Orangeville Hydro Limited

Distribution System Plan

2024 Cost of Service Application

Historical Period:

2018 – 2023 (2023 Bridge Year)

Forecast Period:

2024 – 2028

September 2023

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Acronym	Meaning
ACA	Asset Condition Assessment
AM	Asset Management
AMI	Advanced Metering Infrastructure
CDM	Conservation Demand Management
CHI	Customer Hours Interrupted
CI	Customers Interrupted
DER	Distributed Energy Resources
DSP	Distribution System Plan
EDA	Electricity Distributors Association
ESA	Electrical Safety Authority
GIS	Geographic Information Systems
GS	General Service
HI	Health Index
IESO	Independent Electricity System Operator
LOS	Loss of Supply
MED	Major Event Detail
ODS	Operations Data Storage
OEA	Ontario Energy Association
OEB	Ontario Energy Board
OH	Overhead
REG	Renewable Energy Generation
RRFE	Renewed Regulatory Framework for Electricity Distributors
RRR	Reporting and Record-keeping Requirements
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
UG	Underground

5.2 Distribution System Plan

Orangeville Hydro Limited ("OHL") has prepared this Distribution System Plan ("DSP") in accordance with the Ontario Energy Board's ("OEB") Chapter 5 – Distribution System Plan Filing Requirements for Electricity Distribution Rate Applications, dated December 15, 2022 (the "Filing Requirements") as part of its 2024 Cost of Service Application (the Application).

The DSP is a stand-alone document that is filed in support of OHL's Application. The DSP's duration is a minimum of ten years in total, comprising of a historical period and a forecast period. The DSP covers the historical period of 2018 to 2022, with 2023 being the bridge year, and a forecast period of 2024 to 2028, with 2024 being the Test Year.

The DSP contents are organized into three major sections:

- Section 5.2 provides a high-level overview of the DSP, including coordinated planning with third parties and performance measurement for continuous improvement.
- Section 5.3 provides an overview of asset management practices, including an overview of the assets managed and asset lifecycle optimization policies and practices.
- Section 5.4 provides a summary of the capital expenditure plan, including a variance analysis of historical expenditures, an analysis of forecast expenditures, and justification of material projects above the materiality threshold.

The materiality threshold for OHL is $10,000, and detailed descriptions of specific projects/programs exceeding the materiality threshold are provided in Section 5.4.2.1 and Appendix E. Other pertinent information relevant to this DSP is included in the Appendices.

This DSP follows the chapter and section headings in accordance with the Chapter 5 Filing Requirements.

5.2.1 Distribution System Plan Overview

5.2.1.1 Description of the Utility Company

OHL is an electricity distributor licensed by the OEB. In accordance with its Distribution License ED-2002-0500, OHL provides electricity distribution services in the Town of Orangeville and the Town of Grand Valley, serving a population of approximately 34,000.

OHL is incorporated under the Ontario Business Corporations Act and is a member of Utility Collaborative Services Inc ("UCS"), Cornerstone Hydro Electric Concepts ("CHEC"), Utility Standards Forum ("USF"), and Electricity Distributors Association ("EDA"). OHL is owned by the Town of Orangeville and the Town of Grand Valley, with ownership interests of 94.5% and 5.5% respectively.

OHL receives power from Hydro One Networks Inc. ("HONI") and delivers electricity to its customers. OHL is responsible for maintaining distribution and infrastructure assets deployed over 17 square kilometers (including over 222 kilometers of overhead and underground lines) within the Orangeville and Grand Valley service areas.

Mission: To provide safe, reliable, efficient delivery of electrical energy while being accountable to our shareholders...the citizens of Orangeville and Grand Valley.

While we must operate as a business and be profitable for our shareholders, our main reason for existing is to provide safe, reliable, and economic electricity services to the people of the Town of Orangeville and the Town of Grand Valley. That is what distinguishes us from other large, remotely owned, and controlled energy companies.

Vision: To be acknowledged as a leader among electrical utilities in the areas of safety, reliability, customer service, sustainability, and financial performance.

Core Values: To continue as a profitable electricity distribution enterprise the following principles are core values of our Company:

- We value professionalism and safety in our service and our work.
- We value people - our customers, employees, board members, and shareholders.
- We value our community - its environment and its economic progress.
- We value integrity, honesty, respect, and communications.
- We value local control, local accountability, local employment, and local purchasing; and
- We value easy accessibility for our customers.

Corporate Strategic Goals:

OHL’s latest Business Plan (2023) confirms the strategic goals of the corporation as follows:

- **Safety:**
  - Provide safe work practices for all employees consistent with industry best practices.
  - Communicate and promote a safety culture to stakeholders.
- **Customer Focus:**
  - Leverage technology to enhance the customer experience and increase operational agility.
  - Engage customers at an individual level through existing social media platforms and mobile technology.
- **Operational Effectiveness:**
  - Share best practices with other utilities and stakeholders.
  - Better utilize resources.
  - Properly maintain infrastructure.
  - Inform, engage, support, and motivate staff to assist in accomplishing corporate goals.
- **Public Policy Responsiveness:**
  - Capable of accommodating Distributed Energy Resources and electric vehicle technology.
  - Successfully deliver Provincial Programs to customers.

  - Deliver obligations mandated by pertinent government legislation and regulatory requirements.
  - Investigate how to leverage non-regulated business activities.
- **Financial Performance:**
  - Maximize financial viability.
  - Maintain just and reasonable rates.
  - Meet and/or exceed industry benchmarks.
  - Investigate feasible opportunities to grow the distribution business and potential affiliate business opportunities.

5.2.1.2 Capital Investment Highlights

OHL's capital investments over the planning period have been aligned to the 4 categories of system access, system renewal, system service, and general plant outlined in the Filing Requirements. Table 5.2-1 presents OHL's historical actuals and forecast expenditures for both capital and O&M categories. OHL's 2023 expenditures are projected actuals for projects on track for completion in 2023, however, values are not final and may still change upon year completion.

Table 5.2-1: Historical and Forecast Capital Expenditures and System O&M ($ '000)[1]

Category	Historical					Bridge	Forecast				
	$ '000					$ '000	$ '000				
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
System Access (Gross)	510	303	373	737	96	820	1,360	659	689	650	866
System Renewal (Gross)	202	218	395	530	554	583	787	721	817	738	807
System Service (Gross)	626	677	877	925	2,198	977	819	1,194	1,405	1,359	1,557
General Plant (Gross)	444	171	281	66	135	124	711	436	215	490	225
Gross Capital Expenses	1,781	1,368	1,925	2,258	2,983	2,505	3,677	3,010	3,126	3,237	3,455
Contributed Capital	(199)	(115)	(240)	(349)	(63)	(451)	(719)	(204)	(378)	(292)	(373)
Net Capital Expenses after Contributions	1,582	1,253	1,685	1,909	2,920	2,053	2,958	2,806	2,748	2,945	3,083
System O&M	755	959	807	1,078	1,164	1,249	1,359	1,393	1,379	1,170	1,199

OHL considers performance-related asset information including, but not limited to, data on reliability, asset age and condition, loading, customer connection requirements, and system configuration, to determine investment needs of the distribution system. OHL's DSP demonstrates prudence and rate mitigation consideration in the pacing and prioritizing of non-discretionary investments, specifically those related to replacement or renewing end-of-life assets.

It can be expected that the operational and service requirements driving OHL's capital expenditures, and found within its DSP, should generally remain consistent through the 2024 to 2028 forecast period. The projected expenditures for 2024 and going forward reflect:

- the typical spending needs of a distribution electric utility serving a stable customer base with a geographically distributed (over two separate service areas), and a diverse collection of physical assets.
- focused planned capital sustainment investments required to replace the deteriorated assets found in OHL's distribution system.

The Filing Requirements outline four categories of investments into which projects and programs must be grouped. The drivers for each investment category align with those listed in the Filing Requirements. For reporting purposes, a project or program involving two or more drivers associated with different categories is included in the category corresponding to the trigger driver. To note, all drivers of a given project or program

[1] These numbers are rounded. There may be some inconsistencies observed due to rounding errors.

were considered in the analysis of capital investment options and are further described in Section 5.4 of the DSP.

There are several ongoing and proposed projects that OHL may consider undertaking to address grid modernization, DERs integration and climate change adaptation. The following activities are being considered or undertaken at OHL:

Storm Hardening – Employing proven storm hardening techniques such as installing stainless steel equipment for at-grade applications, moving below grade equipment to above grade (if possible) where flooding is a possibility, design to Canadian Standard Association ("CSA") Heavy Loading conditions standards, and utilize stronger poles in construction. New subdivisions were designed with underground distribution.

Voltage Conversion – Upgrading the 4.16 kV system to 27.6 kV to increase load transfer capability, increase capacity, reduce losses, and allow higher penetration of distributed energy resources ("DER").

Replacement of obsolete assets – Grid modernization effort to remove assets that no longer meet OHL's design standards. Removing these assets will support reliability performance, resiliency, and operational efficiency while reducing OHL's procurement and spare inventory costs through the standardization of equipment.

Station Decommissioning – OHL is planning towards being a station-less grid, meaning all stations and associated equipment will not be owned and managed by OHL. This will reduce operations and maintenance costs on station assets. Additionally, the removal of stations may reduce the number of feeders as well which can introduce cost savings and long-term benefits with regards to streamlined data lifecycles.

There are also a few ongoing and future activities in the OHL service areas that may impact the capital project prioritization and spending as outlined in the DSP.

Customer Connections

Customer connection forecasts are based on timing information received from planning staff, planning reports (provincial, regional, municipal), developer submissions and inquiries, and historical connection rates. Variances in connection timing/quantity over the DSP period will impact actual connections and related System Access expenses.

Municipal Road Projects

The Towns of Orangeville and Grand Valley carry out road reconstruction and other types of roadway improvements on an annual basis. Timing and location for these works are subject to short-term planning considerations, and as such, are frequently rescheduled. OHL will be required to accommodate and react to these road projects as they occur during the period of the DSP.

5.2.1.2.1 System Access

These investments are modifications (including asset relocation) to the distribution system that OHL is obligated to perform to provide a customer (including a generator customer) or group of customers with access to electricity services via OHL's distribution system. These investments are considered mandatory and non-discretionary.

OHL will continue to provide access to its system for both residential and commercial; new and upgraded services. OHL does not expect significant electrification of transportation or building will factor into the forecast period. In addition, OHL has incorporated feedback from third parties regarding the potential relocations of OHL plant due to roadway improvements. The forecasted system access plan will result in an increase of planned expenditures compared to the historical period.

5.2.1.2.2 System Renewal

Expenditures within the System Renewal category are largely driven by the condition of distribution system assets and play a crucial role in the overall reliability, safety, and sustainment of the distribution system. OHL's ACA recommends assets for renewal based on condition data from tests and inspections.

OHL focuses on replacing wooden poles, transformers and hardware which exhibit signs of deterioration consistent with EOL criteria as defined by the utility's asset management standards. For the forecast period, OHL's investment fall under four programs:

- Hardware Replacement
- Pole Replacement
- Failed Transformer/PME replacement
- Meter replacement/additions

5.2.1.2.3 System Service

Expenditures in this category are driven by the need to ensure that the distribution system continues to meet operational objectives (such as reliability, grid flexibility and DER integration) while addressing anticipated future customer electricity service requirements (i.e., station capacity increases, feeder extension, etc.). OHL's forecast plan focusses on completing its voltage conversion program, enabling it to become a station-less utility, improving its reliability and flexibility within its network.

5.2.1.2.4 General Plant

Expenditures in this category are driven by the need to modify, replace or add to assets that are not part of the distribution system but support the utility's everyday 24/7 operations. OHL's key projects and programs over the forecast period include:

- A roof replacement of OHL's main office - OHL's building was built in 1990 and the roof is beyond its life expectancy. OHL was informed by a third party that it is in serious need of replacement.
- Upgrade of software to an industry standard for "Geographic Information Systems" (GIS).
- A financial software upgrade and an enhanced customer portal. OHL's existing customer portal is no longer being supported and is increasing cybersecurity concerns.

5.2.1.3 Key Changes since Last DSP Filing

This is the third DSP filed by OHL. Minimal changes were made to OHL's processes to minimize the capital, maintenance, and administration costs to OHL and its customers. OHL has only invested in and introduced new processes if needed to improve service and quality to its customers as well as maximize efficiencies. These include updated inspection and maintenance programs with improved data collection practices on asset inspections to utilize the appropriate capital investment dollars.

Furthermore, this DSP reflects a continuous improvement in the application of asset management principles by OHL. The DSP intends to guide OHL in enhancing and refining its asset management process to achieve the set goals within the forecast period. Furthermore, the DSP is OHL's 5-year roadmap which includes system developments and improvements for the benefit of its customers and stakeholders. The asset management process will be continually improved and implemented over the forecast period by adding additional asset data and analytics to OHL's future asset and program planning.

It should be also noted that there are other factors that are challenging and affecting both OHL and its customers. These include the current economic factors of low unemployment meaning a labour shortage, continued supply chain shortages for key items, such as transformers and accessories, high inflation, higher borrowing cost, housing crises, alongside the continued increased focus on the impacts of climate change. OHL has tried to factor as many of these issues within its plan, however with the potential level of uncertainty, OHL's plans may need to be adapted and updated, using its planning process, throughout the forecast period. The current plan has been developed with the best available information at the time.

5.2.1.4 DSP Objectives

OHL's DSP is a stand-alone document and is filed in support of OHL's Application. The DSP is designed to present OHL's fully integrated approach to capital expenditure planning. This includes comprehensive documentation of its Asset Management ("AM") process that supports its future five-year capital expenditure plan while assessing the performance of its historical five-year period. It recognizes OHL's responsibilities and commitments to provide customers with reliable service by ensuring that its asset management activities focus on customer preferences, operational effectiveness, public policy responsiveness and financial performance.

OHL's Distribution System Plan is designed to support the achievement of the four key OEB established performance outcomes:

1. **Customer Focus:** services are provided in a manner that responds to identified customer preferences.
2. **Operational Effectiveness:** continuous improvement in productivity and cost performance is achieved, and utilities deliver on system reliability and quality objectives.
3. **Public Policy Responsiveness:** utilities deliver on obligations mandated by the government (e.g., in legislation and regulatory requirements imposed further to Ministerial directives to the Board).
4. **Financial Performance:** financial viability is maintained, and savings from operational effectiveness are sustainable.

To achieve a fully complete and compliant DSP, OHL was required to accomplish the following:

- Understand customer preferences – how do customers wish to receive service and how do they wish to interact with the utility to obtain the information they require and understand the goals, objectives, and priorities of the utility.
- Develop a plan for continuous improvement which includes concepts from reliability maintenance, asset monitoring and project prioritization.
- Understand the age, condition, and performance of its assets.
- Ensure its inspection practices are conducted following the Distribution System Code ("DSC").
- Describe its maintenance activities following good utility practice.
- Ensure that all aspects of employee and public safety are addressed in compliance with all regulatory and legal obligations.
- Forecast and plan for the growth of load customers and renewable generation facilities.
- Recognize and address constraints in the current distribution system and anticipate future capacity requirements.
- Review the historical years with the current year of capital expenditures and report on variances from the previous DSP.
- Demonstrate that the asset management process recognizes the above items and prioritizes projects to accommodate customers and system requirements.
- Develop a five-year forward-looking capital expenditure plan that anticipates the future growth, capacity and performance of the distribution system while remaining flexible to accommodate the unknown requirements of its customer base.

OHL's DSP documents its asset management processes and capital expenditure plan for the 2024-2028 period, which integrates qualitative and quantitative information resulting in an optimal investment plan that covers:

- Customer value considerations
- System expansion considerations
- System renewal considerations
- Regional planning considerations
- Renewable generation considerations
- Smart grid considerations
- Alignment with public policy objectives

OHL incorporates good utility practices of the electricity distribution industry into its operations. This includes adhering to the OEB's DSC that sets out both good utility practices, minimum performance standards for electricity distribution systems in Ontario, and minimum inspection requirements for distribution equipment. Consistent with good practices, OHL continues to maintain its equipment in safe and reliable working order and, only when economically justified, upgrades, or renews its equipment. However, to maintain a moderate increase in the customers' bills, OHL is prudent when incurring costs over the historical period. This is in direct response to customer satisfaction survey results which indicate that the low price of electricity is an important factor to customers.

5.2.2 Coordinated Planning with Third Parties

In preparing this DSP, OHL has considered the needs of its customers, subdivision developers, the municipal governments of Orangeville and Grand Valley, HONI, other LDCs and the IESO. This DSP considers the outcomes of completed consultations, reports, and plans as well as a continued effort in coordinating with any future ongoing developments with third parties. The following sections describe the infrastructure planning consultations that OHL participated in.

5.2.2.1 Customers

OHL's customer engagement activities related to this DSP took place from May 2021 to July 2021, through an online customer engagement. Many of the customer engagement findings corroborated what OHL had been hearing recently from customers, via the ongoing dialogue through the day-to-day engagement. Key learnings that emerged through the engagement included:

- One of the top feedback items received from customers was to keep rates low. OHL understands that high bills can be challenging for its customers, including over the years during the COVID-19 pandemic. To address this, OHL believes it budgets its capital plans efficiently and with care, keeping in mind the financial impact it can have on its customers.
- The second most important choice selected by customers was the safety for employees and the public. This is in alignment with OHL's core objectives and is measured annually through a set of metrics.
- Customers believe OHL should begin investing in infrastructure that accommodates new technologies sooner than later. However, the majority (65%) of customers believe it should be at no additional cost to the customer and only a few participants (approximately 17%) are willing to pay a little more.

Although the participation rate was low relative to the total number of customers served by the utility at just over 3%, OHL believes the pattern of responses from this sample of participating customers would not change dramatically. Hence, it is safe to assume that this engagement process garnered sufficient qualitative feedback to indicate customer preferences.

The purpose of OHL engaging with its customers is to incorporate customer's issues and needs within the utility's capital and maintenance plans while also communicating with customers of ongoing efforts to meet the expected level of service. OHL is both proactive and reactive in its customer engagement consultations and engages its customers through multiple ongoing streams which include:

- In-person engagements at OHL's offices.
- Social media platforms to bring attention to ongoing outages, restoration efforts, and other topics of interest.
- Phone calls through customer service can assist customers in addressing their needs and issues.
- Email sign-ups for receiving paperless bills and notices.
- Customer portal for looking up their power consumption habits and identifying ways to reduce costs.

- Website communication of important updates happening at OHL.
- One-on-one meetings with large business/industrial customers.
- Group meetings with large business/industrial customers.
- Attendance at community events and customer appreciation events

Discussions through the consultations provide helpful insight into the day-to-day operations at OHL. Consultations with industrial customers are conducted periodically primarily to engage and promote participation in utility offered programs, such as CDM initiatives in the past. In addition to this, OHL capitalizes on the opportunity to discuss power quality, other reliability issues, and future system planning.

In 2021, OHL proceeded to complete its DSP customer engagement for both residential and business customers. The purpose of this engagement was to consolidate and consider the feedback received on OHL's upcoming DSP filing and its proposed investment plan. OHL sought direct input from customers to determine if OHL's operational and capital plans aligned with customer preferences and whether customers would ultimately support OHL's decision-making in providing the best, optimized and effective plan for its customers. In summary, customer consultations support the DSP's focus on maintaining existing reliability and service levels through prioritized, efficient, and paced investments while managing the level of bill impacts.

OHL regularly seeks customer feedback to help shape the direction and development of the community investment. OHL prioritizes efforts to connect with customers to ensure that their expectations are being met and to implement suggestions on how OHL can improve their overall customer experience. For OHL to achieve its goals and efforts, OHL undertakes several ongoing customer engagement activities daily, including:

I. Direct Engagement
   - Telephone calls, emails, written letters, and notices
   - Bill inserts
   - In-person interactions at offices
   - Local community events

II. Online Engagement
   - Corporate website
   - Online bill portal for residential and commercial customers
   - Online outage map
   - Social Media (Twitter, Facebook)

III. Customer Survey Program
   - Customer Satisfaction surveys
   - Public Safety Awareness surveys
   - Customer feedback survey

OHL engaged its customers in 2021 through an online survey to gather feedback. Supplementary material was developed by OHL and was communicated to its customers for them to have adequate information to respond to each question. The survey covered various topics such as customer costs, reliability issues and future investments. OHL opened the survey to every resident and customer serviced by OHL which ensured that everyone who wanted to have a say could participate, while also making sure OHL heard from all types of customers.

In 2021, Orangeville Hydro utilized *Bang The Table Engagement HQ* software as the platform for customer engagement. The platform, known as *Engage Orangeville Hydro*, featured interactive tools such as a survey platform, news feed, and forums. The primary objective for utilizing the survey platform was to gather customers' opinions, preferences, and insight on how OHL should prioritize their investments relating to the DSP.

The *Customer Engagement Survey* took place between April 2021 to June 2021, during which 6 commercial and 386 residential account holders completed the survey, for a total of 392 responses. Participants completed 12 questions relating to demographics, power outages and reliability, grid modernization, system renewal, and investments priorities and trade-offs relating to the DSP. Due to the response size of commercial accounts, the data will be grouped to reflect a sample size of all Grand Valley and Orangeville accounts. The information collected was used to determine the next steps in OHL's Distribution System plan for both the 2022-2026 years and 2024-2028 years. The results of the survey are found in Appendix D.

At the beginning of the survey, customers were asked to determine what is most important to them: a reliable supply of electricity or low-cost electricity service. The overarching theme in the data proved that customers believe a low-cost electricity service is most important to them. The data collected highlights that customers value a reliable supply of electricity, minimal power outages, and grid modernization, but not at the expense of increased rates.

OHL's first customer engagement process findings are in alignment with OHL's goals and expectations for its customers. Of the few key learnings that emerged from OHL's customer engagements, the following pertained to OHL's planning procedures for its current DSP:

I. The most important choice selected by customers was to maintain the affordable cost of electricity (i.e., keep rates low). OHL understands that high bills can be challenging for its customers, including over the recent pandemic. To address this, OHL believes it budgets its capital plans efficiently and with care keeping in mind the financial impact it can have on its customers.
II. The second most important choice selected by customers was the safety for employees and the public. This is in alignment with OHL's core objectives and is measured annually through a set of metrics.
III. Customers believe OHL should begin investing in infrastructure that accommodates new technologies sooner than later. However, the majority (65%) of customers believe it should be at no additional cost to the customer and only a few participants (approximately 17%) willing to pay a little more.

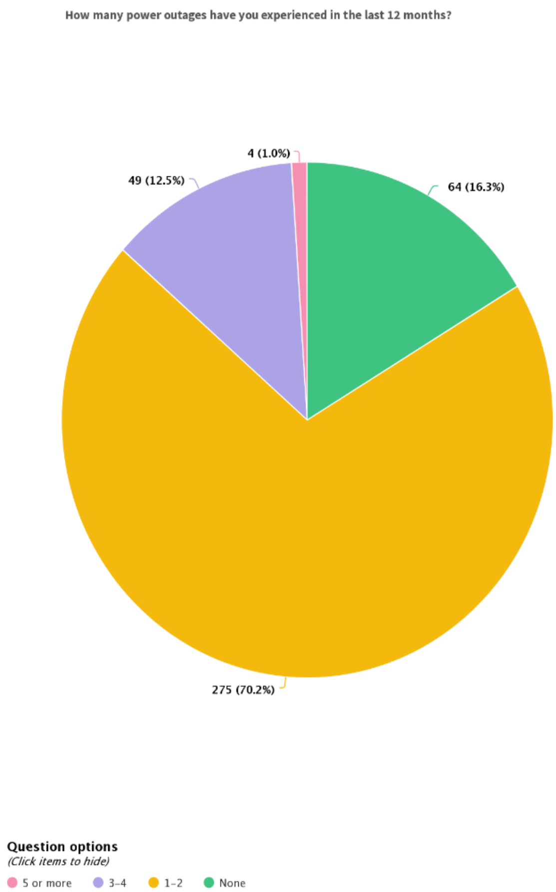
Although the response rate was low relative to the total number of customers OHL serves, the pattern of responses from this sample of participants indicates that this engagement process should have garnered sufficient qualitative feedback to indicate customer preferences. Customer preferences resulted in no major changes to the proposed budget or priority of projects for the DSP period as the preferences are in alignment with OHL's objectives.

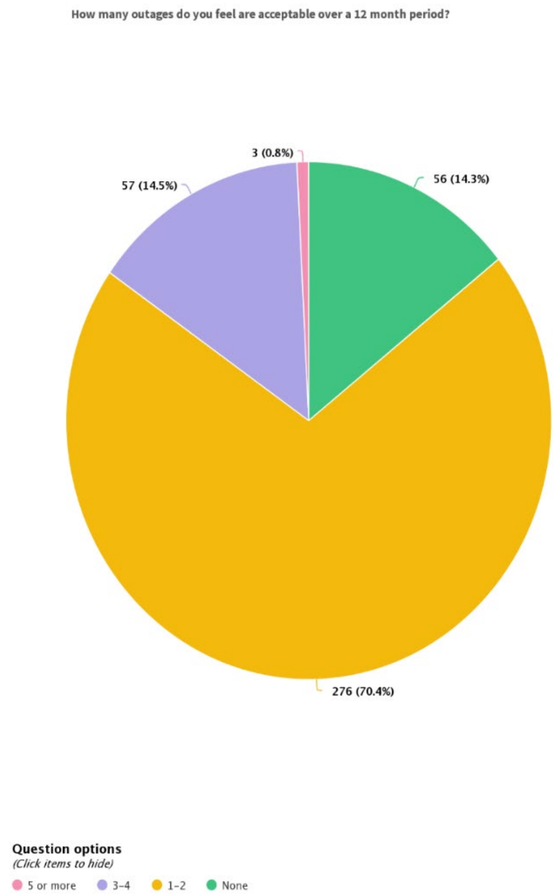
Some highlights from the customer survey are shown below.

Power Outages and Reliability

Customers were asked to reflect on how many power outages they believed they had in the last 12 months. 87% of customers believed they had 0-2 outages in 12 months, and 13% believed they had experienced 3-5 or more outages (Figure 1). Customers were then asked how many outages are acceptable in 12 months, 85% of customers believe 0-2 outages are acceptable and 15% believe 3-5 or more outages are acceptable (Figure 2). Based on the response it can be concluded that the utility is meeting current customers' needs in relation to the frequency of outages.

Figure 5.2-1: Survey Results for Power Outages and Reliability



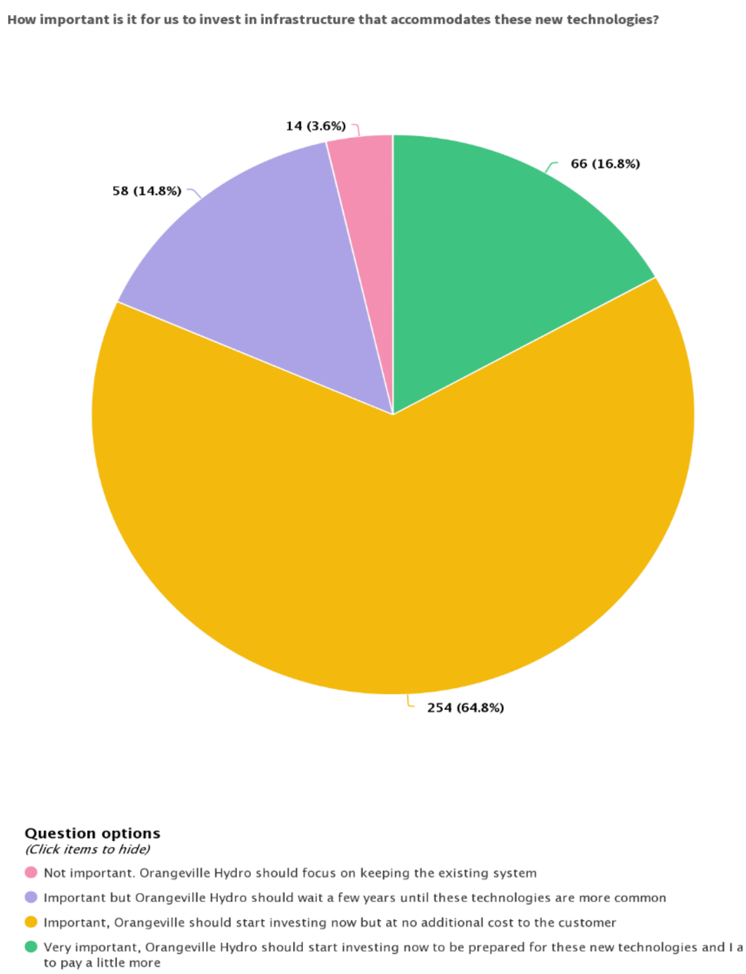


Grid Modernization

This section of the survey focused on the need for Local Distribution Companies ("LDC") to adapt and update their current grid to adhere to customers' expectations for advancing technologies. This section sought to highlight the topic of grid modernization and educated customers on the advancements of the electricity industry such as electric vehicles, renewable energy generation, and battery backup power supply. Participants were asked, *"How important is it for (Orangeville Hydro) to invest in infrastructure that accommodates new technology?"*

A large portion of customers (80%) agreed that while it is important to invest in the infrastructure, OHL should wait for these technologies to evolve or should begin to invest now but not at the expense of increased rates. Whereas a select group of customers (17%) believe that accommodating these new technologies is very important and OHL should begin to invest now, even if rates increase slightly.

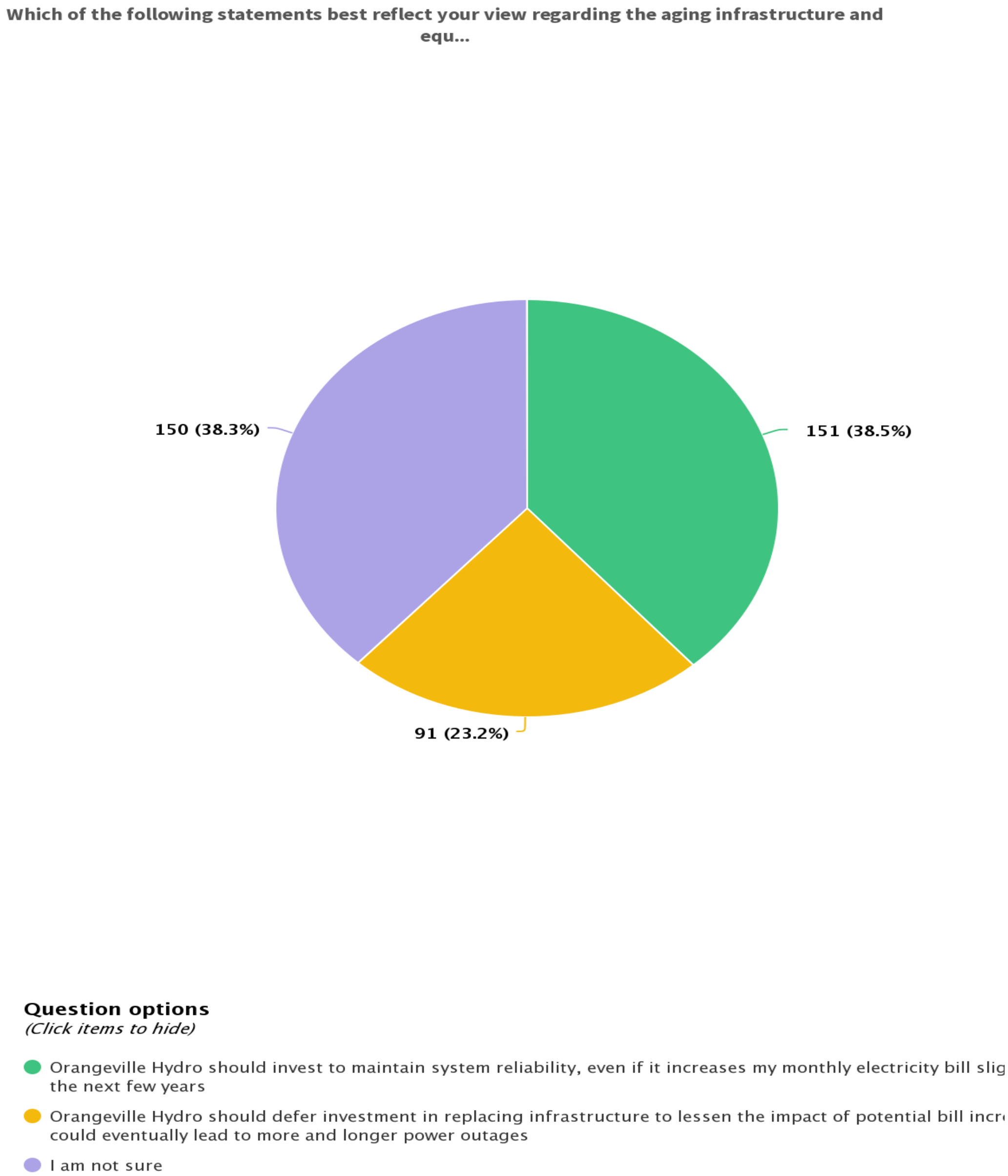
Figure 5.2-2: Survey Results for Grid Modernization



System Renewal

Customers were asked to pick a statement that reflects their view regarding investments in ageing infrastructure and equipment. 23% of customers stated that OHL should defer investing in infrastructure and ageing equipment even if it could eventually lead to more and longer power outages. 39% of customers stated that the utility should begin to invest even if their monthly bill increases slightly, although, 38% of customers answered that they were not sure. As seen in the figure below, 151 responses were in favour of increased rates and 150 were not sure about investing in the infrastructure. However, earlier in the survey customers were asked to pick from three options to describe what is most important to them regarding rates and increasing reliability. Customers could choose from, (1) Maintaining OHL's current electricity rates, (2) Keeping distribution rates low even if reliability may decrease, (3) slightly higher distribution rates increasing system reliability. 93% of customers would like to see distribution rates remain low or stagnant, whereas only 7% of customers were in favour of slightly higher distribution rates. It can be concluded that the participants were not provided with enough context to give an educated answer regarding ageing infrastructure and equipment, but it is presumed based on the data that customers are not willing to lose electrical reliability nor pay more for distribution rates.

Figure 5.2-3: Survey Results for System Renewal



Distribution System Plan – Investment Priorities/Trade-Offs

This section of the survey focused on customer preferences in relation to investment priorities, trade-offs and pacing of investments (see Figure below). Customers were asked to indicate on a scale of 1 to 5, 1 being important and 5 being not important at all, to indicate the level of priority. By indicating the level of priority, OHL can gather insight as to what customers expect from the utility in future years. Participants were asked about multiple areas including:

- Ensuring reliable electrical service
- Delivering electricity at reasonable distribution rates

- Investing in new technologies that could help reduce future electricity distribution costs.
- Replacing ageing infrastructure that is beyond its useful life.
- Upgrading the electrical system to better respond to and withstand the impact of adverse weather.
- Providing quality customer service and enhanced communications
- Helping customers with conservation and cost-saving initiatives

Figure 5.2-4: Survey Results for DSP – Investment Priorities/Tradeoffs

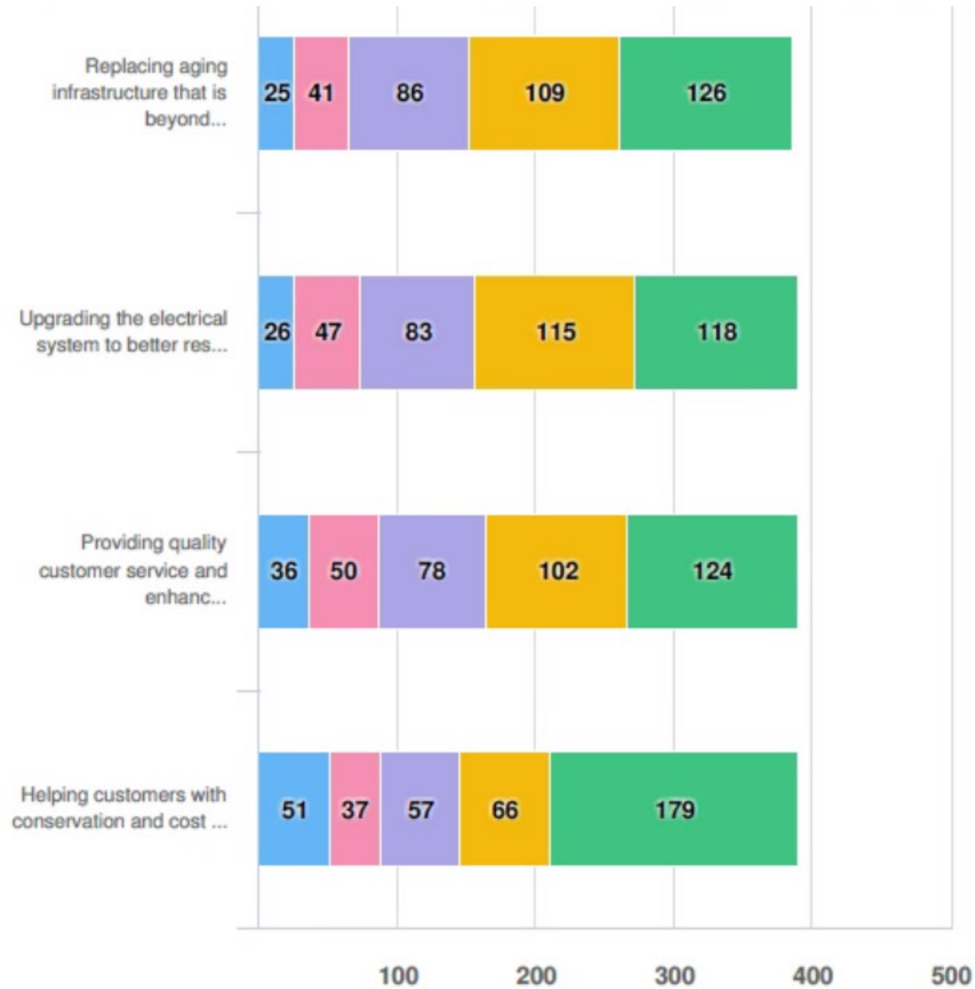
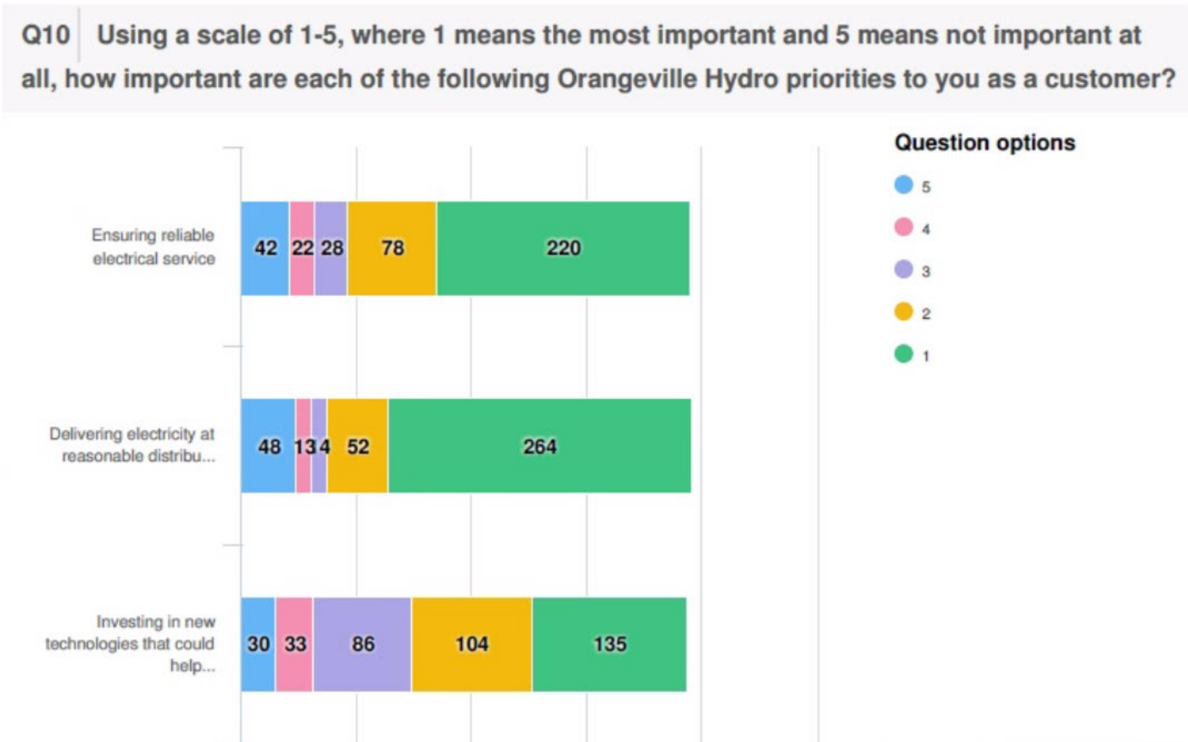


Figure 5.2-5: Survey Results for DSP – Investment Priorities/Tradeoffs



Based on the answers it is evident that customers do not expect OHL to focus on one priority, nor is any one priority significantly more important than another. While the data showed that the top two priorities for customers are to deliver electricity at reasonable distribution rates and ensuring reliable electrical service, it can be concluded that all areas identified are of high importance to the customers.

In direct response to customer preferences, OHL is not introducing additional projects or modifications to existing projects. Furthermore, at this time OHL has not included any costs for technology-based opportunities, innovative projects, or demonstrations in the forecast period to manage low customer bills through the DSP period aside from maintaining current systems used by customers today.

2023 Customer Satisfaction Survey

In addition to the above initiatives, OHL engaged with Advanis to conduct a *Customer Satisfaction Survey* in early 2023 and completed in March of that year. 407 surveys were completed, but representing 3.81% of OHL's customer base, with a margin of error of 4.8%. Though the sample was relatively small it is believed to be reflective of OHL's broader customer base. The survey reached a mixture of residential and commercial customers, who were asked questions relating to their expectations for electrical service, their familiarity with electrical distribution systems, the quality of different dimensions of OHL's service, and their sensitivity to potential changes in service. These responses were consolidated and analyzed to identify emerging trends, changes in attitudes over previous years, and benchmark OHL's performance against other peer LDCs.

Several themes emerged from the 2023 Customer Satisfaction Survey. Residential and commercial customers alike are generally satisfied with their service but are very sensitive to any potential increases in their bill or changes in the quality of their service.

- When asked how they would like investments in system infrastructure to affect their bill, 54% said they would prefer the same bill with about the same number and length of outages.
    - 7% would prefer a higher bill with fewer/shorter outages.
    - 18% would prefer a lower bill with more/longer outages.
    - The remaining 21% didn’t know or had no opinion.
- When asked how they would like investments in equipment and IT infrastructure to affect their bill, 50% would prefer the same bill with about the same number and length of outages.
    - 7% would prefer a higher bill with fewer/shorter outages.
    - 18% would prefer a lower bill with more/longer outages.
    - The remaining 25% didn’t know or had no opinion.

Customers were asked 4 questions on how important certain characteristics of our service are to them. They were asked to rate the importance from 0 (not important at all) to 10 (meaning very important). About 71% indicated that reliable power is highly important. That is, they answered 9 or 10 on a scale of 0 to 10. A somewhat lower percentage of 67% said that reasonable prices are highly important. Dependable and responsive customer service was rated as highly important by 51% of customers and lastly only 23% think it’s highly important to receive education about energy conservation programs, this number is statistically lower than 2 years ago.

Customers were generally willing to adopt and utilize digital forms of communication (text messages, email) with OHL, such as receiving bills or outage information, especially when provided with incentives to switch, such as a one-time reduction in their bill.

5.2.2.2 Subdivision Developers

OHL maintains strong, active relationships with several subdivision developers in order to accommodate the connectivity needs of their projects. OHL regularly monitors the Grand Valley and Orangeville planning portals for activity and engages with all developers to connect new subdivisions. Currently, OHL is liaising with five developers, of which three are to connect in 2024. This has led to OHL allocating capital expenditures for the connection of subdivisions to the network from 2024 onwards. OHL will continue to monitor and engage with developers to understand their plans and adjust OHL’s capital investment plans accordingly. OHL is also an active member of the Greater Dufferin Home Builders Association.

5.2.2.3 Municipalities

OHL maintains a relationship with both the Orangeville and Grand Valley municipal planning, engineering, and administrative teams. OHL consults regularly with the municipal departments to ensure it is informed and provided the opportunity to comment on all major infrastructure projects during the early design stage. The detailed engagement on municipal infrastructure projects occurs with municipal staff and their engineering consultant. In addition to major infrastructure projects, OHL can comment on all severances and variances through the committee of adjustment process. This process is ongoing, and the results of these consultations inform OHL's knowledge of developments, severances, and variances within the Town of Orangeville and the Town of Grand Valley. The committee of adjustment process also provides the opportunity for OHL to inform the municipality of potential issues such as clearance issues between electrical infrastructure and future buildings.

OHL discusses with the planning teams the implications of developments to the distribution system in terms of potential system renewal, system access and system service projects. OHL work with the municipal planning teams to achieve their goals such as road reconstruction, new municipal buildings, the installation of public electric vehicle chargers, and the electrification of the municipal transit and municipal fleet. Respective projects that impact OHL's distribution system are categorized in the appropriate investment categories as they are detailed or requested by Orangeville and Grand Valley. OHL works closely with Orangeville and Grand Valley in the execution of capital projects and in assisting them through the prioritization of projects. Direction provided by the OHL Board of Directors, Town Official Plan, Dufferin County, and private developers is taken into consideration as well.

The consultations with the municipalities have assisted with OHLs timing of proposed voltage conversion projects, such as OHL joining the reconstruction project on Ontario Street and Vicotria Street in Orangeville in 2024. OHL is attempting to align the installation of OHL's underground civil infrastructure with the municipal road reconstruction projects. Regarding the municipalities new build and electrification plans, if the municipalities move forward with their potential new connections or service upgrades, OHL's project costs, including capital contribution, would be contained within the forecasted amounts under the System Access program.

5.2.2.4 Transmitter

OHL is connected to the main Ontario power grid via a single Transmission Station ("TS") – Orangeville TS, owned and operated by HONI. OHL and HONI are in constant conversation regarding changes on their respective systems that would materially affect each utility.

As identified in the 2022 Regional Infrastructure Plan ("RIP") and in the April 2020 Needs Assessment report, HONI intends to replace and upgrade the existing Orangeville TS transformers and reconfigure low voltage equipment due to the asset being at the end of life from a condition standpoint. The upgrades are presently underway with the 44kV upgrades already completed in 2023 and the with an in-service date scheduled for 2024 for the 28kV upgrades. HONI and OHL have collaboratively worked throughout every step of this upgrade. Furthermore, Grand Valley is serviced from HONI's existing 3MVA transformer as Grand Valley Distribution Station ("DS"). HONI's present plan is to refurbish the Grand Valley DS in 2025 and upgrade the existing transformer with a 5MVA transformer. Other existing equipment may be replaced as well depending on age and condition, however, current information in these plans is limited. OHL and HONI's conversations which impacted this DSP, could evolve over the course of the present DSP.

5.2.2.5 Other LDCs

OHL engages with many other LDCs through a variety of forums. These interactions principally occur through voluntary participation in several collaborative organizations such as the EDA, USF, CHEC, and UCS. From these forums, OHL can share and learn about best practices, new standards and legislation, and adjust its investment plans as required. On an operational level, OHL works with other LDCs on an as-needed basis. As OHL is not an upstream or host distributor to any other utilities, there is no regular engagement from day to day. No interaction and consultations with other LDCs have directly affected OHL's DSP.

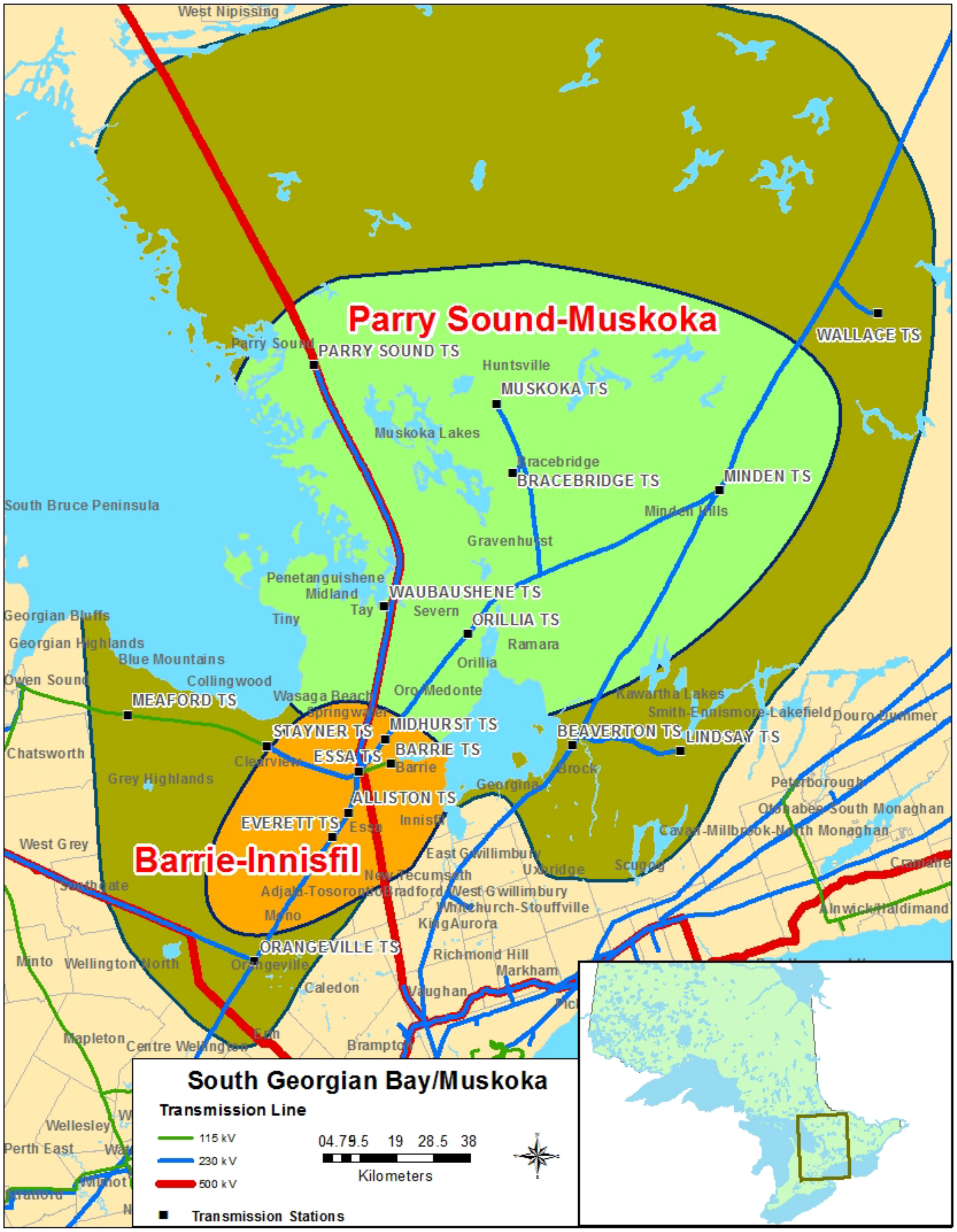
5.2.2.6 IESO

OHL has day-to-day interaction with the IESO through its regulatory, finance, and metering departments. Beyond this, OHL has minimal interaction with the IESO due to OHL being an embedded-LDC, the nature of the OHL's historical and proposed projects, and types of customers connected to OHL's distribution system. In November 2020, OHL joined the IESO's Regional Planning Municipal Outreach session for the South Georgian Bay/Muskoka area. This session re-confirmed that there were no projects or programs from the IESO that would impact OHL's planning process over the duration of this DSP. OHL will continue to engage the IESO with other industry partners as required, either for new Renewable Energy Generation ("REG") investments or to explore any future potential Conservation Demand Management ("CDM") initiatives that may arise. Consultations with the IESO, such as through the Regional Planning Process, did not affect the investments proposed in this DSP. There are no inconsistencies between the Distribution System Plan and the current Regional Plan.

5.2.2.7 Regional Planning Process

OHL is a member of the South Georgian Bay/Muskoka Regional Planning Group which is roughly bordered by West Nipissing on the North-West, the Algonquin Provincial Park on the North-East, Scugog on the South, Erin on the South-West, and Grey Highlands on the West. This region is divided into two sub-regions: Barrie/Innisfil sub-region and Parry Sound/Muskoka sub-region. From a HONI and IESO perspective, the South Georgian Bay/Muskoka Region is within the Group 2 Region.

Figure 5.2-6: Map of South Georgian Bay/Muskoka Region



The first regional planning cycle for the region was completed in August 2017 with a documented Regional Infrastructure Plan ("RIP") completed in 2017. A Needs Assessments was completed in April 2020 as the start of the second planning cycle, with a second RIP completed in December 2022. OHL was a part of both the RIP and Needs Assessment team sessions led by Hydro One. The purpose of the Needs Assessment was to identify new needs for the region as well as recommend a path forward for each need by either developing a preferred plan or identifying which needs require further assessment and/or regional coordination. A technical assessment of needs was undertaken based on:

- Current and future station capacity and transmission adequacy.
- Any major high voltage equipment reaching the end of its life.
- Reliability needs and operational concerns.

There were multiple needs identified in the first and second planning cycle for the region, some of which pertained to or impacted OHL. In the first planning cycle, improvements and upgrades to Orangeville TS were identified. Orangeville TS was identified to be replaced in 2023 and is currently under construction. The implementation and execution plan for the replacement of the TS will be coordinated with Hydro One and does not require further regional coordination. A short description of the scope of Orangeville TS replacement is extracted from the latest Needs Assessment report:

> *Orangeville TS – Replace and upgrade existing 230/44kV 83MVA transformers (T3/T4) with new 125MVA units. Replace and upgrade existing nonstandard three winding 230/44/27.6 125MVA transformers (T1/T2) with new dual winding 230/27.6 83MVA units/ Reconfigure low voltage equipment and transfer existing 44kV feeders from T1/T2 DESN to the T3/T4 DESN. These transformers and associated low voltage equipment have been assessed as being the end of life and in need of replacement due to asset conditions. This is presently underway with an in-service scheduled for 2023.*[2]

In the second phase of the regional planning process, an additional need to replace an aging line section was identified. From the 2022 RIP:

> *E8V/E9V Orangeville TS X Essa JCT – This is a 112km 230kV line section that was in-serviced in 1950. Based on asset condition assessment, this line section requires like for like refurbishment to ensure supply reliability and safety is maintained. The planned in-service date for this investment is 2027.*

The initiative to be led by HONI will replace the transmission line conductor and associated assets and is estimated to cost $70 million.

A Local Plan was also developed for Orangeville TS End-of-Life Replacement completed in 2016. The report can be found on HONI's website here. The 2022 Regional Plan is also attached as Appendix G.

5.2.2.8 Telecommunication Entities

OHL maintains good relationships with third-party communications companies such as Bell, Rogers, Wightman, and Acronym, and OHL offers its support when requested. Communication between OHL and these entities remains open but occurs on an as-needed basis, such as when situations arise where the plant and personnel of either party may affect the operation of the other party. An example of projects where collaboration

[2] https://www.hydroone.com/abouthydroone/CorporateInformation/regionalplans/southgeorgianbaymuskoka/Documents/South%20Georgian%20Bay%20-%20Muskoka%20Needs%20Assessment.pdf

may be necessary include the deployment of fibre-optic cable or dedicated locate assistance when deploying fibre to home.

As an example, in determining the schedule for the installation of ducts, OHL was engaged in talks with Wightman's contractor Avertex, as they were also going to be installing duct on behalf of Wightmans on the same boulevard. OHL was already in the initial planning stages with Avertex to install duct in September 2021 for project B118. This had been planned as an OHL-only installation with directional drilling. Avertex informed OHL of their routing and timing for the Wightman duct installation in October 2021. Avertex was going to be installing Wightman duct in the same boulevard that OHL required duct for B118, as well as B120, & B122 in the very near future. OHL decided to join Wightman's project and have Avertex install the fibre duct and electrical duct at the same time throughout late 2021, and 2022. With some project delays, the installation continued into early 2023.

In addition to these operational engagements, OHL is a member of the USF and the CHEC group and participates in projects run by these groups.

To date, nothing from OHL's engagement from any third-party groups has affected the development of this DSP.

5.2.2.9 CDM Engagements

The EDA and the Ontario Energy Association ("OEA") are working together to find a way to get LDC's to re-engage in CDM practices that are acceptable to all relevant stakeholders such as the IESO, OEB, and Ministry. Discussions are ongoing and OHL is ready to comply with any recommendations that are made.

Additionally, OHL promotes good, available CDM solutions to its customers. For example, OHL regularly engages with its customers through various social media channels to inform them about the IESO's Save-on-Energy program as well as provides energy saving tips on its website.[3]

5.2.2.10 Renewable Energy Generation

OHL currently does not anticipate any REG investments over the forecast period. OHL's REG investment plan is contained in Appendix F.

5.2.2.10.1 IESO Comment Letter

OHL does not anticipate any REG investments over the forecast period, and therefore has not sought a comment letter from the IESO.

[3] Energy and Water Saving Tips – Orangeville Hydro, Rebates & Financial Help – Orangeville Hydro, My Energy Action Plan – Orangeville Hydro

5.2.3 PERFORMANCE MEASUREMENT FOR CONTINUOUS IMPROVEMENT

5.2.3.1 Distribution System Plan

5.2.3.1.1 Objectives for Continuous Improvement Set out in Last DSP Filing

One performance measure that has not been covered in section 5.2.3.1.2, that OHL reported in its last DSP, is System Losses.

OHL system losses over the historical period are shown below.

Table 5.2-2: Performance Measure - System Losses

Measure	2018	2019	2020	2021	2022	OHL Target
System Losses	3.65%	3.71%	3.47%	4.61%	1.96%	< 5.0%

Losses are averaging 3.3% over the historical DSP period, with the most recent reporting year being 2.8%. It is evident OHL is performing well for this performance measure over the average historical period, as well as the continuous improvement year over year in losses experienced.

5.2.3.1.2 Performance Scorecard

OHL's corporate emphasis on continuous improvement is reflected in all areas of its operations. Like most LDCs in Ontario, OHL must replace ageing, at risk of failure distribution infrastructure to ensure the safe and reliable supply of electricity. In addition to the strategic replacement of ageing assets, OHL continues to focus on core maintenance activities to reduce the disruption of electricity distribution to customers. OHL focuses on short- and long-term planning to ensure sufficient system capacity is available, and contingencies are in place should there be a loss of critical distribution infrastructure.

OHL monitors several performance measures, including those mandated by the OEB, that may assist in the utility's continuous improvement activities and satisfying customer requests. These measures can be divided into the following general groups:

1. Customer-oriented performance
2. Cost efficiency and effectiveness
3. Asset/system operations performance

Where applicable, the performance measures included on the scorecard have an established minimum level of performance to be achieved. The scorecard is used to continuously improve OHL's asset management ("AM") and capital planning process. OHL's current performance state is represented by OHL's official scorecard results for the recent historical year as published by OEB. The scorecard is designed to track and show OHL's performance results over time and helps to benchmark its performance and improvement against other utilities and best practices. The scorecard includes traditional metrics for assessing services, such as frequency of power outages and costs per customer. Table 5.2-3 summarizes OHL's performance during historical years from 2018 to 2022.

The guidance provided by the OEB in the recently published *Report of the Board: Electricity Distribution System Reliability Measures and Expectations* (EB-2014-0189), indicates that it would like to use the average or arithmetic mean of the previous five years (or historical period) of data to establish performance expectations for the forecast period. Specifically, the OEB referred to SAIDI and SAIFI as the two reliability indicators that would benefit from using targeted goals.

Each metric provided in the table and subsections below influences OHL's DSP to achieve the best performance for its customers. The following sections address performance metrics as published by the OEB in the performance scorecard and with additional performance metrics identified in OEB's Rate Filing Requirements.

Annual performance variances that are not within target ranges or meet minimal performance thresholds would result in senior management review of performance cause. This may result in review and changes to processes in order to bring performance back to target levels. OHL has been and continues to be, focused on maintaining the adequacy, reliability, and quality of service to its distribution customers. The historical performance measures include 2018 to 2022 to have a complete five-year historical performance assessment.

Table 5.2-3: DSP Performance Measures

Performance Outcome	Measure	Metric	2018	2019	2020	2021	2022	Target
Customer Focus	Service Quality	New Residential/Small Business Services Connected on Time	100.00%	100.00%	100.00%	99.24%	100%	90%
		Scheduled Appointments Met on Time	99.76%	100.00%	100.00%	99.25%	100%	90%
		Telephone Calls Answered on Time	99.94%	99.90%	99.11%	99.21%	99.26%	65%
	Customer Satisfaction	First Contact Resolution	99.90	99.90%	99.90	99.83%	99.62%	No target
		Billing Accuracy	99.99%	100.00%	99.84%	99.82%	99.73%	98%
		Customer Satisfaction Survey	78.2%	78.2	76	76	76	No target
Operational Effectiveness	Safety	Level of Public Awareness	86.20%	85.50%	85.50%	84.50%	84.50%	No target
		Level of Compliance with Ontario Regulation 22/04	C	C	C	C	C	C
		Number of General Public Incidents	0	0	0	1*	0	0
		Rate per 10, 100, 1000 km of line	0.00	0.00	0.00	0.45	0.00	0
	System Reliability	Ave. Number of Hours that Power to a Customer is Interrupted	0.29	0.33	1.01**	1.75**	0.47	0.55
		Ave. Number of Times that Power to a Customer is Interrupted	0.16	0.39	0.75**	0.91**	0.52	0.65
	Asset Management	Distribution System Plan Implementation Progress	87%	96%	102	87%	156%	No target
	Cost Control	Efficiency Assessment	2	2	2	1	1	No target
		Total Cost per Customer ($)	551	568	535	550	605	No target
		Total Cost per km of Line ($)	$31,233	$32,501	$30,612	$31,921	$35,340	No target

Performance Outcome	Measure	Metric	2018	2019	2020	2021	2022	Target
Public Policy Responsiveness	Connection of Renewable Generation	Renewable Generation CIA Completed on Time	-	-	-	-	-	No target
		New Micro-embedded Generation Facilities Connected on Time	100.00%	-	-	-	-	90%
Financial Performance	Financial Ratios	Liquidity: Current Ratio (Current Assets / Current Liabilities)	1.56	1.74	1.41	0.78	1.39	No target
		Leverage: Total Debt (short-term & long-term) to Equity Ratio	1.05	1.15	1.12	1.12	1.28	No target
		Regulatory ROE – Deemed (included in rates)	9.36%	9.36%	9.36%	9.36%	9.36%	No target
		Regulatory ROE - Achieved	11.92%	10.36%	11.83%	9.46%	5.71%	No target

* This is due to an automatic tension sleeve failing resulting in the feeder tripping and live conductor falling to the ground in 2020. This incident was reported to the Electrical Safety Authority ("ESA") and published in 2021. No injuries were reported to OHL employees or the general public. OHL quickly restored the conductor and carried out an infrared scan of that area and the entire service territory to detect other failing sleeves. A few of those sleeves were found to be hot and were immediately replaced. In 2021, OHL replaced the undersized conductors on Centennial Road with the latest conductors. OHL conducted an audit of their overhead system on all their distribution voltages. OHL plans to replace their automatic tension sleeves with compression sleeves over the forecast period. Further information can be found in the material narrative H00-2024.

** The reasons attributing to low reliability (i.e., SAIDI and SAIFI metrics) in 2020 and 2021 is summarized in Table 5.2-4.

Table 5.2-4: Justifications for SAIDI and SAIFI targets

Year	Month	Reason
2020	August	Automatic tension sleeve connector on 4/0 ACSR conductor failed causing an outage on the M26 27.6kV feeder.
2020	November	A foreign interference dig-in incident wherein a private contractor was excavating on an industrial property. The customer-owned fuses did not clear the fault before the M26 Feeder breaker operated which caused an outage to 4,170 customers.
2021	March	A pole fire due to a defective insulator.
2021	September	Rainstorm resulting in a large tree falling onto the M25 Feeder.
2021	October	A failed primary express elbow within a PME-9 unit.

OHL has implemented the following measures to maintain the SAIDI and SAIFI values over the forecast period:

- Planned renewal of end-of-life assets such as poles and cables.
- Proactive vegetation management.
- Replacement of automatic tension sleeves with full tension compression sleeves
- Inspection of the plant to identify potential problems.
- Testing of wood poles with a resistograph.
- Design and construction of distribution circuits to meet CSA-Heavy standards.

These activities and measures are explained in further detail within Appendix C of the DSP – OHL's Distribution Maintenance Program.

5.2.3.2 Service Quality and Reliability

5.2.3.2.1 Service Quality Requirements

OHL has filed Chapter 2 Appendix 2-G Service Reliability and Quality Indicators in live excel format with this application. The data in Appendix 2-G as well as the tables included in this document are consistent with the scorecard. OHL discusses reliability below in section 5.2.3.2.2 Reliability Requirements.

OHL measures and reports on an annual basis on each of the service quality requirements set out in the Distribution System Code ("DSC"). Failure to meet minimum service quality targets would result in measures being taken to realign performance with DSC service quality standards. Service Quality measures include the following major measures: New Residential/Small Business Services Connected on Time, Scheduled Appointments Met on Time and Telephone Calls Answered on Time. Additional sub-measures are tracked as part of the DSC requirements. All these measures are self-explanatory, and all relate to OHL providing connection services as well as quality customer service. OHL is committed to meeting and exceeding all targets found in the Service Quality performance measure group.

Over the past years OHL has exceeded all measures including new services connected on time, scheduled appointments met, and telephone calls answered within 30 seconds. OHL attributes this success to its open-door policy to its customers. Employees answer the telephone themselves with only an IVR to direct calls when they are first received to the correct department and make personal arrangements for appointments. Customers are generally helped immediately with questions or issues at the first point of contact, whether by phone or in person. The following table presents the service quality metrics tracked by OHL along with OHL's historical performance records. Table 5.2-5 below presents only a subset of metrics, however, OHL's scorecard provides a detailed breakdown by sub-metrics.

Table 5.2-5: Historical Service Quality Metrics

Measure	Metric	2018	2019	2020	2021	2022	Target
Service Quality	New Residential/Small Business Services Connected on Time	100.00%	100.00%	100.00%	99.24%	100.00%	90%
	Scheduled Appointments Met on Time	99.76%	100.00%	100.00%	99.25%	100.00%	90%
	Telephone Calls Answered on Time	99.94%	99.90%	99.11%	99.21%	99.26%	65%

OHL exceeded the industry targets for each service quality measure. OHL's outstanding performance on these measures indicates no substantial additional material projects are required for investments in this area. OHL continues to strive to better serve the customer with the highest excellence. OHL's intended action for these measures is to maintain the performance.

OHL measures and reports on Customer Satisfaction measures which include: First Contact Resolution, Billing Accuracy and Customer Satisfaction Survey Results. OHL uses the OEB Targets for these measures and relies on its staff to meet these targets.

First Contact Resolution

OHL measures this performance by logging all calls, letters, and emails received and track them to determine if the inquiry was successfully answered at the first point of contact. A series of logged calls would be created to assist the customer service representative to accurately choose the logged call pertaining to the inquiry received. A specific service order has been created to track any call, letter, or email that was not resolved at the first point of contact.

Billing Accuracy

OHL performs due diligence by testing the consumption levels in correlation to the amount expensed to its customers. The utility also performs analysis of meter reading data and fixing any errors that may arise before it is communicated on the customer's bill.

Customer Satisfaction

Customer satisfaction survey results and customer engagements are important to the success of OHL. OHL is proactive and reactive in its customer engagement consultations, the majority of which provide helpful insight into the day-to-day operations of OHL. OHL engages Advanis in collaboration with other CHEC member utilities to control costs and to conduct an independent biennial telephone-based customer satisfaction survey. The purpose of the survey is to focus on addressing issues of concern raised directly by customers. The survey asks questions of both residential and general service customers on a wide range of topics including power quality and reliability, price, billing payment, communications, and the customer service experience. The feedback is then reviewed by the management team, incorporated into OHL's planning process and forms the basis of plans to improve customer satisfaction, meet the needs of customers, and address areas of improvement.

OHL sets a high standard for performance when it comes to customer care and is proud of the results. OHL strives to deliver customer excellence and value through the execution of its capital investments and operations. OHL believes they have delivered the intended performance for each metric delivering customer satisfaction demonstrating credibility and trust. Targets are established through a five-year moving average (see Table 5.2-6).

Table 5.2-6: Performance Measures - Customer Satisfaction

Measure	Metric	2018	2019	2020	2021	2022	Target
Customer Satisfaction	First Contact Resolution	99.9	99.90%	99.9	99.83%	99.62%	No target
	Billing Accuracy	99.99%	100.00%	99.84%	99.82%	99.73%	98%
	Customer Satisfaction Survey	78.20%	78.20	76.00	76.00	76.00	No target

OHL's performance on the measures indicates no substantial additional material projects are required. OHL continues to strive to better serve the customer with the highest excellence. OHL's intended action for the measure is to maintain the performance of the historical average.

Table 5.2-7 is an excerpt from Appendix 2-G filed with this application. All remaining measures not already discussed are within the OEB minimum standard.

Table 5.2-7: Appendix 2-G SQI: Service Quality

Indicator	OEB Minimum Standard	2018	2019	2020	2021	2022
Low Voltage Connections	90.0%	100.00%	100.00%	100.00%	99.24%	100.00%
High Voltage Connections	90.0%	100.00%		100.00%		
Telephone Accessibility	65.0%	99.94%	99.90%	99.11%	99.21%	99.26%
Appointments Met	90.0%	99.76%	100.00%	100.00%	99.25%	100.00%
Written Response to Enquires	80.0%	98.21%	99.58%	99.54%	98.64%	99.87%
Emergency Urban Response	80.0%	100.00%			100.00%	100.00%
Emergency Rural Response	80.0%					
Telephone Call Abandon Rate	10.0%	0.04%	0.06%			
Appointment Scheduling	90.0%	99.87%	100.00%	99.39%	94.52%	93.54%
Rescheduling a Missed Appointment	100.0%	75.00%				
Reconnection Performance Standard	85.0%	97.53%	95.88%	97.62%	100.00%	100.00%

5.2.3.2.2 Reliability Requirements

System reliability is an indicator of the quality of the electricity supply received by the customer. System reliability and performance are monitored via a variety of weekly, monthly, annual, and on-demand reports generated by the Smart Faulted Circuit Indicators, Customer Notification Bulletins from HONI, and the Outage Monitoring System ("OMS"). OHL collects and reports outage data using the standard format and codes specified in the "Reporting and record keeping requirements" (RRR) document. OHL utilizes other methods of data collection and cataloging such as trouble reports collected by field employees. Calculations are made to determine the reliability indices for SAIDI, SAIFI, and CAIDI. The data is sorted to determine frequency and duration for each feeder as well as to determine the cause and affected components.

The reliability of supply is primarily measured by internationally accepted indices SAIDI and SAIFI as defined in the OEB's *Electricity Reporting & Record Keeping Requirements* dated May 3, 2016. SAIDI, or the System Average Interruption Duration Index, is the length of outage customers experience in the year on average, expressed as hours per customer per year. It is calculated by dividing the total customer hours of sustained interruptions over a given year by the average number of customers served. SAIFI, or the System Average Interruption Frequency Index, is the number of interruptions each customer experiences in the year on average, expressed as the number of interruptions per year per customer. It is calculated by dividing the total number of sustained customer interruptions over a given year by the average number of customers. An interruption is considered sustained if it lasts for at least one minute.

$$SAIDI = \frac{Total\ customer\ hours\ of\ sustained\ interruptions}{Average\ number\ of\ customers\ served}$$

$$SAIFI = \frac{Total\ customer\ interruptions}{Average\ number\ of\ customers\ served}$$

CAIDI or the Customer Average Interruption Duration Index is the average interruption time per customer affected and can be found by dividing the SAIDI value for the given year by the SAIFI value. CAIDI can also be viewed as the average restoration time.

$$CAIDI = \frac{SAIDI}{SAIFI}$$

Loss of Supply ("LOS") outages occur due to problems associated with assets owned by another party other than OHL or the bulk electricity supply system. OHL tracks SAIDI and SAIFI including and excluding LOS. Major Event Days ("MED") are calculated using the IEEE Std 1366-2012 methodology. MEDs are confirmed by assessing whether interruption was beyond the control of OHL (i.e., force majeure or LOS) and whether the interruption was unforeseeable, unpredictable, unpreventable, or unavoidable.

OHL's reliability metric values for the historical period, adjusting for LOS and MEDs, are shown in the tables below.

Table 5.2-8: Historical Reliability Performance Metrics – All Cause Codes

Metric	2018	2019	2020	2021	2022	Average
SAIDI	0.39	1.05	1.40	1.90	3.33	1.61
SAIFI	0.35	1.08	1.01	1.09	2.32	1.17
CAIDI	1.11	0.97	1.39	1.75	1.43	1.33

Table 5.2-9: Historical Reliability Performance Metrics – LOS and MED Adjusted

Metric	2018	2019	2020	2021	2022	Average
	Loss of Supply Adjusted (including MEDs, Excluding LOS)					
SAIDI	0.29	0.33	1.01	1.75	2.94	1.26
SAIFI	0.16	0.39	0.75	0.91	1.44	0.73
CAIDI	1.81	0.85	1.35	1.91	2.03	1.59
	Major Event Days Adjusted (including LOS, excluding MEDs)					
SAIDI	0.39	1.05	1.40	1.90	0.86	1.12
SAIFI	0.35	1.08	1.01	1.09	1.40	0.99
CAIDI	1.11	0.97	1.39	1.75	2.66	1.58
	Loss of Supply and Major Event Days Adjusted (excluding LOS and MEDs)					
SAIDI	0.29	0.33	1.01	1.75	0.47	0.77
SAIFI	0.16	0.39	0.75	0.91	0.52	0.55
CAIDI	1.80	0.85	1.35	1.91	0.92	1.37

In the above tables, the values for SAIDI and SAIFI metrics are higher than usual in 2020 and 2021 which is driving the average higher. This is due to multiple reasons and the explanation for these can be found in Section 5.2.3.1.2.

OHL's historical performance for SAIDI, SAIFI and CAIDI is visualized in the figures below.

Figure 5.2-7: Performance Measure - SAIDI

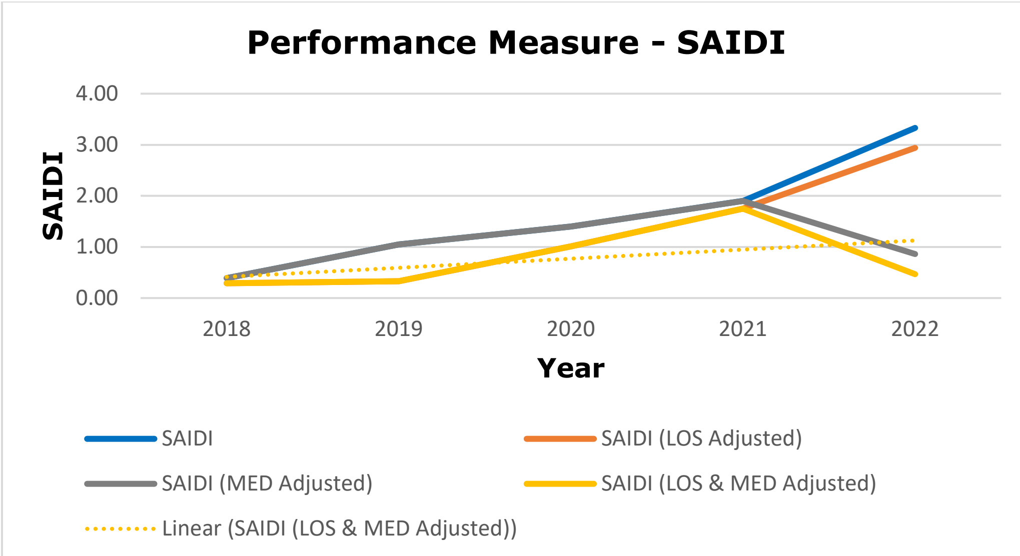


Figure 5.2-8: Performance Measure – SAIFI

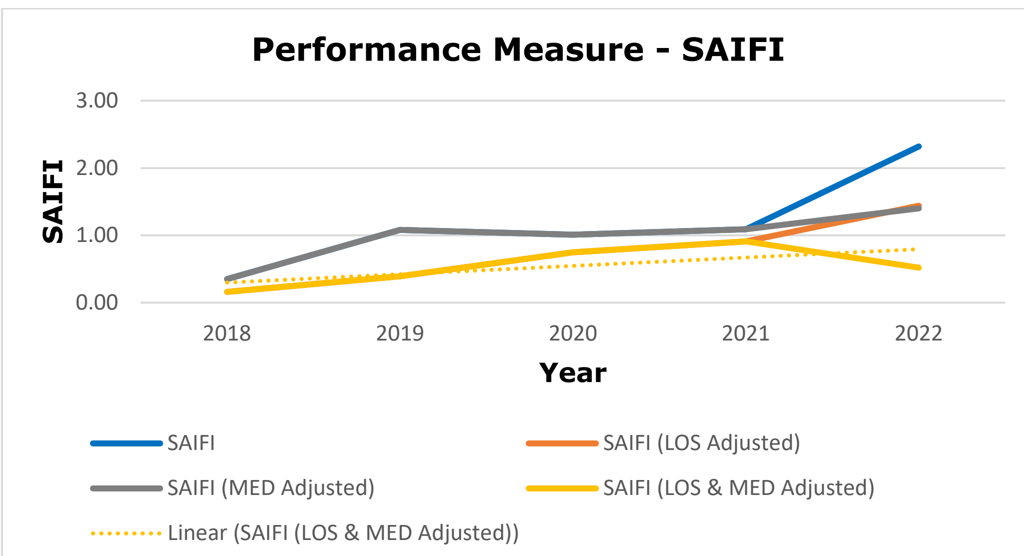
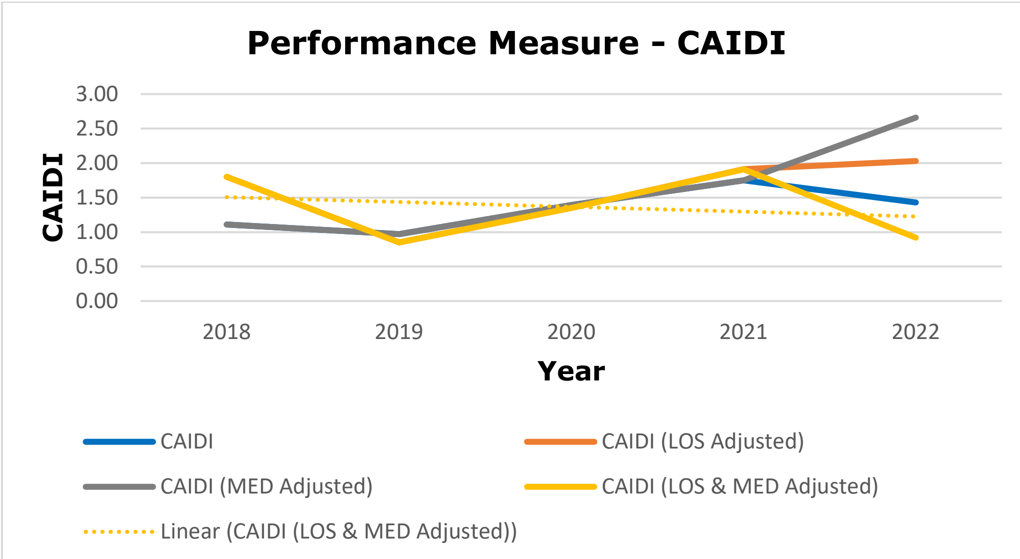


Figure 5.2-9: Performance Measure – CAIDI



OHL uses the SAIDI and SAIFI reliability indexes to gauge the system reliability performance and maintain tight control over capital and maintenance spending. DSP investment priorities are expected to be in alignment with maintaining the historical average reliability performance.

Furthermore, OHL uses several programs to reduce the number of controllable outages. These programs include:

- Planned renewal of end-of-life assets such as poles and cables.
- Planned replacement of automatic tension sleeves.
- The completed replacement of legacy EPAC insulators.
- Proactive vegetation management.
- Inspection of the plant to identify potential problems.
- Testing of wood poles.
- Design and construction of distribution circuits to meet CSA-Heavy standards.

5.2.3.2.3 Outage Details for Years 2014-2022

The following sections and figures provide the breakdown of historical outages for the historical period regarding the number of outages, the number of customers interrupted, and the number of customer hours experienced by the outages. Tracking outage performance by cause code provides valuable information on specific outage causes that need to be addressed to improve negative trending. As with the reliability indices, the historical performance range is used as a target and results outside this range indicate positive or negative trending. The following tables illustrate the number of MEDs over the historical period, the cause of them, and the customer hours interrupted.

Table 5.2-10: Summary of MEDs over the Historical Period

Year	# of MEDs	Cause of MEDs
2022	1	Significant winter blizzard on December 22 & 23
2017	1	A loss of supply event occurred on January 17 due to an ice storm.

Table 5.2-11: List of MEDs over the Historical Period

Date	Customer Base Interrupted	Description
2022	5,400	Significant winter blizzard on December 22 & 23
2017	4,211	A loss of supply event occurred on January 17 due to an ice storm.

Table 5.2-12 presents a summary of outages that have occurred within OHL's service territory providing three different categorizations. A further breakdown by cause codes is provided in the following subsections.

Table 5.2-12: Number of Outages (2018-2022)

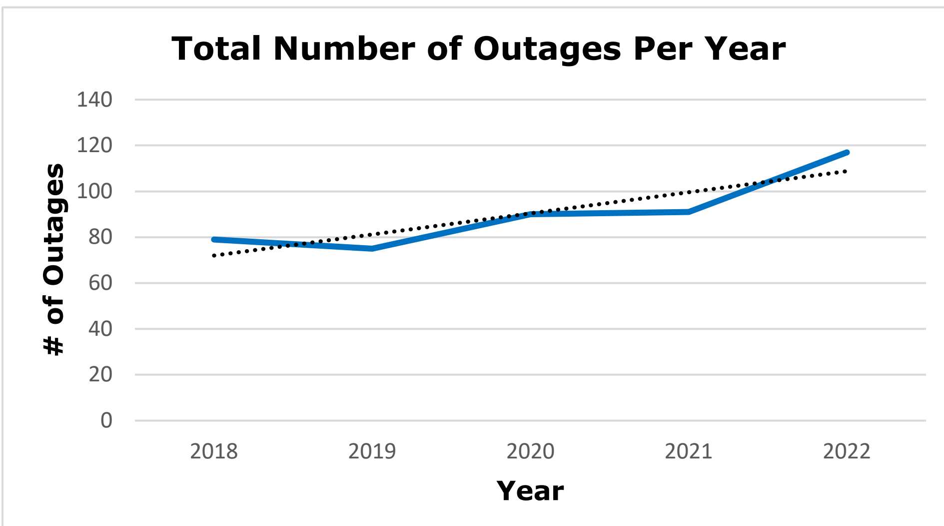
Categorization	2018	2019	2020	2021	2022
All interruptions	79	75	90	91	117
All interruptions excluding LOS	78	72	88	89	109
All interruption excluding MED and LOS	78	72	88	89	109

Table 5.2-13 presents the count of outages broken down by cause code for the historical period. The number of outages is an indication of outage frequency and impacts customers differently based on customer class. For example, residential customers may tolerate a larger number of outages with shorter duration while commercial and industrial customers may prefer fewer outages with longer duration thereby reducing the overall impact on production and business disruption. OHL continues to assess and execute capital and O&M projects to manage the number of outages experienced.

Table 5.2-13: Outage Numbers by Cause Codes

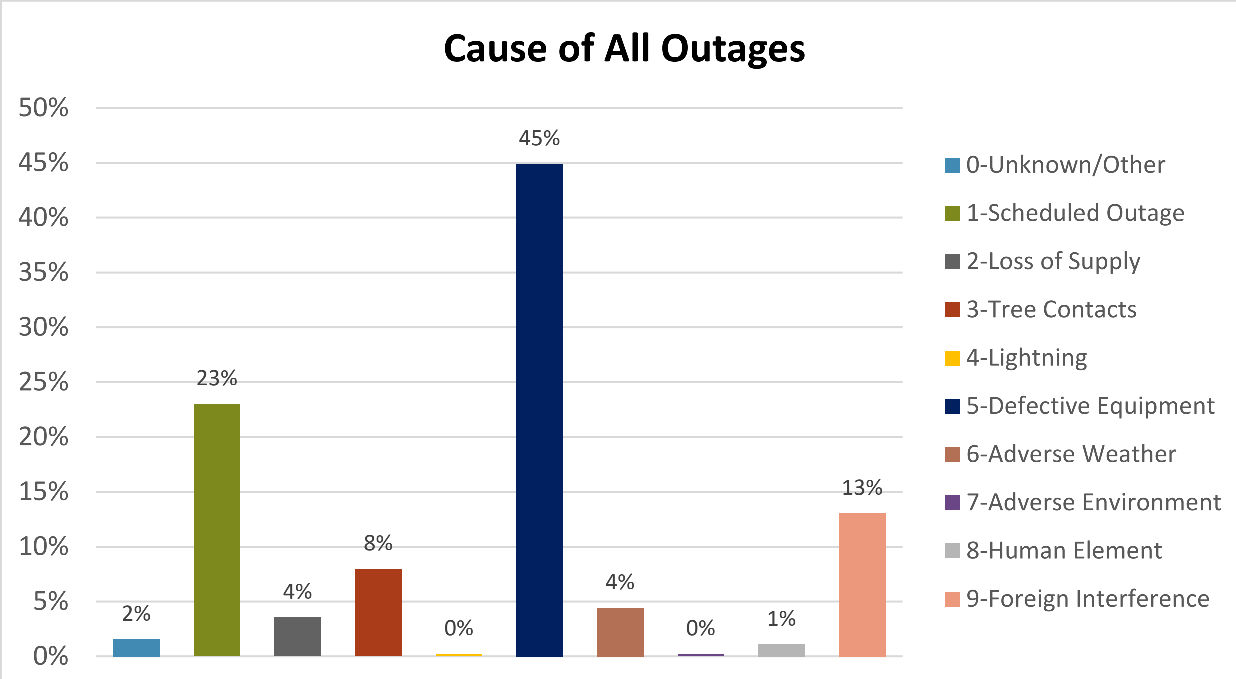
Cause Code	2018	2019	2020	2021	2022	Total Outages	%
0-Unknown/Other	-	5	2	0	0	7	2%
1-Scheduled Outage	19	8	13	13	51	104	23%
2-Loss of Supply	1	3	2	2	8	16	4%
3-Tree Contacts	8	1	6	10	11	36	8%
4-Lightning	-	1	-	0	0	1	0%
5-Defective Equipment	40	42	47	49	25	203	45%
6-Adverse Weather	4	1	10	0	5	20	4%
7-Adverse Environment	-	1	-	0	0	1	0%
8-Human Element	-	2	-	1	2	5	1%
9-Foreign Interference	7	11	10	16	15	59	13%
Total	**79**	**75**	**90**	**91**	**117**	**452**	**100%**

Figure 5.2-10: Total Number of Outages per Year



The total number of interruptions over the historical period varies from a low of 75 to a high of 117, with the overall trend increasing in the period. This represents an average of 0.205 to 0.321 interruptions per day. The top three cause codes ranked by percentage share over the historical period are *Defective Equipment, Scheduled Outage,* and *Foreign Interference.* A summary of the causes of outages within OHL's system is presented in Figure 5.2-11 along with the percentage of overall outage incidents attributable to each cause type.

Figure 5.2-11: Percent of Outages by Cause Code



Defective Equipment outages are a major contributing cause (one of the top three) to the total outages, total customers interrupted, and customer hours interrupted. *Defective Equipment* outages accounted for 45% of the total outages experienced at OHL. These failures result from equipment failures due to condition deterioration, ageing effects or imminent failures detected from reoccurring maintenance programs. OHL has planned investments to prioritize assets for replacement before experiencing a failure that may cause an outage. OHL utilizes evaluations such as the Asset Condition Assessment to assist in prioritizing investments in asset classes.

The majority of these defective equipment causes are listed below:

- Single Customer Service Wire/Connector Issue – The majority of outage incidents under *Defective Equipment* are issues related to a single customers service such as an underground service conductor burn-off or an overhead service wire connection failure. These issues normally one affect one customer and do not have a significant impact on the systemwide SAIDI and SAIFI values but do increase the number of outage incidents. The below causes have a more significant impact on the systemwide SAIDI and SAIFI values.
- Automatic Sleeve Failure – OHL has a replacement program to address these during the forecast period.
- Insulator Failure – OHL staff and contractors have replaced the legacy EPAC insulators on OHL's system.
- Porcelain Cutout Failure – OHL is continuing with its replacement program of replacing porcelain cutouts with polymer cutouts.
- Elbow Failure on a 600A Express in a PME – OHL is continuing with its infrared scanning program and started an ultrasonic partial discharge scanning program. In addition, OHL has trained staff on improved installation techniques.

- PME Failure – OHL has a formal PME replacement program.

Scheduled Outages have remained steady over the historical period due to the execution of OHL's plans. Over the historical period, it has contributed to 23% of the total number of outages that occurred. These outages are due to the disconnection of service for OHL to complete capital investments or to perform maintenance activities on assets that require them to be disconnected for employee safety. A significant capital investment that contributes to this cause code is OHL's ongoing conversion from 4.16 kV to 27.6 kV system as this requires periodic disconnections. OHL continues to plan capital work and maintenance appropriately in times that would affect minimal customers and with short durations.

Foreign Interference continues to be a major top contributing cause to the total outages, total Customer Interruptions and Customer Hours Interrupted. The outages contributing to the cause include dig-ins, vehicle collisions, animal interference, and/or foreign objects. Some of these contributing factors can be minimized such as educating the public about calling before digging or installing animal guards in areas observed to have a high activity of animals, both of which OHL continues to do. However, other factors such as vehicle collisions can happen at random and depending on the extent and where the collision happens may result in a large impact.

Tree contacts continues to contribute to the cause of outages. After the 2013 and 2016 ice storms, OHL increased tree trimming activities with internal staff. In order to maintain reliability and reduce the risk of significant outages during storms, increased labour hours were spent on tree trimming activities. In 2016, OHL began a formal rear-lot line clearing program. OHL's rear-lot infrastructure that was inaccessible for OHL trucks was divided into seven Zones. An Arborist Contractor is utilized each year to complete the line clearing activities within one or two of the seven zones. This program did not exist in 2014, therefore, this is a net-new program with new costs. This program is required to maintain reliability, reduce the risk of challenging outages during ice/windstorms, reduce fire concerns, and reduce the risk of electrical contact from children climbing trees. This program is further justified through the requirements of the IHSA Safe Practice Guide for Line Clearing Operations and Regulation 22/04: Electrical Distribution Safety. OHL's line clearing program has been created to comply with our mandatory obligations, maintain reliability, reduce the risk of fires, and reduce the risk of electrical contacts from children climbing trees near overhead wires.

Loss of Supply outages attributed to a small share of only 4% of the total outages throughout the historical period but accounted for 37% of total Customers Interrupted ("CI") and 22% of total Customer Hours Interrupted ("CHI"). These outages are due to problems associated with assets owned outside of OHL in which OHL has no control over nor does it maintain. Although *Loss of Supply* outages have minimal contribution in terms of outage counts, they have a significant impact on the total CI and CHI. One outage can affect a whole portion of OHL's system and may give OHL limited switching capability, resulting in customers' power not being restored quickly.

The number of CI is a measure of the extent of outages. CHI is a measure of outage duration and the number of customers impacted. The tables and figures below provide the historical values and trends for both CI and CHI.

Table 5.2-14: Customers Interrupted Numbers by Cause Codes

Cause Code	2018	2019	2020	2021	2022	Total CI	%
0-Unknown/Other	-	92	48	0	0	140	0%
1-Scheduled Outage	199	259	208	238	729	1,633	2%
2-Loss of Supply	2,353	8,779	3,300	2,226	11,318	27,976	37%
3-Tree Contacts	183	1	7	2,479	5177	7,847	10%
4-Lightning	-	1	-	0	0	1	0%
5-Defective Equipment	1,325	262	4,695	8,799	311	15,392	21%
6-Adverse Weather	162	12	242	0	11,936	12,352	17%
7-Adverse Environment	-	-	-	0	0	12	0%
8-Human Element	-	49	-	22	22	93	0%
9-Foreign Interference	187	4,207	4366	205	398	9,363	13%
Total	**4,409**	**13,662**	**12,866**	**13,969**	**29,891**	**74,809**	**100%**

Figure 5.2-12: Total CI over historical years

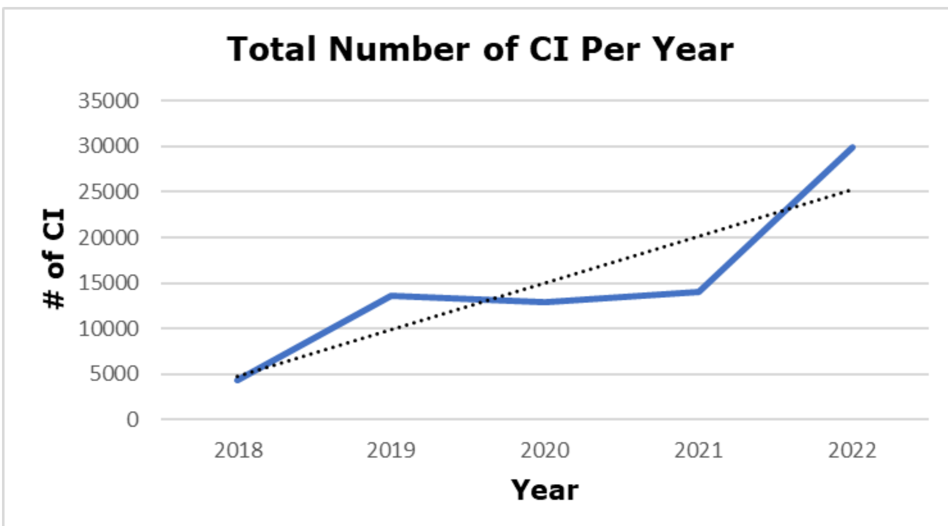
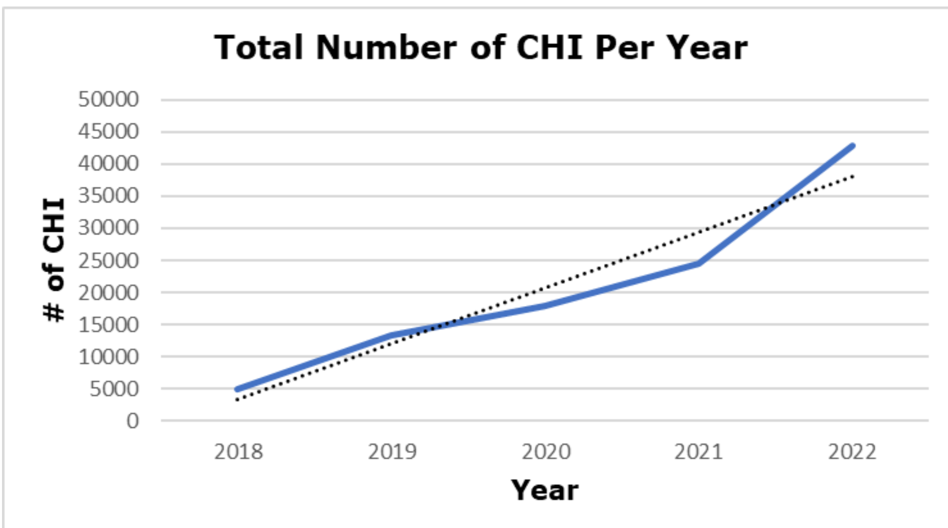


Table 5.2-15: Customer Hours Interrupted Numbers (rounded) by Cause Codes –

Cause Code	2018	2019	2020	2021	2022	Total CHI	%
0-Unknown/Other	0	90	56	0	0	146	0%
1-Scheduled Outage	426	534	420	2,187	1,628	5,195	5%
2-Loss of Supply	1,216	9,147	5,065	1,966	5,007	22,401	22%
3-Tree Contacts	295	2	66	4,083	3,556	8,002	8%
4-Lightning	0	1	-	0	0	1	0%
5-Defective Equipment	2,692	431	6,131	15,598	429	25,281	24%
6-Adverse Weather	108	12	3,300	0	31,772	35,192	34%
7-Adverse Environment	0	12	-	0	0	12	0%
8-Human Element	0	54	-	266	12	332	0%
9-Foreign Interference	189	3,024	2,850	295	456	6,814	7%
Total	**4,926**	**13,307**	**17,888**	**24,395**	**42,860**	**103,376**	**100%**

Figure 5.2-13: Total CHI over historical years



An increasing trend is seen for both the total customers interrupted and customer hours interrupted over the historical period. As seen in the tables, the top cause code that can be controlled and managed by OHL is *Defective Equipment.* OHL proposes continued investments into its AM strategy to manage the impact of outages on the total CI and CHI.

There have been nine main drivers for 85% of the outages over the last 5 years. OHL have analysed these outages, and this has driven OHL to:

1. Work with Hydro One and request resolution to upstream issues.
    a. OHL requested Hydro One install fuses on unfused radial upstream of OHL demarcation.
    b. OHL requested galloping conductor mitigations, resulting in Hydro One installing interphase spacers upstream of OHL demarcation.

   c. OHL has requested changes to the Hydro One Protection and Control settings to reduce nuisance momentary outages to OHL customers. This is expected to take effect in 2024 after the Orangeville TS upgrades.
   d. Hydro One will be rebuilding the Grand Valley DS which will reduce animal contacts within the Grand Valley DS.
2. Increase vegetation management activities as compared to 2014
   a. Also, OHL works with the municipalities to identify and request removal of dead/dying trees that are high risk to OHL pole lines
3. Replace all EPAC insulators to avoid additional pole fires
4. Replace porcelain switches and cutouts during planned maintenance and capital programs
5. Start the Automatic Tension Sleeve Replacement program in 2023
6. Begin Ultrasonic Partial Discharge testing on primary express infrastructure and retrain staff on primary elbow installation practices.
7. Promote Ontario One Call's call/click before you dig through social media as well as work with Locate Service Provider to increase number of locators to ensure compliance with Ontario One Call and meet excavators' timelines for receiving locates.

5.2.3.3 Distributor Specific Reliability Targets

OHL does not use any additional metrics to track its reliability, beyond what is reported to the OEB.

5.3 ASSET MANAGEMENT PROCESS

5.3.1 PLANNING PROCESS

5.3.1.1 Overview

Key elements of the process that drive the composition of OHL's proposed capital investments are highlighted along with OHL's asset management philosophy. The relationship between the Renewed Regulatory Framework for Electricity ("RRFE") outcomes, corporate goals, asset management objectives, and the linkage to the selection and prioritization of OHL's planned capital investments is explained which controls OHL's financial performance and planning.

The components of the asset management process that OHL has used to prepare its capital expenditure plan are identified, including data inputs, preliminary process steps and outputs. The information generally used throughout the DSP is based on available information established at the given moment.

OHL's asset management objectives form the high-level philosophy framework for its capital program. These objectives help to define the content of the programs and the major projects in the capital expenditure plan to be able to sustain OHL's electrical distribution system. The objectives guide OHL to make effective capital investment decisions, which inherently make the best use of, and maximize the value of the assets to the company. The objectives identify an initial starting point and continue to be developed, enhanced, or adjusted as necessary to be aligned with the business environment that the company operates in and help to encourage the process of continuous improvement. The asset management objectives have been qualitatively integrated into OHL's capital investment process to identify, select, and prioritize investments for each planning cycle. Furthermore, the objectives are in harmony with the corporate values, vision, and mission statement. OHL's 2023 Business Plan is attached in Appendix A which contains its strategic objectives.

OHL prepares its capital plans with consideration to business risks known to the utility. Preparations include consultations with key parties, incorporating historical performances into actionable items for the forecast plan, tailoring asset management goals, processes and practices and adopting the latest industry standards to achieve the best value out of its system while managing the risk categories such as safety, cybersecurity, and changing environments. OHL relies on a set of tools to assist in achieving the desired goals with consideration to corporate business risk. To support the tools and methodologies, a set of planning assumptions and criteria are applied to reflect OHL's system.

5.3.1.2 Important Changes to Asset Management Process since last DSP Filing

Since OHL submitted its last DSP only 2 years ago, OHL has not made any further significant changes to the asset management process. OHL, over the next few years, will continue to review the efficacy of its process and make updates as required.

5.3.1.3 Process

Planning Criteria & Process

OHL, like other distribution utilities, strives to ensure its distribution system provides a reliable level of service to customers and connection capacity for forecasted demand growth and as such must be able to handle customer supply needs during normal and certain contingency situations. Overloading of distribution equipment, because of inadequate investment, is avoided as much as possible.

It is OHL's planning policy that the distribution networks shall be designed, constructed, operated, maintained, and renewed in an efficient manner which:

- Supports OHL's strategic goals and asset management objectives.
- Supports the OEB's RRFE outcomes.
- Implements OHL's business plan.
- Complies with regulatory and statutory requirements.
    - Health and safety of workers and the public.
    - Electricity supply quality and reliability.
    - Environmental Protection.
    - Good utility practice.
    - Financial and IFRS accounting practice.
- Effectively controls and balances service levels with asset lifecycle costs and risks.

With its corporate emphasis on business performance and accountability, OHL has developed a capital budget process and system of prioritization. This system reflects its long-term investment strategy, recognizes shorter-term requirements, and can address the ongoing need for OHL to respond to external and internal priority changes. It respects the priorities of a wide range of stakeholders, OHL's corporate strategies and regulatory requirements. OHL's asset management process is shown in the figure below which OHL leverages to identify, select, develop, prioritize, execute, and monitor its investment plans.

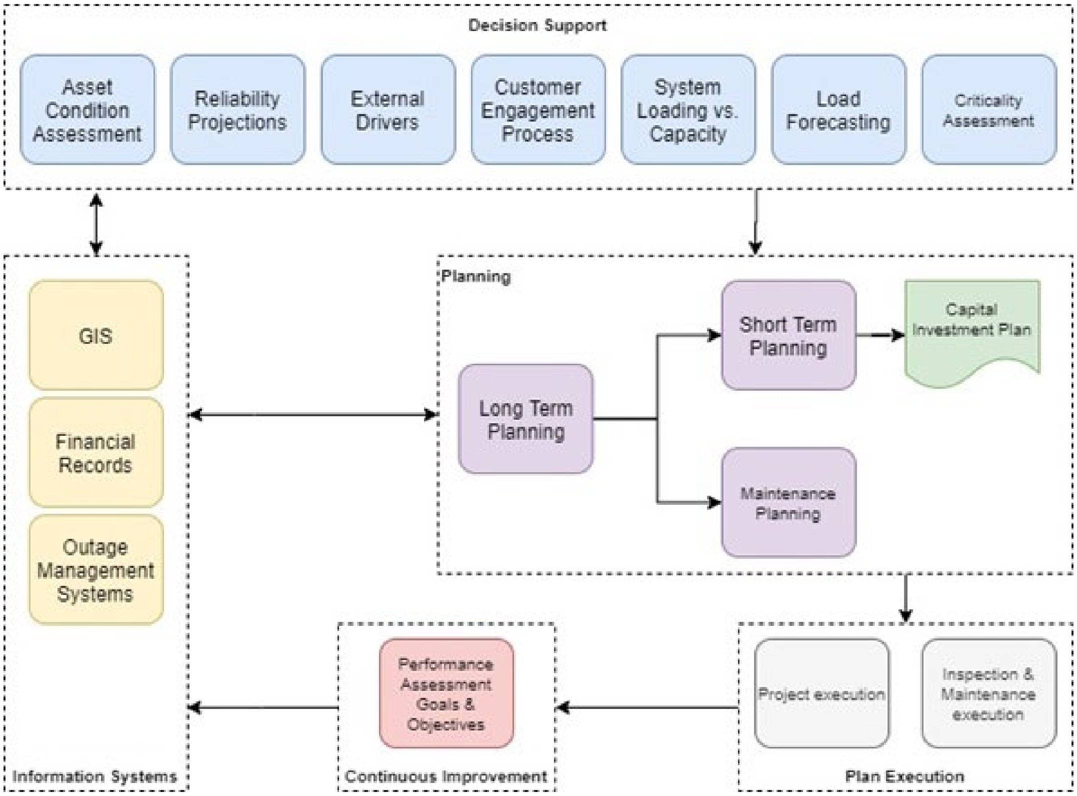
OHL's asset management process is established in a way to coordinate activities to ensure the assets are optimally achieving the company's corporate and asset management objectives. Conceptually, the process includes items such as setting out the criteria for optimizing and prioritizing asset management objectives, lifecycle management requirements of the assets, stating the approach and methods by which the assets are managed, including performance, condition and criticality assessment, the approach to the management of risk, and identifying continuous improvement initiatives. OHL's process is visualized in the Figure 5.3-1. The process contains five elements and is an iterative process:

- Information Systems
    - These are the systems, where the key input data is collected and fed into supporting the activities within the Decision Support element and into the development of OHL's investment plans.
- Decision Support
    - The activities within this element of the process are fundamental to developing the key information that will support OHL in developing its

investment plans. This includes activities that cover both asset information and customer information and look at the impacts it has on the system in terms of capacity and asset health. This includes load forecasting, where OHL looks to continually improve to take account for items such as potential increase in EV vehicles, building electrification etc. Where appropriate OHL also would carry out a sensitivity analysis to account for uncertainty it forecasts.

- Planning
  - Within this section OHL takes a combination of inputs from its decision support outputs, other data and information from its information systems, and develops its investment plans. These include the development of a 5-year plan, maintenance plan, and the overall capital plan.
  - It should be noted that this is a continuous cycle, and new information is regularly collected, these plans are updated and changed on a regular basis to ensure OHL continues to deliver on its corporate and AM objectives.
- Plan Execution
  - Once OHL has developed its plans, it develops the execution plans, which include the execution of capital projects, and its maintenance execution plans. This includes the development of what resources are required, materials etc.
- Continuous Improvement
  - This section is where OHL continually tracks its progress in the execution of its investment plans. This information, including new asset information, testing, and maintenance data is inputted into the various information systems. This data then feeds back into the decision support and planning sections of OHL's AM process.

Figure 5.3-1: OHL's Asset Management System



The goals and objectives used throughout OHL's asset management approach are embedded within the asset management system to integrate continuous improvements in OHL's plan. This includes any key tactical initiatives that help achieve the objectives. The goals and objectives, once identified, have targets established that determine the measure of success of the asset management programs and practices. Conceptually, objectives revolve around, but not be limited to safety, reliability, and cost-efficiency.

<u>Planning Assumptions</u>

As part of the DSP and the plans outlined, the following assumptions are applicable:

- Equipment maintenance, refurbishment and replacement programs are in place to ensure that the capacity and capability of the distribution system are maintained at a reasonable level of risk of disruption due to lifecycle-related equipment failure.
- Incidences of extreme weather continue to be manageable under existing standards of design and construction.
- Historical trends continue unless other information is available otherwise.
- The level of activity in REG continues to be in alignment with historical connection requests or more likely to be less due to the end of the Feed-In-Tariff program.
- External assumptions such as limited growth found in the municipality and developers of the region are held constant and up to date.
- OHL, when identifying any assets for replacement, considers the future capacity requirements such that it does not need to be replaced prematurely due to capacity restraints.

- OHL connected approximately 65 new customers per year over the last 5 years. OHL anticipates that this rate to increase through the forecast period and has budgeted for this in its capital plan under System Access projects.
- CDM- OHL considers CDM activities where appropriate. Currently no viable CDM options are available or mandated through the IESO. OHL will continue to monitor and provide CDM options as they become available.
- Load Forecasting – OHL undertakes load forecasting which helps OHL understand the potential impact future loads could have on its network. With a focus on an increase in potential electrification of both vehicles and building heating, OHL has begun to look at the potential impact these could have on OHL's network. As with all forecasts, OHL also looks at sensitivity analysis of its forecasts to account for uncertainties of what may happen in the future. It should be noted that currently OHL does not foresee any short-term issues during the forecast period, and OHL has capacity accommodate the future growth it has currently forecast.

Project Identification

Capital spending is driven by customer value and capital needs identification through OHL's asset management process.

System Access projects such as development and municipal plant pole relocation projects are identified throughout the year by way of engagement with external proponents. These projects are mandatory and are budgeted and scheduled to meet the timing needs of the external proponents.

System Renewal projects are identified through OHL's asset management process. The project needs for a specific period are supported by a combination of asset inspection, individual asset performance, and asset condition assessments as summarized in the asset management process.

System Service projects are identified through OHL's asset management process and operational needs to ensure that any forecasted load changes that constrain the ability of the system to provide consistent service delivery are dealt with promptly.

General Plant projects are identified internally by specific departments (engineering, finance, operations, administration, etc.) and supported through specific business cases for the specific need.

Project Selection, Risk Management, and Prioritization

Non-discretionary projects are automatically selected and prioritized based on externally driven schedules and needs. System Access projects fall into this category and may involve multi-year investments to meet customer or developer requirements. For discretionary investments across System Renewal, System Service and General Plant, a number of prioritization factors are considered. These factors align with OHL's corporate and AM objectives:

- Safety – projects that are considered to address safety as a primary factor.
- Reliability & Performance – projects that help OHL maintain or improve its reliability and meet other OEB performance measures.

- Asset Condition – projects that address assets that are at risk of failure as identified through both asset condition assessments, and inspection and maintenance information.
- Customer Focus – projects that enable OHL to address customer priorities and continue to deliver excellent service to its customers.
- Best Practice – projects that enable OHL to address assets that are no longer considered best practice and are impacting OHL's performance.

These projects are selected and prioritized based on value and risk assessments for each project against the objectives outlined above. Evaluating the absolute or relative importance of these proposed investments can be an intricate task as they may have competing requirements for available resources in any year. Whilst a list of projects may be prioritized using these criteria, within the execution year, the end decision of whether to proceed with an individual project in the current year is made by senior management based upon the best information available at the time.

Project Pacing

Project pace for System Access projects is generally determined by external schedules and needs. Although System Renewal, System Service and General Plant projects tend to be uneven and most are paced to begin and be completed within a particular budget year, OHL takes efforts to minimize the variance of the budget within a given fiscal year. These three investment types are paced with consideration of available resources and managing the program cost impacts on the customer's bill.

5.3.1.4 Data

OHL uses several inputs to assess the status of its distribution system assets and to assist in determining the capital and operational investments to be made in the system. The main elements OHL considers within the asset management process (but not limited to) include:

- Information Systems
- Inspection & Maintenance
- Asset Condition Assessment
- Reliability Analysis
- System Loading & Capacity
- Customer Engagement
- External Factors
- Growth studies

Information Systems

The goal of the information systems is to contain the relevant information for ongoing development and optimization of assets inspection, maintenance, refurbishment, planning, replacement, support regulatory/legislative compliance and support IFRS accounting standards. OHL's information systems (GIS & separate field inspection management platform) are the designated asset registers for field assets and serves as accurate models of OHL's physical electrical distribution system. The information in the GIS, such as location, and specifics of the asset in whole describe the asset. The separate field inspection management platform contains inspection records and asset ratings. OHL's GIS & separate field inspection management platform asset database contains the asset source data that supports the ACA process as well as the capital planning process. Asset data in the GIS is captured from a multitude of sources including, but not limited to construction as-built records and legacy records.

Inspection & Maintenance

The goal of the inspection and maintenance is to be compliant with standards and codes and to leverage the results from the programs to prioritize and plan for asset interventions in any year. OHL maintains a full schedule of distribution asset inspection and maintenance programs operating on a fixed-year rotation as required by the OEB's DSC. Inspection, maintenance, and operational data are collected and stored which is used to support OHL's asset condition assessments which are input for developing operating and capital expenditure plans.

Asset Condition Assessment

The goal of the asset condition assessment is to interpret the inspection and performance data of key assets to assess the overall condition of the asset. The ACA is a key supporting tool for developing an optimized lifecycle plan for asset sustainability with a prioritized list of assets that require capital intervention. Under the proposed capital plan, decisions to repair, refurbish or replace existing assets continues to be based on experienced judgment and knowledge of staff augmented with improved access to electronic records and structured evaluation processes.

Reliability Analysis

The goal of the reliability analysis is to identify and manage the leading outage causes that affect the overall performance and service quality experienced by customers. Outage causes are analyzed for each feeder to evaluate feeder outage risk and develop prioritization for evaluation in the current capital investment planning process. The analysis is used to inform OHL's asset management process in developing the O&M programs and capital expenditure plan for each year.

System Loading & Capacity

The goal of system loading and capacity is to identify, assess, and manage system constraints found on feeders as a result of increasing customer connections, customer load increase or renewable energy generation connections. The information is collected on system peak loading at many points in the system including OHL supply point meters, substation feeder measurement devices and sub-feeder load measurement devices. The data is analyzed as needed to measure the risk of system overloading and to mitigate any concerns.

External Factors

External drivers may sometimes influence OHL's decision-making in determining the optimal plans for their system. OHL continues to remain cognizant of these external drivers when developing its capital and maintenance plans.

External drivers include:

- Political – governments have their directions and strategies that OHL needs to be mindful of and to be in alignment with their plans.
- Economic – economic growth and decline within OHL's service area as well as the shift of business operations within residential units.
- Social – changes in the environment that illustrate customer needs and wants.
- Technological – innovation and development within the electrical/utility sector which includes automation, technology awareness, electric vehicle penetration, battery storage and new services.
- Environmental – ecological and environmental aspects that can affect OHL's operations or demand which includes renewable resources, weather or climate changes, and utility responsibility initiatives.
- Regulatory/Legal – legal allowances and/or changing requirements from the OEB as well as additional legal operations such as health and safety requirements, labour laws, and consumer protection laws.

Growth Studies

The goal of growth studies is to inform and plan accordingly for any future connections that may be requested by customers. OHL leverages the studies led by the municipalities and regional districts to plan allocate appropriate capital budgets and prioritize resources for the projects. Furthermore, this also considers any municipal renewal projects where OHL may have to relocate their assets or work together with the municipality for efficiencies. OHL monitors the development of any relevant studies annually to appropriately adapt and reflect current conditions and projections within its plans.

Tools

Engineering Analysis

OHL Engineering staff can utilize the loading data from the Advanced Metering Infrastructure (AMI) networks and the Operations Data Storage (ODS) for loading analysis of transformers and services. Before the AMI and ODS, field staff were required on-site to install monitoring equipment. The AMI and ODS have reduced the trucking and labour required to analyze the loading of transformers and services. This loading data has also been used to confirm the most appropriate size of equipment required to service particular loads. This has ensured the most appropriate and cost-effective equipment is installed. This optimization includes a reduction in transformer sizes.

OHL's AMI also provides Engineering staff with voltage information at the service delivery point. OHL staff can utilize this information as opposed to attending multiple sites and installing voltage monitoring equipment. The AMI has reduced the trucking and labour required to analyze the voltage at service delivery points.

Asset Management System (GIS) Implementation

The utility asset information is maintained in two separate repositories: The GIS and the separate field inspection management platform. This information is used engineering, operations, and finance departments. The GIS provides a network connectivity model, which more accurately represents the impact of assets on one another.

The model would also be a foundation for system analysis studies, which has been essential for addressing historical REG applications and assessing their potential impacts on the OHL distribution system.

SCADA

The OHL distribution system is relatively compact. The response to trouble calls and outages is within industry norms, as is evidenced by the performance indicators. The need for remote control of switching equipment at this time is minimal. However, as systems become more complex due to distributed generation requirements, system control and operation will also become more complex, and the supporting systems will need to be sophisticated enough to support these operational needs.

Outage Management and Reliability

OHL has utilized the Sensus AMI and the Savage Data ODS to build an Outage Management System at no additional cost from either party. OHL staff receive near real-time visual notification of all Power Fails, Power Restores, Voltage Dips and Meter Tampers that are reported by the smart meters. This has been utilized to decrease the lag between the start of an outage and OHL's awareness of the outage. This decrease in lag reduces the length of outages experienced by customers. The OMS also provides additional information to help determine the scale outages, and whether a problem is on the customer's side of the demarcation point. In some cases, OHL can restore power to customers before the customers become aware of the event. The OMS has deferred further investment in other systems such as other outage management systems, "smart" technologies, and a SCADA system. If addition to the OMS, OHL has installed smart faulted circuit indicators on all main feeders to monitor loading as well as receive alerts regarding loss of supply or downstream fault current details.

5.3.2 Overview of Assets Managed

5.3.2.1 Description of Service Area

5.3.2.1.1 Overview of Service Area

OHL is an urban electric distribution company servicing the Town of Orangeville and the Town of Grand Valley with a total service area of 17 km^2, a municipal population of approximately 34,000, a customer base of 12,846[4] and a mainly summer peaking load. Figure 5.3-2 below depicts OHL's service areas.

[4] Customer base as of end of 2022.

Figure 5.3-2: Service areas for OHL

5.3.2.1.2 Customers Served

In 2022, OHL served 12,846 electricity distribution customers across its service area. The table below presents OHL's customer base over the historical period, divided into residential, general service less than 50 kW, and general service greater or equal to 50 kW. The table does not include USL, sentinel, and streetlight counts.

Table 5.3-1: Changing Trends in Customer Base

Annual Year	Residential	General Service <50 kW	General Service ≥50kW	Total
2022	11,560	1,161	125	12,846
2021	11,483	1,168	124	12,775
2020	11,409	1,164	124	12,697
2019	11,360	1,160	132	12,652
2018	11,285	1,164	134	12,583

5.3.2.1.3 System Demand & Efficiency

The table below shows the annual peak demand (kW) for OHL's distribution system.

Table 5.3-2: Peak System Demand Statistics

Annual Year	Winter Peak (kW)	Summer Peak (kW)	Average Peak (kW)
2022	43,994	49,506	43,117
2021	41,873	49,837	42,117
2020	42,683	51,287	41,557
2019	43,212	45,153	39,868
2018	42,821	48,441	42,145

The total OHL system has remained stable in size and has been consistently summer peaking. It should be noted that the Town of Orangeville is a consistently a summer peaking community while the Town of Grand Valley recently switched from winter peaking to summer peaking. Peak data shown includes the net effect of embedded loads and generators. Variances in the seasonal peaks are attributable to weather temperature in both winter and summer and loading impacts associated with the number of degree days. Table 5.3-3 indicates the efficiency of the kilowatt-hour purchased and delivered by OHL.

Table 5.3-3: Efficiency of kWh Purchased by OHL

Annual Year	Total kWh Delivered (excluding losses)	Total kWh Purchased	Losses as % of Purchased
2022	268,116,946	275,958,140	2.92%
2021	260,728,374	286,727,922	3.07%
2020	254,347,083	263,490,930	3.60%
2019	252,725,978	261,942,354	3.66%
2018	256,748,352	266,473,256	3.79%

5.3.2.1.4 Summary of System Configuration

OHL's distribution system is made up of approximately 75 kilometers of overhead primary circuits, 146 kilometers of underground primary circuits, 1,707 poles, and 1,337 distribution transformers.

OHL's distribution system is embedded in the distribution system of HONI. All OHL feeders are connected to the HONI owned Orangeville TS. The Town of Orangeville is fed from one express 44kV feeder (M5), one express 27.6kV feeder (M26) and two shared 27.6kV feeders (M25 and M23). OHL owns three 4.16kV distribution stations that are connected to the M5 feeder that supplies the older areas of the Town. The Town of Grand Valley is fed from one 12.47kV feeder (F2) that is connected to the HONI owned Grand Valley DS. The Grand Valley DS is fed from a HONI-owned 44kV feeder (M2).

OHL's distribution plant consists of a sub-transmission network at 44kV and 27.6kV with distribution substations at 12.47kV and 4.16kV. OHL is continually completing voltage conversion projects to convert the 4.16kV network to 27.6kV.

OHL manages the following Municipal Substations that supply the older areas of the Town of Orangeville. The Grand Valley DS is owned and managed by HONI.

Table 5.3-4: OHL Municipal Station Nameplate Information

Station Name	Transformer Manufactured Year	Capacity	# of Feeders	Type of Protection
MS 2	1975	5 MVA	2	Fused
MS 3	1967	5 MVA	2	Fused
MS 4	1977	5 MVA	2	Fused
Grand Valley DS	Owned by Hydro One	3 MVA	1	Oil Reclosures

5.3.2.1.5 Climate

Orangeville and Grand Valley are in South-Central Ontario, in the Dufferin County. The climate in OHL is described as cold and temperate, with significant precipitation throughout the year. The average temperature in Orangeville and Grand Valley is 6.7°C and ranges between -10 °C and 25°C. About 922 mm of precipitation falls annually with a monthly average of 97mm[5]. The service area experiences an average of 120 to 140 frost-free days, typically beginning late in May and ending late September.

5.3.2.1.6 Economic Growth

The Town of Orangeville undertook a five-year review of the Official Plan, which sets out in general terms, the pattern by which Orangeville will grow over a 20-year horizon and provides planning policies to guide the physical, social, and economic development of Orangeville. At the time of the review, Orangeville's population was 29,540 and is forecasted to reach a population of 36,490, a growth of 6,950 persons[6]. Furthermore, Grand Valley is anticipated to have an accelerated population and employment growth over the coming year. Population growth is forecasted to increase from 2,965 people to 7,478 people by 2031[7]. OHL is required to work with the town to connect new customers and accommodate the growth with appropriate upgrades and renewals of the system. OHL's existing and new customers expect to receive reliable service. To address this, OHL is constantly engaging with its customers to understand issues that are faced and develop plans to improve the service they are receiving.

Furthermore, OHL experiences a lower customer growth rate as compared to the Greater Toronto Area ("GTA"), resulting in fewer investment dollars to be secured for addressing all residential concerns while balancing with the identified system needs. In response to this OHL attempts to manage significant rate spikes.

5.3.2.2 Asset Information

5.3.2.2.1 Asset Capacity & Utilization

The Town of Orangeville is supplied with four M-Class feeders connected to the Hydro One owned Orangeville TS. Each feeder is metered with Wholesale Revenue Metering Equipment that is used for settlement in the IESO administered wholesale market and

[5] Source: https://en.climate-data.org/north-america/canada/ontario/orangeville-10484/
[6] https://www.orangeville.ca/en/doing-business/resources/Documents/Land-Needs-Assessment-2016.pdf
[7] https://www.townofgrandvalley.ca/en/doing-business/resources/Documents/BuildingPlanningandDevelopment/PlanningandDevelopmentResourceDocuments/Official_Plan-consolidated-April-2017.pdf

load monitoring. Also, OHL has installed Smart Faulted Circuit Indicators (FCIs) on each feeder to provide fault indication, loss of current indication and load monitoring.

The older area of the Town of Orangeville is supplied with three 4.16kV sub-stations with a total of 6 feeders. OHL monitors the peak amperage with ammeters that are read every month.

The Town of Grand Valley is supplied from a single F-Class feeder connected to the Hydro One owned Grand Valley DS. The feeder is metered with Wholesale Revenue Metering Equipment that is used for settlement in the IESO administered wholesale market and load monitoring. OHL has installed FCIs on the feeder to provide fault indication, loss of current indication, and load monitoring.

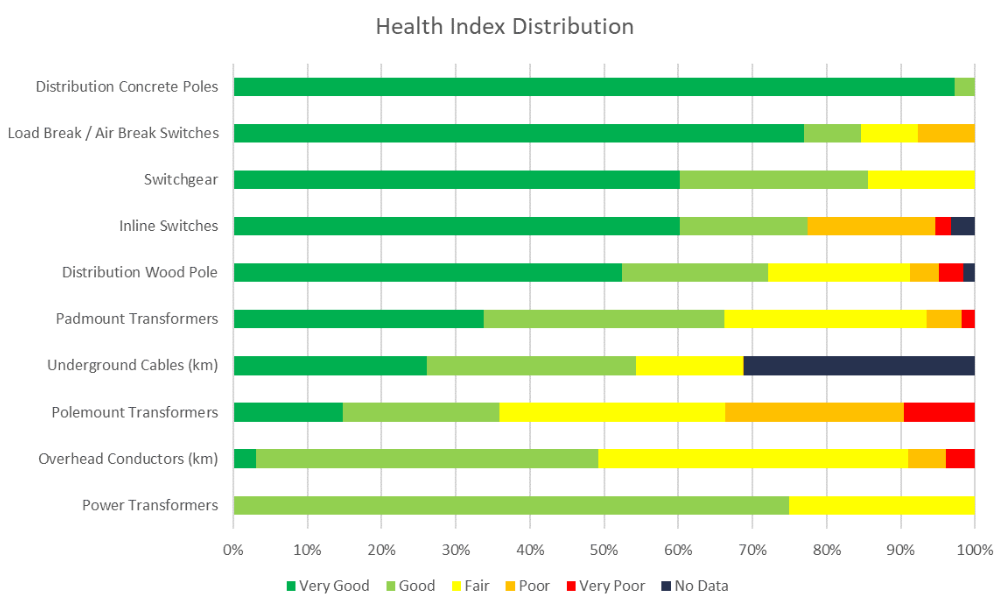
Table 5.3-5: Station Capacity and Peak Load

Station Name	Capacity	Peak Load
MS 2	5 MVA	1.2 MW
MS 3	5 MVA	1.3 MW
MS 4	5 MVA	2.0 MW
Grand Valley DS	3 MVA	2.5 MW

5.3.2.2.2 Asset Condition and Demographics

The Asset Condition Assessment ("ACA") study was carried out by METSCO in 2021 for OHL to establish the health and condition of station and distribution assets in-service. Figure 5.3-3 presents the summary results of the ACA.

Figure 5.3-3: ACA Overview



As the figure above indicates, the majority of OHL's distribution system is in Good or Better condition, with several specific asset classes containing units found to be in Poor and Very Poor condition – most notably Wood Poles and Pole Mount Transformers. Table 5.3-6 presents the numerical Health Index ("HI") summary for each asset class. The distribution of Health Indices is based on the total population count of a given asset class. For each asset class, the following details are listed: total population, average HI, average Data Availability Index ("DAI"), and the HI distribution.

Table 5.3-6: ACA Overall Results

Asset Class	Population	Health Index Distribution (%)						Average Health Index	Average DAI
		Very Good	Good	Fair	Poor	Very Poor	No Data		
Distribution Wood Pole	1691	52.40%	19.75%	19.04%	3.96%	3.31%	1.54%	83.70%	93.10%
Distribution Concrete Poles	36	97.22%	2.78%	0.00%	0.00%	0.00%	0.00%	89.06%	100.00%
Overhead Conductors (m)	73583.3	3.10%	46.10%	41.77%	5.09%	3.94%	0.00%	66.20%	100.00%
Underground Cables (m)	148163.97	26.06%	28.18%	14.50%	0.11%	0.00%	31.14%	79.40%	95.00%
Padmount Transformers	989	33.77%	32.46%	27.30%	4.65%	1.82%	0.00%	75.95%	97.86%
Polemount Transformers	345	14.78%	21.16%	30.43%	24.06%	9.57%	0.00%	60.81%	97.02%
Load Break Switches	13	76.92%	7.69%	7.69%	7.69%	0.00%	0.00%	82.42%	100.00%
Inline Switches	93	60.22%	17.20%	0.00%	17.20%	2.15%	3.23%	80.40%	53.30%
Switchgear	83	60.24%	25.30%	14.46%	0.00%	0.00%	0.00%	87.65%	99.60%
Power Transformers	4	0.00%	75.00%	25.00%	0.00%	0.00%	0.00%	76.00%	100.00%

The ACA report is found in Appendix B which contains detailed results for each asset class including demographics.

5.3.2.2.3 Asset Risks

Feeder conversion work remains a key focus of OHL's investment program throughout the forecast period. OHL is in the process of converting its 4.16 kV system to a 27.6 kV system. Throughout the conversion process, OHL will have to support the carrying cost of the legacy 4.16 kV system until fully decommissioned and removed from service.

OHL's efforts to prolong the useful life of their installed assets have led to an ageing infrastructure resulting in expected maintenance budget increases to continue delivering the expected services. In addition, older vintages of physical assets are more difficult to maintain as it is difficult to source spare parts for them. Recognizing the challenges that lie ahead, OHL continues to work upon a formal asset management program based on reliability, condition assessment and preventative and predictive maintenance practices. Understanding that replacement of large portions of the distribution system would be financially challenging, OHL has initiated several piece-wise renewal projects that can help to level the expenditures over the forecast period thereby minimizing rate impacts.

5.3.2.3 Transmission or High Voltage Assets

OHL does not own or is planning to own transmission or high voltage (>50kV) assets.

5.3.2.4 Host & Embedded Distributors

OHL's distribution system is embedded in the distribution system of Hydro One. OHL is not a host distributor. Four OHL feeders are connected to the Hydro One owned

Orangeville Transformer Station and one OHL feeder is connected to the Hydro One owned Grand Valley Distribution Station.

5.3.3 Asset Lifecycle Optimization Policies and Practices

5.3.3.1 Asset Replacement and Refurbishment Policy

OHL owns all the distribution assets within its service area and is responsible for the management of all its distribution and substation assets. It maintains the efficiency and reliability of its distribution system through an active inspection, maintenance, and asset management program that focuses on customer service, employee safety, and cost-effective maintenance, refurbishment, and replacement of assets that can no longer meet utility standards.

OHL leverages practices that reflect practical and prudent business approaches for implementing the company vision and objectives. OHL uses its asset management program and capital investment process to evaluate and decide whether to replace equipment or have it repaired in addition to prioritizing the project within the overall capital program. In this it includes how OHL considers the future capacity requirements for the system and hence for specific assets. The following description of OHL's practices demonstrates OHL's consideration in the management of its assets which aid in the reliable delivery of power to its customers.

OHL considers a wide range of factors when deciding whether to refurbish or replace a distribution asset, including public and employee safety, service quality, rate impacts, maintenance costs, fault frequency, asset condition, and life expectancy so that investment in replacement plant can be prudent.

To optimize equipment value and minimize replacement costs, OHL considers the reuse of equipment from the field where safe to do so. This is done in compliance with *Ontario Regulation 22/04 (Reg. 22/04), Section 6(1) (b) – Approval of Electrical Equipment* and ensures used equipment meets current standards and poses no undue hazard for re-use in new construction. Examples of equipment subject to potential reuse are distribution transformers, load break switches and pad mount switchgear. All equipment subject to reuse must meet certain minimum condition criteria and must be deemed safe to use by a competent person. If this is the case, then the asset is returned to inventory.

If it has been determined that the asset cannot be reused but is still worth potentially repairing, then a repair estimate is obtained to return the asset to a safe and useable condition in addition to an estimate of the expected remaining useful life. If the cost of the repair plus the Net Book Value ("NBV") of the asset is less than the replacement cost and the new expected useful life exceeds the original remaining useful life, then the asset is repaired, otherwise, the asset is replaced and disposed of. Plant equipment is replaced at the end of life when all refurbishment options have been exhausted.

5.3.3.2 Description of Maintenance and Inspection Practices

Table 5.3-7: Summary of Inspection and Maintenance Activities

Assets	Category	Activity	Frequency
Overhead distribution assets	Inspections	Visual	Three-year cycle
		Infrared	One-year cycle
	Predictive maintenance	Pole testing	Periodic cycle
	Preventative maintenance	Vegetation management	Three-year cycle
Underground distribution assets	Inspections	Visual	Three-year cycle
		Infrared	One-year cycle
Station assets	Inspections	Visual	Monthly
	Predictive maintenance	Oil testing of Power Transformers	Annual

Maintenance is performed to ensure equipment continues to provide its essential functions safely over its lifecycle. Some assets require very frequent maintenance efforts (e.g., fleet vehicles), others require infrequent maintenance efforts (e.g., pole structures) and some are essentially maintenance-free (e.g., direct maintenance on a conductor). For most assets, uniform maintenance programs are established for consistency. For very large and critical assets (e.g., station transformers) maintenance programs can be unit-specific depending on the nature of asset issues discovered. All maintenance work performed meets the requirements of Reg. 22/04 and is signed off by qualified staff.

While fulfilling its asset management responsibilities, OHL engages in the following type of maintenance programs:

- Predictive Maintenance
    a. Visual Inspection - This addresses risk management and actively assesses the condition of the plant. It is also required to meet regulatory requirements.
    b. Testing - This addresses risk management and actively assesses the condition of the plant. It is more detailed and more focused than visual inspection and typically involves the measurement of some aspect of the asset. These include:
        i. Infrared inspection
        ii. Ultrasonic Partial Discharge inspection
        iii. Pole Testing
- Preventative Maintenance

a. Activities to extend the trouble-free operation of the asset so that the activity is economical and ensures the continued reliable operation of the asset. These include:

   i. Line clearing / vegetation management

   ii. Load balancing

- Condition-Based or Reactive Maintenance

  a. Occurrences where the plant is discovered to be out of specification or is malfunctioning and the condition needs to be corrected. The follow-up activities to restore the asset to full function are included here. Occasionally the most cost-effective way to remedy the situation is a replacement.

OHL completes inspections as prescribed in the DSC with an approach and frequency that addresses public safety and cost-efficiency.

The following sections are extracts from OHL's Distribution Maintenance Program which is attached under Appendix C. The results of each program will be utilized to schedule any repair work required or where appropriate capital work on a planned basis. Where the inspection/tests determine an immediate hazard to the public, immediate follow-up action will be required. Work orders will be issued for the repair work and when the work has been completed the work orders will be filed in the Engineering Office. The expectation is that corrective action will be completed in the year that the inspection was completed. In this way, a backlog of deficiencies will not occur.

5.3.3.2.1 Overhead Visual Inspection Program

This program outlines the inspection schedule, recording and follow-up actions associated with the OHL overhead system. This program covers the inspection of:

- Poles/Supports
- Overhead transformers
- Switches and Protective Devices
- Hardware and Attachments
- Conductors and Cables
- Third-party plant
- Vegetation Control

The overhead system will be fully inspected on a schedule that meets the requirements of the DSC. For this program, the "urban" population density schedule in the DSC will be utilized. On-going inspection requires the entire system to be reviewed every three years. For this program, a minimum of one-third of the overhead system will be inspected annually. This allows OHL to manage the risk lifecycle of its overhead assets.

5.3.3.2.2 Underground Visual Inspection Program

This program outlines the inspection schedule, recording and follow-up actions associated with the Orangeville Hydro underground system. This program covers the inspection of:

- Pad-Mounted Transformers & Switching Kiosks (PME & KABAR)
- Vegetation and Right of Way

The underground system will be fully inspected on a schedule that meets the requirements of the DSC. For this program, the "urban" population density schedule in the DSC will be utilized. On-going inspection requires the entire system to be reviewed every three years. For this program, one-third of the underground system will be inspected annually. This allows OHL to manage the risk lifecycle of its underground assets.

5.3.3.2.3 Substations Visual Inspection Program

This program outlines the inspection schedule, recording and follow-up actions associated with the Orangeville Hydro substations. This program covers the inspection of:

- Distribution Substations
- Customer Specific Substations

Each substation will be inspected on a schedule that meets the requirements of the DSC. For this program, the "urban" population density schedule in the DSC will be utilized. Additional visual inspections will be completed by a contractor twice per year to assist OHL. The contractor will also take oil samples to complete Dissolved Gas Analysis and Chemical Analysis of each substation transformer.

Table 5.3-8: Substations Visual Inspection Program Schedule

Inspection Schedule			
Station Type	**Outdoor Open**	**Outdoor Enclosed**	**Indoor Enclosed**
Distribution Station	1 month	Annually	Annually
Customer Substation	Annually	3 Years	3 Years

5.3.3.2.4 Substation Preventative Maintenance

This program outlines the detailed inspection, testing, recording, and follow-up actions associated with the OHL Substation Maintenance. This program covers the:

- Testing of Substation Transformers
- Arrestor testing
- Protection Testing and Maintenance
- General station maintenance

The substations maintenance will be completed on each station once every six years.

5.3.3.2.5 Line Clearing Program

Maintaining lines free from the interference of vegetation and other obstructions is an important element to ensure the safety and reliability of the distribution system. This program outlines the inspection schedule, recording and follow-up actions associated with the OHL line clearing program. This program covers the:

- Inspection of the distribution system
- Line clearing activities

Line clearance inspections have been incorporated into the other inspection programs such as Pole Testing and Infrared Inspections, as well as, during regular work. Any areas of reduced clearance will be either resolved or noted and reported to the Manager of Operations & Engineering. Furthermore, the Zone that is scheduled for Line Clearing will be patrolled during the Clearing Activities.

Line clearing will be done as required based on inspections and reports. Maintenance work orders will be issued as a result of field observations and inspections and the work scheduled accordingly. The priority of line clearing is:

1. Primary Express Feeders (44kV and 27.6kV)
2. Fused Three Phase Circuits (27.6kV, 12.5kV, and 4.16kV)
3. Single Phase Taps (16kV, 7.2kV, and 2.4kV)
4. Roadside secondary bus
5. Rear lot construction secondary bus
6. Individual service wires

5.3.3.2.6 Load Balance Program

This program outlines the measurement, recording and follow-up actions associated with the OHL load balancing program. This program covers the:

- Recording of feeder loading
- Load balancing

The feeder loads will be measured on an annual basis. Normally this activity will be undertaken during system peak loading. If there are system issues, measurements may be taken more frequently.

If the phase loading of the various feeders is out of balance by more than 10%, work orders will be issued for the transfer of load from the higher loaded phase to the lightly loaded phase. Where loading measurements indicate that the feeder loading is reaching capacity levels, OHL will transfer the load to feeders with more capacity. Maintenance work orders will be issued to complete any load transfers.

5.3.3.2.7 Overhead and Underground Rebuilds

This program outlines the annual process for the renewal of the OHL distribution system. This program covers the:

- Recording of system inspections
- Evaluation of system rehabilitation needs
- Planned rehabilitation projects

Annual recommendations will be made for capital work on the overhead and underground systems. Recommendations will be made based on the results of the inspections throughout the year and on any special investigations completed to address specific concerns.

The expectation is to keep the general condition of the systems in good shape to prevent the need for extensive maintenance and to limit system outages due to failures. The amount of work recommended will vary depending on the conditions found in the field.

5.3.3.2.8 Infrared Inspection Program

This program outlines the inspection schedule, recording and follow-up actions associated with the OHL Infrared Program. This program covers the inspection of:

- Overhead Transformers
- Overhead Switches and Protective Devices
- Overhead Primary Conductor Splices and Terminations
- Underground Express Primary Cable Termination and Elbows
- Pad-mounted Express Switchgear Cubicles
- Secondary Bus Connections

The overhead primary system will be fully inspected on a schedule that meets the requirements of the DSC. For this program, the "urban" population density schedule in the DSC will be utilized. On-going inspection requires the entire system to be reviewed every three years. For this program, all of the overhead primary systems will be inspected annually. For this program, all express underground systems will be inspected annually.

5.3.3.2.9 Pole Testing and Inspection Program

This program outlines the inspection schedule, recording and follow-up actions associated with the OHL Pole Testing & Inspection Program. This program covers the inspection of:

- OHL Owned Poles
- Hardware and Attachments
- Third-party plant
- Vegetation Control

This program covers the testing of:

- OHL Owned Wooden Poles

OHL staff and/or a contractor will test & inspect a minimum number of poles each year. All poles will be tested before retesting poles. This will ensure no poles are missed for an extended period. It is expected that the pole testing and inspection will identify significant decay and degradation of the wood fibres. The preferred non-destructive test method is the Resistograph.

5.3.3.2.10 Pad-mounted Equipment Refinishing Program

This program outlines the schedule associated with the OHL Pad-mounted Equipment Refinishing Program. This program covers the refinishing of:

- Transformers
- Switching Cubicles (PME & KABAR)

OHL staff and/or a contractor will refinish a minimum of 20 pieces of equipment annually. It is expected that the refinishing process will remove damaged paint, remove surface rust by sanding/grinding/sand blasting, prime and paint the exterior of the equipment.

5.3.3.3 Processes and Tools to Forecast, Prioritize & Optimize System Renewal Spending

The inputs and processes for forecasting, prioritizing, and optimizing System Renewal spending are summarized in the following sub-sections. Additional information can be found in sections 5.3.1.2 and 5.3.1.3 of this DSP.

5.3.3.3.1 Forecasting

System Renewal projects are typically discretionary. The only exception in OHL's case are the meter projects with mandated service obligations through Measurement Canada. The project needs for a particular period are supported by a multitude of factors, depending on the information available for each asset type. This could include a combination of asset inspection, individual asset performance, and condition information.

An ACA study was carried out by METSCO to establish the health and condition of distribution and substation assets in service. By considering all relevant information related to the assets' operating condition, the condition of all infrastructure assets was assessed and expressed on a normalized index in the form of a HI. The HI was related to the probability of failure values for each project, using a weighted average approach, as described in detail in Appendix B, and each asset was assigned a health indicator expressed as "very good," "good," "fair," "poor," and "very poor." The resulting information from the ACA study was used to help forecast the renewal needs of OHL's assets over the forecast period. For metering projects, a combination of age, meter inspection and testing are used to forecast the meter replacements.

5.3.3.3.2 Prioritization & Optimization

OHL's optimization and prioritization process is described in section 5.3.1.3.

5.3.3.3.3 Strategies for Operating within Budget Envelopes

The proposed System Renewal projects over the forecast period were identified to maintain system reliability and were paced for implementation based on the funding available for asset renewal and by considering the resources required for project implementation for the type of work predominantly involved. Assets with the highest consequence of failure in service have been prioritized for renewal or rehabilitation during the next five years.

As OHL's planning process is continually being updated with new information, OHL completes investment planning on an annual basis to help inform any necessary budget adjustments for the following year. OHL understands that circumstances may change, and if needed, budgets can be re-prioritized depending on customer and system needs. For example, due to the nondiscretionary nature of System Access projects, these projects will take priority if there are competing demands with System Renewal projects. Completing investment planning on an annual basis allows OHL to use the best available information to effectively plan for and manage the highest priority projects and programs over the forecast period while remaining within the approved budget envelope. OHL also monitors the execution of projects against budgets and makes changes as required to stay within overall budget envelopes.

5.3.3.3.4 Risks of Proceeding / Not Proceeding

Risk is factored into the selection and prioritization of capital expenditures during the prioritization process and is ultimately used to determine the prioritized list of capital projects and programs over the forecast period. It is at this stage of the process that OHL considered the risks associated with proceeding versus not proceeding with an individual capital expenditure and decides whether the capital expenditure is required during the forecast period or if it can be deferred.

Assets with unacceptably high-risk scores are monitored closely and plans are included in the project scope to alternatively maintain, refurbish, or replace the assets to reduce the risk to an acceptable level. It is noteworthy that some assets carry an inherently higher risk than others. The top projects in each category are identified in the prioritization process and scrutinized using further investigation and expert opinion to eliminate data inconsistencies and determine appropriate scopes of work.

5.3.3.4 Important Changes to Life Optimization Policies and Practices since Last DSP Filing

Since OHL submitted its last DSP only 2 years ago, OHL has not made any further significant changes to its life optimization policies and practices. OHL, over the next few years, will continue to review the efficacy of its process and make updates as required.

5.3.4 System Capability Assessment for REG & DERs

OHL does not have any restricted feeders currently, and as OHL is forecasting minimal DER connections in the forecast period, it has no plans to make any changes to its feeders in relation to this.

Currently, there are no REG connections for the forecast period that are already approved or in the application process. However, OHL remains vigilant in monitoring developments in the renewable energy sector. While there may not be any confirmed REG connections at present, there is still a possibility that opportunities for REG connections could arise during the forecast period.

5.3.5 CDM Activities to Address System Needs

CDM activities are aimed at reducing electricity consumption to manage system costs, reduce peak demand, and improve affordability for customers. CDM initiatives implemented by OHL under historical CDM Frameworks have resulted in some decline in peak demand, however it has not been substantial enough to avoid major infrastructure renewal projects. The IESO has not determined OHL's service area as a focus area for the Local Initiatives Program under the 2021 – 2024 Conservation and Demand Management Framework.

OHL considers CDM as part of its planning process (see section 5.3.1.3) to determine whether CDM can be considered a viable alternative to any of OHL's planned investments over the forecast period. However, no viable CDM alternatives have been identified currently. As a result, there are no CDM activities currently planned over the forecast period. OHL will continue to consider the ability to use distribution rate funded CDM to potentially defer or avoid investments. OHL will monitor the availability of new CDM programs and activities to offer our customers under future CDM Frameworks.

5.4 Capital Expenditure Plan

This section describes OHL's five-year capital expenditure plan over the forecast period, including a summary of the plan, an overview of OHL's capital expenditure planning process, an assessment of OHL's system development over the forecast period, a summary of capital expenditures, and justification of capital expenditures.

5.4.1 Capital Expenditure Summary

OHL's DSP details the program of system investment decisions developed based on information derived from OHL's asset management and capital expenditure planning process. Investments, whether identified by category or by a specific project, are justified in whole or in part by reference to specific aspects of OHL's asset management and capital expenditure planning process. OHL's DSP includes information on prospective investments over a five-year forward-looking period (2024 – 2028).

The capital expenditure summary provides a snapshot of OHL's capital expenditures over the ten-year DSP window. For summary purposes, the entire costs of individual projects have been allocated to one of the four OEB investment categories based on the primary driver for the investment:

1. System Access
2. System Renewal
3. System Service
4. General Plant

The categorization is derived from the capital expenditure planning process that prioritizes items based on whether they are discretionary or non-discretionary.

Table 5.4-1: Historical Capital Expenditures and System O&M (Part 1: 2018-2020)

Category	Historical								
	2018			2019			2020		
	Plan.	Act.	Var.	Plan.	Act.	Var.	Plan.	Act.	Var.
	$		%	$		%	$		%
System Access									
Gross Capital	457,306	509,508	11%	624,306	302,685	(52%)	609,337	372,926	(39%)
Capital Contributions	(298,474)	(198,868)	(33%)	(286,252)	(114,921)	(60%)	(243,623)	(239,979)	(1%)
Net Capital	158,832	310,640	96%	338,054	187,764	(111%)	365,714	132,947	(40%)
System Renewal									
Gross Capital	33,134	201,614	508%	266,800	217,629	(18%)	189,880	394,476	108%
Capital Contributions	(0)	(0)	0%	(0)	(0)	0%	(0)	(0)	0%
Net Capital	33,134	201,614	5.08%	266,800	217,629	(18%)	189,880	394,476	108%
System Service									
Gross Capital	708,659	625,952	(12%)	535,591	676,650	26%	1,005,065	877,012	(13%)
Capital Contributions	(0)	(0)	0%	(0)	(0)	0%	(0)	(0)	0%
Net Capital	708,659	625,952	(12%)	535,591	676,650	26%	1,005,065	877,012	(13%)
General Plant									
Gross Capital	152,500	450,696	196%	315,800	171,264	(46%)	424,000	280,525	(34%)
Capital Contributions	(0)	(6,844)	0%	(0)	(0)	0%	(0)	(0)	0%
Net Capital	152,500	443,852	191%	315,800	171,264	(46%)	424,000	280,525	(34%)
Total (Gross)	1,351,599	1,780,926	32%	1,742,497	1,368,228	(21%)	2,228,282	1,924,939	(14%)
Total Capital Contributions	(298,474)	(198,868)	(33%)	(286,252)	(114,921)	(60%)	(243,623)	(239,979)	(1%)
Total (Net)	1,053,125	1,582,058	50%	1,456,245	1,253,307	(14%)	1,984,659	1,684,960	(15%)
System O&M	1,193,236	754,878	(37%)	1,001,431	958,991	(4%)	1,001,995	807,988	(19%)

Table 5.4-2: Historical Capital Expenditures and System O&M (Part 2: 2021-2023)

Category	Historical						Bridge		
	2021			2022			2023		
	Plan.	Act.	Var.	Plan.	Act.	Var.	Plan.	Act.	Var.
	$		%	$		%	$		%
System Access									
Gross Capital	315,167	736,527	134%	427,898	96,413	(77%)	820,036	820,036	0%
Capital Contributions	(204,526)	(349,139)	71%	(203,055)	(62,566)	(69%)	(451,067)	(451,067)	0%
Net Capital	110,641	387,388	204%	224,843	33,847	(147%)	368,969	368,969	0%
System Renewal									
Gross Capital	790,484	530,019	(33%)	541,020	554,050	2%	583,184	583,184	0.00
Capital Contributions	(0)	(0)	0%	(0)	(0)	0%	(0)	(0)	0%
Net Capital	790,484	530,019	(33%)	541,020	554,050	2%	583,184	583,184	0.00
System Service									
Gross Capital	867,598	925,386	7%	1,095,187	2,197,624	101%	976,919	976,919	0.00
Capital Contributions	(0)	(0)	0%	(0)	(0)	0%	(0)	(0)	0%
Net Capital	867,598	925,386	7%	1,095,187	2,197,624	101%	976,919	976,919	0.00
General Plant									
Gross Capital	101,880	66,192	(35%)	213,100	134,922	(37%)	124,383	124,383	0.00
Capital Contributions	(0)	(0)	0%	(0)	(0)	0%	(0)	(0)	0%
Net Capital	101,880	66,192	(35%)	213,100	134,922	(37%)	124,383	124,383	0.00
Total (Gross)	2,075,129	2,258,124	9%	2,277,206	2,983,009	31%	2,504,522	2,504,522	0.00
Total Capital Contributions	(204,526)	(349,139)	71%	(203,055)	(62,566)	(69%)	(451,067)	(451,067)	0.00
Total (Net)	1,870,603	1,908,986	2%	2,074,151	2,920,443	41%	2,053,455	2,053,455	0.00
System O&M	1,111,995	1,077,960	(3%)	1,134,235	1,164,462	3%	1,249,459	1,249,459	0.00

The following table summarizes the planned capital expenditures, by investment category, throughout the DSP forecast timeline.

Table 5.4-3: Forecast Capital Expenditures and System O&M

Category	Forecast				
	2024	2025	2026	2027	2028
	$	$	$	$	$
System Access					
Gross Capital Spend	1,359,889	658,682	688,513	650,310	865,968
Capital Contributions	(718,936)	(203,666)	(377,697)	(291,859)	(372,702)
Net Capital Expenditures	640,953	455,016	310,816	358,451	493,266
System Renewal					
Gross Capital Spend	787,454	720,928	816,933	737,671	807,351
Capital Contributions	(0)	(0)	(0)	(0)	(0)
Net Capital Expenditures	787,454	720,928	816,933	737,671	807,351
System Service					
Gross Capital Spend	818,940	1,194,177	1,405,127	1,359,250	1,557,016
Capital Contributions	(0)	(0)	(0)	(0)	(0)
Net Capital Expenditures	818,940	1,194,177	1,405,127	1,359,250	1,557,016
General Plant					
Gross Capital Spend	710,917	436,000	215,000	490,000	225,000
Capital Contributions	(0)	(0)	(0)	(0)	(0)
Net Capital Expenditures	710,917	436,000	215,000	490,000	225,000
Total Expenditure, Gross	$3,677,200	$3,009,787	$3,125,573	$3,237,231	$3,455,335
Total Capital Contribution	($718,936)	($203,666)	($377,697)	($291,859)	($372,702)
Total Expenditure, Net	$2,958,264	$2,806,121	$2,747,876	$2,945,372	$3,082,633
System O&M	1,359,282	1,393,264	1,379,096	1,169,562	1,198,802

5.4.1.1 Plan vs Actual Variances for the Historical Period

Assessing and understanding the variances is an important step for OHL to promote continuous improvements in its estimation and budgeting process. Excluding projects identified as mandatory, OHL creates each project budget based on preliminary designs and historical costs for planning its programs annually. Once detailed designs are complete and ready to be issued for construction, the project estimate is revised to reflect any changes in the design. The revised estimate is used to track against the actual costs, which are reviewed monthly. Customer demand projects are budgeted using averages from previous years. These projects are mostly unplanned and tracked in real-time to balance the total annual budget with other discretionary projects (i.e., OHL may take action to reduce System Renewal projects to ensure the total annual actual expenditures remain in line with the total annual proposed budget). Likewise, if the actual budget of System Access projects is less than the forecasted budget, OHL may plan to allocate the budget to other System Access planning years or to other project categories where appropriate to maintain consistent annual expenditures. OHL is identifying in advance that some variances are significantly high in some years for a few categories.

System Access

System Access projects are customer-driven and are typically not planned. They are budgeted based on a rolling five-year historical average. System Access expenditures can be categorized into smaller categories such as road relocations, subdivision connections and primary and secondary service requests. No sub-category can be planned for with a high degree of accuracy. However, OHL attempts to minimize the variances with proactive engagements with developers, city departments and customers. OHL is often aware of future proposed subdivisions and road relocation projects, but development can often be slow, and projects may remain in the preliminary stages for many years before implementation which is beyond OHL's control.

System Renewal

System Renewal variances were attributed to higher or lower unit replacements than originally budgeted. As OHL progresses through its risk management tasks and lifecycle activities, OHL can identify the most at-risk assets that should be replaced to maintain system performance. Additionally, on completion of the maintenance tasks, if the asset does not need to be replaced, OHL would not replace the asset to meet the planned budget. This is a benefit to its customers so that the bill impacts, and increases are minimized as much as possible. Annual variances were attributed due to project deferrals each year due to the more than anticipated customer requests and System Access projects in 2014. However, OHL has been able to achieve its capital plan presented in the previous DSPs.

System Service

The historical System Service variances were contributed to the voltage conversion project delays in 2014/2015 which had a cascading effect on the current year with project scopes being shifted by a year each year. The primary reasons for the delays include weather and higher priorities for emergencies, reactive and System Access work with a limited resource pool from OHL to complete the expected work each year.

General Plant

General Plant projects are identified internally by specific departments (IT, finance, engineering, operations, customer service, and administration), OHL prioritizes the investments most needed to maintain reliable operations for the business and its customers.

OHL's 2014 DSP covered a forecast period of 2014 to 2018. For 2019 to 2022 OHL used its own Board-Approved capital budget as a comparative for material variances over $10,000.

DSP Planned vs Actual Expenditures for 2018 to 2022 Period

Table 5.4-1 provides OHL's historical capital expenditures. OHL's 2014 DSP ended in 2019. The Planned comparisons then become the OHL Business Plan approved by its Board of Directors.

Overall, OHL has met its targets in meeting its planned target on an average of the last 5 years, 2018 to 2022. Most of the 11% variance can be attributed to the 2022 fiscal year, which was caused by increased material cost and a large fiber project where it was beneficial for OHL to bury duct jointly with the fiber company.

Table 5.4-4: Average Net Historical Capital Expenditures Summary

Category	5-Year Plan Average	5-Year Actuals Average	Variance
	$ '000		%
System Access	240	211	(12)
System Renewal	364	380	4
System Service	843	1,061	26
General Plant	242	222	(8)
Total Expenditure, Net	1,688	1,873	11

Table 5.4-5: Variance Explanations - 2018 Planned Versus Actuals

Category	2018 Plan. $	2018 Act. $	2018 Var. $	2018 Var. %	Variance Explanations
System Access, Gross	457,306	509,508	52,202	11%	Subdivision expansions in OHL service territory were higher by $200K. These subdivisions are non-discretionary, and the timelines are driven by the developers, the execution of the Offer to Connect and energization of the subdivision. In 2018, 4 subdivisions were energized whereas typically OHL will plan to energize 2 or 3 in a year or connect about 100 new customers.
System Renewal, Gross	33,134	201,614	168,480	508%	OHL purchased 560 meters for $125K during the year in anticipation of residential meter reverification project. 18 pole replacements were done as well. OHL had not planned for these expenditures at all during the 2014 DSP.
System Service, Gross	708,659	625,952	(82,707)	(12%)	The $635K Robb Boulevard and the $74K C-Line & Century Drive conversions which were planned were delayed to 2020 and 2021. During 2018, the Ms4-E Feeder Voltage Conversion was completed for $546K (originally planned for 2017). The Riddell Road feeder tie (originally planned in 2014) was started for $43K and continued into 2019.
General Plant, Gross	152,500	443,852	291,352	191%	OHL purchased a Freightliner single bucket for $300K which had been delayed since the 2015 DSP year, as OHL had some discretion as to the state of the aerial device.
Total Gross Capital Expenditure	**1,351,599**	**1,780,926**	**429,327**	**32%**	The primary drivers for the increase were a substantial increase in general plant, system renewal and system access, offset by decreased spending in system service.
Capital Contributions	**(298,474)**	**(198,868)**	**99,606**	**(33%)**	Lower Capital Contributions due to less contributed capital from subdivision energizations.
Net Capital Expenditures	**1,053,125**	**1,582,058**	**528,933**	**50%**	The primary drivers for the increase were a substantial increase in general plant, system renewal and

Category	2018 Plan.	Act.	Var.	Var.	Variance Explanations
	$		%		
					system access, offset by decreased spending in system service.

Table 5.4-6: Variance Explanations - 2019 Planned Versus Actuals

Category	2019 Plan.	Act.	Var.	Var.	Variance Explanations
	$		%		
System Access, Gross	624,306	302,685	(321,621)	(52%)	Subdivision expansions in OHL service territory were lower by $150K. These subdivisions are non-discretionary, and the timelines are driven by the developers, the execution of the Offer to Connect and energization of the subdivision. In 2019, 3 small subdivisions were energized.
System Renewal, Gross	266,800	217,629	(49,171)	(18%)	OHL replaced only 1 pole in 2019. (-$52K)
System Service, Gross	535,591	676,650	141,059	26%	OHL had not planned on doing the Riddell Rd feeder tie which had been planned in 2014 in the previous DSP.
General Plant, Gross	315,800	171,264	(144,536)	(46%)	OHL had planned for billing and accounting system enhancements ($107K) which did not materialize. The purchase of a replacement for a 2008 Dodge Caravan was deferred into a future year.
Total Gross Capital Expenditure	**1,742,497**	**1,368,228**	**(374,269)**	**(21%)**	The primary drivers for the decrease were a decrease in system access, general plant, and system renewal, offset by increased spending in system service.
Capital Contributions	**(286,252)**	**(114,921)**	**171,331**	**(60%)**	Lower Capital Contributions due to less subdivision energization and customer-driven requests.
Net Capital Expenditures	**1,456,245**	**1,253,307**	**(202,938)**	**(14%)**	The primary drivers for the decrease were a decrease in system access, general plant, and system renewal, offset by increased spending in system service.

Table 5.4-7: Variance Explanations - 2020 Planned Versus Actuals

Category	2020				Variance Explanations
	Plan.	Act.	Var.	Var.	
	$		%		
System Access, Gross	609,337	372,925	(236,412)	(39%)	Subdivision expansions in OHL service territory were lower by $150K. These subdivisions are non-discretionary, and the timelines are driven by the developers, the execution of the Offer to Connect and energization of the subdivision. Mayberry Hills Phase 3A ($260K) was not energized during the year, which was offset by Cachet Grand Valley Phase being energized sooner than anticipated.
System Renewal, Gross	189,880	394,476	204,596	108%	OHL replaced 14 failed transformers, whereas OHL usually plans for about 10 transformers being defective, as well as purchasing new transformers for 2021 projects (213K). Only 4 pole replacements were done in 2020. (-$30K)
System Service, Gross	1,005,065	877,012	(128,053)	(13%)	The $509K Third St/Second St conversion from the 2015 DSP was done from 2019 on and was finally completed in 2021. Due to re-prioritization of projects, the Robb Boulevard conversion could not proceed as planned (-$568K).
General Plant, Gross	424,000	280,525	(143,475)	(34%)	OHL postponed a number of general plants purchased due to the pandemic, as most of those are discretionary in nature.
Total Gross Capital Expenditure	**2,228,282**	**1,924,938**	**(303,344)**	**(14%)**	The primary drivers for the decrease were a decrease in system access, general plant, and system service, offset by increased spending in system renewal.
Capital Contributions	**(243,623)**	**(239,979)**	**3,644**	**(1%)**	N/A
Net Capital Expenditures	**1,984,659**	**1,684,959**	**(299,700)**	**(15%)**	The primary drivers for the decrease were a decrease in system access, general plant, and system service, offset by increased spending in system renewal.

Table 5.4-8: Variance Explanations - 2021 Planned Versus Actuals

Category	2021				Variance Explanations
	Plan.	Act.	Var.	Var.	
	$			%	
System Access, Gross	315,167	736,528	421,361	134%	Subdivision expansions in OHL service territory were higher by $425K. These subdivisions are non-discretionary, and the timelines are driven by the developers, the execution of the Offer to Connect and energization of the subdivision. Mayberry Hills Phase 3A ($437K) was energized during the year, although OHL had not forecast for it to be energized.
System Renewal, Gross	790,484	530,019	(260,465)	(33%)	OHL replaced 14 defective transformers, whereas we usually plan for about 10 transformers being defective, as well as installing existing stock transformers on various projects ($210K). OHL did 21 pole replacements though 28 were planned (-$64K). Delays on transformer delays also contributed to this.
System Service, Gross	867,598	925,386	57,788	7%	MS2-West Feeder conversion was done for $50K more due to lines contract planned at a higher estimated than actual costs.
General Plant, Gross	101,880	66,192	(35,688)	(35%)	OHL had $20K less of general plant purchases due to a planned front office washroom renovation that was postponed to 2021.
Total Gross Capital Expenditure	**2,075,129**	**2,258,125**	**182,995**	**9%**	The primary drivers for the increase were an increase in system access and system service, offset by decreased spending in system renewal and general plant.
Capital Contributions	**(204,526)**	**(349,139)**	**(144,613)**	**71%**	Higher Capital Contributions due to more contributed capital from subdivision energizations.
Net Capital Expenditures	**1,870,603**	**1,908,986**	**38,383**	**2%**	The primary drivers for the increase were an increase in system access and system service, offset by decreased spending in system renewal and general plant.

Table 5.4-9: Variance Explanations - 2022 Planned Versus Budget

Category	2022 Plan. $	2022 Act. $	2022 Var. $	2022 Var. %	Variance Explanations
System Access, Gross	427,898	96,415	(331,483)	(77%)	Subdivision expansions in OHL service territory were lower by $191K. These subdivisions are non-discretionary, and the timelines are driven by the developers, the execution of the Offer to Connect and energization of the subdivision. Mayberry Hills Phase 3A was planned to be energized in 2022, but Mayberry Hills was energized in 2021 and the First St Towns were energized in 2023.
System Renewal, Gross	541,020	554,050	13,030	2%	OHL replaced 2 failed transformers, whereas we usually plan for about 10 defective transformers, as well as purchasing stock transformer for future projects. OHL did 19 pole replacements though 17 were planned (-$26K).
System Service, Gross	1,095,187	2,197,624	1,102,437	101%	MS2-South Feeder conversion was done for $221K more than planned due to increased material and contractor costs caused by projects being brought forward from future years. MS-2 South Feeder conversion expanded to two new areas: Edelwild/Avonmore/Johanna and Edelwild/Rustic/Cedar/Lawrence. These were large fiber project where it was beneficial for OHL to bury duct jointly with the fiber company. These last 2 caused unplanned jobs cost of $492K and $596K.
General Plant, Gross	213,100	134,922	(78,178)	(37%)	OHL postponed Silverblaze and mCare software purchases ($49K).
Total Gross Capital Expenditure	**2,277,206**	**2,983,011**	**705,805**	**31%**	The primary drivers for the increase were an increase in system service and system renewal, offset by decreased spending in system access and general plant.
Capital Contributions	**(203,055)**	**(62,566)**	**140,489**	**(69%)**	Lower Capital Contributions due to less subdivisions and customer-driven requests.
Net Capital Expenditures	**2,074,151**	**2,920,445**	**846,294**	**41%**	The primary drivers for the increase were an increase in system service

Category	2022				Variance Explanations
	Plan.	Act.	Var.	Var.	
	$		%		
					and system renewal, offset by decreased spending in system access and general plant.

2023 Variance Summary

As 2023 is still ongoing, no variance analysis has been carried out.

5.4.1.2 Forecast Expenditures

Figure 5.4-1 below outlines the planned forecast expenditures by individual investment categories.

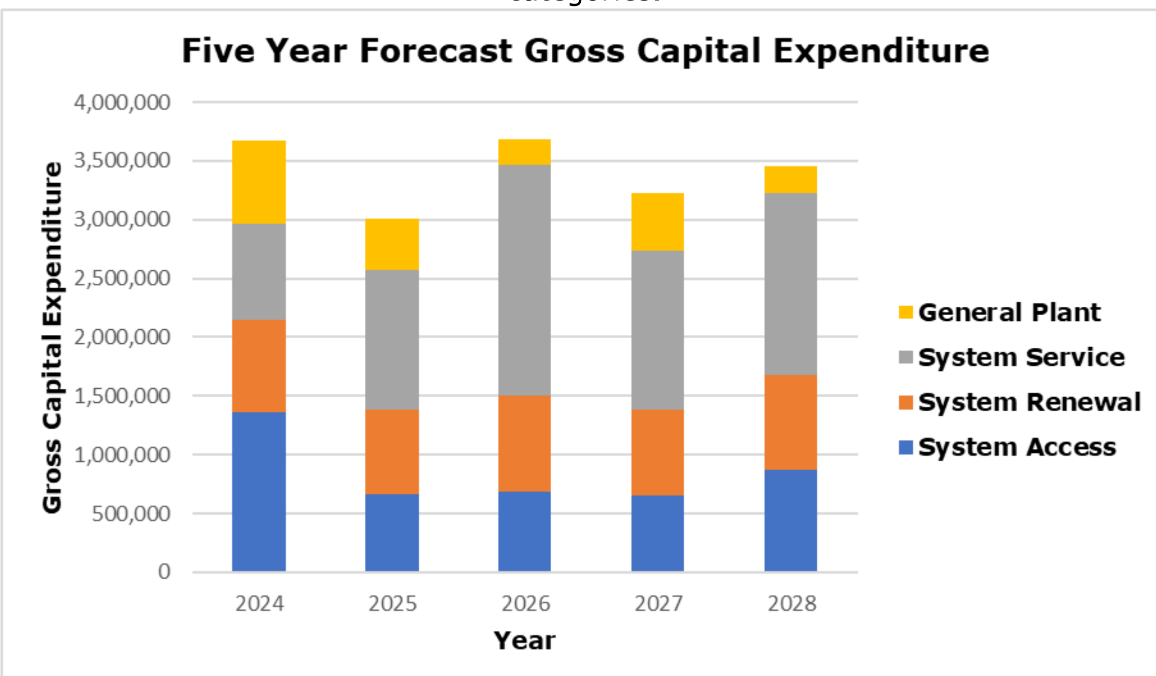


Figure 5.4-1: Planned capital expenditures by investment category

OHL has developed a prudent capital budgeting process combined with a system of capital project prioritization that considers customer preferences, business performance and accountability. This system reflects its long-term strategy and addresses the need for OHL to remain flexible enough to respond to priority shifts as they occur. The capital budget process considers the relative priorities of the proposed investments including both non-discretionary and discretionary budget items.

Non-Discretionary items include:

- Projects that accommodate the company's obligation to connect including new customers as well as load growth.
- Projects to accommodate municipal, regional and Ministry requirements.
- Projects or expenditures to satisfy regulatory initiatives, environmental or health & safety risks and the company's conditions of service.

Discretionary Items include:

- Infrastructure Renewal Projects
- Information Technology
- Fleet/Tools

The combination of OHL's asset management and capital expenditure planning process leads to a capital expenditure plan consisting of a five-year capital expenditure forecast which includes a one-year detailed capital budget.

5.4.1.2.1 System Access

Expenditures in this category are driven by external requirements such as servicing new customer loads and relocating distribution plants to suit road authorities. The timing of investment is driven by the needs of the external parties. These expenditures are mandatory. Specific project scopes are rarely known at the time that the budget is set, and total expenditures can vary from year to year. Most of the forecasted investments in this category are based on historical requirements. Specific projects such as relocations are budgeted based on OHL's estimates and historical averages, in conjunction with information from external agencies of the work required over the project life cycle. OHL's proposed 2024 – 2028 System Access forecast investments are found in the table below.

System Access investments consist of the following major items: customer connections and new services. Customer connections include connecting existing customers to the system specifically those that are affected by the voltage conversion efforts. New services include supplying electrical equipment and materials to residential, commercial, and industrial accounts where no electrical supply currently exists.

The increase in 2024 is driven by two larger than the historical average subdivisions. Edgewood Valley Developments Phase 2B is a detached home development which is much larger than OHL's typical subdivision connection projects. Another Grand Valley single detached home development is expected to be energized and has been confirmed to OHL by the developers. During this capex planning process, OHL reached out to the subdivision developers, and they have confirmed energization in 2024.

Table 5.4-10: Forecast Net System Access Expenditures

Category	Forecast					Total ($)	Percent of Total
	2024	2025	2026	2027	2028		
	$						
Various General Service Capital Contribution Projects	40,000	40,000	40,000	40,000	40,000	200,000	9%
Various Residential Capital Contribution Projects	5,000	5,000	5,000	5,000	5,000	25,000	1%
Estimated Distributed Energy Resources	0	0	0	0	0	0	0%
Various Subdivisions	595,953	410,016	265,816	313,451	448,266	2,033,501	90%
Total Expenditure, Net	640,953	455,016	310,816	358,451	493,266	2,258,501	100%

5.4.1.2.2 System Renewal

Expenditures within the System Renewal category are largely driven by the condition of distribution system assets and play a crucial role in the overall reliability, safety, and sustainment of the distribution system. OHL's ACA recommends assets for renewal based on condition data from tests and inspections. The asset management process outlines the strategy used to determine the criteria for asset replacement. The output of the asset management process drives the development of the capital expenditure plan and prioritization for System Renewal. OHL's proposed 2024 – 2028 System Renewal forecast investments are found in the table below.

As part of the asset renewal projects, OHL plans to replace overhead and underground assets which exhibit signs of deterioration consistent with End-of-Life ("EOL") criteria as defined by the utility's asset management standards. These investments are aimed at maintaining the safety and reliability of the distribution system while mitigating the cost impacts to customers. OHL focuses on replacing wooden poles, transformers and hardware which exhibit signs of deterioration consistent with EOL criteria as defined by the utility's asset management standards. For example, deteriorated poles that lose their structural integrity pose a safety risk to the employees servicing them and the public. Moreover, in-field failures of deteriorated assets can affect system reliability performance, potentially resulting in outages that would be longer and can cost more under a reactive replacement than under a proactive replacement approach.

The increase in 2024 is driven by a sleeve replacement program and the higher cost of materials. This program is designed to remove the automatic tension sleeves from the primary distribution system to be replaced with compression sleeves. The need for this program was identified after the December 2022 blizzard which triggered OHL to file a major event report with the OEB.

During the planning process, OHL increased meter purchases in 2024, 2025, 2026, 2027, and 2028 to replace existing meters and to connect new customers. The whole meter population requires replacement or reverification by 2028. OHL is pacing its meter programs to minimize any one-off impacts. The forecasted quantities for purchase are: 1,202 in 2024, 1,424 in 2025, 1,656 in 2026, 1,424 in 2027, and 1,712 in 2028. These purchases will be used for new installations, to replace failed existing meters, and to begin a paced renewal program for existing smart meters.

Table 5.4-11: Forecast Net System Renewal Expenditures

Category	Forecast					Total ($)	Percent of Total
	2024	2025	2026	2027	2028		
	$						
Substation Renewal	7,194	0	7,194	0	7,194	21,582	1%
Failed Transformer/PME Replacement	161,383	161,383	161,383	161,383	161,383	806,915	21%
Hardware Replacement	227,478	50,000	50,000	50,000	50,000	427,478	11%
Meter Replacement and Additions – Purchases, Sampling, Reverification,	243,499	361,645	450,456	378,388	440,874	1,874,862	48%

Category	Forecast					Total ($)	Percent of Total
	2024	2025	2026	2027	2028		
	$						
Phone to Modem, Replacement							
Pole Replacement	147,900	147,900	147,900	147,900	147,900	739,500	19%
Total Expenditure, Net	787,454	720,928	816,933	737,671	807,351	3,870,337	100%

5.4.1.2.3 System Service

Expenditures in this category are driven by the need to ensure that the distribution system continues to meet operational objectives (such as reliability, grid flexibility and DER integration) while addressing anticipated future customer electricity service requirements (i.e., station capacity increases, feeder extension, etc.). OHL's proposed 2024 – 2028 System Service forecast investments are found in the table below. OHL plans to continue its ongoing voltage conversion effort on its system over the forecast period.

In the forecast period, the primary reason for the increase in System Service budgets is OHL is planning the steady continuation of the 4kV voltage conversion circuits. Most of the 4kV assets remaining are underground cable and pad-mounted transformers, in which underground infrastructure costs more to replace than the overhead infrastructure.

Table 5.4-12: Forecast Net System Service Expenditures

Category	Forecast					Total ($)	Percent of Total
	2024	2025	2026	2027	2028		
	$						
Voltage Conversion Project #1	419,902	206,345	882,704	805,985	663,065	2,978,001	47%
Voltage Conversion Project #2	209,941	577,878	522,423	553,265	537,323	2,400,831	38%
Voltage Conversion Project #3	189,097	409,955	0	0	356,627	955,678	15%
Total Expenditure, Net	818,940	1,194,177	1,405,127	1,359,250	1,557,016	6,334,510	100%

5.4.1.2.4 General Plant

Expenditures in this category are driven by the need to modify, replace or add to assets that are not part of the distribution system but support the utility's everyday operations (i.e., land, buildings, tools, and equipment; rolling stock and electronic devices and software used to support day to day business and operations activities). While these items are important and contribute to a safe and reliable operation, General Plant investment levels and timing are generally subject to a greater degree of discretion than other investment categories. However, if ignored over a significant period, it may result in larger issues and investments needed without any discretion to continue daily operations. OHL's proposed 2024 – 2028 General Plant forecast investments are found in the table below.

The 2024 expenditures are due to a much-needed roof replacement, a new industry standard of GIS, a financial software upgrade and an enhanced customer portal. OHL's building was built in 1990 and the roof is beyond its life expectancy. OHL was informed by a third party that it is in serious need of replacement. OHL's existing customer portal is no longer being supported and is increasing cybersecurity concerns. It also provides customers with poor customer experience when they attempt to manage their accounts online.

Table 5.4-13: Forecast Net General Plant Expenditures

Category	Forecast					Total ($)	Percent of Total
	2024	2025	2026	2027	2028		
	$						
Building	296,000	200,000	50,000	20,000	50,000	616,000	30%
Office Equipment	30,000	18,000	3,000	13,000	13,000	77,000	4%
Computer Equipment	58,000	27,000	16,000	16,000	16,000	133,000	6%
Computer Software	197,380	107,000	32,000	32,000	32,000	400,380	19%
Vehicles	93,815	70,000	100,000	395,000	100,000	758,815	37%
Stores Equipment	2,000	2,000	2,000	2,000	2,000	10,000	0%
Tools, Shop & Garage Equipment	6,500	7,000	7,000	7,000	7,000	34,500	2%
Measurement & Testing	24,222	2,000	2,000	2,000	2,000	32,222	2%
Miscellaneous Equipment	2,000	2,000	2,000	2,000	2,000	10,000	0%
Land Rights	0	0	0	0	0	-	0%
Communication Equipment	1,000	1,000	1,000	1,000	1,000	5,000	0%
Total Expenditure, Net	710,917	436,000	215,000	490,000	225,000	2,076,917	100%

It should be noted that OHL was GreenButton certified in May 2023. The testing & implementation continues with their vendor/provider. OHL expects to go-live in October 2023.

5.4.1.2.5 Investments with Project Lifecycle Greater than One Year

OHL forecasts that the equipment installed under the forecasted projects will be in-service at year end and the costs will be a capitalized in the year of installation. In the event that a project does span over multiple years, OHL followed and will continue to follow the OEB's accounting processes and use account 2055 – Work in Progress.

5.4.1.3 Comparison of Forecast and Historical Expenditures

OHL has previously stated its objective is to meet all regulated requirements and manage its assets in a manner that minimizes the cost to OHL customers and ratepayers. OHL delivers value to customers by controlling costs concerning its proposed investments through appropriate optimization prioritization and pacing of capital-related expenditures.

With this objective in mind, OHL has been carefully examining and monitoring its distribution system through the historical period in addition to understanding industry trends and practices to identify appropriate technologies and opportunities for integration. Based on the condition assessments that have been performed, it is evident that OHL's asset base is ageing and requires maintenance, refurbishment, and potential replacement of assets in a timely, planned, and controlled manner. Although OHL can extend the life of its in-service assets, this does not preclude it from having a plan and performing asset maintenance to maintain the high level of reliability demanded by its customers.

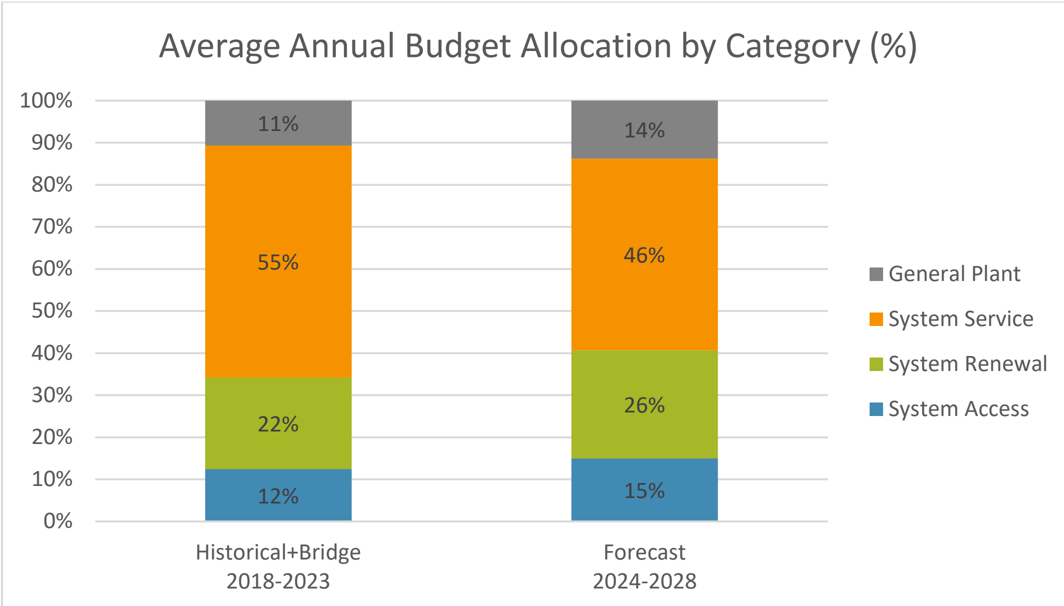
Continuing to operate and maintain the existing system indefinitely would mean a progressively more expensive maintenance program with increasing difficulty in finding parts with the risk of failing equipment due to age and service life. Furthermore, continuing without a planned and controlled maintenance program could result in diminished reliability standards and progressively more incidents resulting in potential hazards to both staff and the public. Operating the system without performing maintenance would result in an inability to meet customer needs and expectations.

The alternative to this is the path chosen by OHL which is currently being implemented and involves the measured, strategic, and planned upgrade, replacement, and refurbishment of the electrical distribution system. As a prudent utility, OHL has realized the costs of this action would be prohibitive if considered in a single year. Consequently, OHL has developed its current plan to maintain customer-driven reliability while eliminating lumpy investments and volatile rate impacts. Pursuing this path through the forecast period and beyond can ultimately reduce overall operating and maintenance costs by eliminating the 4.16 kV MS's and simultaneously enabling the system capacity to accept distributed generation and additional load. This conversion to 27.6 kV will result in lower line losses due to the higher operating voltage, operations and maintenance saving due to the elimination of 4.16 kV substations, enhanced public safety through the relocation of utility plant from backyards to public rights of way and the satisfaction of customer expectation for a system with high-reliability standards.

5.4.1.3.1 Overall Capital Expenditures

A comparison can be made of OHL's annual budget allocation between the historical period and the forecast period, shown in Figure 5.4-2. OHL wants to increase forecast expenditures for System Service projects while also maintaining its system where needed without significant bill impacts to the customer. The primary reason for the increase in System Service budgets is the continuation of the 4kV voltage conversion circuits. However, most of the assets remaining are underground cable and pad-mounted transformers, in which underground infrastructure costs more to replace than the overhead infrastructure. In some of the past years, OHL had been focusing on overhead assets with minimal budget and resources being directed onto underground assets. Moving forward, the reverse effect will be seen with a higher focus of budget and resources on underground assets versus overhead assets. In addition, due to the uncertainty associated with System Access projects, if the budget does not get used within the planning year, OHL intends on diverting the funds to other needed investments where appropriate to achieve OHL's objectives in addition to meeting the customer's expectation of the system's performance.

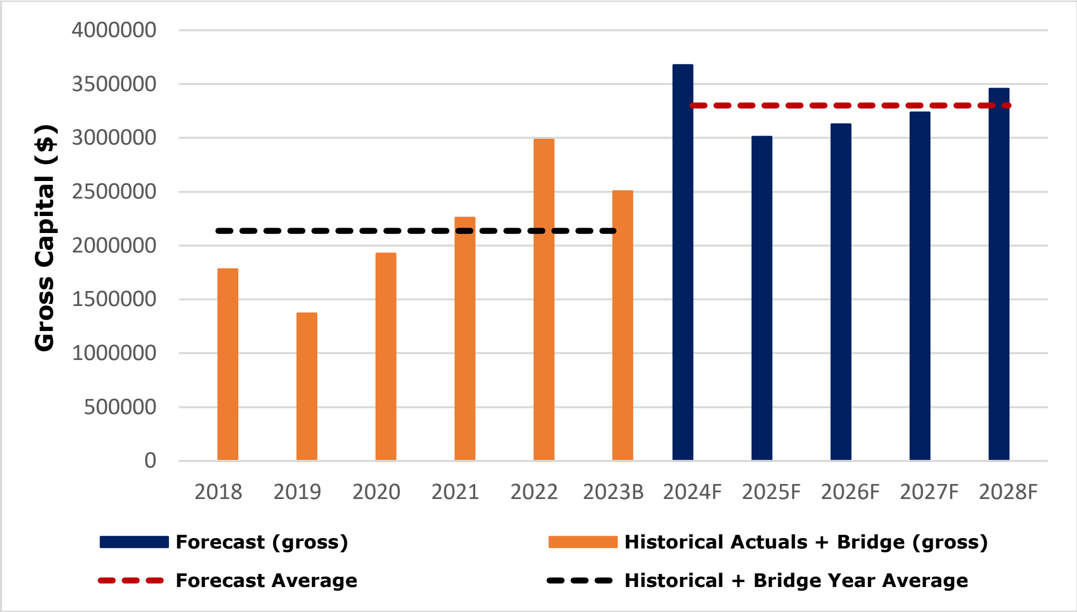
Figure 5.4-2: Average Annual Budget Allocation (Historical vs. Forecast)



The overall gross capital expenditure trend over the 2018 to 2028 period, is shown in the following figure. The average overall gross capital expenditures forecast is approximately 54% higher than the historical plus bridge-year average. This is largely as a result of the following factors:

- Uptake in System Access projects in 2024 identified by the town and developers that require energization during the forecast period.
- Increases in supply chain, labour, and material costs.
- Increase in System Renewal costs, to deliver a more consistent level of spending to ensure OHL is able to maintain its system reliability.
- Increase in System Renewal costs to begin renewing meter population.
- General Plant increases in 2024 due to an urgent need to replace the roof of OHL's office building to ensure the safety of its employees.
- Introduction of new programs to pro-actively address issues identified during the historical period.

Figure 5.4-3: Overall Gross Capital Expenditures



OHL has developed a prudent capital budgeting process combined with a system of capital project prioritization that considers customer preferences, business performance and accountability. OHL's investment plan reflects its long-term strategy and addresses the need for OHL to remain flexible enough to respond to priority shifts as they occur. The capital budget process considers the relative priorities of the proposed investments including both non-discretionary and discretionary budget items.

Non-Discretionary items include:

- Projects that accommodate the company's obligation to connect including new customers as well as load growth.
- Projects to accommodate municipal, regional and Ministry requirements.
- Projects or expenditures to satisfy regulatory initiatives, environmental or health & safety risks and the company's conditions of service.

Discretionary Items include:

- Infrastructure Renewal Projects
- Information Technology
- Fleet/Tools

OHL's investment plan will enable them to achieve its corporate and AM objectives of:

- Safety – projects that are considered to address safety as a primary factor.
- Reliability & Performance – projects that help OHL maintain or improve its reliability and meet other OEB performance measures.
- Asset Condition – projects that address assets that are at risk of failure as identified through both asset condition assessments, and inspection and maintenance information.
- Customer Focus – projects that enable OHL to address customer priorities and continue to deliver excellent service to its customers.

- Best Practice – projects that enable OHL to address assets that are no longer considered best practice and are impacting OHL's performance.

5.4.1.3.2 System Access

System Access investments include the following drivers:

- Customer service requests - continued development of the Town of Orangeville and the Town of Grand Valley requiring new customer connections (site redevelopment; subdivisions).

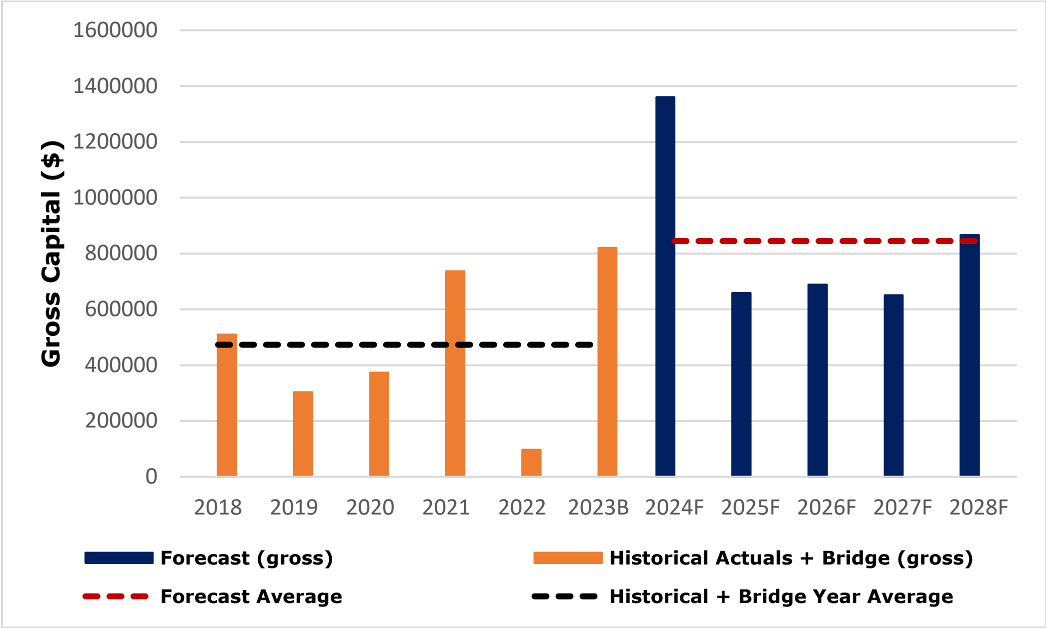
The historical trend with System Access was significantly variable year over year due to variability of new subdivisions development. As shown in Figure 5.4-4 the forecast average is 79% higher than the historical average. This is based on the projections Orangeville currently has for the town as well as historical performance trends concerning customer connections. The subdivision developments within the historical years consisted mostly of infill townhouse developments. The forecast period consists of both infill townhouse developments and lager developments consisting of a mix of single detached homes and townhouses. OHL believes the proposed budget has adequate resources and funds in place to accommodate potential future connections and projects that are deemed mandatory. However, these projects are difficult to forecast with high accuracy and may still change as these are dependent on developers and city plans. For 2024, the individual developers have confirmed they still plan to proceed with their projects, namely Mayberry Hills Phase 3B, Edgewood Valley and Cachet Main Street North.

Table 5.4-14: Planned Number of Subdivisions and New Connections

Year	Number of Subdivisions	Number of New Connections
2024	3	281
2025	2	145
2026	2	117
2027	1	193
2028	2	219

The above table shows the forecasted number of developments and forecasted number of new connections within the development.

Figure 5.4-4: Comparative Gross Expenditures for System Access



5.4.1.3.3 System Renewal

System Renewal investments include the following drivers:

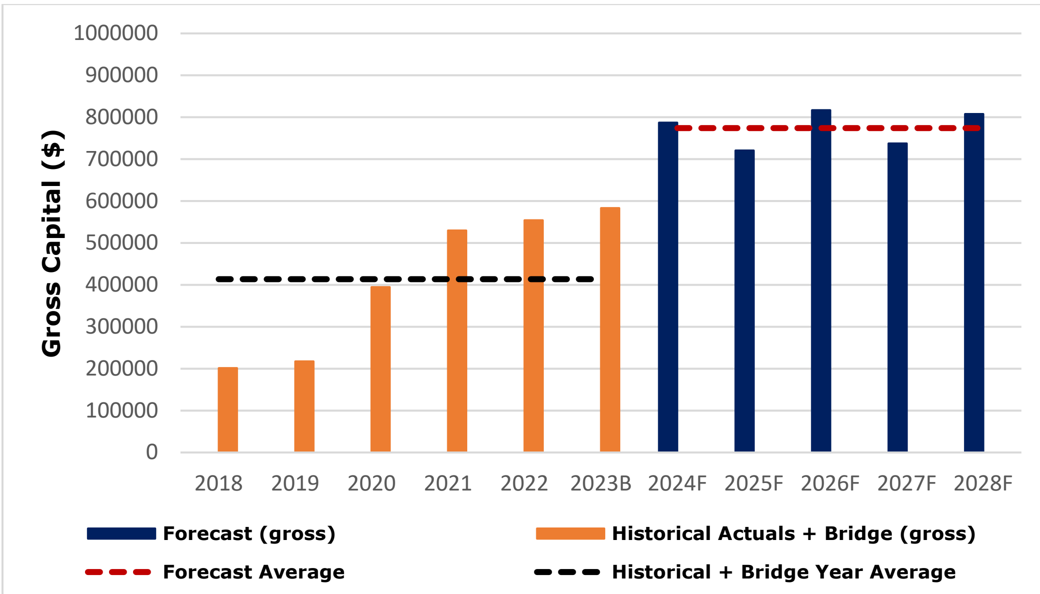
- Failure risk - multi-year planned asset replacement that addresses assets in "very poor" and "poor" condition. The historical trend has seen increasing investments due to ageing infrastructure.
- Emergency needs - emergency reactive replacement of distribution system assets due to unanticipated failure, storms, motor vehicle accidents, vandalism, etc.

Expenditures for System Renewal were occasionally shifted to accommodate additional priority investments for the system to meet the expected performance by OHL's customers. As shown in Figure 5.4-5, the forecast average is 87% higher than the historical average. OHL intends on having a more constant level of spending on renewal projects to manage the system's health and performance. Should additional funds be remaining from System Access due to fewer customer service requests than planned for, OHL intends to re-allocate funds into renewal projects to address additional at-risk assets, that would be identified through OHL's planning process. Forecasted projects are generally in alignment with the projects executed in the past such as overhead and underground renewal. The following are some of the main factors for the forecasted increase in expenditures:

- Increase in meter purchases in 2024, 2025, 2026, 2027, and 2028 to replace meters. The whole meter population requires replacement or reverification by 2028. OHL is pacing its meter programs to minimize any one-off impacts. The forecasted quantities for purchase are: 1,202 in 2024, 1,424 in 2025, 1,656 in 2026, 1,424 in 2027, and 1,712 in 2028. These purchases will be used for new installations, to replace failed existing meters, and to begin a paced renewal program for existing smart meters.

- A new replacement program to replace 1 to 2 PME switchgear a year, addressing the defective equipment issues, due to PME failures.
- A new automatic sleeve replacement program in 2024, to address increase in failures over the historical period. OHL plans to replace 431 sleeves in 2024.
- Increase in supply chain costs due to shortage of equipment, and inflation increase compared to the historical period.

Figure 5.4-5: Comparative Gross Expenditures for System Renewal



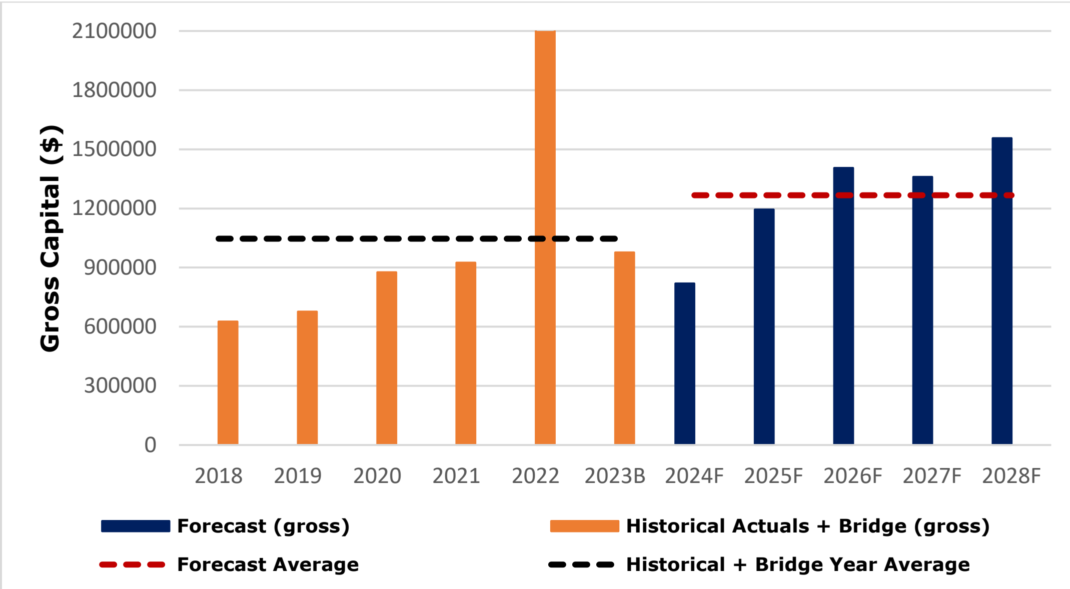
5.4.1.3.4 System Service

System Service investments include the following drivers:

- System constraints – voltage conversion, line extensions and feeder interconnections to accommodate grid load growth and modernization of the system.
- System operational objectives – investments to maintain system reliability and efficiency of distribution stations.

As shown in Figure 5.4-6, the forecast average is 14% more than the historical average. OHL is currently not planning for the installation of additional automation capabilities into the current system. The 2022 increase was due to OHL joining a fibre to the home project where multiple years of duct was installed within one year as a joint-trench project in coordination with the third-party telecommunications provider. In the forecast period, the primary reason for the increase in System Service budgets is the continuation of the 4kV voltage conversion circuits. Most of the 4kV assets remaining are underground cable and pad-mounted transformers, in which underground infrastructure costs more to replace than the overhead infrastructure. In some of the historical years, OHL had been focusing on overhead assets with minimal budget and resources being directed onto underground assets. Moving forward, the reverse effect will be seen with a higher focus of budget and resources on underground assets versus overhead assets. In addition, some of the costs increase can be attributed to inflation cost increases and recent supply chain cost increases.

Figure 5.4-6: Comparative Gross Expenditures for System Service



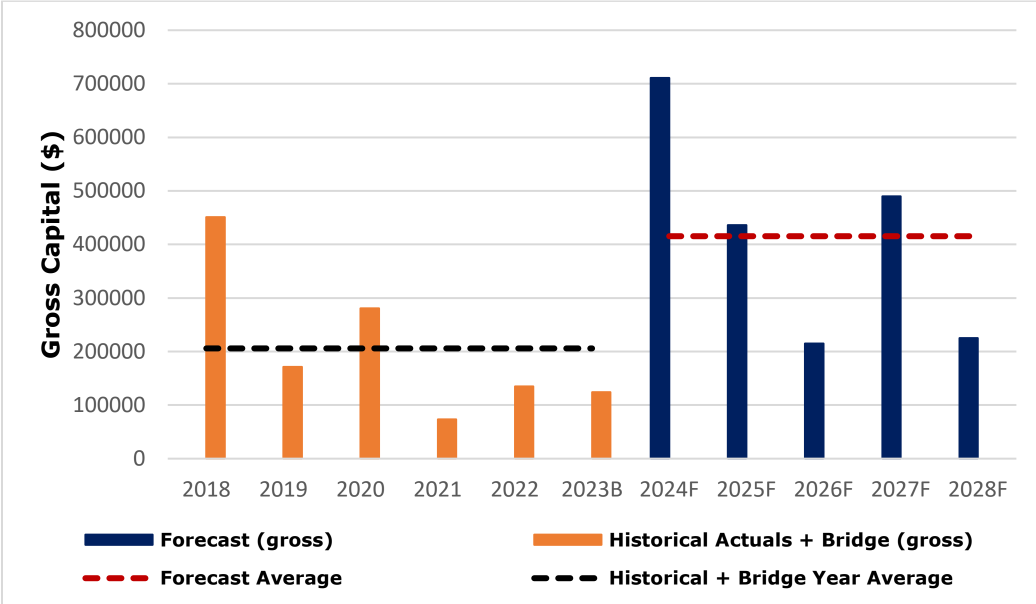
5.4.1.3.5 General Plant

General Plant investments include the following drivers:

- System Maintenance support – replacement of rolling stock, tools and replacing fleet units. Historical investments have resulted in specific rolling stock and tool replacement as required. Replacement of major fleet units tends to be a high lumpy cost in a particular investment year when compared to the replacement costs of small fleet units.
- Business Operations efficiency – GIS development, data collection efforts and computer upgrades to support daily operations and to better understand and analyze the system needs.

As shown in Figure 5.4-7, the forecast average is 102% higher than the historical average. The historical expenditures had variable spending in the General Plant category, addressing only critical items that were needed to maintain and continue operations at OHL. OHL continues to use the same framework moving forward to address only the critical issues needed to maintain the existing facilities, fleet, and IT assets. The major increase in expenditure for 2024 and 2025 are due to the need for OHL to replace the roof of its office, which has been identified as at risk of failing, with known defects and leaks been identified. Through a third-party inspection, it was recommended that the roof be replaced in 2024. This project is important to ensure OHL can keep its staff safe and provide an acceptable environment for its staff to work in and provide efficient customer service. The increase in 2027 is to address a truck that will have reached its end of life. The truck is critical in ensuring OHL can continue to maintain a 24/7 operation responding to emergency requests as well as planning maintenance and capital work.

Figure 5.4-7: Comparative Gross Expenditures for General Plant



5.4.1.4 Important Modifications to Capital Programs Since Last DSP

As described in the above sections, OHL has a couple of new replacement programs that are addressing assets that have been identified as having increasing failures and contributing heavily to the defective equipment portion of the reliability metrics. These include:

- Planned PME switchgear replacement program.
- Planned automatic sleeve replacement program.
- Paced meter replacement program for 2024-2028.
- Roof replacement project planned for 2024 & 2025.

5.4.1.5 Forecast Impact of System Investments on System O&M Costs

System investments can result in:

- the addition of incremental plant (e.g., new poles, switchgear, transformers, etc.).
- the relocation/replacement of existing plant.
- the replacement of the end-of-life plant with the new plant (e.g., cables, poles, transformers, etc.)
- new/replacement system support expenditures (e.g., fleet, building, software, etc.)

OHL employs a strategy of deferring O&M spending in areas that align with system renewal efforts, to the extent possible, where doing so will pose no safety or environmental hazard. In general, incremental plant additions will be integrated into the asset management system and will require incremental resources for ongoing O&M purposes. However, OHL balances this off with staff turnover and other efficiencies to minimize the impact, and this is expected to put a neutral to upward pressure on O&M costs.

Relocation/replacement of an existing plant normally results in an asset being replaced with a similar one, so there would be little or no change to resources for ongoing O&M purposes (i.e., inspections still need to be carried out periodically as required per the DSC). There may be some slight life advantages when a working older piece of equipment is replaced with a newer one that would impact O&M repair-related charges. Overall, the planned system investments in this category are expected to put neutral pressure on O&M costs.

Replacement of end-of-life assets with the new plant will still require the allocation of resources for ongoing O&M purposes. Repair would be the most significant O&M activity impacted by the new plant. Certain assets, such as poles, offer few opportunities for repair-related activities and generally require replacement when deemed at end of normal life or critically damaged. Other assets such as direct buried cable offer opportunities for repair-related activities (e.g., splices) up to a point where further repairs are not warranted due to end-of-life conditions. In a few areas, cable faults will not be repaired due to cable end of life. When faulted, the faulted cable section will be replaced, normally a section between two distribution transformers. For planned cable replacement in a subdivision, a new primary cable installed in the duct replaces direct buried primary cable and is expected to provide higher reliability. This will shift response activity for a cable failure from repair (O&M) to replacement (capital). If assets approaching the end of life are replaced at a rate that maintains equipment class average condition, then one would expect little or no change to O&M costs under no growth scenarios but would still see upward O&M cost pressure in growth scenarios (more cumulative assets to maintain each year). Replacement rates that improve equipment class average condition could result in lowering certain maintenance activities costs (e.g., pole testing, reactive repairs, etc.). Overall, this is expected to put slight downward pressure on O&M repair-related costs.

System support expenditures (e.g., GIS, Asset Condition Assessment studies) are expected to provide a better overall understanding of OHL's assets that can lead to a more efficient and optimized design, maintenance and investment activities going forward. Asset Condition Assessment studies have been conducted and data gaps have been identified. To improve the quality of data used in the ACA studies, increased data collection efforts may be implemented which can increase pressure on O&M costs. Collected data will be inputted into the GIS as attribute information for each piece of plant. Improved asset information can allow existing resources to partially compensate for growth-related increases in O&M activities. Fleet replacement expenditures result in reduced O&M for new units however this will be offset by increasing O&M of remaining units as they get older. Overall, the system investments are not expected to have a significant impact on total O&M costs in the forecast period.

Typically, O&M costs are expected to increase over the forecast period due to labour costs, supply chain and contractors' costs. The retirement of a Lines Supervisor in late 2026 is causing a future decrease in O&M. It is important to OHL to undertake accurate budgeting with the information known at the time, but as future plans and workload changes, it is uncertain whether this position will be replaced at this point.

Table 5.4-15: Forecast System O&M Expenditures

Category	Forecast ($)				
	2024	2025	2026	2027	2028
System O&M	1,359,282	1,393,264	1,379,096	1,169,562	1,198,802

5.4.1.6 Non-Distribution Activities

OHL confirms that there are no expenditures for non-distribution activities in the OHL's budget.

5.4.2 Justifying Capital Expenditures

Customer Value

OHL regularly engages with its customers to share information, educate customers, and to gather their opinions and insights on its services and on key priorities. Customer needs, preferences, priorities and expected level of service are key inputs considered when developing capital plans.

Through the prioritization of System Access projects such as new customer connections, service requests and new subdivisions, OHL ensures that customer needs and requests are being met.

The scope of capital investments planned in the System Renewal category has also been determined with the objective of keeping power supply reliability from deteriorating below an acceptable level while also keeping the overall investment envelope for this DSP within a range that would not result in retail rates escalations beyond the affordability of OHL's customer base. This aligns with its two customer priorities identified in a recent survey, which corresponds to "*Reliable Power*" and "*Reasonable Costs*".

OHL's System Service investments in its voltage conversion programs will allow OHL to become a station-less system, whilst continuing to maintain its reliability. This conversion to 27.6 kV will result in lower line losses due to the higher operating voltage, operations and maintenance saving due to the elimination of 4.16 kV substations, enhanced public safety through the relocation of utility plant from backyards to public rights of way and the satisfaction of customer expectation for a system with high-reliability standards.

OHL's General Plant investments are also selected and prioritized such that OHL can continue to operate safely, efficiently and support other work. Work on replacing its roof, will ensure its employees have a safe space to work and continue to serve its customers in an efficient manner.

In order to align OHL's overall capital budget envelope with customer expectations, OHL has prioritized and optimized its proposed capital investments such that the most critical projects and programs have been budgeted over the forecast, while a number of lower priorities, less critical scoped projects and programs have been either deferred, reduced, or eliminated from the budget envelope.

Technological Changes and Innovation

OHL ensures it keeps abreast of the latest grid innovations and any technological changes that could help enhance OHL's network and continue to deliver a safe and reliable service that meets its customer expectations. A few examples of technological improvements and innovation either recently implemented or planned over the forecast period are noted below:

- Hardware Replacement- Automatic Sleeve Replacement – In 2020, an automatic tension sleeves failed resulting in the feeders tripping and live conductor falling to the ground. OHL quickly restored the conductor and carried out an infrared scan of that area and the entire service territory to detect other failing sleeves. To address this issue, OHL has created a program (January 2023) to remove all automatic tension sleeves, to be replaced with compression sleeves. In addition, by implementing compression sleeves, this will reduce any cost that would be associated with OHL responding to restoring failed automatic tension sleeves.
- OHL has continued its effort to replace porcelain cutouts with polymer cutouts during planned maintenance and capital projects. By replacing these assets during planned maintenance and other capital project, OHL can maximise its cost efficiency on replacing these assets to the latest standards.
- OHL has continued with a program to change to stainless steel transformers for single phase pad mounted transformers, enhancing the durability of its transformers, as well as employing the ese of Internal Fault Detector for all transformers.

Consideration of Traditional Planning Needs

As previously explained in Section 5.3.1, traditional planning needs, including load growth, asset condition, and reliability are key inputs considered as part of OHL's AM processes.

OHL undertakes load studies to identify areas that may require investments to accommodate required capacity. Load growth is a direct input into OHL's planning for System Access and System Service type projects. Load growth is also a key input into the regional planning process (detailed in Section 5.2.2.4) which helps to identify future requirements (both wires and non-wires) to accommodate load growth.

Asset condition and reliability data are key inputs considered by OHL when identifying, selecting, and prioritizing System Renewal expenditures. Through a recently completed ACA exercise, several assets have been identified as in need of replacement now or in the near future. In the absence of investments into asset renewal, the existing infrastructure presents high risk of failure in service, affecting supply system reliability and public safety.

However, renewal and replacement of all infrastructure components determined to be in "fair," "poor," or "very poor" condition during the next five years would be difficult to manage through OHL's resources and it would lead to unaffordable increase in retail rates. Given that the top two customer priorities correspond to "*Reliable Power*" and "*Reasonable Costs,*" OHL's challenge is to seek an optimized balance of these generally opposing factors.

One example of a project OHL is undertaking that will address reliability issues, is it Automatic Tension Sleeve replacement program. Through this program OHL is mitigating an identified issues with this asset that had caused impacts to reliability.

Overall Capital Expenditures

OHL has outlined the details of its forecast capital expenditure in Section 5.4.1.2. Further justification for its material investments can be found in Appendix E, which outline the justification for each material investment.

5.4.2.1 Material Investments

The focus of this section is on projects/activities that meet the materiality threshold set out in Chapter 2 of the Filing Requirements. OHL materiality threshold is $10,000.

Table 5.4-16: Test Year Material Investment List

Category	Project Code	Project Name/Description	Priority Rank[8]	2024 Expenditure ($ '000)		
				Gross	Contr.	Net
System Access	C01-2024	Various General Service Capital Contribution Projects	**1**	80	(40)	40
	C02-2024	Various Residential Capital Contribution Projects	**2**	30	(25)	5
	S01-2024	Various Subdivisions	**3**	1,242	(646)	596
System Renewal	B00-2024	Transformer and PME Replacements	**5**	169	0	169
	H00-2024	Hardware Replacement	**6**	227	0	227
	M00-STOCK-2024	Meter Replacement and Additions	**4**	243	0	243
	P00-2024	Pole Replacement	**7**	148	0	148
System Service	B121-2024	MS2 East Feeder Conversion	**15**	420	0	420
	B122-2024	MS2 South Feeder Conversion	**8**	210	0	210
	B2024-1	Ontario and Victoria Street Voltage Conversion	**10**	189	0	189
General Plant	GP 2024-1	Building	**11**	296	0	296
	GP 2024-2	Office Equipment	**16**	30		30
	GP 2024-3	Computer Equipment	**9**	58	0	58
	GP 2024-4	Computer Software	**12**	197	0	197
	GP 2024-5	Vehicles	**13**	94	0	94
	GP 2024-8	Measurement and Testing	**14**	24	0	24

[8] OHL's process for determining the priority rank for each project is outlined in section 5.3.1.3

Appendix A – OHL's Business Plan

Appendix B – OHL's Asset Condition Assessment

Appendix C – OHL's Distribution Maintenance Program

Appendix D – 2023 Orangeville Hydro Customer Satisfaction Report

Appendix E – Material Investment Narratives

Appendix F – OHL's REG Investment Plan

Appendix G – 2022 Regional Plan