety standards, using standardized equipment.

5. Economic Development

This project will provide capacity to connect new customers in the Van Norman Innovation Park, contributing to the growth of the local economy.

6. Environmental Benefits

Not applicable.

C. Category-specific requirements for each project/activity

<u>System Service:</u>

Projects in this category are driven by growth in demand for new services or increased capacity requirements.

Investment Category:	**System Service**
Capital Project Name:	John Pound Rd. Phase II - Feeder Tie
Drivers:	Capacity, Reliability, Flexibility
Asset Type(s):	Overhead Primary Conductor
Total Capital Cost (2021):	$15,518
Start Date:	January 1st 2024
End Date:	December 30th 2024

A. General information of the project/activity

This section of the grid needs to be built to gain a feeder tie in our system. Building of this feeder tie will allow 2 feeder redundancy for our Industrial customers.

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

1. Efficiency, Customer value, Reliability

The main drivers for this project are capacity and reliability due to single feeder availability in the industrial park. Construction of this feeder tie will allow for future connections of customers.

2. Safety

These investments are indirectly linked to public and worker safety, as they eliminate assets that could fail unexpectedly if overloaded.

3. Cyber-security, Privacy

Not applicable.

4. Co-ordination, Interoperability

All new assets will meet current construction and safety standards, using standardized equipment.

5. Economic Development

This project will provide capacity to connect new customers in the Van Norman Innovation Park, contributing to the growth of the local economy.

6. Environmental Benefits

Not applicable.

C. Category-specific requirements for each project/activity

<u>System Service:</u>

Projects in this category are driven by growth in demand for new services or increased capacity requirements.

Investment Category:	**System Service**
Capital Project Name:	Valley View Dr. – Primary Extension
Drivers:	Capacity, Reliability, Flexibility
Asset Type(s):	Overhead Primary Conductor,
Total Capital Cost (2021):	$21,978
Start Date:	January 1st 2024
End Date:	December 30th 2024

A. General information of the project/activity

This project requires a single phase extension of 16kv primary to relocate a transformer to provide better voltage stability to customers.

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

1. Efficiency, Customer value, Reliability

The main drivers for this project are capacity and reliability due to a single phase transformer being to located to far from the end customers. Engineering to design and determine a better solution to mitigate voltage fluctuation.

2. Safety

These investments are indirectly linked to public and worker safety, as they eliminate assets that could fail unexpectedly if overloaded.

3. Cyber-security, Privacy

Not applicable.

4. Co-ordination, Interoperability

All new assets will meet current construction and safety standards, using standardized equipment.

5. Economic Development

Not applicable.

6. Environmental Benefits

Not applicable.

C. Category-specific requirements for each project/activity

<u>System Service:</u>

Projects in this category are driven by growth in demand for new services or increased capacity requirements.

Investment Category:	**General Plant**
Capital Project Name:	Tools, Shop & Garage Equipment: $30,000 Furniture & Office Equipment:$25,000 Computer Software - Job Cost Module GP:$20,000
Drivers:	General business operations
Asset Type(s):	Facilities
Total Capital Cost (2021):	$75,000
Start Date:	January 1st 2024
End Date:	December 30th 2024

A. General information of the project/activity

THI's General Plant investments are standard procurement of replacement or new computer, office and operational equipment. These are required to maintain operations and support information technology requirements.

Appendix H – 2020 THI Strategic Plan

TILLSONBURG HYDRO INC.

Strategic Plan

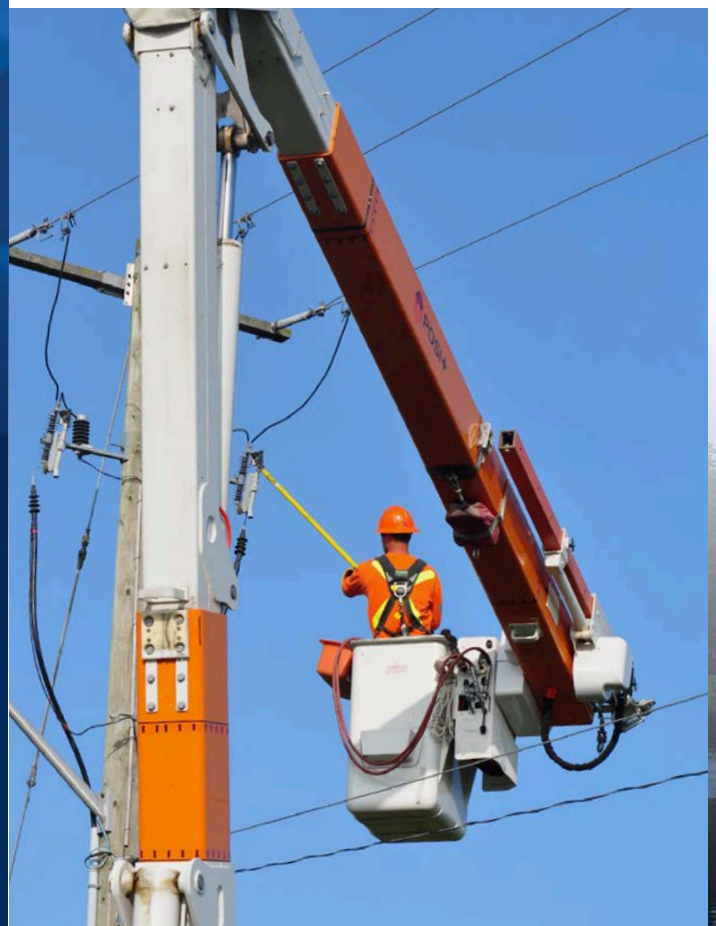
2020 - 2023

Mission

A local energy distribution company committed to maximizing value to our stakeholders through innovative solutions.

Vision

To deliver electricity through safe, dependable, cost-effective and environmentally responsible practices.



Our Values

Safety
Promoting safe and efficient practices in the supply, delivery, education and use of energy.

People
Creating an atmosphere for employees that promotes empowerment and commitment to the THI vision.

Integrity
Focusing on transparent, responsible and fiscally sound leadership.

Agility
Responding to our customers, community and industry trends while seeking excellence and continuous improvement in all business areas.

Objectives

Corporate & Social Responsibility
Committed to being a socially, financially and environmentally sustainable company.

Leadership Responsibilities
THI works to achieve its Mission, Vision and Values through strategic direction, targeted outcomes and ethical practices consistent with all statutory and regulatory requirements.

Customer Care
Enhance customer engagement by seeking feedback and monitoring customer satisfaction.

Reliability
Maximize system performance utilizing best practices for asset management to align with customer needs, industry practices and corporate goals.

Financial
Maximize value to our stakeholders through responsible financial management and industry best practices to improve efficiencies and reduce costs to our rate payers.

High Performance Teams
Promote a culture that will retain and attract high performance talent that will maximize Corporate and Board performance.

Risk Management
Continue to identify and manage risks within the changing digital environment and leverage technology to enhance our operations and service delivery.

Powering your community

TILLSONBURG HYDRO INC.

Tillsonburg Hydro Inc. is 100% owned by the Town of Tillsonburg and operates as a regulated company under the auspices of the Ontario Energy Board. THI serves more than 7,500 customers in the Town of Tillsonburg.

10 Lisgar Ave.,
Tillsonburg, ON
N4G 5A5

www.tillsonburghydro.ca

Appendix I – THI Service Area

SCHEDULE 1 DEFINITION OF DISTRIBUTION SERVICE AREA

This Schedule specifies the area in which the Licensee is authorized to distribute and sell electricity in accordance with paragraph 8.1 of this Licence.

The Town of Tillsonburg as of November 7, 1998.

- Excluding the customers located at the following addresses:
    - i. 165 Rokeby Road, Tillsonburg, ON N4G 4G9
    - ii. 233 Rokeby Road, Tillsonburg, ON N4G 4G9
    - iii. 239 Rokeby Road, Tillsonburg, ON N4G 4G9
    - iv. 247 Rokeby Road, Tillsonburg, ON N4G 4G9
    - v. 253 Rokeby Road, Tillsonburg, ON N4G 4G9
    - vi. 259 Rokeby Road, Tillsonburg, ON N4G 4G9
- Including the customers located at the following addresses:
    - i. 176 Young Street, Tillsonburg, ON N4G 3H9
    - ii. 180 Young Street, Tillsonburg, ON N4G 3H9
    - iii. 183 Young Street, Tillsonburg, ON N4G 3H9
    - iv. 184 Young Street, Tillsonburg, ON N4G 3H9

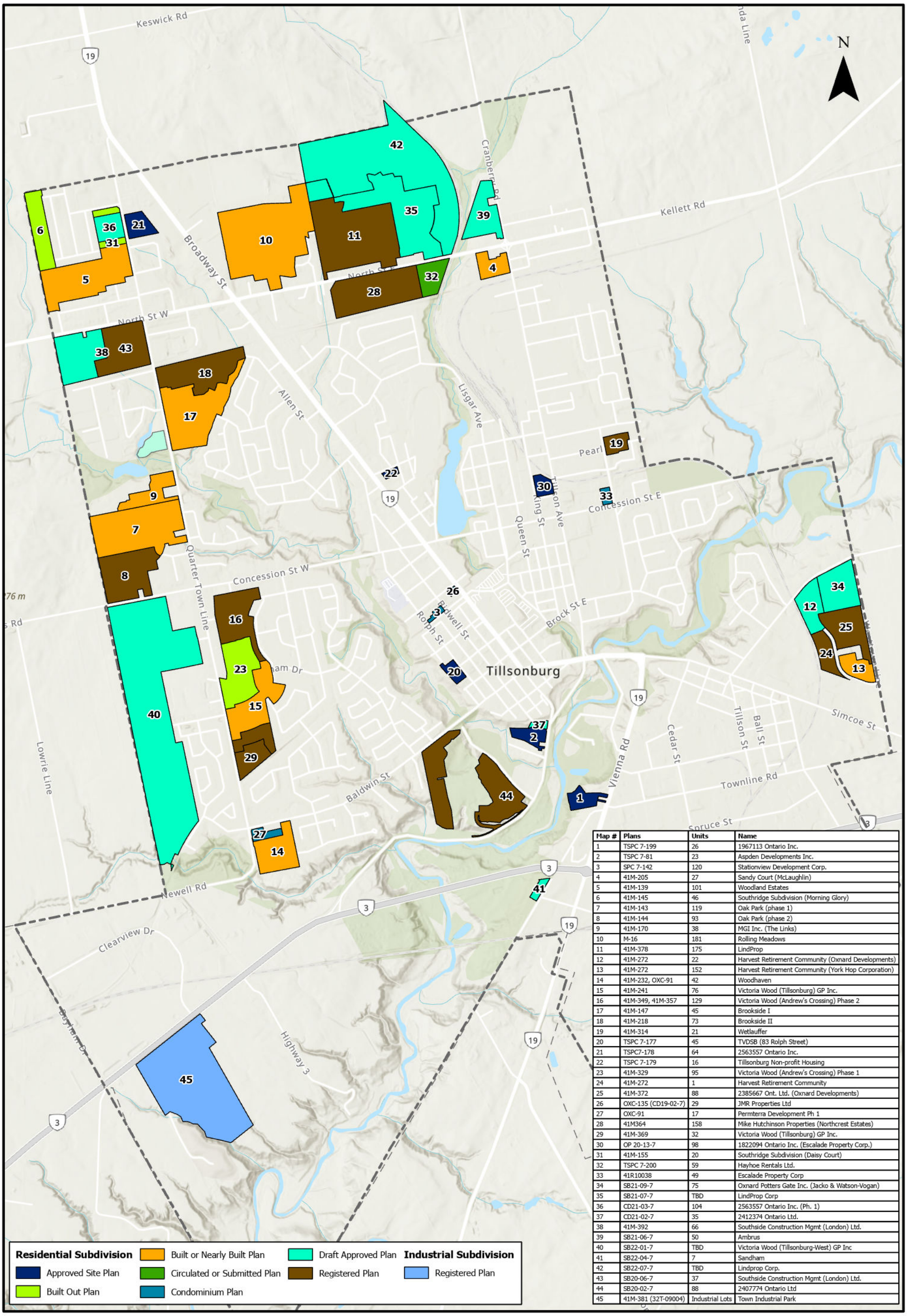
The customer located in the Township of South-West Oxford formerly known as the Township of West Oxford, Township of Dereham, Village of Beachville, as at December 31, 1974.

- 124127 Pressey Road, Dereham, ON N4G 4G8

The customer located in the Municipality of Bayham, formerly known as Township of Baymen, Village of Port Burwell, Village of Vienna as at December 31, 1997.

- 14719 Bayham Drive, Bayham, ON N4G 4G8


Culloden
Brownsville Rd
Brownsville Rd
Brownsville
Broadway St
Tillsonburg
Cornell Rd
Rock's Mills
Talbot Rd
Highway 3
Courtland
Highway 3
Corinth
Highway 19
Norfolk County Road 30
Colonel Talbot Rd
Highway 59



Map #	Plans	Units	Name
1	TSPC 7-199	26	1967113 Ontario Inc.
2	TSPC 7-81	23	Aspden Developments Inc.
3	SPC 7-142	120	Stationview Development Corp.
4	41M-205	27	Sandy Court (McLaughlin)
5	41M-139	101	Woodland Estates
6	41M-145	46	Southridge Subdivision (Morning Glory)
7	41M-143	119	Oak Park (phase 1)
8	41M-144	93	Oak Park (phase 2)
9	41M-170	38	MGI Inc. (The Links)
10	M-16	181	Rolling Meadows
11	41M-378	175	LindProp
12	41M-272	22	Harvest Retirement Community (Oxnard Developments)
13	41M-272	152	Harvest Retirement Community (York Hop Corporation)
14	41M-232, OXC-91	42	Woodhaven
15	41M-241	76	Victoria Wood (Tillsonburg) GP Inc.
16	41M-349, 41M-357	129	Victoria Wood (Andrew's Crossing) Phase 2
17	41M-147	45	Brookside I
18	41M-218	73	Brookside II
19	41M-314	21	Wetlauffer
20	TSPC 7-177	45	TVDSB (83 Rolph Street)
21	TSPC7-178	64	2563557 Ontario Inc.
22	TSPC 7-179	16	Tillsonburg Non-profit Housing
23	41M-329	95	Victoria Wood (Andrew's Crossing) Phase 1
24	41M-272	1	Harvest Retirement Community
25	41M-372	88	2385667 Ont. Ltd. (Oxnard Developments)
26	OXC-135 (CD19-02-7)	29	JMR Properties Ltd
27	OXC-91	17	Permterra Development Ph 1
28	41M364	158	Mike Hutchinson Properties (Northcrest Estates)
29	41M-369	32	Victoria Wood (Tillsonburg) GP Inc.
30	OP 20-13-7	98	1822094 Ontario Inc. (Escalade Property Corp.)
31	41M-155	20	Southridge Subdivision (Daisy Court)
32	TSPC 7-200	59	Hayhoe Rentals Ltd.
33	41R10038	49	Escalade Property Corp
34	SB21-09-7	75	Oxnard Potters Gate Inc. (Jacko & Watson-Vogan)
35	SB21-07-7	TBD	LindProp Corp
36	CD21-03-7	104	2563557 Ontario Inc. (Ph. 1)
37	CD21-02-7	35	2412374 Ontario Ltd.
38	41M-392	66	Southside Construction Mgmt (London) Ltd.
39	SB21-06-7	50	Ambrus
40	SB22-01-7	TBD	Victoria Wood (Tillsonburg-West) GP Inc
41	SB22-04-7	7	Sandham
42	SB22-07-7	TBD	Lindprop Corp.
43	SB20-06-7	37	Southside Construction Mgmt (London) Ltd.
44	SB20-02-7	88	2407774 Ontario Ltd
45	41M-381 (32T-09004)	Industrial Lots	Town Industrial Park

Residential Subdivision
- Approved Site Plan
- Built Out Plan
- Built or Nearly Built Plan
- Circulated or Submitted Plan
- Condominium Plan
- Draft Approved Plan
- Registered Plan

Industrial Subdivision
- Registered Plan

TILLSONBURG HYDRO INC.

TILLSONBURG HYDRO INC.
ENGINEERING SERVICES

CUSTOMER SERVICE CENTRE
10 LISGAR AVE, TILLSONBURG, ON, N4G 5A5

0 95 190 380 570 760 950
Meters

DEVELOPMENT ACTIVITY TOWN OF TILLSONBURG