OPERATIONS, MAINTENANCE & ADMINISTRATION ("OM&A") OVERVIEW

Toronto Hydro's 2025-2029 Custom Incentive Rate Framework set out in Exhibit 1B, Tab 2, Schedule 1 includes a mechanism to enable multi-year rate funding for operational investments as well as capital expenditure needs. The proposed 2025-2029 Operations, Maintenance & Administration ("OM&A") plan represents the minimum investments necessary to deliver the Distribution System Plan ("DSP") outlined in Exhibit 2B and achieve key outcomes valued by customers and the OEB under the Renewed Regulatory Framework ("RRF").

In addition to enabling Toronto Hydro to attract and retain the necessary resources to carry out its DSP and deliver customer outcomes in next rate period and beyond, the OM&A plan addresses other key operational requirements, including:

- integrating cloud computing and non-wires solutions into operations;
- responding to evolving policy and customer expectations to connect behind-the-meter technologies such as electric vehicles, solar panels, and energy storage;
- protecting customers' data and the grid against intensifying cyber security threats driven by rapid technology advancements and changing geopolitical dynamics;
- complying with new or expanded legal and regulatory requirements, including customer service, safety, and environmental obligations;
- maintaining safe, reliable, and effective operations across a multitude of key utility functions including Emergency Response, Supply Chain, Fleet, Facilities, and Information Technology ("IT");
- addressing a variety of externally-driven costs, including insurance premiums, bad debt expenses, and regulatory costs; and

- keeping up with asset maintenance requirements to ensure the grid remains safe and reliable for customers.

This schedule provides an overview of Toronto Hydro's current 2020-2024 and future 2025-2029 OM&A plan. The drivers underpinning Toronto Hydro's OM&A plan are specific, tangible, and urgent, with the most pressing needs highlighted in section 5 of this schedule, and detailed evidence supporting the entire plan provided in Exhibit 4, Tab 2. Tables 1 and 2 below provide breakdowns of Toronto Hydro's OM&A expenditures by program for the historical and bridge years (2020-2024), and forecast years (2025-2029), respectively.

Table 1: Historical and Bridge Year OM&A Expenditures by Program ($ Millions)[1]

Programs	Actual			Bridge	
	2020	2021	2022	2023	2024
Preventative and Predictive Overhead Line Maintenance	5.8	6.2	5.7	7.2	7.9
Preventative and Predictive Underground Line Maintenance	5.1	4.4	5.7	6.3	6.1
Preventative and Predictive Station Maintenance	5.9	6.4	5.5	6.5	7.0
Corrective Maintenance	23.1	26.5	23.5	24.9	25.6
Emergency Response	22.1	23.0	22.0	20.4	23.1
Disaster Preparedness Management Program	6.0	5.5	4.9	1.3	1.8
Control Centre Operations	7.6	6.0	6.5	7.4	7.9
Customer Operations	9.3	7.5	9.0	12.6	12.8
Asset and Program Management	13.4	11.9	13.1	13.5	14.0
Work Program Execution	11.0	14.2	17.3	14.3	15.2
Fleet and Equipment Services	9.3	8.5	7.8	8.7	9.1
Supply Chain Services	15.8	12.9	13.8	16.7	18.8
Facilities Management	24.3	26.0	25.0	26.0	27.9

[1] Numbers may not sum due to rounding.

Programs	Actual			Bridge	
	2020	2021	2022	2023	2024
Customer Care	55.7	39.3	39.3	44.9	48.4
Human Resources, Environment and Safety	15.5	17.6	16.7	18.9	21.3
Finance	16.4	17.9	18.4	20.9	22.9
Information Technology	48.0	50.6	53.5	57.5	61.1
Legal and Regulatory	18.5	19.0	19.2	24.7	28.0
Charitable Donations and LEAP	1.0	1.0	1.0	1.3	1.4
Common Costs and Adjustments	(0.2)	(0.3)	(1.0)	(1.1)	(0.9)
Allocations and Recoveries	(25.5)	(26.6)	(26.5)	(31.4)	(33.9)
Total OM&A	**288.1**	**277.5**	**280.4**	**301.5**	**325.5**

Table 2: Forecast Year OM&A Expenditures by Program ($ Millions)[2]

Programs	Forecast				
	2025	2026	2027	2028	2029
Preventative and Predictive Overhead Line Maintenance	9.1	9.2	9.6	9.5	9.4
Preventative and Predictive Underground Line Maintenance	6.8	7.0	6.7	7.1	7.0
Preventative and Predictive Station Maintenance	8.0	7.6	7.7	8.6	8.8
Corrective Maintenance	29.5	30.7	31.0	32.0	33.6
Emergency Response	25.9	26.4	27.2	27.9	28.6
Disaster Preparedness Management Program	1.9	1.9	2.0	2.1	2.2
Control Centre Operations	8.3	9.0	9.5	10.0	10.5
Customer Operations	12.7	13.1	13.7	14.1	14.6
Asset and Program Management	14.2	15.8	16.6	17.9	18.7
Work Program Execution	16.0	16.8	17.9	18.5	19.4
Fleet and Equipment Services	9.3	9.6	9.8	10.0	10.3
Supply Chain Services	21.5	23.5	24.9	25.5	27.1
Facilities Management	27.9	28.4	28.9	29.6	30.3
Customer Care	48.6	51.6	52.5	54.4	56.1

[2] Numbers may not sum due to rounding.

Programs	Forecast				
	2025	2026	2027	2028	2029
Human Resources, Environment and Safety	22.6	23.2	24.2	25.3	26.3
Finance	24.4	26.2	27.6	29.4	31.1
Information Technology	63.3	65.8	68.7	71.7	75.1
Legal and Regulatory	29.9	30.9	32.0	33.2	34.2
Charitable Donations and LEAP	1.5	1.6	1.7	1.8	1.9
Common Costs and Adjustments	(0.9)	(0.9)	(0.8)	(0.8)	(0.8)
Allocations and Recoveries	(37.5)	(39.4)	(41.2)	(42.3)	(44.8)
Total OM&A	**343.0**	**358.0**	**370.2**	**385.5**	**399.6**

The programs that constitute Toronto Hydro's plan are largely a continuation of its 2020-2024 OM&A programs, which are critical to the safe and reliable operation of the distribution system, delivering timely and effective customer-facing services, and fulfilling critical corporate functions that allow the utility to operate in a financially responsible and legally-compliant manner. However, the utility is not operating in a stable state as detailed in the discussion of the funding need in the Rate Framework in Exhibit 1B, Tab 2, Schedule 1, and discussed in brief below. Instead, these operational programs must be delivered in an environment of increased volume and increased complexity of work driven by evolving customer needs, requirements, and expectations.

The information presented in this OM&A overview schedule is organized as follows:

- Section 1 contextualizes Toronto Hydro's OM&A investment plan;
- Section 2 outlines historical productivity and benchmarked efficiency trends;
- Section 3 presents the workforce needs and challenge underpinning the plan;
- Section 4 describes Toronto Hydro's business planning process;
- Section 5 identifies key drivers necessitating forecast OM&A expenditures; and

- Section 6 sums up the preceding information with a macro level causal track analysis showing the variance drivers from the 2020 OEB-approved OM&A budget to the 2025 test year and 2029 forecast year.

1. THE OM&A PLAN IN CONTEXT

In the current rate period, Toronto Hydro's operating parameters shifted from a relatively linear and stable environment to a more dynamic, growth-oriented context, predicated on significant increases in future customer demand driven by an unprecedented energy transition that is creating new and expanded roles for electricity within the economy. The DSP in Exhibit 2B outlines in detail the capital investments required to address these new imperatives, while also sustaining existing infrastructure in accordance with good utility practices. However, asset readiness is only part of the solution required to meet the needs of customers and the system in an electrified future state. Toronto Hydro must also invest in human capital and other operational priorities to deliver the increasing and evolving capital plan and ensure that customers are not underserved in the next decade as the pace of the energy transition intensifies.

As the utility takes least-regrets actions to expand and modernize the grid to be ready and equipped for a once-in-a century transformation of the energy system, it similarly needs to invest in resources with new and enhanced skill sets to get the work done safely and cost-effectively. However, not all of these resources can be capitalized under existing accounting standards and practices, nor do all the solutions to expand and modernize the grid entail capital investments. Technological advancements offer new digital tools and smart grid solutions to address system needs and deliver cost-effective customer services. Taking advantage of these opportunities requires investment in both capital assets (i.e. hard infrastructure like sensors, switches, and reclosers, and intangibles like software systems) and in operational programs where approximately 50 percent of the costs related to human capital typically reside.

Since 2015, Toronto Hydro has served the needs of a growing city, evolving customer and policy demands, and an aging and deteriorating system, while addressing intensifying challenges—brought on by factors such as urban development and densification, more frequent instances of extreme weather, and evolving cyber security threats—with a staffing complement that is essentially flat from 2015 to 2024. After nearly a decade of realizing sustained efficiencies and managing complex operations with a flat headcount, Toronto Hydro requires incremental funding to hire and retain necessary resources without compromising the utility's financial viability.

Entering the next rate term, it is no longer possible nor prudent for Toronto Hydro to meet its obligations without additional resources. From 2024 through to 2029, Toronto Hydro's workforce is expected to grow by roughly 25 percent to sustain the foundations of a safe and reliable grid while also meeting the imperatives of an urban city and customers who are increasingly relying on electricity to expand, digitize, and decarbonize their footprint. Relative to the increase in the capital plan that the utility must deliver to get the grid ready and achieve outcomes for customers during this transformational time, the pace of workforce growth and related OM&A increases demonstrates Toronto Hydro's ongoing commitment to be efficient and productive. Specifically, the linear trends in Figure 1 below shows that from 2015-2029 (a 14-year period spanning three custom incentive rate cycles) Toronto Hydro has delivered, and intends to continue delivering, a larger capital program with an increase in resourcing and related OM&A costs that is comparatively much lower than the rate of growth in the capital program.

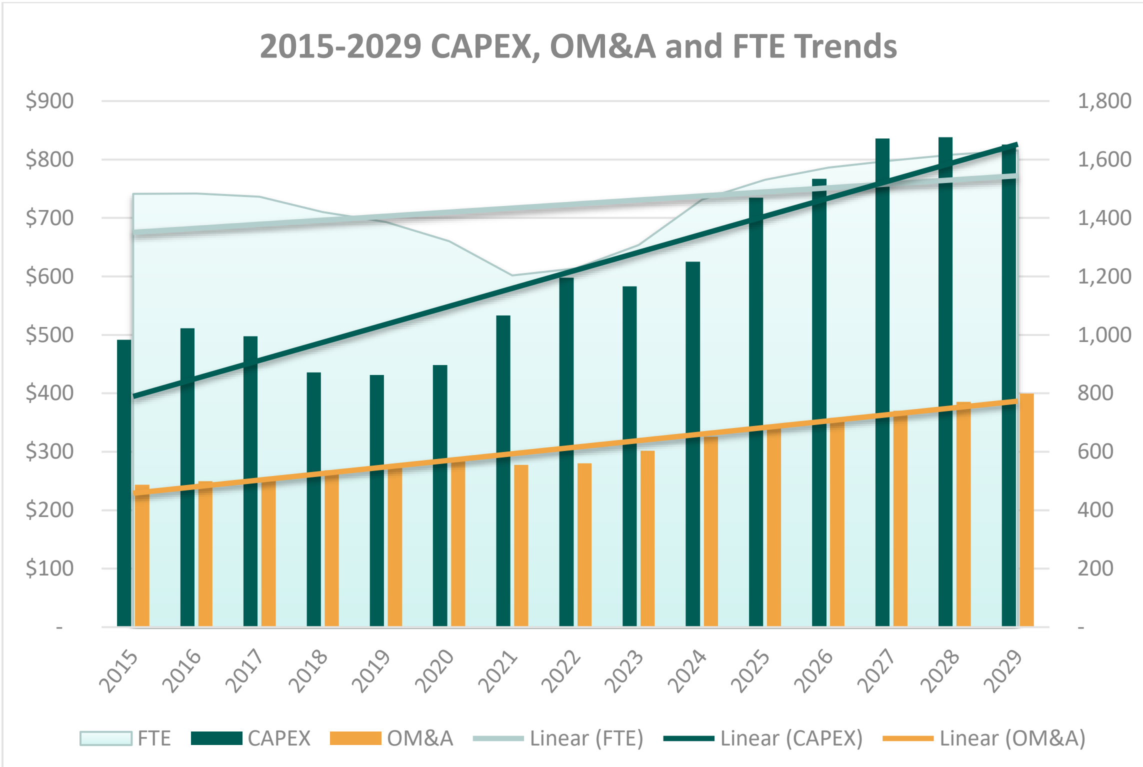

Figure 1: Comparing 2014-2029 Linear Trends in CAPEX, OM&A and FTEs

The full-time employee ("FTE") and OM&A trends identified in Figure 1 above reflect the continuation of a productivity journey in the last decade that has produced a demonstrably lean staffing complement. Notably, benchmarking shows that relative to other large and mid-sized distributors in Ontario, Toronto Hydro's workforce is well below the average when compared using various key ratios such as of net fixed assets ("NFA") per FTE, FTEs by system load (MWh), and FTEs per km of line. This benchmarking data is presented and further detailed in section 2 below.

1.1 Key Themes and Trends

Toronto Hydro's 2025-2029 OM&A plan is forecasted at approximately $1,856 million, representing a 26 percent increase over the current 2020-2024 period, compared to a 44 percent proposed increase in capital investment, as outlined in the DSP in Exhibit 2B. Efficient deployment of operational funding and staffing costs over the last decade, as further discussed below, has enabled Toronto Hydro to bring forward in this application an operational plan that (i) supports the execution of a larger capital program necessary to expand and modernize the grid for the future, while (ii) continuing to deliver high performance on service quality metrics, with (iii) an increase in operational budgets that is comparatively lower than the capital program.

In 2025, the first year of the next rate period, Toronto Hydro's forecasted OM&A budget is approximately $343 million, representing a compound annual growth rate of 5.16 percent from the utility's approved OM&A in the 2020 rebasing application (EB-2018-0165). On a per customer basis, the compound annual growth rate ("CAGR") from the 2020 approved to the 2025 proposed budget is approximately 4.66 percent. Over the same period (2020 to 2025), Toronto Hydro's OM&A costs per FTE (a measure of workforce productivity per OEB Appendix 2-L),[3] are increasing at a CAGR of 2.1 percent, which is less than the average rate of inflation over this period, per the OEB's parameters for 2021-2024,[4] and assuming a return to stable pre-pandemic inflation levels of 2 percent in 2025, consistent with the Bank of Canada's economic outlook.[5] Inflation is a measure that reflects the increasing cost of input prices, including labour. The fact that operational expenses per FTE are growing at a rate less than inflation shows that input prices related to labour are being managed efficiently through the utility's compensation and staffing

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[3] OEB Filing Requirements for Electricity Distribution Rate Applications Chapter 2 – Cost of Service (December 15, 2022), s. 2.4.2 "OM&A Summary and Cost Driver Tables".
[4] OEB Letter Re: *2021 Inflation Parameters* (November 9, 2020); EB-2021-0212, OEB Decision and Order, *2022 Input Price Index Generic Proceeding* (November 18, 2021); OEB Letter re*: 2023 Inflation Parameters* (October 20, 2022); OEB Letter re: *2024 Inflation Parameters* (June 29, 2023).
[5] Bank of Canada, *Monetary Policy Report* (October 2023), online: <https://www.bankofcanada.ca/wp-content/uploads/2023/10/mpr-2023-10-25.pdf> at page 1.

strategy. Table 3 below details the facts and trends outlined above, which are also presented in OEB Appendix 2-L at Exhibit 4, Tab 1, Schedule 5.

Table 3: 2020-2025 OM&A Trends

	2020 Test	2021 Actuals	2022 Actuals	2023 Bridge	2024 Bridge	2025 Test	2020-24 CAGR
OM&A ($M)	266.7[6]	277.5	280.4	301.5	325.5	343.0	**5.16%**
OM&A per Customer ($)	341.3	352.9	354.6	379.7	408.2	428.5	**4.66%**
OM&A per FTE ($)	201,892	230,673	228,524	230,680	222,488	224,036	**2.10%**

Over the next rate period, from 2025 to 2029, Toronto Hydro forecasts OM&A costs to increase at a CAGR of 3.89 percent with a corresponding growth in OM&A per customer of 3.54 percent and OM&A per FTE of 2.26 percent, as shown below in Table 4.

Table 4: 2025-2029 OM&A Trends

	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast	2029 Forecast	2025-29 CAGR
OM&A ($M)	343.0	358.0	370.2	385.5	399.6	**3.89%**
OM&A per Customer ($)	428.5	445.6	459.3	476.7	492.6	**3.54%**
OM&A per FTE ($)	224,036	227,735	231,954	238,404	245,003	**2.26%**

The growth trends observed in Tables 3 and 4 above are subject to important considerations regarding workforce-related and customer-correlated costs.

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[6] In EB-2018-0165, the OEB approved a 2020 OM&A budget of $272.2 million and directed Toronto Hydro to amend the presentation of shared services within Other Revenue, under USoA Accounts 4375 and 4380 for revenues and expenses of non-rate regulated utility operations. Normalized for this change, the 2020 OEB-approved OM&A budget was $266.7 million.

1.1.1 Workforce Related Costs

Despite workforce being a key driver of the OM&A plan, staffing-related costs (as measured by OM&A per FTE metrics) are growing at a lower rate than the overall plan. Over both rate periods, from 2020 through to 2029, the OM&A CAGR is 4.6 percent whereas OM&A per FTE CAGR is roughly 2.17 percent. Additionally, the OM&A per FTE growth rate over this period is lower than the rate of inflation, which averages at 3.5 percent using OEB parameters for 2021-2024 and a 2 percent outlook for 2025-2029, assuming a return to stable pre-pandemic inflation levels of 2 percent, consistent with the Bank of Canada's economic outlook.[7]

Toronto Hydro requires a custom rate funding solution to secure the human capital necessary to deliver the 2025-2029 investment plan safely and efficiently, maintain the high-service quality performance improvements achieved in the last decade,[8] and achieve other important outcomes that customers need and value such as improving the resilience of the grid.[9] Neither cutting compensation costs nor cutting headcount are viable strategies to manage these key objectives within a standard IRM funding framework. Managing workforce-related costs downwards to live within a standard IRM funding paradigm would entail a reduction to Toronto Hydro's overall staffing complement of up to 200 resources by the end of the rate period, putting total FTEs below 2015 levels. Since Toronto Hydro already has a demonstrably lean workforce compared to other distributors in the province, as evidenced by the benchmarking results in section 2, such a reduction to its staffing complement is not possible or prudent because it would put resourcing at precariously low levels and compromise the utility's performance with

[7] *Supra* note 5.
[8] Exhibit 1B, Tab 3, Schedule 2.
[9] Exhibit 1B, Tab 3, Schedule 1.

respect to a multitude of outcomes and risks that pose significant consequences for customers, as further detailed in sections 3 and 5.1 below.

Similarly, reducing compensation costs per employee is not a viable strategy to live within standard IRM funding for OM&A. The Mercer Compensation Benchmarking study at Exhibit 4, Tab 4, Schedule 5 and similar benchmarking studies filed in past rate applications show that Toronto Hydro's compensation strategy consistently yields costs (i.e. salary and wages) that are market-competitive at the 50th percentile within both the energy sector and general industry. A material reduction to compensation costs per employee, which would have to be implemented by effectively freezing salaries and wages over the 2025-2029 period, would put Toronto Hydro out of compliance with its collective agreement obligations and place the utility's compensation below market levels, compromising its ability to attract and retain the talent it needs to serve customers.

1.1.2 Customer-Correlated Costs

The other key observation to point out with respect to the cost per customer trends observed in Tables 3 and 4 above is that operating in Canada's densest and fastest (vertically) growing city, Toronto Hydro serves far more end-use customers through bulk-metering and competitive sub-metering arrangements than its actual customer count would otherwise indicate. Based on self-declarations submitted by multi-unit residential buildings for the purposes of Regulated Price Plan elections and the Ontario Electricity Rebate ("OER") program, Toronto Hydro estimates that it serves approximately 340,000 end-consumers or more behind bulk meters. As the sub-metering market has become more mature in Toronto over the last decade, a greater share of new multi-unit buildings opt for bulk-metering service connections.[10] The practical effect of operating in this urban environment with a deregulated sub-metering market is a slower rate of formally reported customer growth from 2015 to 2029, which is putting artificial upward pressure on cost performance metrics like OM&A per customer, as shown in Figure 2 below.

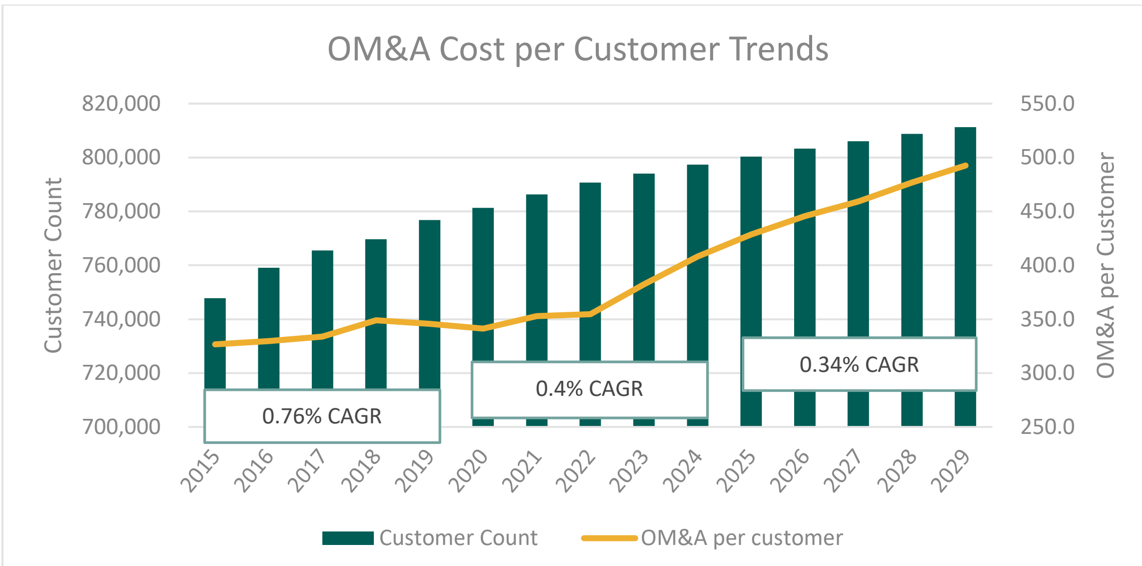

Figure 2: 2015-2029 OM&A Cost per Customer Trends

1.2 Service Quality and Performance Outcomes

Toronto Hydro's OM&A expenditures contribute to the achievement of the Renewed Regulatory Framework ("RRF") outcomes,[11] as measured by the Electricity Distributor Scorecard ("EDS") and Electricity Service Quality Requirements ("ESQRs") outlined in Exhibit 1B, Tab 3, Schedule 2. Each OM&A program enables outcomes that Toronto Hydro

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[10] Toronto Hydro estimates that its market share for suite metering new multi-unit buildings is now approximately 30 percent, compared to approximately 70 percent in 2013.

[11] Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach, (October 18, 2012), at page 57.

expects to be attained as a result of the proposed investment and are categorized into the four outcome categories under the RRF; namely, Customer Focus, Operational Effectiveness, Public Policy Responsiveness, and Financial Performance.[12] This approach underscores the customer value generated by the proposed OM&A programs.

Over the last decade, Toronto Hydro managed operational funding efficiently, as further discussed below, while delivering notable improvements in service quality and other performance metrics for its customers. For example, Toronto Hydro improved its performance on first contact resolution, a key measures of customer experience and satisfaction, from 77 percent in 2013 to 92 percent in 2022. Similarly, the utility improved connections-related performance, as measured by the metric New Residential and Small Business Services Connected on Time, from 94 percent in 2013 to 99 percent in 2022.[13]

Over the 2025-2029 rate period, Toronto Hydro intends to maintain these performance improvements and make targeted improvements in other areas such as: (i) strengthening protection against physical and digital security threats, (ii) improving efficiency outcomes through the use of non-wires solutions to avoid or defer the need for traditional capital investments, and (iii) strengthening resilience through proactive investments in modern grid technology as outlined in the Grid Modernization Strategy in Exhibit 2B, Section D5. These and other key performance objectives are outlined in Toronto Hydro's 2025-2029 Custom Scorecard in Exhibit 1B, Tab 3, Schedule 1.

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[12] The outcomes listed in each program are directly connected to, and dependent on, the forecasted funding needs for the program. Any change in overall rates funding for the term of the plan would require Toronto Hydro to reforecast cost allocation to each program and re-examine the corresponding outcomes.

[13] Please refer to Exhibit 1B, Tab 3, Schedule 2 for more information about the utility's historical performance.

The OM&A programs detailed in Exhibit 4, Tab 2 work together with the capital programs outlined in Exhibit 2B, Section E to enable the achievement of the key performance commitments across four areas of performance in the 2025-2029 Custom Scorecard: (1) System Reliability and Resilience; (2) Customer Experience and Service; (3) Environment, Safety, and Governance; and (3) Efficiency and Financial Performance. Investments in operational programs as detailed herein and importantly, the resources that underpin these programs, are essential to meeting the performance targets outlined in Exhibit 1B, Tab 3, Schedule 1.

2. Productivity & Benchmarking

Using publicly available data,[14] the historical benchmarking analysis presented in this section demonstrates that Toronto Hydro (i) has a lean workforce compared to its Ontario peers and (ii) is a strong OM&A cost performer compared to other large and mid-sized distributors in the province.[15] Toronto Hydro's efficient OM&A and staffing cost management to date positions the utility well to address a growing need for investments in operations and resourcing without creating undue cost burdens and rate increases for customers in the next rate term.

2.1 OM&A Metrics

Figures 3 and 4 below compare OM&A expenditures against capital expenditures and system load (MWh), respectively, over the 2016 to 2022 period for Toronto Hydro and the identified distributor peer group. When comparing OM&A expenditures to capital

[14] Using publicly available data that utilities including Toronto Hydro reported to the OEB under the Electricity Reporting and Record Keeping Requirements ("RRR").

[15] The peer group consists of the large and mid-sized Ontario distributors: Hydro One, Hydro Ottawa, Alectra Utilities, Elexicon Energy, London Hydro, EnWin Utilities, and Enova Power. With the exception of Elexicon and Hydro One, these distributors serve the top 10 cities in Ontario (by population size). Hydro One was included in the peer group because it serves approximately 90 percent of the service territory in the province, and Elexicon Energy was included because it is the fourth largest municipally owned electricity distributor in the province.

expenditures (Figure 3), Toronto Hydro spends considerably less OM&A relative to capital in comparison to the peer group, in many years showing an OM&A-to-CAPEX ratio of less than half that of the peer group. Toronto Hydro's OM&A per MWh of load (Figure 4) is more comparable to that of other large distributors, but remains lower than that of the peer group for all years analyzed.

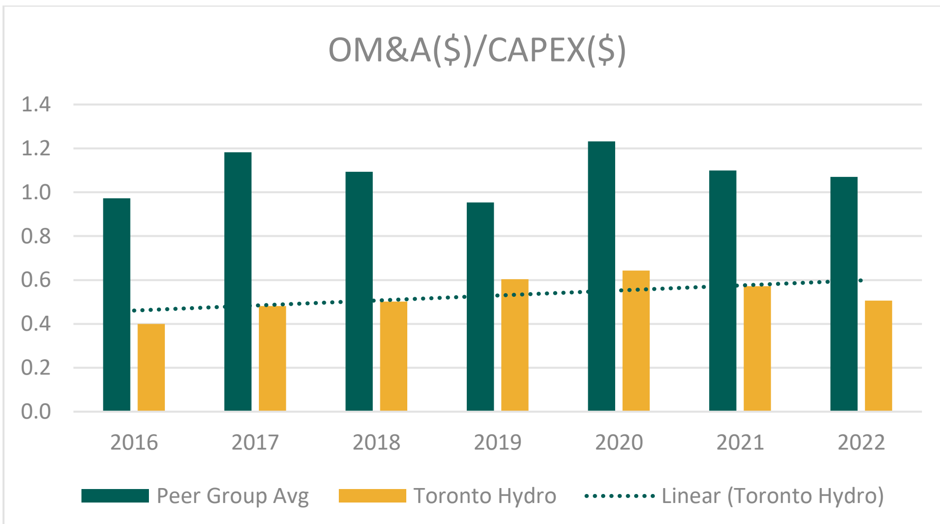

Figure 3: OM&A relative to Capital Expenditures

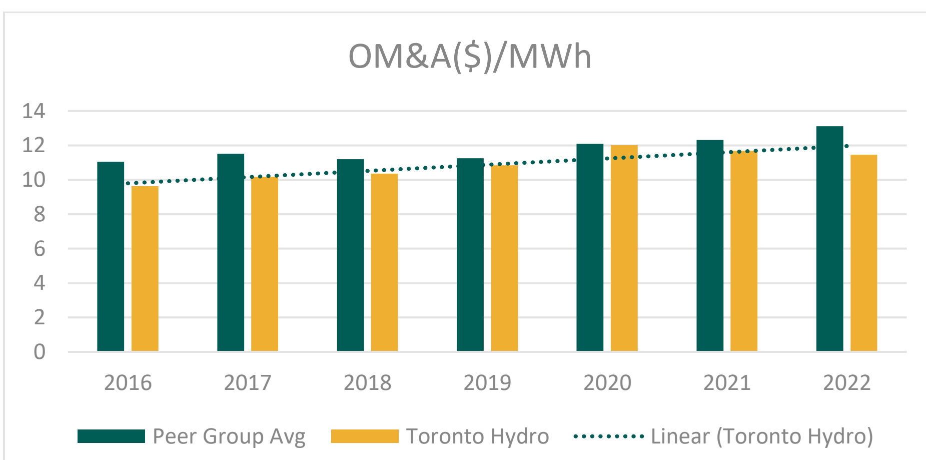

Figure 4: OM&A Expenditure per MWh of Load

2.2 FTE Metrics

Figures 5, 6, and 7 below compare total FTEs against capital expenditures, load (GWh), and circuit-km over the 2016 to 2022 period for Toronto Hydro and the identified distributor peer group. Toronto Hydro has a considerably lower FTE per $1 million in capital expenditures relative to the peer group, staffing an average of 2.86 FTE per $1 million in capital expenditure, compared to an average of 7.5 FTE for the peer group. Similarly, there is a noticeable gap between Toronto Hydro and the peer group with respect to the number of FTEs per GWh of load and per circuit-km.

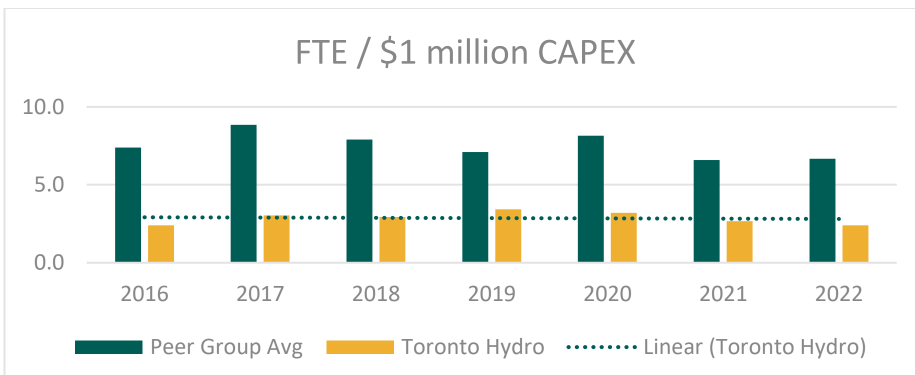

Figure 5: FTE per $1 million Capital Expenditures

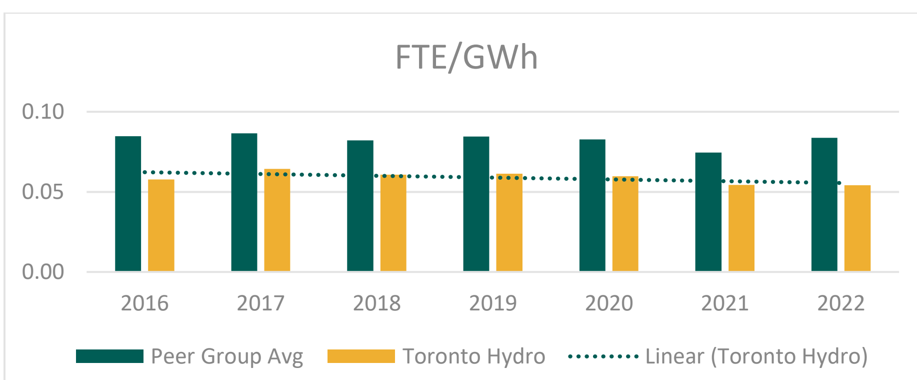

Figure 6: FTE per GWh of Load

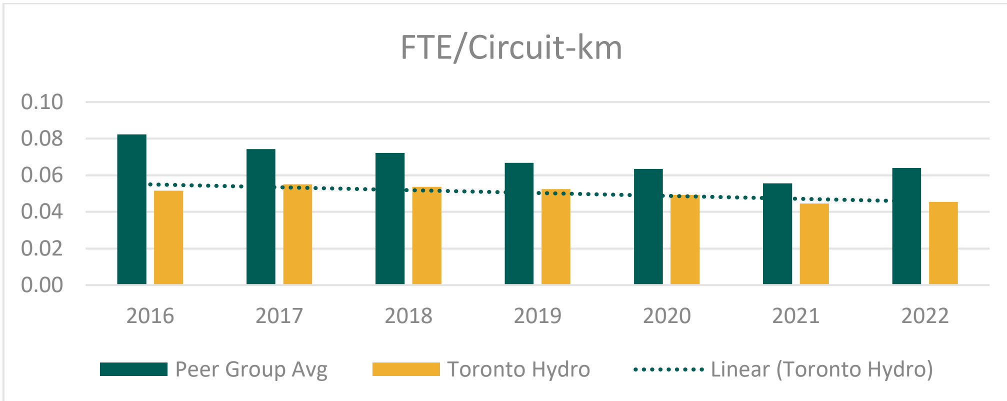

Figure 7: FTE per Circuit-Km

2.3 Customer Metrics

Figures 8, 9, and 10 below compare FTEs, OM&A expenditures, and MWh of load relative to customer count over the 2016 to 2022 period for Toronto Hydro and the identified distributor peer group. Subject to the practical caution articulated above in subsection 1.1.2, customer metrics provide another tool for assessing Toronto Hydro's performance against its peers. With respect to FTE per customer, Toronto Hydro's staffing is consistent with or better than the peer group. At first glance, Toronto Hydro appears slightly "behind" the average of other large Ontario distributors when examining OM&A per customer, but closer examination shows that Toronto Hydro requires more system capacity, more assets and hence more resources per customer than other large or mid-size distributors in Ontario. In part, this is driven by Toronto Hydro customers serviced behind bulk meters, which skews the evaluation of performance against customer count. Examination of MWh of load relative to customer count demonstrates this reality, with Toronto Hydro providing an average of 31.8 MWh per customer, approximately 35 percent more load per customer relative to the peer group multi-year average of 23.6 MWh.

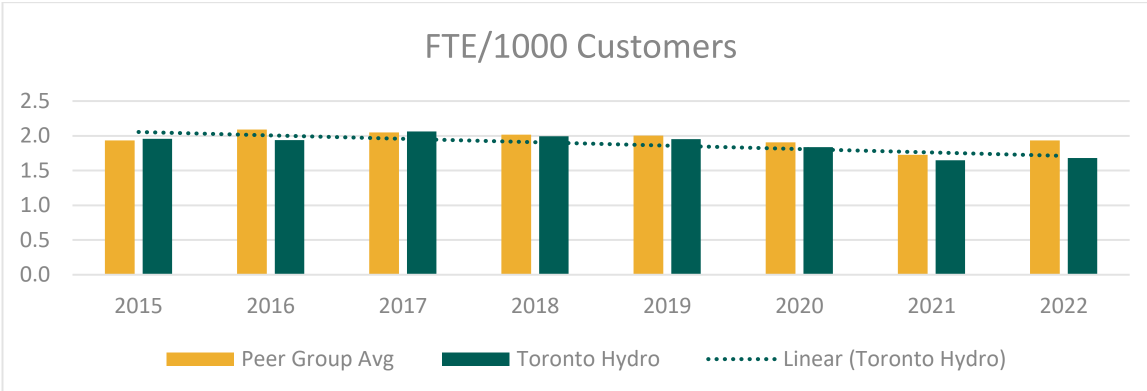

Figure 8: FTE per 1,000 Customers

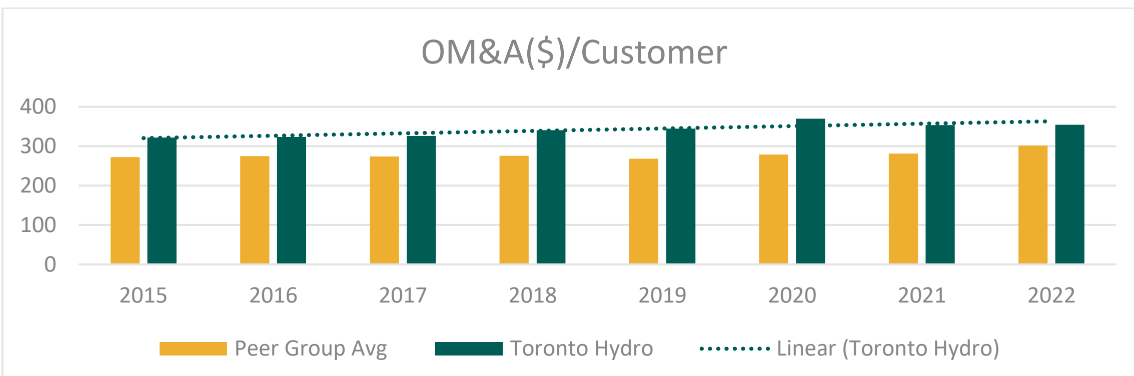

Figure 9: OM&A Expenditure per Customer

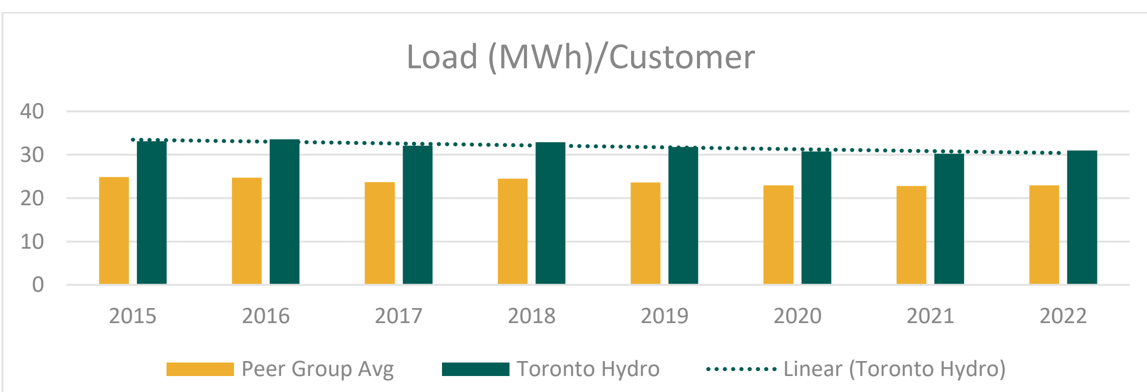

Figure 10: MWh of Load per Customer

3. WORKFORCE NEEDS AND CHALLENGES

With compensation costs representing a large portion of the utility's 2025-2029 OM&A budget, the need for resources and the ability to fund prudent costs to attract and retain those resources is the biggest driver of the multi-year OM&A need.

Figure 11 below shows the overall profile of Toronto Hydro's FTEs from 2015 to 2029, consistent with data provided in the current and previously filed iterations of Appendix 2-K, which excludes students as they are temporary resources.

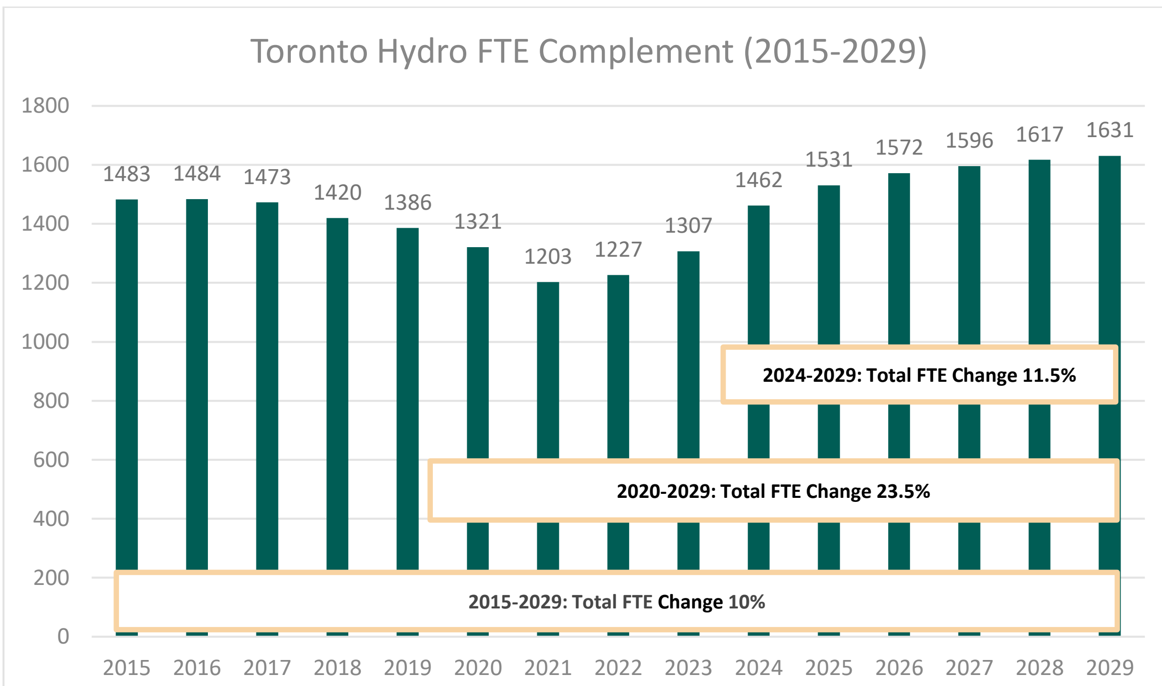

Figure 11: 2015-2029 FTE Complement (Appendix 2-K)

From 2015 to 2029 Toronto Hydro expects total FTEs to increase by 10 percent. This FTE count overlays a period of time in which Toronto Hydro's annual capital expenditure plan is growing by roughly 70 percent, while the customer count is expected to grow by approximately 8.5 percent, including the addition of larger and more complex customers such as data centres and transit systems. A growing customer base and expanding capital program both place constraints on staff resources, with distinct tasks increasing in volume as the utility serves more (and larger) customers and executes more individual capital projects.

In the 2020-2024 rate application (EB-2018-0165), Toronto Hydro brought forth a workforce plan that was responsive to the circumstances of the day, being a more stable and linear operating environment. Despite significant disruption caused by the COVID-19 pandemic, the utility expects to successfully implement its resource plan over the current rate period. However, fundamental shifts have taken place since EB-2018-0165 which have material implications for Ontario's energy sector and Toronto Hydro's business, and require responsive action over the 2025-2029 rate period.

As the worst of the COVID-19 pandemic subsided, customers, governments, and markets began to coalesce around a need to accelerate the energy transition to mitigate the existential and economic impacts of climate change. Fueled by technology trends including the declining cost of solar photovoltaic and battery technologies, government policies encouraging climate action, and financial markets driving a greater focus on ESG imperatives, customer needs and expectation for electricity are rapidly evolving. As customers electrify previously non-electric energy uses (e.g. transportation, heating) and increase participation in clean energy production and management, these actions will have fundamental long-term implications for Toronto Hydro and its system, including—but not limited to—being ready to serve a future demand for electricity that is expected to roughly double over the next two decades.[16]

[16] As shown in the Future Energy Scenarios report filed at Exhibit 2B, Section D4, Appendices A and B.

Given its fundamental obligation to connect customers who want to access the distribution grid, Toronto Hydro cannot enter this period of significant change unprepared to handle increased demand and consumption, bi-directional power flows, increased societal reliance on electricity, and enhanced customer expectations that naturally flow from these evolutions. Due to the long lead time required for investment in both grid and human capital, to meet these needs Toronto Hydro must begin work today to be prepared for an accelerated energy transition in the next decade.

Toronto Hydro's response to changing circumstances began in earnest in 2022 after COVID-19 related disruptions in 2020 and 2021 brought its staffing contingent to a low point of 1,203 FTEs in 2021. As seen in the Employee Costs and Compensation Table (Appendix 2-K) filed in Exhibit 4, Tab 4, Schedule 2, from 2022 through 2023 Toronto Hydro has been primarily "catching up" to the staffing levels projected in the 2020-2024 rate application. Yet, because the external environment has changed, these catch-up efforts are also a foundational step towards a future-ready plan that includes investments in resourcing capacity (headcount) and capabilities (enhanced skills) that are necessary to deliver the 2025-2029 DSP and key outcomes outlined in Exhibit 1B, Tab 3, Schedule 1.

As Toronto Hydro prepares to enter its next rate period, staffing levels are forecasted to grow by 25 percent over the 2024 through 2029 period. Due to the necessity of long lead time investments in human capital (see below), this growth is higher in the beginning years and more gradual over the rest of the period, focused on scaling teams that require additional resources and expanded skills to plan, design and execute capital and operations work programs.

Just as it takes years to build new transformer station or convert an area of the city served by legacy infrastructure to modern standards, human capital investments require long lead times, with the average employee undergoing two years training and development before becoming a fully competent contributor due to the specialized nature of the skills and experience required to work in this sector. For certain trades, it takes anywhere from four and a half to six and a half years to train a new certified and skilled tradesperson, plus a minimum additional one to two years to develop a new frontline leader post-apprenticeship.

Toronto Hydro often hires capable, but relatively inexperienced employees, with the intention to develop them in-house through on-the-job training and mentoring by tenured staff who can ensure effective knowledge and skill transfer to the next generation of employees. Combining this practice with continued pace of baby-boomer retirements, Toronto Hydro's workforce has an average age of 40, having declined by 14 percent over the last decade.

A key part of Toronto Hydro's talent strategy is a trade school for field trades such as Power Line Technicians and Distribution System Technologists to develop them from apprentices to journeypersons. This talent strategy is fuelled by partnerships with colleges and universities for direct recruiting and collaborative curriculum building. The relationships with academic institutions extend to other areas of technical expertise, including engineers, engineering technologists and technicians, computer systems developers and programmers, software developers and programmers, cyber security specialists, database analysts, data administrators, accountants, lawyers, and human resources ("HR") professionals. The utility's development program ensures it has both a strong workforce today and a healthy pipeline of talent for the future.

An expanded workforce means that compensation costs must also increase to keep pace. From 2024 to 2029, as the utility's workforce grows by approximately 11.5 percent, total compensation expenses are expected to increase by compound annual growth rate of 6.9 percent. Total cash compensation per FTE is forecast to increase at rate of 3.7 percent over the 2020 to 2029 period, consistent with economic assumptions in section 4.2.6 and in the Compensation evidence.[17] The Mercer compensation benchmarking study filed at Exhibit 4, Tab 4, Schedule 5 and similar benchmarking studies filed in past rate applications affirm that Toronto Hydro's compensation philosophy continues to deliver good value for the utility and its customers, concluding that Toronto Hydro's total compensation is positioned within a market competitive median.

4. Business Planning

This section describes Toronto Hydro's business planning process to arrive at the operational plan summarized in this schedule and detailed throughout Exhibit 4.

4.1 Planning Process

Toronto Hydro leveraged its established integrated business planning process to produce a 2023-2029 operational plan that enables the delivery and complements the priorities and outcomes of the capital plan, while maintaining the safety and reliability of the distribution system, enabling non-wires solutions, enhancing customer experience in accordance with broader societal trends, keeping the utility abreast of all applicable policy, legislative, and regulatory developments, and equipping support functions with the tools and resources required to enable these outcomes.

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[17] For more information about Compensation costs please refer to Exhibit 4, Tab 4, Schedule 4.

As discussed in Exhibit 2B, Section E2, Toronto Hydro began its business planning process in 2022 by obtaining feedback about customers' needs and priorities with respect to the 2025-2029 planning period (Phase 1 Customer Engagement).[18] Customers expressed that price, reliability, and investing in new technology are their top priorities, with reliability increasing in relative importance compared to previous engagements. Customers also expressed that they expect Toronto Hydro to invest in system capacity to ensure that growth does not decrease reliability and to support their electrification objectives. This feedback enabled Toronto Hydro to develop a capital plan organized around four investment priorities: 1) Sustainment and Stewardship; 2) Modernization; 3) Growth; and 4) General Plant.

The utility used customer feedback, along with other business and technical inputs such as asset health demographics, system constraints, safety and environmental risk assessments, business conditions and risks, legislative and regulatory requirements, cost inputs for materials, and labour and external services, to produce the capital and system maintenance plans through the Investment Planning and Portfolio Reporting ("IPPR") process described in Exhibit 2B, Sections D1 and D3.

Following the development of the capital and maintenance plan, the utility determined the workforce complement, external services, equipment, materials, and other operational resources that it will need to execute the capital plan and keep up with growing customer requirements, changing technologies, and evolving policy expectations. Through a series of iterative engagements between operational leaders, system planners, and specialists from support services such as Finance and Human

[18] For more detailed information about the Customer Engagement process that Toronto Hydro followed, please refer to Exhibit 1B, Tab 5, Schedule 1.

Resources, Toronto Hydro produced an operational plan (inclusive of workforce requirements) that was integrated with the capital and maintenance plans.

As further detailed in Exhibit 2B, Section E2, to guide the development of the plan in a way that balances price and service quality outcomes, Toronto Hydro set a strategic planning direction which included a price limit of 7 percent per year on the average annual distribution rate increase for residential customers. This price limit translated into an upper budget limit of $1.9 billion for the operational plan over the 2025-2029 rate period.

Various iterations and refinements took place over the course of planning process, as leaders across the organization worked cross-functionally to align, optimize, and stress-test capital and operational expenditure levels to ensure compatibility between objectives and strike balance between price and service quality outcomes. These engagements produced a multi-year workforce plan which aims to ensure that Toronto Hydro has the necessary capacity (headcount) and capabilities (skillsets) to execute the investment plan.

Once a draft plan was produced that aligned with the strategic planning direction, Toronto Hydro took the draft plan back to customers for feedback via a comprehensive customer engagement process (Phase 2), whereby customers provided input on seven key investment options, by indicating their preferences on whether to increase, maintain, or reduce the pace of investment, and the specific trade-offs between price and other outcomes for each area. The utility used the results of the Phase 2 Customer Engagement, as well as other salient information such as 2022 year-end actual data, to finalize the capital and operational plans. The assumptions underpinning the operational plan, including the headcount plan, were refined alongside the capital plan, resulting in the $1,856 million OM&A plan summarized in this schedule and detailed in Exhibit 4, Tab 2.

4.2 Planning Inputs

Toronto Hydro relied on a broad variety of inputs to ensure that its operational plan aligns and supports the priorities of the capital plan, and delivers customer-valued outcomes, while prudently controlling costs. In producing the operational plan, the utility applied an inflationary increase approach to existing budgets and then layered on incremental requirements and priorities derived from the planning inputs summarized below.

4.2.1 Customer Needs and Priorities

Toronto Hydro's operational plan for the 2025-2029 rate period was informed by extensive application-specific, as well as ongoing customer engagement activities undertaken in the normal course of business. As discussed briefly in section 4.1 above and in greater detail in Exhibit 1B, Tab 5, Schedule 1, the utility undertook a two-phase application-specific customer engagement to learn about customers' needs and priorities to build a draft plan that is responsive to those needs and priorities, and obtain customer feedback on the draft plan across key investment areas. The plan is also informed by extensive ongoing customer and stakeholder engagement activities undertaken in the normal course of business as part of the utility's robust and sophisticated customer research and response model, as described below in section 3 of Exhibit 1B, Tab 5, Schedule 1.

Ongoing and application-specific research reveals that customer behaviour and attitudes are evolving, and there is a shift in terms of customers needs and priorities. These include:

- Reliability and investment in new technology have become increasingly important to customers, and are almost on par with price.
- Customers are looking for information to improve their understanding of climate change, decarbonization and electrification, as well as an understanding of Toronto Hydro's role in these initiatives, while at the same time looking for opportunities to reduce their overall energy costs.
- Many customers have strong expectations for Toronto Hydro to commit to environmental initiatives and lessen environmental impact.
- Customers have evolving communication preferences – email is the preferred method of contact for all communications and younger Torontonians, in particular, have above-average preference for SMS communications.
- Customers have shown more concern for the future of the electricity system and the grid than in past years.

As key sectors of the economy shift towards electrification, the volume and complexity of customer needs and inquiries are expected to increase. Toronto Hydro's customer response model is becoming more efficient at understanding and responding to customer requirements quickly, and improving customers' self-service experience through the introduction of various self-service tools (such as an improved online self-service portal and a new mobile application). Yet, the utility needs more resources with the necessary knowledge and skills to maintain an agile and robust customer research and response model as the energy transition unfolds. The 2025-2029 operational plan reflects Toronto Hydro's drive to meet these needs in the next rate period and beyond.

4.2.2 Asset Maintenance Requirements

Toronto Hydro determines asset maintenance requirements, including system response and customer-driven work activities, through its annual Investment Planning and Portfolio Reporting ("IPPR") process, detailed in Exhibit 2B, Sections D1 and D3 whereby the utility: (i) establishes asset management policies, goals, and objectives, as informed by corporate strategies and customer needs, expectations, and feedback; (ii) assesses the current state of assets based on asset demographics and condition; (iii) identifies the required expenditure levels to manage risk and achieve intended outcomes; and (iv) tracks execution status and expenditures to inform future projects.

Toronto Hydro also considers asset management and maintenance considerations for general plant infrastructure, namely vehicle fleet, facilities, and IT assets and systems, which serve as the backbone for all capital and operational programs. The safe, reliable, and efficient operation of these assets is crucial to Toronto Hydro's successful and cost-effective delivery of the outcomes expected by customers and mandated by the OEB, and the protection of the distribution grid from physical and digital threats.

4.2.3 Workforce Requirements

Toronto Hydro's leaders identified the workforce needs to execute work in their programs in terms of both capacity (i.e. headcount) and capabilities (i.e. skillsets). This included consideration of Toronto Hydro's hiring plans that were already in place but had been delayed in implementation due to the COVID-19 pandemic. In this regard the utility prioritized resourcing in a number of key areas of the plan, which are discussed in further detail in section 5.1. These areas include:

- Resources to support modernization objectives across a number of portfolios, including System Planning, Control Centre, and Information Technology.

- Staff in customer-interfacing functions such as Customer Connections, Key Accounts, Customer Care, and Community and Public Relations to align with growing volumes of work and increasing service expectations in these portfolios.
- Skilled trades, and technical and other resources in work program execution-related functions to enable the delivery of a larger capital program, including back-end support functions such as Supply Chain, Finance, and Legal Services.

4.2.4 Legislative and Regulatory Obligations

The 2020-2024 rate period saw a significant increase in the volume of legislative and regulatory requirements and policy engagements emanating from the Government of Ontario, the OEB, and the IESO. Examples include major infrastructure policy initiatives embodied in legislation such as the *Building Transit Faster Act, 2020*, the *Building Broadband Faster Act, 2021*, and the revised *Ontario Underground Infrastructure Notification System Act, 2012*, consumer-oriented initiatives such as the Ultra Low Overnight TOU rate[19] or Green Button,[20] and 10 rounds of amendments to OEB codes and 28 OEB Staff Bulletins to give effect to these and other requirements. Examples of policy engagements include the Framework for Energy Innovation, the Reliability and Power Quality Review, Electric Vehicle Integration, and Distribution Sector Resilience, Responsiveness & Cost Efficiency.[21] These requirements and engagements have added to volumes of work for both Toronto Hydro's legal and regulatory professionals and operational business units implementing the relevant outcomes, generating additional business processes that will last into the 2025-2029 rate period.

[19] Ontario Regulation 633/21 under the *Electricity Act, 1998* SO 1998 c. 15, Sched A.
[20] Ontario Regulation. 95/05 under the *Ontario Energy Board Act, 1998* SO 1998 c. 15, Sched B.
[21] EB-2021-0118, EB-2021-0307, EB-2023-0071, and EB-2023-0003, respectively.

4.2.5 Internal and External Benchmarking

Toronto Hydro also relied on comparative analyses, as detailed in section 2 above, and expert benchmarking studies to situate the utility's historical performance and future expenditure plans with comparable peers across various jurisdiction and operational areas. These studies are summarized in Exhibit 1B, Tab 3, Schedule 3.

4.2.6 Economic Assumptions

Toronto Hydro used both general and specific cost and economic assumptions in its forecast of 2025-2029 OM&A costs. In preparing its 2023 to 2029 forecasts, Toronto Hydro considered, and the forecasts reflect, the following inputs: (i) Toronto Hydro's obligations under collective agreements, (ii) relevant labour market data (where available),[22] and (iii) the utility's projections of outcomes of future rounds of collective bargaining that will take place throughout the forecast period. More specifically, in the absence of objective market indicators to forecast compensation increases over the 2025-2029 forecast period, the utility (in consultation with its compensation expert Mercer Canada and based on experience) relied on a historical rolling-average (in addition to the factors noted above) as the best information available to predict reasonable future compensation levels. For more information on compensation costs, see Exhibit 4, Tab 4, Schedules 2 and 4. Otherwise, a general inflation factor of 2.0 percent was applied, consistent with the Bank of Canada's economic outlook to return the economy to stable inflation by 2025.[23]

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[22] For example, the results of Mercer Canada's *August 2023 QuickPulse™ Canada Compensation Planning Survey* show total salary increases of 3.7 percent, online: <https://www.imercer.com/ca/ARTICLEDETAIL/annual-increase-budget-canada>

[23] *Supra* note 5.

5. KEY DRIVERS

5.1 Staffing

As further described below, the execution of increased volumes of work is a key driver of the workforce requirements across a number of functions and roles within the utility's operations, which are summarized herein and further detailed in the underlying programmatic evidence. The challenge of increasing volumes of work is further compounded by more complex workloads. Priorities such as grid modernization, increased receipt and use of data, pursuit of non-wires solutions to defer or displace the need for traditional infrastructure, intensifying cyber security threats, and increased connection and management of distributed energy resources, all add to the complexity of work completed by Toronto Hydro staff. Some of these developments have created situations of incremental workload for Toronto Hydro staff relative to historical status quo, while others have increased the complexity of existing tasks. These workloads ultimately produce better outcomes for customers through provision of safe and reliable service, while relying on a more intelligent grid with enhanced capabilities to manage outages and handle two-way power flows.

Figure 12 below highlights material areas of growth in Toronto Hydro's workforce plan, with implications for OM&A funding required over the 2025 to 2029 rate period. The sections that follow address each of these areas, articulating the specific workload requirements that drive the need for incremental staffing.

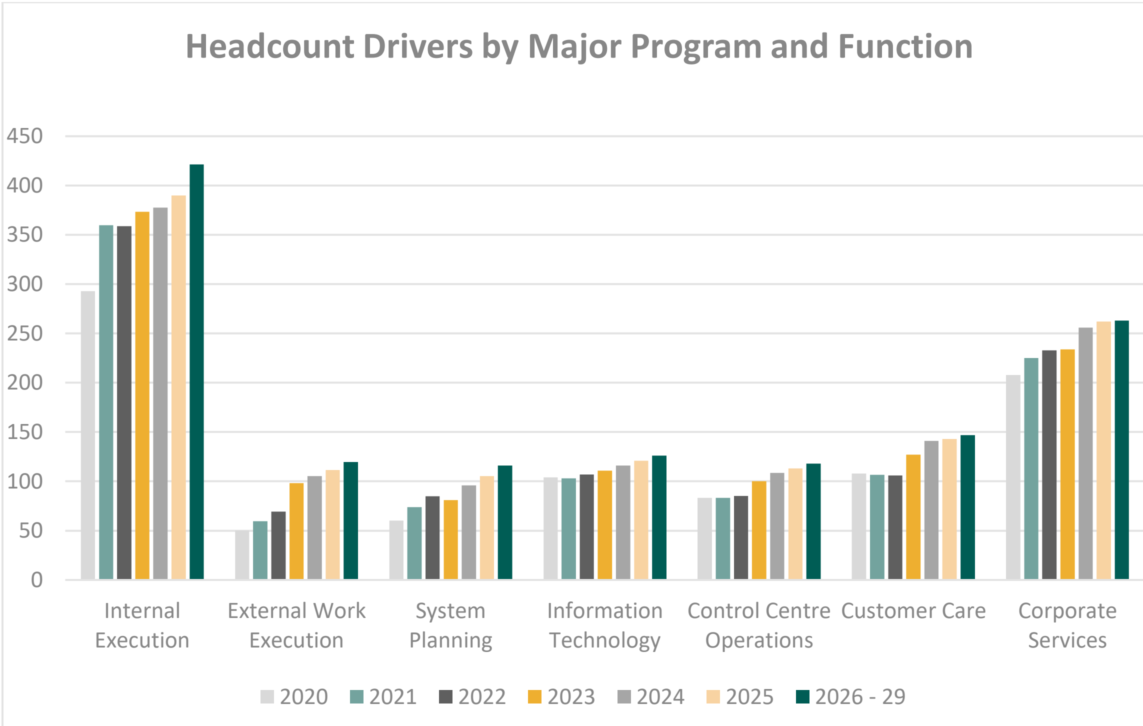

Figure 12: 2020-2029 Headcount Drivers by Major Program and Functions[24]

The key areas of investment in incremental resources are summarized as follows:

- **Internal Work Execution**: Increases to the complement of Certified and Skilled Trades critical to the execution of Toronto Hydro's capital and operations programs, including the utility's Grid Modernization Strategy, at a pace that allows for the extended lead-time required to safely train new workforce entrants.
- **External Work Execution**: Increases to the number of contract managers and project management staff to ensure the utility is able to effectively manage external contractors as the capital program grows.

[24] Figure 12 is aligned with Appendix 2-K (Exhibit 3, Tab 4, Schedule 2) in that it excludes students, which are temporary resources.

- **System Planning:** This segment is driven by the amount of capital (system access, renewal, and service) and maintenance work, and associated scopes of work that must be developed. Additional resources are required to analyze distribution system performance and needs, develop the utility's asset management strategy, develop the utility's grid modernization plan, manage record keeping and develop the DSP and scopes of work for executing the DSP.
- **Control Centre Operations:** As more distribution assets and DERs are connected to Toronto Hydro's grid and the utility modernizes system operation through the implementation of advanced grid management systems and more sophisticated data analysis and automation, this program will require more staff, both to handle increasing volumes of work and acquire specialized skills and knowledge made necessary by the evolution of Control Centre operations to support the Grid Modernization Strategy and Non-Wires Solutions program.
- **Information Technology**: The utility will need a robust staffing complement to effectively manage core business IT processes, as well as cyber security enhancements, cloud implementation, and major IT projects.
- **Customer Care:** Additional workers skilled in data analytics are required to enable the utility to respond to more complex customer inquiries, implement and optimize automated call centre quality management, powered by artificial intelligence and machine learning technologies, as well as gain insights on customer behaviour in interacting with the increasing number of communication channels (e.g. live chat and mobile application).
- **Corporate Services:** Financial professionals administering the utility's financial and accounting records and process will need to keep pace with the increasing volume of work; Higher work volumes (such as offers to connect), evolving legal, regulatory and policy requirements and changing business conditions necessitate

highly-skilled and experienced staff to address legal, regulatory and public affairs matters; and the utility's talent acquisition, management, and retention services, compensation, and performance management frameworks will need to oversee the human resources needed to execute Toronto Hydro's investment plan.

5.1.1 External Work Execution

As further described in Exhibit 4, Tab 2, Schedule 10, the External Work Execution segment administers and oversees capital and maintenance work performed by external contractors and is the primary point of contact between Toronto Hydro and external contractors. The tasks completed by this group include evaluating and administering competitive tenders for contractor services, providing oversight of the resulting contracts, and administering support of the specific projects assigned to external contractor crews, such as: job package development and issuance; liaising with system planners to address specific design matters; field issues management; liaising with customers directly and through the community relations team; ordering materials; facilitating changing of project scopes; monitoring contractor safety practices; invoicing and receipting; and inspection of newly constructed assets.

Given the nature of the workload completed by the External Work Execution segment, Toronto Hydro must increase the number of contract managers and project management staff to ensure the utility is able to effectively manage external contractors as the capital program grows. From the end of 2022 to 2029, Toronto Hydro intends to increase resourcing in this area by 74 percent from 69 to 120 staff. In Toronto Hydro's experience, an appropriate resource level has each manager, with a supporting analyst, executing approximately $11 to 13 million in capital projects annually. As shown in Figure 12, Toronto Hydro's plan ensures sufficient resources to support these execution levels.

If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility would face execution risks due to a smaller contingent of frontline managers, analysts, and other staff being required to manage a larger capital portfolio per employee; allowing staff significantly less capacity to tend to the needs of each individual project relative to best practice and historical norms. These execution risks include a slower pace of work, compromises from quality and less time for internal coordination across projects.

A decrease in External Work Execution resources would slow the pace of execution, jeopardizing the completion of required and planned capital projects. Reduction in the number of projects being executed in a given year would put renewal of assets and upgrade or expansion of the distribution system at risk. This would introduce the risk of reduced reliability due to aged assets or the inability for customers (residential and business) to expand as needed to accommodate growth and/or energy conversion for climate action purposes. A decrease in resources may also result in less time available per project. This could lead to less capacity to ensure best practices are followed, and may compromise customer experience in terms of reliability. As well, strained resources and time per projects can lead to reduced time for internal coordination across projects, with less consideration for efficiencies in terms of optimal construction window or calendarization which can lead to lost opportunities for project cost reduction. For example, field manager understaffing may result in inadequate field quality assurance/control during pre-construction. Field managers assist project execution managers with field “walk-downs” prior to construction. Not being able to undertake these may lead to unnecessary delays during construction that could have been identified earlier by a field manager that has years of “hands-on” experience.

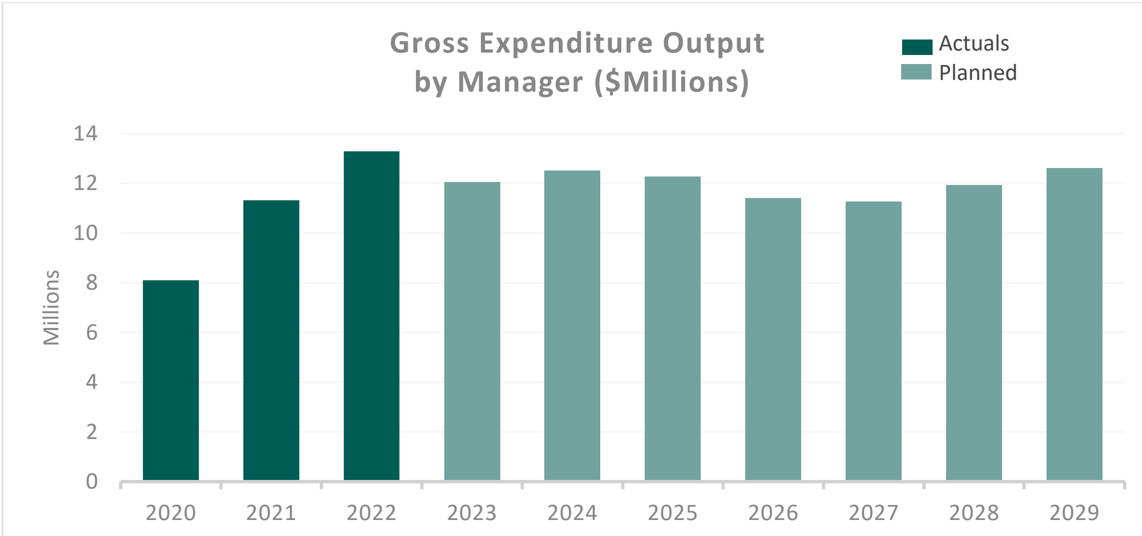

Figure 13: Gross Expenditure Output by Manager ($ Millions)

5.1.2 Internal Work Execution

The Internal Work Execution segment, as described in Exhibit 4, Tab 2, Schedule 10, captures the non-capitalized expenditures associated with work performed by Toronto Hydro's skilled trades' apprentices, including the training costs associated with the utility's trade school which is further described in Exhibit 4, Tab 4, Schedule X. Certified and skilled trades are critical resources in the execution of Toronto Hydro's capital and maintenance programs. Over time, Toronto Hydro has strengthened the workforce to prepare for retirements and unplanned exits as necessary, and allow for the extended lead-time required to safely train new workforce entrants, considering that apprentice programs run from four and a half to six and half years in length. From the end of 2022 to 2029, Toronto Hydro intends to increase resourcing in this area by 17 percent from 360 to 421 staff.

A steady complement of certified and skilled trades is critical to the execution of Toronto Hydro's capital and operations programs. One of the key areas that certified and skilled

Trades will support is Toronto Hydro's Grid Modernization Strategy (Exhibit 2B, Section D5). This strategy addresses emerging challenges and opportunities arising from electrification, distributed energy resource proliferation, and worsening climate change in a manner that leans first and foremost into the deployment of proven technologies (e.g. reclosers, switches, smart meters, analytics), which will deliver benefits to customers in the near-term (e.g. improved reliability), while laying the foundation for more advanced use cases that will be required in 2030 and beyond. Distribution System Technologists—who operate, install, commission, construct, repair, maintain, and decommission all types of, protective relay and control systems, distribution automation equipment, and SCADA systems—are key to implementing the Grid Modernization Strategy as the equipment and systems installed and maintained by these resources are key components and enablers of the Intelligent Grid that lies at the heart of this strategy.

If Toronto Hydro were forced to scale back this program to manage within a reduced level of funding over the 2025-2029 rate period, the utility would face a decreased ability to meet legislated training targets, thereby becoming exposed to unnecessary safety and legal risks. Furthermore, reduced investment in the certified and skilled trades enabled by this program would results in notable execution risks with respect to the capital and maintenance plans detailed in this application and beyond, due to lack of support and decrease in recruitment of skilled tradespeople.

5.1.3 System Planning

The System Planning segment (Exhibit 4, Tab 2, Schedule 9) enables Toronto Hydro to analyze distribution system performance and needs, develop the utility's asset management strategy, develop the utility's grid modernization plan, develop the DSP and scopes of work for executing the DSP, and manage record keeping. Toronto Hydro intends to increase resources in this area to by 37 percent from 85 to 116 staff between the end of 2022 and 2029. The System Planning segment is driven by the volumes of distribution system capital and maintenance work that the utility needs to plan and design, and associated scopes of work that must be developed. Growth and electrification, system studies and development planning need, and distributed energy resource (“DER”) connections will require incremental studies, forecasts, and planning, and the deployment of Intelligent Grid, Energy Storage technologies, and Non-Wires Solutions.

The work done through the System Planning segment is divided into four functional areas:

- **The Investment Planning function** undertakes analytical work related to reliability, asset condition assessments, and risk assessment (e.g. environment, safety, customer, and legal claims). This work forms the basis of the development of Toronto Hydro’s DSP presented in Exhibit 2B.
- **The Capacity Planning and Grid Innovation function** is responsible for planning the distribution system’s future load requirements driven by customer growth and the requisite connection capacity to accommodate current and forecasted levels of DERs, as well as identifying opportunities for adopting non-wires solutions.
- **The Integrated Planning and Grid Modernization function** is responsible for facilitating the development, integration, and strategic oversight of Toronto Hydro’s long-term Grid Modernization Strategy, in addition to providing market intelligence and strategic forecasting of future electricity system needs and opportunities, and change management support capacity to help accelerate innovation initiatives.

- **The Records Management function** involves the maintenance and upkeep of digital records of Toronto Hydro's distribution system. The utility must maintain up-to-date records to enable efficient and effective system planning and operations.

If Toronto Hydro were forced to deliver the System Planning segment with a reduced level of funding over the 2025-2029 rate period, the utility could face compliance risks and inefficiencies, including ineffective system planning, inability to manage risks around growth and electrification, failing to maximize benefits of new technologies connected to modernization initiatives, and significant safety and reliability risks if records and data updates are not synchronized with equipment or system configuration changes.

5.1.4 Control Centre Operations

The Control Centre Operations program (Exhibit 4, Tab 2, Schedule 7) facilitates the safe and reliable operation of the utility's distribution grid through real-time system control and monitoring activities and coordinates system switching and restoration work through the utility's Control Centre to mitigate the effects of outages on customers and enable safe load transfers for capital and maintenance work. The program also plays a critical role in the integration of both customer-owned and utility-owned DERs into Toronto Hydro's distribution system, the significance of which will only increase over the 2025-2029 period, as the energy transition takes hold and the utility's Non-Wires Solutions program expands.[25] The Control Centre is also one of the key executors and enablers of Toronto Hydro's Grid Modernization Strategy[26]—as the utility adds more distribution assets and modernizes its system operations through more sophisticated data analysis

[25] Exhibit 2B, Section E7.2.
[26] Exhibit 2B, Section D5.

and automation, this program will require more staff both to handle increasing volumes of work and acquire specialized skills and knowledge, made necessary by technologies the utility plans to implement in the 2025-2029 rate period such as Network Condition Monitoring & Control,[27] Advanced Metering Infrastructure 2.0,[28] Fault Location, Isolation, and Service Restoration,[29] and the Advanced Distribution Management System.[30]

Toronto Hydro intends to increase resources in this area to by 39 percent from 85 to 118 staff between the end of 2022 and 2029. The Control Centre program's staffing needs is driven by a variety of tasks and business processes such as the volumes of new distribution system operation assets installed in the grid, growth in the volume of DER connections, incremental and more complex system data modelling requirements, and support for the implementation of IT/OT infrastructure projects and internal and external planning and policy engagements.

For example, as shown in Table 5 below, the number of assets connected to Toronto Hydro's Supervisory Control and Data Acquisition ("SCADA") system is going to increase significantly—by over tenfold in some cases—over the 2025-2029 rate period as part of the investments under the Contingency Enhancement segment of the System Enhancements program.[31]

Table 5: SCADA-connected Assets

Asset Type	2020-2024	2025-2029
Switches	33	299
Reclosers	49	220

[27] Exhibit 2B, Section E7.3.
[28] Exhibit 2B, Section E5.4.
[29] Exhibit 2B, Section D5.
[30] Exhibit 2B, Section E8.4, Appendix A.
[31] Exhibit 2B, Section E7.1.

Asset Type	2020-2024	2025-2029
Feeders for Distribution Automation	15	63

Similarly, growth in the volume of DERs driven by both Toronto Hydro and its customers more broadly will increase the workload of the Control Centre Operations program. By 2029, the expansion of the Non-Wires Solutions program will require the Energy Centre function of the Control Centre to support the procurement of up to 30 MW of capacity under the Flexibility Services initiative (compared to 10 MW in the 2020-2024 period) and manage the operation of nine Toronto Hydro-owned battery energy storage systems ("BESS") (compared to only one in the 2020-2024 period).[32]

In addition, the utility forecasts total DERs installed on the grid to increase by approximately 67 percent from 2023 to 2029,[33] which is driving investments in the Generation Protection, Monitoring and Control program.[34] Each additional device installed in the system pursuant to these programs requires oversight from Control Centre Operations personnel for: 1) commissioning and testing in the field to reliably communicate with the SCADA system, and 2) daily operations and troubleshooting (e.g. responding to alarms or asset management tasks). Headcount increases in this area are essential to enabling the utility to safely and reliably accommodate these utility- and customer-driven changes to its grid.

Technological advancements and the modernization of system operation tools is another area that will require the Control Centre Operations program to upskill and enhance its workforce. For example, the advanced applications that Toronto Hydro will adopt as part

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[32] Exhibit 2B, Section E7.2.
[33] Exhibit 2B, Section E3 at page 3.
[34] Exhibit 2B, Section E5.5.

of the Advanced Distribution Management System ("ADMS") Upgrade will require the utility to significantly improve data modelling in the Network Management System ("NMS") to enable the self-healing grid and other automation functions through modernization projects such as Fault Location, Isolation, and Service Restoration ("FLISR").[35] This is because the operation of FLISR will depend on not only traditional types of data relating to connectivity attributes of distribution equipment, but also engineering attributes, such as device limits, impedances, and power transformer data, representing an increase in data point types from 13 to 36. Adequate staffing for the Control Centre Operations program to gather these additional types of data and input them into modelling systems will be essential for the successful and timely implementation and daily operation of modernization initiatives such as FLISR.

Finally, Control Centre Operations staff act as subject matter experts for a number of internal and external activities. Internally, program staff support investments in cellular SCADA upgrades under the Communication Infrastructure segment of the Information Technology and Operational Technology ("IT/OT") Systems program, where the expertise of Control Centre operators is crucial to the timely and reliable completion of critical infrastructure upgrades.[36] Externally, Control Centre Operations staff support Toronto Hydro's participation in industry forums and working groups such as the Electric Power Research Institute ("EPRI") Distribution Operations & Planning Group,[37] and the IESO's Transmission-Distribution Coordination Working Group.[38] The operational expertise that Control Centre operators bring to these engagements benefits both Toronto Hydro, by enabling the utility to expand its knowledge of the industry through connections with

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[35] Exhibit 2B, Section E8.4, Appendix A.
[36] Exhibit 2B, Section E8.4.
[37] EPRI, *Distribution Operations and Planning,* online: <https://www.epri.com/portfolio/programs/108271> .
[38] IESO, *Transmission-Distribution Coordination Working Group* online: <https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Transmission-Distribution-Coordination-Working-Group> .

stakeholders, and the industry, by contributing to policy design and development with Toronto Hydro's unique experience as a large urban distributor.

If Toronto Hydro were forced to deliver work under the Control Centre Operations program with a reduced level of funding over the 2025-2029 rate period, the utility would be unable to resource the critical functions discussed above, resulting in a number of risks relating to the successful execution of capital plans relating to the distribution system and IT/OT projects; the efficient and effective modernization of Toronto Hydro's operations in accordance with customer and stakeholder expectations and the continued transition to new and diverse energy resources; and the productive development of industry policies.

5.1.5 Information Technology ("IT")

The IT OM&A program (Exhibit 4, Tab 2, Schedule 17) supports all aspects of Toronto Hydro's business. The IT infrastructure, cyber security controls, business applications and services supported and delivered by this Program enable efficient operations of the utility and play a critical role in achieving Toronto Hydro's objective to provide safe, secure and reliable electricity. Adequate resourcing for this area is key to supporting the execution of the 2025-2029 investment plan. Toronto Hydro intends to increase resources in this area by 18 percent from 107 to 126 staff between the end of 2022 and 2029.

As discussed in Exhibit 2B, Section E8.4, Toronto Hydro needs to invest in IT/OT hardware, software, and communications infrastructure over the 2025-2029 rate period to maintain relevant assets and systems in reliable operating condition, renew assets at end-of-life or vendor support, implement and maintain robust controls against increasing and more sophisticated cyber security threats, and contribute to the utility's capacity to accommodate growth and modernization journey in the context of the broader energy transition. The IT program requires a larger staff complement and the appropriate mix of skillsets to execute and support these initiatives, as each project requires subject matter experts, technical staff, and project managers to effectively and efficiently achieve the planned outcomes. The increasing prominence of cloud solutions intensifies these demands, as IT solutions that were traditionally on-premises and may have required a particular skillset and/or complement of resources may now require a significantly different skillset and resource mix where the utility relies on a cloud-based application.

Cyber security controls must be periodically refreshed and enhanced to maintain the reliability and availability of systems to support core operations, mitigate against potential vulnerabilities and threats, and minimize the risks of system failure. Investments in this area constitute a significant part of Toronto Hydro's IT plan for the 2025-2029 rate period,[39] and to execute this work and keep up with the shifting cyber security landscape and controls, Toronto Hydro needs additional IT staff with enhanced skillsets.

In addition, Toronto Hydro has observed the following workload trends driving the program's resourcing needs:

- From 2020-2024 to 2025-2029, an increase of 6 percent in the number of endpoint devices supported by the program;
- From 2020-2024 to 2025-2029, an increase of 18 percent in the number of complex systems operated and maintained by the program;
- From 2020 to 2023, an increase of 22 percent in IT service requests handled by the program; and
- From 2020-2024 to 2025-2029, an increase of 9 percent in cyber security systems and controls overseen by the program.

[39] Exhibit 2B, Section E8.4 and Exhibit 4, Tab 2, Schedule 17.

If Toronto Hydro were forced to deliver this program with a reduced level of funding or staffing over the 2025-2029 rate period, the utility could face various cyber security risks and suffer from a significant loss in business efficiency due to a decline in the quality and availability of IT solutions and tech support.

5.1.6 Customer Care

As the electricity industry evolves, Toronto Hydro's customer service functions must keep up with broad changes in customer needs and preferences driven by the energy transition and adapt to handle evolving customer behaviour and more complex information. As discussed in Exhibit 4, Tab 2, Schedule 14, the utility is already observing these trends even with respect to traditional customer interactions. For example, a high bill inquiry now often requires a frontline representative to consider more factors than before, such as the customer's choice of available pricing plans (e.g. tiered, Time of Use, Ultra-Low Overnight Time of Use) or the customer's usage of electricity-intensive devices such as electric vehicle chargers or heat pumps. These trends are even more pronounced with respect to services that have been historically niche areas, but are gradually becoming more commonplace, such as DERs. For example, the billing of net metered accounts is an order of magnitude more complex than regular load accounts, due to the calculation of generation credits and the treatment of Harmonized Sales Tax.

In this environment, customers' expectations are also continually reshaped by all service providers they interact with, not just utilities. As online services and electronic transactions are gradually becoming the norm for the majority of small and large businesses, customers are coming to expect the same standard of service from their electricity distributor as table stakes.

Toronto Hydro's customer-interfacing operations are adapting to these trends by increasing the variety of communication channels available to customers, with a focus on self-service. In 2022, the number of such channels increased from seven to nine, with the addition of live chat and Toronto Hydro's mobile application.[40] As a result, customers are currently able to perform a broad variety of online transactions, such as registering for electronic bills ("eBills"), requesting move-ins or move-outs, downloading consumption information for their rental property,[41] registering for pre-authorized debits, or reporting streetlight outages. While each channel adds to customer convenience, managing interactions through different channels requires different staff skills to operate and perform analytics for gaining insights on customer behaviour and each channel's effectiveness and efficiency.

From the end of 2022 to 2029, Toronto Hydro intends to increase resourcing in this area by 39 percent from 106 to 147 staff. Against the trends discussed above, Toronto Hydro plans to transfer certain customer-interfacing functions from its external contact centre vendor to internal staff, in order to build, preserve, and diversify in-house knowledge and expertise of core functions, and leverage the same for modernization initiatives and projects or business processes borne out of regulatory compliance requirements.

Parallel to the insourcing effort, the utility plans to hire new staff to replace retiring staff and/or fill vacant positions. The addition of new and relatively inexperienced staff drives the need for more training time and quality assurance ("QA") work. In order to increase the effectiveness of QA processes, Toronto Hydro plans to increase its reliance on technology and data analytics—for example, deploying speech analytics tools to transcribe and analyze customer interactions, assess indicators of customer sentiment

[40] The previously existing seven channels are telephone, email, fax, Toronto Hydro's website, interactive voice response ("IVR") through the Contact Centre function, and the online customer self-service portal.

[41] Pursuant to Ontario Regulation 389/10, under the *Energy Consumer Protection Act, 2010*, SO 2010, c 8.

and intent, and identify call drivers. The application of such techniques and strategies to quality management, powered by artificial intelligence and machine learning technologies, enables evaluation of customer service performance based on more robust empirical data. In order to leverage and unlock the full potential of these capabilities, Toronto Hydro must invest in human capital with the necessary data analytics skillsets.

Knowledge management is another area driving resourcing needs in Customer Care. As the complexity of service offerings and customer interactions grows, either through new legislative and regulatory requirements or evolving customer needs and technologies, it is becoming more important to keep knowledge management databases current. The utility needs dedicated staff for maintaining consistent and current information and making it accessible to customers and staff across all engagement channels.

5.1.7 Corporate Services

Corporate services provide organization-wide support in the areas of Finance, Public, Legal, and Regulatory Affairs ("PLRA"), and Human Resources, Environment and Safety ("HRES"). From the end of 2022 to 2029, resources in corporate services are forecasted to increase by 13 percent from 233 to 263 staff. As the volume and complexity of Toronto Hydro's capital investments and operations increase in the 2025-2029 period, corporate services require a highly skilled and dedicated workforce to perform all of these functions in a timely and effective manner.

The Finance program (Exhibit 4, Tab 2, Schedule 16) supports Toronto Hydro's operations through financial planning, management reporting, capital planning and reporting, payroll and disbursements, corporate tax, treasury, insurance, and internal audits, as well as external reporting and financial regulatory and revenue management. Toronto Hydro needs an adequate complement of finance professionals to administer the utility's complex financial and accounting processes and records in the face of increasing volumes of work (i.e. projects and transactions) borne out of the capital program.

The PLRA program (Exhibit 4, Tab 2, Schedule 18) provides specialized legal, regulatory, government and public relations professional services to the utility and its affiliates. Higher work capital volumes (such as offers to connect), evolving legal, regulatory, and policy requirements (as noted above in section 4.2.4) and changing business conditions necessitate highly-skilled and experienced staff to address complex and consequential legal, regulatory, and public affairs matters. These needs are most cost-effectively addressed by internal resources with the necessary skills and experience to provide the required services in a holistic manner that is integrated with other business functions. Attracting and retaining talent in this area of corporate services is a particular challenge because the utility competes with law firms and large sophisticated organizations such as banks that often offer more attractive compensation packages.

The HRES program (Exhibit 4, Tab 2, Schedule 15) provides comprehensive human resource management services ranging from employee lifecycle, labour relations, employee communications and engagement, governance of health and safety and environmental management systems, and human resources technology management. All of these activities are carried out within a culture of ensuring employees' health and safety, and environmental sustainability. Looking ahead to 2025-2029, the utility's talent acquisition, management, and retention services, compensation, and performance management frameworks must be equipped to serve the human resource needs of a growing organization that is challenging itself (through its greatest asset—people) to maintain a record of high-performance and deliver incremental outcomes to customers during a time of unprecedented change and transformation.

Without sufficient funding to maintain its Corporate Services functions, the utility could be exposed to a number of risks, including legal, compliance, and customer-related risks and drawbacks, all of which would compromise its ability to deliver outcomes that customers value and expect. These consequences include: reduced governance and oversight of financial planning and management activities, leading to a greater risk of errors and omissions; ineffective or unfavourable negotiation of contract terms, resulting in substandard performance by contracted parties or foregone recourse to appropriate remedies, reducing the value and increasing costs to ratepayers; non-compliance or inadequate implementation of new requirements resulting in increased customer complaints and barriers to achieving public policy objectives; a reduced ability to successfully recruit and develop the skilled and specialized resources that Toronto Hydro requires to execute its investment plan; and increased likelihood of safety-related incidents or incidents with an adverse environmental impact.

5.2 Other Key Drivers

Expenditures in OM&A are also driven by factors in addition to staffing levels. Below is an overview of the key, non-staffing related drivers.

5.2.1 Asset Maintenance Requirements

Toronto Hydro’s distribution system consists of approximately 61,000 distribution transformers, 17,000 primary switches, 15,600 kilometres of overhead conductors, and 13,800 kilometres. Toronto Hydro leverages its reliability centred maintenance framework, in combination with the OEB's minimum inspection requirements,[42] and continuous monitoring and assessment of asset performance to maintain equipment in good working order throughout its expected serviceable life, and where possible, to increase the useful life for enhanced value. This includes conducting inspections and maintenance tasks on a fixed (or variable) cycle as necessary, as well as completing corrective work to address asset deficiencies and risks that jeopardize system safety and reliability. The Corrective Maintenance program, in particular requires significant investments to address a number of incremental drivers: [43]

- **Corrective Work Requests:** Toronto Hydro uses a prioritization framework that classifies asset deficiencies into four categories, depending upon the urgency/severity of the deficiency. Since 2019, the utility observed a rise in the volume of corrective work in the "P3" category requiring resolution within 180 days due to the proportion of assets exhibiting deteriorating conditions and exceeding their expected lives. These asset deficiencies elevate the risk of failure and must be managed to keep the system safe and reliable for customers.
- **Electrical Safety Authority ("ESA") Requirements:** Toronto Hydro plans its maintenance programs with a view to achieving and maintaining compliance with electrical distribution safety requirements under Ontario Regulation 22/04,[44] in accordance with directives and guidelines issued by the ESA from time to time. This includes work such as the disconnection and grounding of unused lines, and responding to ESA directives and flash notices identifying hazards and risks that must be addressed. A recent example of such ESA-directed work is "Delta to Wye" conversions based on a 2018 flash notice to distributors and which is expected to continue driving work volumes into the 2025-2029 rate period.

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[42] OEB, *Distribution System Code*, Appendix C, (August 2, 2023).
[43] Exhibit 4, Tab 2, Schedule 4.
[44] Ontario Regulation 22/04, under the *Electricity Act, 1998* SO 1998, c 15, Sched A.

- **Emergency Response:** Corrective work may also be required as a result of emergencies or unplanned system events, including asset failures and deficiencies identified outside of Toronto Hydro's daily (planned) operations (including ESA field inspections) but requiring follow-up remediation in order to permanently restore power or eliminate safety or environmental risks. The emergence of such issues and the extent of the work (and costs) required to address them are unpredictable. As the distribution system becomes more heavily utilized due to electrification, the emergence of such compliance issues is expected to grow.

Toronto Hydro must address asset maintenance requirements in a timely manner in order to: (i) remain compliant with the Distribution System Code, (ii) satisfy electrical distribution safety requirements under Ontario Regulation 22/04, and (iii) maintain a safe and reliable system for customers in alignment with good utility practice. Without sufficient funding for asset maintenance, all of these critical outcomes are placed at risk.

5.2.2 Cloud Computing

Cloud solutions equip the utility with dynamic and cost-effective software tools to support the automation and modernization of business processes and protect the system against increasing cyber security threats. Toronto Hydro invests cloud computing solutions in accordance with the utility's IT Investment Strategy outlined in Exhibit 2B, Section D8. Costs to implement cloud-based solutions typically include project initiation, planning, execution (e.g. configuration, development, testing, customization, etc.), monitoring and control, and deployment. Recent drivers of cloud computing expenses include:[45]

- The implementation of new applications such as Oracle Field Services Cloud ("OFSC"), an upgrade to the mobile workforce management system for Grid

[45] Exhibit 4, Tab 2, Schedule 17.

Emergency Management, which replaced the legacy on-premises in-house solution. OFSC allows dispatchers and grid response crews to collaboratively manage outage events with respect to assembling crews, managing priorities, and communicating across different groups to respond to an unplanned outage events in a timely and effective manner.

- Cyber security maintenance and subscription fees as a result of new investments into cloud-based, artificial intelligence-enabled threat prevention, detection, and response solutions to ensure that cyber security processes and controls are capable of adequately responding to the evolving threat landscape.

Cloud-based solutions increase the range of IT solutions available to Toronto Hydro and provide the utility more flexibility in designing and implementing IT systems and controls. However, the shift from the traditional perpetual software licensing model to cloud subscription and maintenance fees is driving incremental OM&A expenditures as more IT vendors move towards a subscription model for both cloud-based and on-premises systems. In fact, many vendors are adopting "cloud only" solutions that rely solely on cloud technologies instead of providing an option to host a solution on-premises.

Toronto Hydro requires sufficient funding for cloud solutions to: (i) serve growing technology requirements across the business driven by modernization imperatives and innovation opportunities; (ii) adequately protect its grid and systems against cyber security threats; and (iii) retain flexibility in a more dynamic technology environment.

5.2.3 Non-Wires Solutions (Local Demand Response)

Toronto Hydro's Non-Wires Solutions ("NWS") program was established in the 2015-2019 Distribution System Plan to address capacity constraints through local demand response

("LDR").[46] Building on its existing LDR experience, Toronto Hydro identified further opportunities to use LDR in the 2025-2029 rate term to avoid and defer capital investments in load transfers, and set an ambitious goal to expand the reach of the LDR program in the next rate term. Toronto Hydro intends to procure 30 MW of flexible system capacity to displace and defer the need for load transfers in the Horseshoe North area during the 2025-2029 period. Load transfers in this area are currently necessary to alleviate capacity constraints at a number of stations, including Finch TS and Bathurst TS. The goal is to use LDR to defer or displace certain load transfers by procuring flexible system capacity from third-party or customer-owned DERs.

5.2.4 Insurance Premiums

Insurance premium costs are included in the Finance program.[47] The utility anticipates an upward trend in insurance costs through to 2029 that is attributable to higher rates on the existing insurance program policies for property, liability, cyber, directors and officers ("D&O"), and crime. In particular, cyber security insurance premiums are increasing in correlation with growing and more acute cyber security threats that affect large organizations such as Toronto Hydro each year. In addition, Toronto Hydro's rate base is expected to increase from $4.9 billion in 2022 to $7.6 billion in 2029 which has a direct impact on the future property and liability insurance premiums. Without sufficient funding for insurance costs, Toronto Hydro may face challenges securing financing for its work programs, risk contravention of covenants contained in existing debt issuances, and be exposed to compliance risks vis-à-vis relevant tax laws, rules, and regulations.

[46] Exhibit 2B, Section E7.2.
[47] Exhibit 4, Tab 2, Schedule 16.

6. Variance Analysis

In the last rebasing application (EB-2018-0165), the OEB approved a 2020 OM&A budget envelope of $272.2 million,[48] and directed Toronto Hydro to amend the presentation of costs attributable to shared services.[49] In accordance with that directive, Toronto Hydro reclassified $5.5 million of shared services costs from 2020 OM&A to other revenues and expenses,[50] resulting in an OEB-approved 2020 OM&A budget of $266.7 million.[51]

Toronto Hydro's actual OM&A expense for 2020 was $288.1 million. However, this amount includes approximately $21.1 million in one-time expenses related to the COVID-19 pandemic; specifically bad debt expense,[52] and non-routine emergency costs such as additional personal protective equipment and increased health services resources.[53] Adjusted for these one-time COVID-19 related expenses, Toronto Hydro's actual OM&A expense for 2020 is $267.0 million, which is aligned with the OEB-approved 2020 OM&A test year of $266.7 million.

Figures 14 and 15 below respectively show the major drivers of OM&A cost increases from the adjusted 2020 actual to the 2025 test year and from the 2025 test year to the 2029 forecast year. Consistent with applicable OEB guidance,[54] detailed year-over-year variance analyses by OM&A program and segment can be found OEB Appendix 2-JB (Recoverable OM&A Cost Driver Table) and in Exhibit 4, Tab 2, Schedules 1 to 21.

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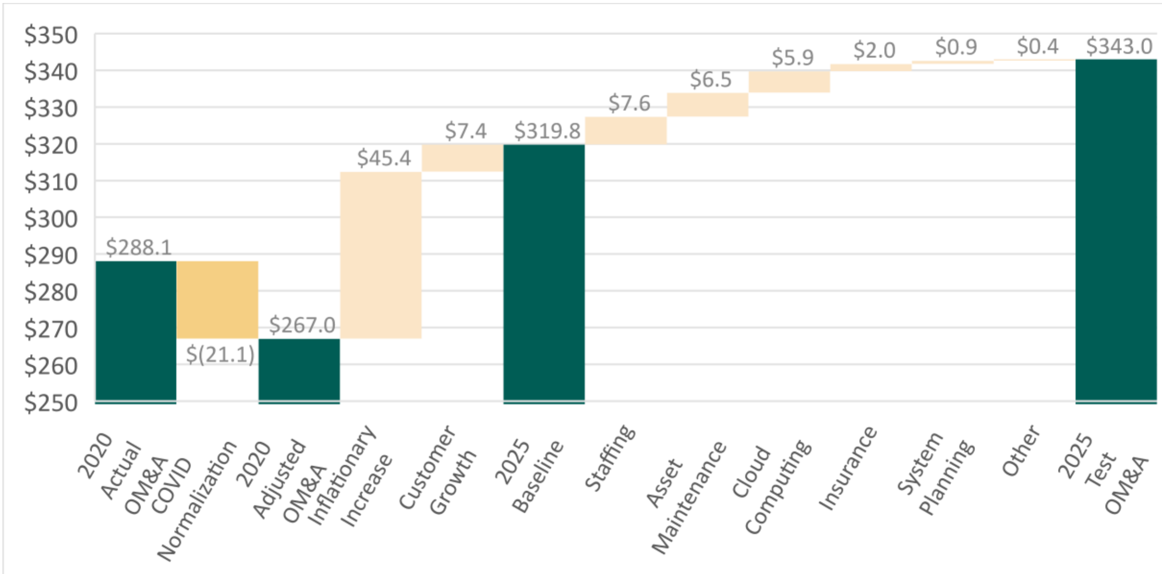
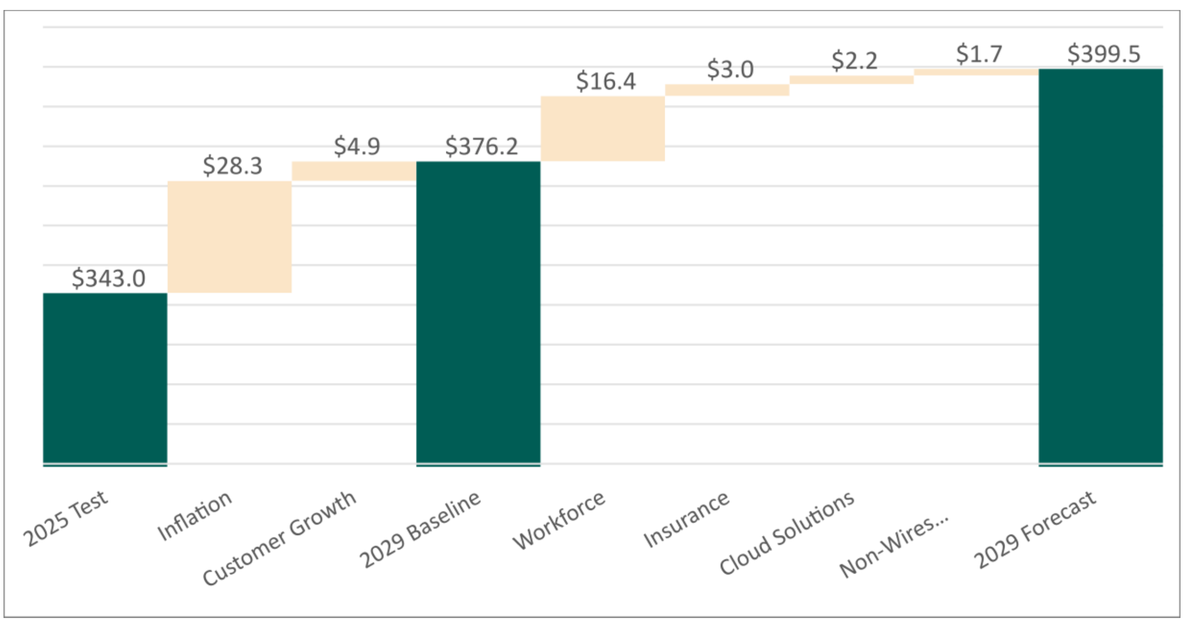
48 EB-2018-0165, Decision and Order (December 19, 2019) at page 140.
49 EB-2018-0165, Decision and Order (December 19, 2019) at page 131.
50 Exhibit 3, Tab 2, Schedule 2 (OEB Appendix 2-H).
51 Exhibit 4, Tab 1, Schedule 3 (OEB Appendix 2-JB).
52 Exhibit 4, Tab 2, Schedule 14 at page 29.
53 Exhibit 4, Tab 2, Schedule 6 at pages 17-18.
54 Including, for example, OEB Filing Requirements for Electricity Distribution Rate Applications, Chapter 2 (December 15, 2022), s. 2.4; and the Handbook for Utility Rate Applications (October 13, 2016) at page 19.



1 **Figure 14: OM&A Causal Track Analysis 2020 Test versus 2025 Test ($ Millions)**



2 **Figure 15: OM&A Causal Track Analysis 2025 Test versus 2025 Forecast ($ Millions)**

PREVENTATIVE AND PREDICTIVE OVERHEAD LINE MAINTENANCE

1. OVERVIEW

Table 1: Preventative and Predictive Overhead Line Maintenance Program Summary

Preventative and Predictive Overhead Line Maintenance Program									
Outcomes: Operational Effectiveness - Reliability, Environment, Operational Effectiveness - Safety, and Customer Focus									
Segments: • Overhead Line Patrols & Pole Inspections • Overhead Switch Maintenance & Insulator Washing • Vegetation Management • Metering Services									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
5.8	6.2	5.7	7.2	7.9	9.1	9.2	9.6	9.5	9.4

The Preventative and Predictive Overhead Line Maintenance program (the "Program") funds Toronto Hydro's maintenance activities on: (i) Toronto Hydro's overhead line assets; and (ii) metering assets and associated communication systems that enable meter data collection and tracking to ensure compliance with applicable legislative and regulatory requirements. This Program involves inspection and maintenance tasks typically conducted on a fixed cycle, including inspection of equipment for indications of potential failure. The segments in this Program are focused on preserving and maximizing the performance of assets over their expected useful life while mitigating a wide variety of system risks. The Program is also designed to minimize overall asset lifecycle costs, account for factors such as the safety of Toronto Hydro work crews and the public, responsible environmental stewardship and associated obligations, and compliance with statutory and regulatory requirements.[1]

The Preventative and Predictive Overhead Line Maintenance program is comprised of the following four segments:

- **Overhead Line Patrols & Pole Inspections:** This segment funds periodic line patrols to inspect all overhead distribution equipment, including pole-mounted transformers, switches, auxiliary equipment, and conductor wire. In addition to line patrols, the segment also includes dedicated pole inspections and wood pole treatment as well as inspections of poles to assess the need for additional guying for reinforcement during storm events;
- **Overhead Switch Maintenance & Insulator Washing**: This segment funds two general sets of maintenance activities on the overhead distribution system: (i) the periodic maintenance of overhead switches such as SCADA-Mate and Three Phase Gang-Operated Switches; and (ii) the washing of porcelain insulators located at high-risk locations prone to contamination build-up;
- **Vegetation Management**: This segment funds the trimming of vegetation near overhead feeders to minimize the impact of tree-caused power interruptions on system reliability;
- **Metering Services:** This segment funds the inspection and maintenance of metering assets and associated communication technologies to ensure proper functionality and compliance with applicable legislative and regulatory requirements;

[1] Ontario Energy Board, Distribution System Code (August 2, 2023) Appendix C.

By preserving and maximizing the performance of overhead line and metering assets and ensuring these assets are fully operational, this Program contributes to maintaining safety, environmental stewardship, and overall system reliability at reasonable costs to Toronto Hydro's customers. In addition, the Program contributes to customer experience and satisfaction by facilitating: (i) the tracking of accurate and timely electricity consumption information for customer billing purposes; and (ii) the use of up-to-date communication technology that enables remote reading and processing of customer meter information.

2. OUTCOMES AND MEASURES

Table 2: Preventative and Predictive Overhead Line Maintenance Program Outcomes and Measures Summary

Operational Effectiveness - Reliability	• Contribute to the overall system performance and reliability – as measured by performance metrics like SAIFI, SAIDI, Customers Interrupted ("CI"), and Customer Hours Interrupted ("CHI") – by promptly identifying potential asset failure or assets in substandard conditions before failure occurs, through planned inspections in compliance with the Ontario Energy Board's ("OEB") Distribution Systems Code ("DSC").
Environment	• Contribute to reducing the environmental impact of Toronto Hydro's distribution system by proactively identifying transformers exhibiting signs of oil deficiencies for replacement, thereby reducing the likelihood of oil spills into the environment.
Operational Effectiveness - Safety	• Contribute to Toronto Hydro's safety objectives (including compliance with Ontario Regulation 22/04, and safety performance as reflected by metrics like the Serious Electrical Incidents Index and Total Recordable Injury Frequency through proactive inspections to identify and reduce the likelihood of equipment malfunction (e.g. porcelain switch breaking) and asset failures (e.g. collapse of a pole or flashovers on electrical equipment) which, if not prevented, may lead to injury of the general public and/or Toronto Hydro's crews.

Customer Focus	• Contribute to Toronto Hydro's customer focus objectives by ensuring the accurate billing of all smart metered customers based on actual usage, and mitigating the risk of meter seals expiring before their testing and re-validation (which also supports compliance with applicable regulatory requirements like the *Electricity and Gas Inspection Act,*[2] and the *Weights and Measures Act*).[3]

3. PROGRAM DESCRIPTION

The Preventative and Predictive Overhead Line Maintenance program funds all maintenance activities with respect to Toronto Hydro's overhead distribution system and metering assets, including meters and communication systems that enable meter data collection and tracking. This Program involves inspection and maintenance tasks typically conducted on a fixed cycle and inspection of equipment for predetermined conditions indicative of a potential failure. The segments in the Program focus on preserving and maximizing the performance of assets over their expected useful life while mitigating a variety of system risks. The Program is also designed to minimize overall costs and account for factors such as the safety of Toronto Hydro's work crews and the public, responsible environmental stewardship and associated obligations, and compliance with applicable statutory and regulatory requirements.

The Preventative and Predictive Overhead Line Maintenance program is comprised of the following four segments:

- **Overhead Line Patrols & Pole Inspections**: this segment funds periodic line patrols to inspect and assess the condition of all overhead distribution equipment including pole-mounted transformers, switches, auxiliary equipment, and

[2] RSC 1985, c. E-4. [“*Electricity and Gas Inspection Act”]*
[3] RSC 1985, c. W-6. [“*Weights and Measures Act”].*

conductor wire. In addition, this segment also includes dedicated pole inspections of all wood, concrete, and steel poles as well as wood pole treatments, and inspections of poles to assess the need for additional guying for reinforcement during storm events.

- **Overhead Switch Maintenance & Insulator Washing:** this segment funds two general sets of maintenance activities on the overhead distribution system: (1) the periodic maintenance of overhead switches such as SCADA-Mate and Three Phase Gang-Operated Switches, and (2) the washing of porcelain insulators located at high-risk locations prone to contamination build-up.
- **Vegetation Management:** this segment funds the trimming of vegetation near overhead feeders to minimize the impact of tree-caused power interruptions on system reliability.
- **Metering Services:** this segment funds the inspections and maintenance of metering assets and associated communication technologies to ensure proper functionality and compliance with applicable legislative and regulatory requirements. Metering maintenance activities include: meter audits to verify meter accuracy; verifying, testing and troubleshooting wholesale meters installed at transmission grid supply points; investigating communication issues; and installing reused meters following accuracy testing.

4. PROGRAM COSTS

In 2025, Toronto Hydro requires $9.1 million in rate funding for the Preventative and Predictive Overhead Line Maintenance program, which represents an increase of $3.3 million over the 2020-2024 rate application.

Over the 2025-2029 rate period, the utility expects the cost of this program to increase by a compounded annual growth rate of 1.0 percent, which is necessary to address overhead line maintenance needs and deliver the customer outcomes enabled by this program.

The Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for each segment are summarized in Table 3 below.

Table 3: Overhead Maintenance Program Expenditures by Segment ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Overhead Line Patrols & Pole Inspections	0.5	0.5	0.5	0.5	0.6	0.8	0.8	0.9	0.9	0.9
Overhead Switch Maintenance & Insulator Washing	1.4	1.6	1.3	1.6	1.7	2.4	2.4	2.5	2.6	2.6
Vegetation Management	2.8	3.4	3.5	3.5	3.8	4.0	4.1	4.2	4.3	4.4
Metering Services	1.1	0.7	0.4	1.6	1.8	1.9	1.9	2.0	1.7	1.5
Total	**5.8**	**6.2**	**5.7**	**7.2**	**7.9**	**9.1**	**9.2**	**9.6**	**9.5**	**9.4**

4.1 Cost Drivers

Cost variances are partly attributed to varying numbers of units scheduled for inspections each year based on their inspection cycle. For example, from 2020 to 2021 overhead line patrols and infrared thermography scans increased from 5,862 km to 7,576 km. Other cost drivers include:

- The adjustment of inspection frequencies for wood poles from ten years to eight years, and the implementation of a new inspection program for concrete and steel poles starting in 2025;
- The increase in the annual volumes of overhead switches maintained to achieve a six-year maintenance cycle starting in 2025;

- An increase in vegetation management costs to address an ever-growing tree canopy and reduce potential outages caused by tree-related contacts; and
- Increases in metering services costs due to the growing number of suite metering units driven by the growing population of condominium residents, as well as changes in the volume of meters due to be tested and resealed each year.

4.2 Cost Control and Productivity Measures

4.2.1 Cost Management

Toronto Hydro has a competitive bid process with a wide range of contractors involved in bidding for our contracted work, which helps keep costs competitive across vendors and provides more options.[4]

For the Overhead Line Patrol segment, starting in 2019 Toronto Hydro has tracked the exact number of kilometers of overhead distribution patrolled each year in order to ensure it is more accurately charged for areas patrolled.

For the Vegetation Management segment, planned trimming activities are expected to reduce the number of areas requiring reactive spot trimming, which can cost as much as 50 percent more than planned trimming; the bundling of feeders from the same station whenever possible will yield further costs savings; and the piloting of new technologies such as LiDAR and satellite imagery is expected to further improve the efficiency of the program.

[4] Exhibit 4, Tab 2, Schedule 15.

For Toronto Hydro's Insulator Washing segment, the reduced number of poles with porcelain insulators, as they are phased out of the system will directly yield cost savings due to fewer poles insulators needing to be washed.

4.2.2 Productivity

Toronto Hydro has placed significant emphasis on achieving greater output for the same or reduced input in each of the segments within the Preventative and Predictive Overhead Line Maintenance program. Toronto Hydro continues to rely on a Reliability Centered Maintenance ("RCM") approach and adjusts maintenance tasks and frequencies based on RCM and Condition-based Maintenance principles. Toronto Hydro also does the following:

- Standardize the maintenance cycles of overhead switches to align with station maintenance cycles wherever possible to minimize the need for multiple equipment outages and significant switching resources, enable efficient execution of more maintenance work per outage, and minimize the need for multiple visits to work on particular sites;
- Implement "find and fix" protocols whereby crews that identify minor asset deficiencies address the deficiencies (e.g. replacing equipment nomenclature or addressing missing or defective guy guards and pole ground wires) onsite, as opposed to only logging the deficiencies for future action under the Corrective Maintenance program;[5]
- Issue longer-term inspection maintenance contracts to third party service providers to keep unit costs stable and increase service quality levels over time (i.e. as result of accumulated service provider experience and familiarity with identifying deficiencies on Toronto Hydro's distribution system); and

[5] Exhibit 4, Tab 2, Schedule 4.

- Introduce new tools or making greater use of existing technology such as Infrared Thermography, Electronic Maintenance Sheets, Online Partial Discharge Testing, LiDAR, and satellite imagery; and,
- Migrate from phone line based communication to more reliable communication technology (i.e. wireless), reducing costs associated with on-site investigations and troubleshooting.

The following sections describe each of the segments in the Preventative and Predictive Overhead Line Maintenance program.

5. OVERHEAD LINE PATROLS AND POLE INSPECTIONS SEGMENT

5.1 Segment Description

Toronto Hydro conducts line patrols to inspect its overhead lines – approximately 4,100 circuit kilometres of primary and 11,500 circuit kilometres of secondary distribution lines – every three years. Infrared thermography scans are also performed annually on all primary lines and nearby secondary lines. The three-year inspection cycles for line patrols are as mandated by the OEB's Minimum Inspection Requirements (under Appendix C of the DSC).[6]

Line patrols cover all overhead distribution equipment including poles, conductor wires, pole-mounted transformers, switches, lightning arrestors, line insulators, and other peripheral attachments. Approximately 139,000 poles, 30,700 overhead transformers, and 7,350 overhead switches are inspected through line patrols.

Toronto Hydro also conducts dedicated pole inspections for its wood poles which are currently conducted on a ten-year cycle. All wood poles are either butt or full length

[6] *Supra* note 1.

treated against rot. For the reasons discussed below, beginning in 2025, Toronto Hydro plans to adjust this cycle for wood poles to every eight years and also to begin inspecting all concrete and steel poles on a ten-year cycle. In addition, Toronto Hydro also conducts inspections to identify poles that are in need of additional guying for reinforcement during storm events and undertakes condition based maintenance for poles by targeting certain poles found to be in poor condition or at a higher risk of failure more frequently. Toronto Hydro has approximately 105,000 wood poles, 29,700 concrete poles and 3,600 steel poles.

Overhead line patrols are designed to identify visible deficiencies (such as signs of leaking transformers, loose or broken attachments (e.g. cross-arms, insulator brackets), and damaged poles), as well as deficiencies that can be identified through infrared thermography. This technology identifies thermal anomalies, such as a significant increase in temperature at the secondary connection point of the pole-mounted transformer shown in Figure 1. If undetected and not addressed, such a deficiency can lead to a failure of the connection over time and result in safety and environmental risks due to arcing, which can lead to a transformer fire and release of oil into the environment. The Institute of Electrical and Electronics Engineers ("IEEE"), American National Standards Institute ("ANSI") and the International Electrotechnical Commission ("IEC") all publish standard temperature ratings for assets, which are used to determine if an electrical component has a temperature above the recommended value. Thermography is an accepted and encouraged practice in the utility industry as evidenced by the National Fire Protection Association's standard 70B: Recommended Practice for Electrical Equipment Maintenance.[7]

[7] National Fire Protection Association, Standard for Electrical Equipment Maintenance (2023).

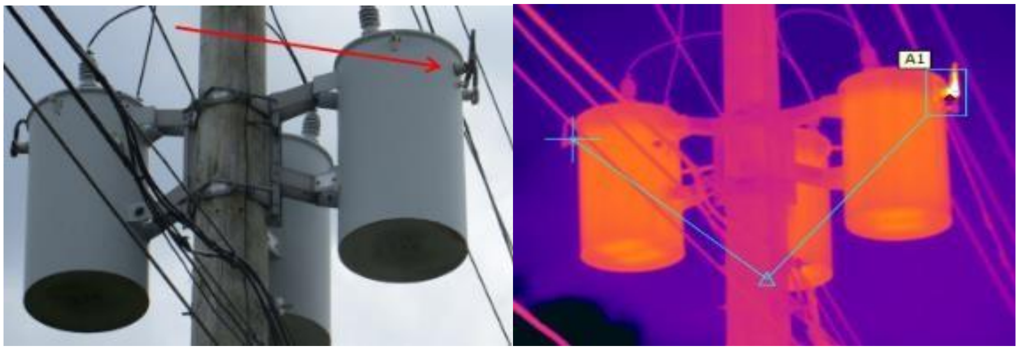


Figure 1: Secondary Connection on Pole-Mounted Transformer (Left) with an Infrared Thermography Image of the Same Asset Denoting a Hot Spot at A1 (Right)

Wood pole inspections involve a visual assessment of each pole and a sounding test using a hammer to check for internal cavities, which can indicate an infested or internally decayed pole. Based on the results of this assessment, one or more of the following steps may be taken:

- A bore test (using a 12 millimetre diameter bit to drill into the pole) to assess the condition of the shavings from the interior;
- A resistograph test (using a 2 millimetre diameter needle drill bit and an electronic resistance measurement device to drill into the pole) to determine the presence of wood decay, stages of rot, and hollow areas;
- Treatment using a boron glass rod or copper-boron glass rod wood preservative;
- Treatment using an external copper napthenate wrap; and
- Treatment using an internal fumigant.

Beginning in 2025, Toronto Hydro is adjusting the inspection cycle for wood poles from ten to eight years to better manage the growing volume of wood poles past their useful life and in HI4 and HI5 condition based on the asset condition assessment (“ACA”) as shown in Figure 2 below. This adjustment will also allow Toronto Hydro to better inform its wood pole ACA and support planning of system renewal investments with more timely inspection data of poles in poor condition.

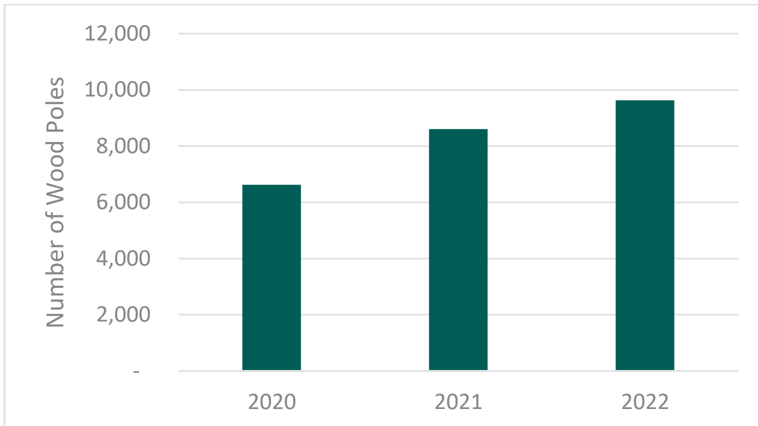


Figure 2: Wood Poles in HI4 & HI5 from 2020-2022

From 2025 onward, Toronto Hydro will begin to inspect concrete and steel poles in addition to wood poles as part of its dedicated pole inspection program on a ten-year cycle. Inspections of these poles are supported by the Canadian Securities Administrators (CSA) Standard C22.3. Inspections of these poles will allow Toronto Hydro to improve decisions on planned renewal investments for these assets. Further, this is expected to reduce the burden on reactive capital by proactively identifying poles with substandard conditions and scheduling them for replacement before they require costly reactive intervention. Toronto Hydro had originally planned to conduct inspections for these assets in 2020, however Toronto Hydro postponed this initiative until 2025 to give flexibility in the short-term budgeting for this segment and more time to plan ahead for the implementation of inspections for these assets.

Overhead line patrols and pole inspections serve to assess asset conditions and identify overhead asset deficiencies resulting from aging assets or exposure to weather, animals, trees, or other environmental elements. Condition and deficiency information gathered during these activities is utilized to plan and prioritize capital and corrective maintenance work, so that public and employee safety, environmental, system reliability, and financial risks can be mitigated. Pole treatment activities are undertaken to extend the life of the pole and mitigate the risk of decay.

During 2020-2022, Toronto Hydro identified on average approximately 7,100 deficiencies annually during line patrols. Deficiencies identified include loose or deteriorated connections, missing guy guards, tracking insulators, rusted equipment, oil leaks, vegetation interference, damaged conductors and conductor splices, which are all addressed in the Corrective Maintenance or Reactive and Corrective Capital programs.[8] Identifying and addressing these issues reduces the likelihood of a component failure and the associated risks. For example, an aging conductor splice that fails could result in a live conductor dropping to the ground, which would create a serious safety risk to the public and Toronto Hydro employees and cause a power interruption that may impact hundreds of customers. Thermography is used to mitigate this risk as it allows such deficiencies in splices to be identified.

Dedicated pole inspections identify poles that have lost their mechanical strength and are likely to fail, endangering the crews working on them and possibly resulting in collapse if they remain in service.

For wood poles, the primary indicator of health and remaining life is mechanical strength, given that the main function of poles is to act as support structures. As a natural material, a wood pole undergoes a different degradation process than most other distribution assets. The degradation processes are primarily biological and cumulative with age. They

[8] Exhibit 4, Tab 2, Schedule 4 and Exhibit 2B, Section E6.7.

consist of insect infestation, moisture ingress, and bird or fungi attacks. Decay causes a wood pole to lose its strength and functionality, which increases the risk of a structural failure. Poles often support and withstand significant static loads such as transformer banks and conductors, and dynamic loads such as climbing workers or high winds. They typically fail with the onset of age and the loss of structural strength.

As further illustrated in Figures 3 and 4 below, deficiencies such as rot and excessive cracking are common causes of pole failures. Between 2020 and 2022, Toronto Hydro condemned on average over 190 wood poles annually.

Figure 3: Rot at Base of a Pole

Figure 4: (Left) Cracked Wood Pole, (Right) Surface Rot on Pole

For steel poles, the most common cause of degradation is corrosion as illustrated in Figure 5. The corrosion protection system for steel poles can be compromised by mechanical degradation of the coating due to external impacts by foreign objects or abrasion, adverse weather conditions, and loss of coating due to age.

Figure 5: Corrosion on Steel Pole Base

Concrete poles can begin to deteriorate from weather events or mechanical damage by external factors such as vehicle impacts. Cracks on concrete poles can either be circumferential (around the pole) or longitudinal (along the length of the pole), with the latter type typically being more serious in nature as shown in Figure 6 below. Longitudinal cracks can be caused by reinforcing steel being overly close to the surface of the concrete pole or degradation due to weather events such as freeze-thaw conditions.

Figure 6: (Left) Longitudinal Crack on Pole, (Right) Cracked Concrete Base

During the 2020-2022 period, approximately 26 concrete poles were replaced reactively on average annually.

Poles are found predominantly along sidewalks, roadways, and other areas of high pedestrian and vehicular traffic. Without routine inspection, there is an unacceptable risk that poles and associated attachments could collapse onto sidewalks, roadways, and even residences. The collapse of a pole can also cause oil spills from ruptured transformer tanks, electrical arcs, flashovers, and fires, which pose serious environmental risks and safety risks to the public and Toronto Hydro employees. Minimizing the likelihood of a pole failure will mitigate these risks. Moreover, pole inspection activities, and in particular wood pole treatments (e.g. application of boron rods, copper naphthenate wraps, and internal fumigant) extend the life of poles and allow for a more efficient and structured capital pole replacement program.

Between 2020 and 2022, there were on average approximately 130 incidents of overhead asset failures (excluding major event days) each year. These failures were primarily attributed to overhead transformers, switches, conductors, insulators, lightning arrestors and poles, and caused in excess of 117,000 CIs and 75,000 CHI's annually. Line patrols and pole inspection activities are in place to identify deficiencies that, if left unaddressed, may lead to incidents that impact system reliability.

5.2 Overhead Line Patrols and Pole Inspections Segment Costs

Table 4 below provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025) expenditures for this segment.

Table 4: Overhead Line Patrols and Pole Inspections Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Overhead Line Patrols & Pole Inspections	0.5	0.5	0.5	0.5	0.6	0.8	0.8	0.9	0.9	0.9

5.3 Overhead Line Patrols and Pole Inspections Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

There is no material variance during this rate period.

2021 – 2022 Variance Explanation

There is no material variance during this rate period.

2022 – 2025 Variance Explanation

Between 2022 and 2025, expenditures are expected to increase by approximately $0.3 million, or an average of approximately $0.1 million per year, primarily due the adjustment of the inspection frequency for wood poles from ten to eight years and the addition of inspections for concrete and steel poles in 2025.

2025 – 2029 Variance Explanation

Between 2025 and 2029, expenditures are forecasted to increase by approximately $0.1 million, which is primarily attributed to inflationary pressures. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks, including:

- Reduced ability to comply with applicable legislative and regulatory requirements such as the OEB's Minimum Inspection Requirements.[9]
- Increased frequency of equipment malfunctions or failures due to unidentified deficiencies or lack of maintenance leading to increased:
  - safety risks from incidents such as the collapse of a pole onto a roadway, sidewalk or residence, or flashovers on electrical equipment;
  - environmental risk from oil leaks resulting from unidentified equipment deficiencies such as corrosion on the transformer tank; and
  - reliability risks from the failure of overhead equipment, which can result in outages.
- Decreased ability to extend the life of wood poles through treatment.

6. OVERHEAD SWITCH MAINTENANCE AND INSULATOR WASHING

6.1 Segment Description

This segment includes two general sets of maintenance activities on the overhead distribution system: (i) maintenance of overhead switches; and (ii) washing of porcelain overhead line insulators.

- **Overhead Switches:** Toronto Hydro maintains overhead switches on a variable cycle greater than 6 years and beginning in 2025 will adjust the cycle to six-years. There are two main types of switches on Toronto Hydro's distribution system:

[9] *Supra* note 1.

- Supervisory Control and Data Acquisition ("SCADA") Switches (or SCADA-Mate Switches): These switches are motorized, and can be operated remotely from the Control Room via wireless communication, or operated locally by field crews. To enable communication and remote operation during a system failure, the switches and related equipment utilize a battery system that is capable of providing power for switch operation and communication. Maintenance of SCADA switches involves verifying the switch's remote and local operation along with lubrication of the pivot points on the visible air-gap isolation mechanism. It also includes battery replacements for the switch and repeater radio (in accordance with manufacturer's recommendations), and Remote Terminal Unit ("RTU") testing to verify proper communication with the Control Room. Figure 7 below shows a typical SCADA switch.

Figure 7: SCADA-Mate Switch

- Three Phase Gang-Operated Switches: These switches are found throughout Toronto Hydro's overhead system and unlike the SCADA switches, are not capable of remote operation. While some have motorized controls, the vast majority are manually operable at the physical switch location. The scope of work to maintain these switches involves verifying correct blade alignment, blade penetration, travel stops, arc interrupter operation, and mechanical operation. The contacts are cleaned and greased and the switch is tested for correct operation. Figure 8 below shows a gang-operated switch.

Figure 8: Manual Gang-Operated Switch

In total, Toronto Hydro maintains approximately 2,200 overhead switches comprising of approximately 1,300 SCADA switches and 900 Three Phase Gang-Operated Switches.

Due to resourcing and operational constraints, Toronto Hydro has historically found achieving the four-year maintenance cycle of its overhead switches noted in its 2020-2024 rate application to be challenging, instead attaining variable cycles generally greater than 6 years. In order to maximize existing resources, starting in 2023, condition-based maintenance principals have been used to target switches that pose a greater risk of failure. To further alleviate constraints, beginning in 2025, Toronto Hydro will be maintaining overhead switches on a six-year inspection cycle at a minimum. This approach is supported by an independent assessment of Toronto Hydro's overhead switch maintenance practices.

- **Insulator Washing:** Conductors and switches used on the overhead distribution system have historically been attached to poles and structural infrastructure using porcelain insulators (rather than the current standard of polymer insulators). Porcelain insulators have a high dielectric strength and good mechanical properties, including hardness and resistance to chemical erosion and thermal shock. However, porcelain has poor resistance to contamination build-up, which causes tracking (i.e. leakage of electricity across the insulator). The accumulation of dirt and salt, combined with moisture (during misty or foggy days), reduces the effective insulation levels, and can lead to insulator tracking, flashover, and potential pole fires. To mitigate the risk of contamination and insulator tracking, insulators at the highest risk locations are washed twice a year. Insulator washing is performed using a high-pressure intermittent water jet while lines are energized. Figure 9 shows an example of a porcelain insulator being washed.

Figure 9: Porcelain Insulator Washed Using a High Pressure Water Jet

Overhead switch maintenance and insulator washing serve to mitigate public and employee safety, system reliability, and financial risks. Manual overhead switching is a common and high-risk activity undertaken by Toronto Hydro crews. Switches that are not regularly maintained can be difficult to operate, which has led to strains and injuries for crew members. Regular maintenance enables the detection and prediction of common failure modes, including the failure of a switch's insulator as shown in Figure 10 below, which can result in an arc flash that can seriously injure crew members.

Figure 10: Broken Switch Insulator

A second common failure mode is corrosion of switch metal blades. This naturally occurs from contaminants such as road salt and water settling on the switch blades. It can result in excessive heating of the blade and, over time, can lead to the blade failing to conduct electricity. Contaminants and corrosion on a switch blade during a load break operation may also cause the electrical arc to elongate, which causes additional damage to the blade and can lead to blade failure. Associated safety risks include burns from an arc-flash and overexertion injuries to an employee (i.e. if a switch requires a significant amount of force to operate).

Other common failure modes include switch seizure due to the drying out of lubrication, excessive arcing due to the misalignment of blades, and in the case of SCADA switches, failure of batteries – all of which can lead to switch malfunction, and pose a risk of injury to Toronto Hydro employees.

Between 2020 and 2022, Toronto Hydro identified on average 38 switch-related deficiencies annually. These deficiencies are addressed by overhead switch maintenance activities such as identifying and correcting deteriorated insulators and corroded switch blades, ensuring blades are properly aligned, lubricating switches, and replacing batteries proactively. Deficiencies requiring further follow-up action or replacement of the switch are addressed in the Corrective Maintenance or Reactive and Corrective Capital programs.[10]

From a system reliability perspective, reducing the likelihood of switch failures can reduce the number of CIs and CHIs. Between 2020 and 2022, Toronto Hydro's distribution system experienced on average approximately 30 power interruptions per year due to switch failures, which resulted in more than 46,000 CIs and 24,000 CHIs annually. Switches are designed to isolate line sections from the distribution system when a fault occurs or for the purposes of undertaking planned work. Their function and impact on system reliability can be illustrated using the example in Figure 11 below.

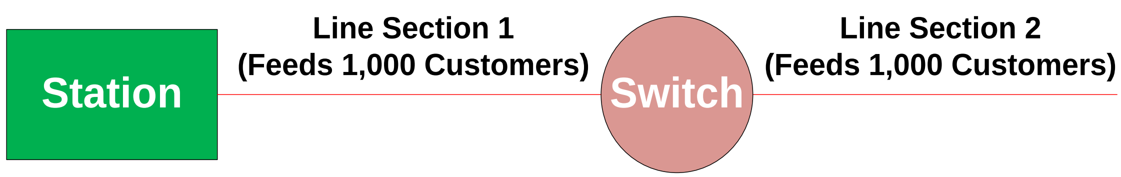


Figure 11: Example of Overhead Switch Impact on System Reliability

Depicted above is a feeder that serves 2,000 customers, divided into two line sections using a switch, with each section serving 1,000 customers. When a fault occurs on Line Section 2, the switch can be operated to isolate that line section such that the station can continue to supply the customers on Line Section 1. Without an operable switch, 2,000 CIs would result, as the feeder would be isolated in its entirety from the station.

[10] *Supra* note 8.

Maintaining the switch in good working order has the potential to reduce that number to 1,000 CIs as only Line Section 2 would be isolated. Assuming in this theoretical example a fault is equally likely to occur on Line Section 1 or Line Section 2, an operable switch would improve system reliability by 33 percent.

Approximately 2,500 locations contain porcelain insulators, which are at an increased risk of contamination as they are close to industrial areas and busy arterial roads and highways (such as the 401, 400, 427, and the Don Valley, Allen, and Gardiner Expressways), where salt used to melt snow or ice in the winter months becomes airborne through "salt spray" and deposits on the insulators.

Removing contamination through insulator washing reduces the risk of electrical tracking, pole fires, and insulator failures. From a safety perspective, pole fires and insulator failures in Toronto's dense urban areas can cause injury to individuals at ground level and crew members working near the insulators. The primary failure mode for porcelain equipment is cracking, which may start as a hairline crack, but has the potential to lead to a catastrophic failure with shards of debris falling to the ground and striking anyone in the vicinity and an arc flash risk to workers nearby. Figure 12 below shows a close-up view of a porcelain insulator damaged by electrical tracking over time.

Figure 12: Close-up of Damaged Porcelain Insulator Showing Tracking

From a system reliability perspective, insulator failures, depending on where they occur on a feeder, will cause a power interruption for tens to possibly thousands of customers. On March 3, 2015, Toronto Hydro experienced an all-time high of 121 pole fires, caused by a freezing rain storm event. These pole fires impacted approximately 107,000 customers and resulted in approximately 292,000 CHI's. The cause of the fires was a combination of the higher moisture levels caused by freezing rain and the build-up of salt used on roads, which became airborne and accumulated on the insulators. This combination of factors can significantly increase the risk of a pole fire. See Figure 13 below.

Figure 13: Pole fire on December 22nd, 2017

From a financial perspective, pole fires resulting from insulator tracking necessitate emergency response, equipment replacement, and in some instances, the payment of damage claims. Emergency response costs incurred by Toronto Hydro for the March 3, 2015 freezing rain event totalled $1.5 million.

In response to this event, Toronto Hydro developed a reactive insulator washing program, which involves additional system wide insulator washing of all high risk pole locations on a reactive basis, based on weather patterns and road salt usage trends. This work is funded through the Corrective Maintenance program.[11] Since this Program began, Toronto Hydro has not seen pole fires at 2015 levels. From 2020-2022, Toronto Hydro has been averaging approximately 20 pole fires per year which represents a significant reduction from the total number of poles fires in 2015.

Given the risks associated with contaminated porcelain insulators (including public and employee safety, system reliability, and financial risks), routine insulator washing is a necessary and prudent means of reducing the likelihood of contingencies resulting from debris build-up on insulators. Reductions in the amount of insulator washing could result in increased incidents of insulator tracking and poles fires.

As porcelain insulators are naturally phased out of the system and replaced with polymer insulators, the need for insulator washing is expected to diminish in the long-term, as polymer insulators are hydrophobic and are not susceptible to the same failure mode due to contamination. In the short-term however, continued insulator washing is expected to be required.

6.2 Overhead Switch Maintenance and Insulator Washing Segment Costs

Table 5 below provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for this segment.

[11] *Supra* note 5.

Table 5: Overhead Switch Maintenance and Insulator Washing Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Overhead Switch Maintenance & Insulator Washing	1.4	1.6	1.3	1.6	1.7	2.4	2.4	2.5	2.6	2.6

6.3 Overhead Switch Maintenance and Insulator Washing Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

Expenditures increased by approximately $0.2 million from 2020 to 2021, which was primarily attributed to an increase in unit prices to maintain all overhead switches and an increase in switch batteries replaced.

2021 – 2022 Variance Explanation

Expenditures decreased by approximately $0.2 million from 2021 to 2022, which was primarily attributed to a decrease in the number of switch batteries replaced.

2022 – 2025 Variance Explanation

Between 2022 and 2025, expenditures are expected to increase by approximately $1.1 million, or an average of $0.4 million per year, which is primarily attributed to an increase in the number of overhead switches scheduled for maintenance in order to achieve a six-year inspection cycle.

2025 – 2029 Variance Explanation

Between 2025 and 2029, expenditures are expected to increase by approximately $0.2 million, or an average of less than $0.1 million per year, primarily due to inflation partially offset by decreases in the number of insulators to be washed. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks, including:

- Reduced ability to comply with applicable legislative and regulatory requirements such as the OEB's Minimum Inspection Requirements.[12]
- Increased frequency of equipment malfunctions or failures due to unidentified deficiencies or lack of maintenance leading to increased:
    - safety risks from incidents such as the collapse of a pole onto a roadway, sidewalk or residence, or flashovers on electrical equipment;
    - environmental risk from oil leaks resulting from unidentified equipment deficiencies such as corrosion on the transformer tank; and
    - reliability risks from the failure of overhead switches or other equipment, which result in outages or interruptions caused by overgrown trees, which can result in outages.

7. VEGETATION MANAGEMENT

7.1 Segment Description

Toronto Hydro performs vegetation management on over 860 overhead primary feeders extending almost 4,800 circuit kilometres along Toronto's arterial thoroughfares, rights-of-way, and residential streets. These feeders co-exist with the City of Toronto's mature and dense tree canopy, which includes about 600,000 City-owned "street trees" and thousands of trees located on customer properties. In total, there are over ten million trees in the City of Toronto. Over 125,000 of these street trees are adjacent to primary overhead feeders, and their overgrowth can potentially interfere with the safe and reliable distribution of electricity.

[12] *Supra* note 1.

Planned vegetation management activities are executed by contractors with support from Toronto Hydro's internal resources. Trees and branches are pruned according to minimum clearance standards based on American National Standards Institute ("ANSI") A300 – Standard Practices for Trees, Shrubs and other Woody Plant Maintenance,[13] and the City of Toronto Forestry Pruning Guidelines. In addition to the minimum clearance standards, Toronto Hydro considers other factors such as:

- **Species and growth patterns of a tree**: Fast-growing trees are trimmed more and slow-growing trees are trimmed less;
- **Natural trimming practices**: Branches are pruned back to a natural point of growth in the crown of the tree and leaders are "trained" (shaped) to grow away from the lines;
- Distance of major limbs that exhibit minimal growth, versus minor branches that can exhibit aggressive growth;
- **Directional pruning practices**: Maintenance of tree shape and branch patterning;
- Overall aesthetics and balance of the tree;
- Removal of dead limbs; and
- **Storm hardening**: Select removal of branches within the canopy to minimize the possible effects of wind and severe weather, but maintain the overall tree appearance.

Toronto Hydro avoids the practice of "tree topping", which is the indiscriminate removal of branches to reduce the size of the tree crown. As a result, and given the above-noted factors, Toronto Hydro mandates the use of certified utility arborists for vegetation

[13] American National Standards Institute, *American National Standard for Tree Care Operations — Tree, Shrub, and Other Woody Plant Maintenance — Standard Practices (Pruning)*, (A300 (Part 1) -2001).

management activities with training, knowledge, and certification in the practice of arboriculture.

Vegetation management mitigates the risk of vegetation interference by pruning trees near Toronto Hydro's overhead feeders. Each year, Toronto Hydro identifies the feeders in greatest need of tree pruning based on prioritization criteria such as feeder reliability history, number of customers supplied by each feeder, and the amount of time that has elapsed since the trees surrounding the feeder were last pruned. The prioritization process results in pruning trees surrounding feeders once every two to five years, with the system average being approximately three years. On average, Toronto Hydro pruned 1,399 circuit kilometres and approximately 47,000 trees annually between 2020 and 2022.

Figure 14: Tree Trimming of an Overhead Feeder

Vegetation interference is one of the most common causes of power interruptions, as overhead feeders are prone to tree branch contacts. Trees may make contact with distribution feeders as a result of natural growth, or when severe weather causes branches to break and fall onto lines or to bend and make intermittent contact. Conductors on feeders can also naturally stretch and sag due to ice and snow build-up, heavy loading or warm weather, bringing the lines closer to tree limbs. Branch contacts with lines result in a new path for current to travel, causing the branch to become energized, and posing a safety risk.

Vegetation-related power interruptions have a significant impact on system reliability and are among the leading causes of system outages. Statistics from 2020 to 2022 show that tree contacts are responsible for nearly 100 power interruptions a year, and cause approximately 116,000 CIs and 117,000 CHIs annually. When all interruptions are considered, over the period of 2020-2022, trees accounted for approximately nine percent of all CIs and 16 percent of all CHIs annually on average. These statistics exclude interruptions that occurred on major event days. During such days, the distribution system is particularly vulnerable to tree contacts and costly tree damage.

As more time passes since the last tree pruning for a particular feeder, it becomes more likely that tree contacts will occur and associated risks will increase (including system reliability, financial, and safety risks). These risks can be effectively mitigated through tree trimming.

From a reliability standpoint, Figure 15 illustrates the average number of sustained outages per feeder relative to time elapsed since the last pruning and trimming activities. This figure shows that the more time that passes from when a feeder was last trimmed, the higher the number of sustained outages are observed for that feeder, which is forecasted to continue to increase as more time elapses from the last trimming.

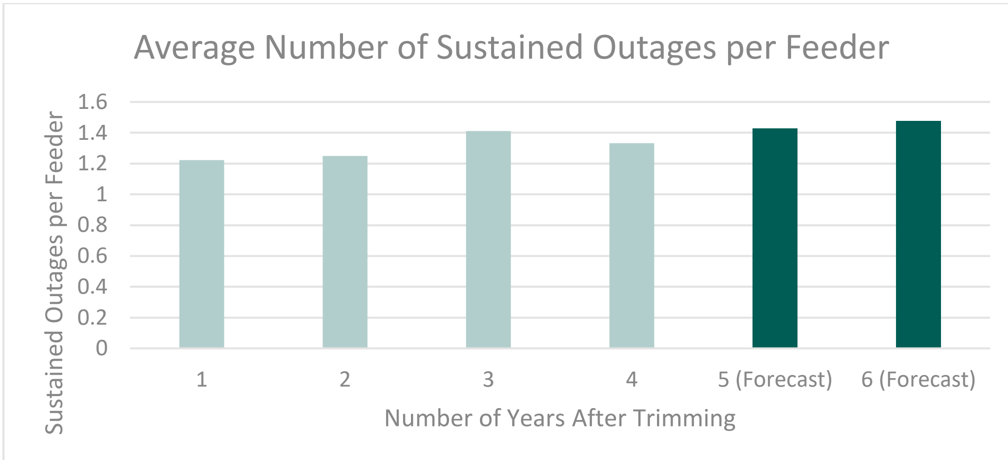


Figure 15: Average Number of Sustained Outages Per Feeder

Vegetation management is also a widely accepted means of effectively "storm-hardening" a system (i.e. proactively mitigating against storm damage and associated system reliability risks). Storm hardening involves selectively removing portions of a tree canopy to reduce the "sail effect" of branches during high winds and to reduce the likelihood that broken branches will make contact with lines. As such, more frequent tree pruning further reduces risks posed by severe weather.

Toronto Hydro's system is susceptible to severe weather and storm damage, as evidenced by the 2013 ice storm and more recently the May 21st, 2022 wind storm. In many cases, the effects of these storms continue well after the storm has passed. Broken and weakened trees and tree limbs continue to pose a threat to overhead lines until the next tree pruning date. From a financial perspective, planned vegetation management is expected to reduce reactive expenditures from corrective and emergency responses.

In addition to system reliability and financial risks, vegetation management serves to mitigate safety risks, including as a result of trees and vegetation that grows or is blown into power lines. This vegetation can become energized, and in certain situations, can cause fires or step and touch potential risks to the general public. Another safety risk stems from branches or trees that bring energized conductors to the ground when they fall, which pose significant safety hazards to the public. Vegetation management is expected to mitigate these risks.

Under the City's Strategic Forest Management Plan, the City's tree canopy cover is expected to grow from 28 percent to 40 percent. The outcome of this initiative is evident from Toronto Hydro's Vegetation Management program (see Figure 16), where the number of trees trimmed for the same feeders has increased by approximately 61 percent from 2018 to 2022. The growing tree canopy will only increase the need for a robust Vegetation Management program in order to maintain tree growth and mitigate the risk of tree contacts with overhead distribution lines.

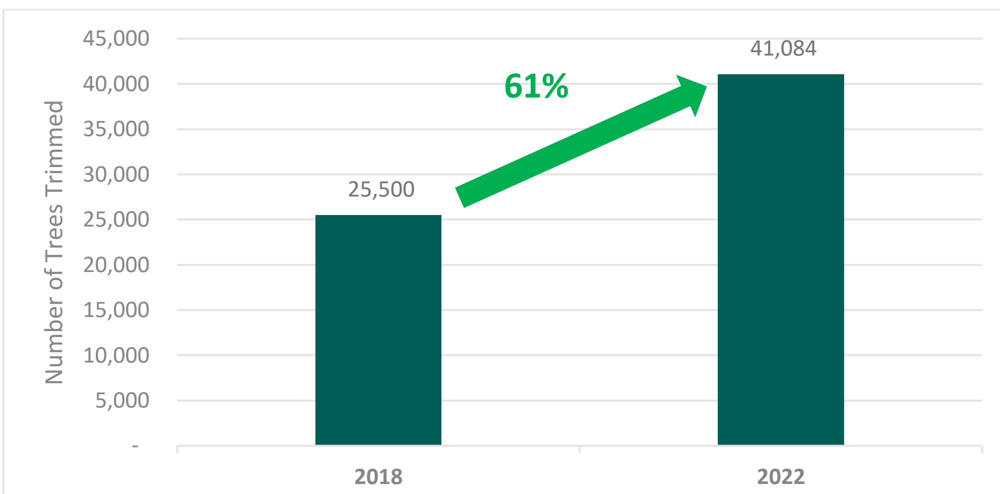


Figure 16: Tree count for feeders trimmed in 2018 versus the same feeders trimmed in 2022

Toronto Hydro is piloting multiple technologies, such as LiDAR and satellite imagery to assess vegetation encroachment near overhead primary conductors. The objectives of these pilots is to reduce vegetation-related outages by adopting a data and condition-based approach for feeder-based tree trimming.

7.2 Vegetation Management Segment Costs

Table 6 below provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for this segment.

Table 6: Vegetation Management Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Vegetation Management	2.8	3.4	3.5	3.5	3.8	4.0	4.1	4.2	4.3	4.4

7.3 Vegetation Management Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

Expenditures increased by approximately $0.6 million from 2020 to 2021, which was primarily attributed to an increase in the number of kilometers of feeder trimmed.

2021 – 2022 Variance Explanation

Expenditures increased by approximately $0.1 million from 2021 to 2022, which was primarily attributed to an increase in the number of kilometers of feeder trimmed.

2022 – 2025 Variance Explanation

Between 2022 and 2025, expenditures are expected to increase by approximately $0.5 million, or an average of $0.2 million per year, primariliy due to inflationary pressures.

2025 – 2029 Variance Explanation

Between 2025 and 2029, expenditures are forecast to increase by $0.4 million, or an average of $0.1 million per year, due to inflationary pressures. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks, including:

- Reliability risks from interruptions caused by overgrown trees;
- Extreme weather related risks due to inability to storm harden the system by reducing likelihood that broken branches will make contact with lines during high winds;
- Safety risks due to branch contacts with lines causing branches to become energized, potentially causing fires and step and touch potential risks; and
- Financial risks due to increased spending on corrective or emergency responses.

8. METERING SERVICES SEGMENT

8.1 Segment Description

Toronto Hydro and its customers rely on metering equipment to accurately measure and provide on a timely basis electricity consumption information for customer billing and market settlement purposes. The Metering Services segment is responsible for maintaining this equipment to ensure proper functionality and compliance with applicable legislative and regulatory requirements.

Toronto Hydro's metering assets include both meters and the communication systems that enable meter data collection and tracking. The maintenance of metering equipment is critical to ensuring the ongoing accuracy of meter reads and the associated billing and settlement data. Moreover, meter testing is a requirement under the *Electricity and Gas*

Inspection Act administered by Measurement Canada. [14] Metering Services maintains Toronto Hydro's 798,000 smart and suite meters and 222 wholesale meter installations, examples of which are illustrated in Figures 17 and 18 below.

Figure 17: Smart Meter Installation at Customer Location.

Figure 18: Wholesale Meter Installation at Transformer Station.

Metering Services activities consist of three major functional categories: (i) Meter Sampling & Testing; (ii) Wholesale Meter Maintenance; and (iii) Field Response.

8.1.1 Meter Sampling and Testing

Toronto Hydro is required to comply with the metering requirements set out in and pursuant to legislation administered by Measurement Canada, which requires that all meters must be resealed at specific intervals in order to ensure that customers' electricity use is metered accurately. The Toronto Hydro meter sampling and testing program verifies the accuracy of meters, ensuring compliance with applicable requirements under the *Electricity and Gas Inspection Act* and the *Weights and Measures Act.*[15] These statutes

[14] *Supra* note 2.
[15] *Supra* note 2 and 3.

permit the use of meters for a set period of time, also referred to as a "seal period", before they must be either tested (i.e. re-verified) or replaced. For smart meters, this time span is typically ten years. When meters are tested and re-verified for accuracy, the seal period is extended.

For meter testing purposes, Measurement Canada permits utilities to form isolation lots (i.e. groups of meters with homogeneous meter characteristics), and test only a small number (called the sample group) from the isolation lot. Typically, 2-5 percent of randomly selected meters from each isolation lot form the sample group. For smaller homogeneous lots, the sampling rate could be as high as 50 percent. These sampling rates are allowed given the large number of meters in-service. The number of meters to be tested is determined in accordance with Measurement Canada's specification S-S-06, *Sampling Plans for the Inspection of Isolated Lots of Meters in Service*.[16] The seal period of the isolation lot of meters can be extended if the accuracy statistics for the sample group meet tolerances stipulated in Measurement Canada's specification. Some unique meters do not belong to any isolation lot and must be removed from service and tested individually before their seal periods expire. Table 7 lists the number of meters with a seal period that will expire during the 2025-2029 rate period. It also lists the number of meters that will need to be sampled or re-verified so as to comply with Measurement Canada's requirements. The sampling units accounts for meters that will be replaced through capital investments in the Metering program, including through Toronto Hydro's Advanced Metering Infrastructure ("AMI") 2.0 initiative.[17]

[16] See Annex C, Table 2, Limiting Quality 3.15.
[17] Exhibit 2B, Section E5.4.

Table 7: Number of Seal Expiring Meters in 2025-2029 and Sampling Units

Year	Seal-Expiring Meters	Sampling/Re-verification units
2025	196,127	10,464
2026	155,463	13,201
2027	70,968	14,783
2028	68,151	15,396
2029	28,242	11,311
Total	**518,951**	**65,155**

In conducting meter testing, Toronto Hydro relies on field crews to remove meters that are part of a sample group and return them to Toronto Hydro's accredited service provider for testing. Test results are forwarded to Toronto Hydro for documentation and further actions based on the test results. A pass will result in an update to the meter records and the extension of seal periods, based on the tested accuracy levels. For the utility's smart meters with a ten-year initial seal period, provided the meters pass testing, the seals will be extended for all of the meters within the group by an additional eight years.

8.1.2 Wholesale Meter Maintenance

Wholesale meters, including instrument transformers, are installed at transmission grid supply points to measure electricity supplied from Hydro One Networks Inc. ("Hydro One") to Toronto Hydro. Wholesale meter maintenance involves re-verifying (i.e. testing every eight years) and troubleshooting wholesale meters, and ensuring compliance with all applicable regulations, such as the requirement to notify the Independent Electricity System Operator ("IESO") of Meter Trouble Reports within 48 hours pursuant to the IESO's Market Rules and Market Manual.

Meter Trouble Reports are issued if there is any failure in data communication or if the data is suspected to contain errors. Data communication failures can arise from issues with Toronto Hydro's wireless 4G private network, the meter itself, or the modem. If such a failure occurs, Toronto Hydro attempts to resolve the issue remotely. If remote resolution is unsuccessful, Toronto Hydro deploys field crews to the site of the particular wholesale meter to address the issue directly.

8.1.3 Field Response

The third category of activities within Metering Services is Field Response, which includes activities such as:

- Testing the accuracy of large user meter installations;
- Converting legacy flat rate services (e.g. Water heaters) into metered activities; and
- Installing reused meters following accuracy testing.

Toronto Hydro's 691,000 smart meters have a failure rate of 0.9 percent (i.e. approximately 6,200 units annually). Toronto Hydro's 94,000 suite meters have a failure rate of 2 percent (i.e. approximately 1,700 annually). The majority of the failures are related to: (i) the use of radio frequency mesh technology for smart meters; (ii) powerline carrier for suite meters, to deliver the meter reading data back to Toronto Hydro's centralized meter reading software and (iii) hardware failure of suite meters. As failures occur, staff and field crews must investigate failure causes and restore communications in a timely manner, as well as perform on-site interval energy data downloads to maintain time sensitive billing (time-of-use).

Overall, a significant portion of the work undertaken by Metering Services is not discretionary because it is either driven by statutory or regulatory obligations, or a need to resolve a meter issue in the field on a reactive basis.

8.2 Metering Services Segment Costs

Table 8 below provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for this segment.

Table 8: Metering Services Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Metering Services	1.1	0.7	0.4	1.6	1.8	1.9	1.9	2.0	1.7	1.5

8.3 Metering Services Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

Expenditures decreased by approximately $0.4 million from 2020 to 2021, primarily due to obsolete meter models that could not be reused and therefore were not sampled or reverified.

2021 – 2022 Variance Explanation

Expenditures decreased by approximately $0.3 million from 2021 to 2022, mainly due to lower maintenance activities for transformer station metering and reduced number of reused meter changes as obsolete meter models were being replaced with new meters.

2022 – 2025 Variance Explanation

Between 2022 and 2025, expenditures are expected to increase by $1.5 million, or an average of $0.5 million per year, primarily due to higher volumes of suite maintenance activities and meter testing and resealing and operational costs related to Toronto Hydro's AMI 2.0 initiative.

2025 – 2029 Variance Explanation

Between 2025-2029, expenditures are forecast to decrease by $0.4 million, or an average of $0.1 million per year, primarily due to lower meter sampling costs and reduced operational costs. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks, including:

- Reduced ability to comply with applicable legislative and regulatory requirements such as Measurement Canada's metering requirement; and
- Worsening customer service performance due to inaccurate or delayed billing of customers based on usage.

PREVENTATIVE AND PREDICTIVE UNDERGROUND LINE MAINTENANCE

1. OVERVIEW

Table 1: Preventative and Predictive Underground Line Maintenance Program Summary

Preventative and Predictive Underground Line Maintenance Program									
Outcomes: Operational Effectiveness - Reliability, Environment, and Operational Effectiveness – Safety									
Segments: • Below-Grade Equipment Maintenance • Padmounted Equipment Maintenance • Cable Diagnostic Testing • Contact Voltage Scanning									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
5.1	4.4	5.7	6.3	6.1	6.8	7.0	6.7	7.1	7.0

The Preventative and Predictive Underground Line Maintenance program (the "Program") funds maintenance activities on Toronto Hydro's underground assets. This Program involves inspection and maintenance tasks typically conducted on a fixed cycle and inspection of equipment for predetermined conditions indicative of a potential failure. The activities comprising the individual segments in this Program are focused on preserving and maximizing the performance of assets over their expected useful life while mitigating a wide variety of system risks. This Program is also designed to minimize overall costs and account for other factors such as the safety of Toronto Hydro's work crew and the public, and statutory and regulatory requirements.[1] The Preventative and Predictive Underground Line Maintenance program is comprised of the following four segments:

[1] *Distribution System Code*, Appendix C (August 2, 2023).

- **Below-Grade Equipment Maintenance:** this segment includes the periodic inspection and maintenance of all underground vaults such as network vaults, compact radial distribution ("CRD") vaults, underground residential distribution ("URD") vaults, submersible vaults, cable chambers, and equipment housed within them.
- **Padmounted Equipment Maintenance:** this segment includes the periodic inspection of padmounted equipment (e.g. transformers, switches), which form part of Toronto Hydro's underground distribution system.
- **Cable Diagnostic Testing:** this segment involves performing diagnostic testing on cables installed in Toronto Hydro's underground system to provide a more accurate assessment of the condition of underground cables, splices, joints, and terminations.
- **Contact Voltage Scanning**: this segment addresses includes the periodic scanning of Toronto Hydro's distribution system for contact voltage, which results from an unintentional connections between structures or surfaces (e.g. bus shelters, surfaces above buried distribution equipment) and Toronto Hydro's distribution system. The main activity in this segment involves using vehicle mounted mobile scanning tools to scan for stray voltages from electrical connections and terminations that potentially energize poles, bus shelters etc., due to exposure to weather elements, thereby creating public safety hazards.

By preserving and maximizing the performance of underground assets, and reducing risks associated with its operation, this Program contributes to maintaining safety, environmental responsibility, and overall system reliability at a reasonable cost to Toronto Hydro's customers.

2. OUTCOMES AND MEASURES

Table 2: Preventative and Predictive Underground Line Maintenance Program Outcomes and Measures Summary

Operational Effectiveness - Reliability	• Contribute to maintaining existing levels of system reliability – as measured by performance metrics like SAIDI, SAIFI, Customers Interrupted (“CI”), and Customer Hours Interrupted (“CHI”) – through the effective inspection and maintenance of underground assets for deficiencies in compliance with the Ontario Energy Board’s (“OEB”) Distribution Systems Code (“DSC”).
Environment	• Contribute to reducing the environmental impact of Toronto Hydro’s distribution system by proactively identifying transformers exhibiting signs of oil deficiencies or padmounted switches leaking SF_6 gas for replacement, thereby reducing the likelihood of these contaminants from entering the environment.[2]
Operational Effectiveness - Safety	• Contribute to Toronto Hydro’s safety objectives (including compliance with Ontario Regulation 22/04, and safety performance as measured through the Serious Electrical Incidents Index) by:[3] ○ minimizing public exposure to contact voltage by finding and eliminating energized (4.5 volts or greater) surfaces and structures on Toronto Hydro’s distribution system; and ○ minimizing exposure to blown cable chamber lid incidents through prompt identification and resolution of failing cables that can result in electrical faults leading to these incidents.

3. PROGRAM DESCRIPTION

The Preventative and Predictive Underground Line Maintenance program funds maintenance activities on Toronto Hydro’s underground assets. This Program involves inspection and maintenance tasks typically conducted on a fixed cycle and inspection of equipment for predetermined conditions indicative of a potential failure. The activities comprising the individual segments in this Program are focused on preserving and

[2] Approximately 600 oil deficiencies (e.g. leaking underground transformers) were found and reported between 2020 and 2022.
[3] Ontario Regulation 22/04: Distribution System Safety, under *Electricity Act,* SO 1998, Ch 15, Schedule A.

maximizing an the performance of assets over their expected useful life while mitigating a wide variety of system risks. Tasks in this Program are also designed to minimize overall costs and account for factors such as the safety of Toronto Hydro crews and the public, and statutory and regulatory requirements.

Maintenance activities include vault and cable chamber inspections to assess the condition of civil structures and the equipment housed inside (e.g. transformers, switches, and cables), inspections of padmounted transformers and switches; cable diagnostic testing for underground cables; and contact voltage scanning for stray voltages across the distribution system.

- **Below-Grade Equipment Maintenance:** this segment funds the periodic inspection and maintenance of all underground vaults such as network vaults, compact radial distribution ("CRD") vaults, underground residential distribution ("URD") vaults, submersible vaults, cable chambers, and equipment housed within them.
- **Padmounted Equipment Maintenance:** this segment funds the periodic inspections of padmounted equipment (e.g. transformers, switches).
- **Cable Diagnostic Testing:** this segment funds the diagnostic testing on cables installed in Toronto Hydro's underground system to provide a more accurate assessment of the condition of underground cables, splices, joints, and terminations.
- **Contact Voltage Scanning:** this segment funds the periodic scanning of Toronto Hydro's distribution system for contact voltage, which results from an unintentional connections between structures or surfaces (e.g. bus shelters, surfaces above buried distribution equipment etc.) and Toronto Hydro's distribution system. The main activity in this segment is the use of vehicle

mounted mobile scanning tools to scan for stray voltages from electrical connections and terminations that potentially energize poles, bus shelters etc. due to exposure to weather elements, thereby creating public safety hazards.

4. PROGRAM COSTS

In 2025, Toronto Hydro requires $6.8 million in rate funding for the Preventative and Predictive Underground Line Maintenance program, which represents an increase of $1.7 million over the previous rate period in 2020.

Over the 2025-2029 rate period, the utility expects the cost of this program to increase by a compounded annual growth rate of 1.1 percent, which is necessary to address underground line maintenance needs and deliver the customer outcomes enabled by this program.

The Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for each segment are summarized in Table 3 below.

Table 3: Preventative and Predictive Underground Line Maintenance Program Expenditures by Segment ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Below-Grade Equipment Maintenance	2.5	2.9	3.0	3.5	3.2	3.5	3.6	3.3	3.5	3.5
Padmounted Equipment Maintenance	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6
Cable Diagnostic Testing	-	0.3	0.4	0.6	0.6	0.7	0.8	0.8	0.8	0.8
Contact Voltage Scanning	2.0	0.7	1.8	1.7	1.8	2.0	2.0	2.0	2.2	2.1
Total	**5.1**	**4.4**	**5.7**	**6.3**	**6.1**	**6.8**	**7.0**	**6.7**	**7.1**	**7.0**

4.1 Cost Drivers

Cost variances are partly attributed to varying numbers of units scheduled for inspections each year based on their inspection cycle. For example, in the Below–Grade Equipment Maintenance segment, the number of submersible vaults due for maintenance increased from 2,500 locations in 2021 to 3,244 locations in 2022 (an increase of 30 percent). Similarly, in the Padmounted Equipment Maintenance segment, Toronto Hydro inspected more padmounted transformers, from 2,157 units in 2021 to 2,422 units in 2022. In the Cable Diagnostic Testing segment, costs are increasing as this is a relatively new segment and testing is steadily ramping up.

4.2 Cost Control and Productivity Measures

4.2.1 Cost Management

Toronto Hydro continually looks to optimize its work coordination process. For example, Toronto Hydro's Cable Diagnostic Testing program in the downtown core aims to coordinate testing with station maintenance cycles. As the program matures, multiple feeders will be able to be coordinated at the same station for testing to eliminate the need for additional outages and site visits, thereby reducing costs.

As of 2027, Toronto Hydro's network vaults will have sensors providing remote monitoring and control through the Network Condition Monitoring and Control ("NCMC") program.[4] Network monitoring will complement the inspections of network vaults and will reduce the number of on-site inspections required, yielding costs savings from the adjustment of maintenance cycles for the civil structure of network vaults from 6 months to 1 year.

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[4] Exhibit 2B, Section E7.3.

For the Contact Voltage segment, Toronto Hydro adjusted the inspection cycle to be performed on a per ward basis, implementing risk-based maintenance principles. Instead of scanning the entire city on an annual basis, only wards deemed to be higher risk are scanned each year. The remaining lower risk wards, i.e. those located outside of downtown and with fewer historical voltage contact hits, are scanned every three years. This change has yielded direct cost savings from the reduction in overall scanning activity each year.

4.2.2 Productivity

Toronto Hydro has placed significant emphasis on achieving greater output for the same or reduced input in each of the segments within the Preventative and Predictive Underground Line Maintenance program. Toronto Hydro continues to rely on its Reliability Centered Maintenance ("RCM") approach, pursuant to which it adjusts maintenance tasks and frequencies based on RCM and Condition-Based Maintenance ("CBM") principles. Examples of these adjustments include:

- Continuously updating inspection forms and implementing CBM to allow for the capturing of greater details about substandard conditions or deficiencies found during inspections. These updates enable better prioritization and determination of the most appropriate corrective action for each deficiency to better mitigate public and employee safety, as well as environmental, system reliability, and financial risks.
- Standardizing the scheduling of outage-based activities to align with station maintenance cycles wherever possible to minimize the need for multiple outages (and significant switching resources), enable bundling of maintenance work, and minimize the need for multiple trips to particular sites.

- Implementing "find and fix" protocols whereby crews that identify minor asset deficiencies also address the deficiencies on site (through actions such as lubricating components, replacing faulted circuit indicators, replacing sump pumps, clearing drains, caulking ducts and roof slabs, and replacing defective locks, hinges or handles) as opposed to only logging the deficiencies for the Corrective Maintenance program.
- Introducing new tools or making greater use of technology such as 3D imaging and modelling of underground structures, Cable Diagnostic Testing, Contact Voltage Scanning, Infrared Thermography, Electronic Maintenance Sheets, and Online Partial Discharge Testing.
- Improve the method of selecting assets for inspections through the adoption of CBM principles based on an asset's health and condition history.

The following sections describe and discuss the drivers of each of the segments within the Preventative and Predictive Underground Line Maintenance program.

5. BELOW-GRADE EQUIPMENT MAINTENANCE SEGMENT

5.1 Segment Description

This segment covers the inspection and maintenance of underground vaults and cable chambers and the equipment housed within them. These below-grade structures are constructed out of concrete or reinforced or un-reinforced concrete and house transformers, switches, cables, and other electrical distribution equipment. Inspections and maintenance activities are conducted on various types of below-grade structures including network vaults, compact radial distribution ("CRD") vaults, underground residential distribution ("URD") vaults, submersible vaults, and cable chambers.

Constructed in the 1950s and 1960s, network vaults are primarily located in the downtown core of Toronto. These vaults are the largest of the below-grade structures, and house interconnected electrical equipment used for the secondary network system that provides reliable supply to large and critical customers in the city's dense downtown core. The four main electrical components within network vaults are: (i) primary switches, which isolate supply to transformers; (ii) transformers; (iii) network protectors, which open when reverse power flow is sensed, preventing the secondary grid from feeding a primary side fault; and (iv) fuse panels, which protect the cables feeding the secondary grid. The transformer and the network protector are referred to as a network unit, an example of which is illustrated in Figure 1. Toronto Hydro has over 1,040 network vaults and 1,700 network units that require inspection and maintenance.

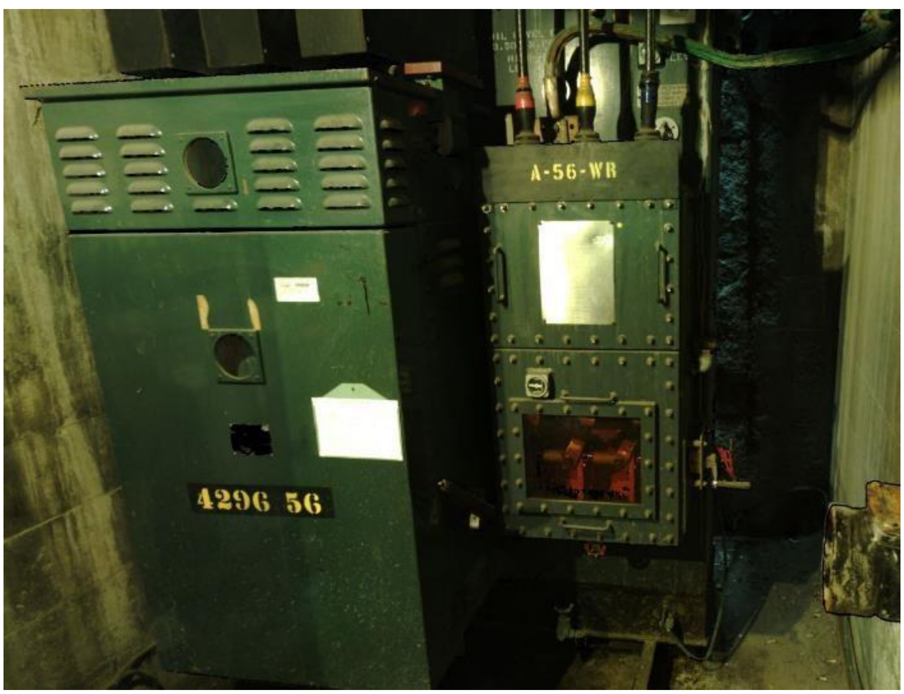

Figure 1: A Network Unit

The civil structures of network vaults is are currently inspected on a six-month cycle and the electrical assets are inspected annually. Beginning in 2027, the inspection cycle for the civil structures of network vaults will be adjusted from six months to annual. This extended cycle is appropriate because all network vaults will be equipped with sensors installed as part of the NCMC program. The NCMC program is expected to complement the network inspections by providing remote monitoring and control for the network distribution system. The real-time remote sensing capabilities will provide live operating data for parameters such as temperature and water level within the vault, network transformer oil temperature and oil levels, and network protector operation status, as well as water levels inside the protector. With the implementation of NCMC across the network distribution system, the real-time condition and loading data will allow Toronto Hydro to proactively monitor operating conditions and effectively respond and proactively address any potential hazards that are detected. Network protectors are also inspected, cleaned, and functionally tested to ensure operability on a four-year cycle for high voltage protectors, and a five-year cycle for low voltage protectors.

Toronto Hydro's CRD and URD systems were constructed in the early 1990s and 2000s, respectively. CRD vaults were designed to be a cheaper lower-cost alternative to network vaults because of their simpler design, and are typically used to supply small retail, apartment, and commercial office buildings. URD vaults were built for 4 kV to 13.8 kV conversion projects and are primarily used to power small residential or commercial buildings. Toronto Hydro has a total of 780 CRD and URD vaults, which are inspected annually.

Submersible vaults are small civil structures installed on public road allowances, or private properties, and are used for residential distribution. These vaults contain submersible transformers,[5] switches, loop-through primary conductors, and secondary circuits. The

[5] Submersible transformers are designed to function submerged under water for extended periods (but not indefinitely), although Toronto Hydro aims to keep water out of the submersible vaults through inspections.

vaults are sized to accommodate a transformer and secondary connections only. The over 8,700 submersible transformer vaults in Toronto Hydro's distribution system are inspected on a three-year cycle. Figure 2 illustrates a submersible vault.

Figure 2: Submersible Vault

Cable chambers are civil structures are typically installed on public road allowances, and contain primary and secondary cables, cable splices, and in many cases, third party installations such as Toronto Transit Commission ("TTC") power cables, television cables, and phone lines. Located along the routes of underground feeders, cable chambers facilitate cable installation in underground ducts. Toronto Hydro has over 11,400 cable chambers that are inspected on a ten-year maintenance cycle. Beginning in 2025, Toronto Hydro will be implementing condition-based maintenance for cable chambers in poor condition as well as locations found to have deficiencies reported from Cable Diagnostic Testing.

The Below-Grade Equipment Maintenance segment includes, for all types of vaults or chambers, visual inspections of the civil infrastructure and electrical equipment, thermographic scans, partial discharge testing, drainage, and sump pump tests.

The inspection cycles in this segment are designed to meet or exceed mandated cycles specified by the OEB's Minimum Inspection Requirements (Appendix C to the Distribution System Code).[6]

The useful life of below-grade structures (including all types of vaults described above and cable chambers) is 60-65 years. The roofs of those structures however are expected to last for only 25 years, due to greater exposure to the environment and dynamic loads such as pedestrian and vehicular traffic. The equipment housed within below-grade structures is expected to have an average life between 30 and 40 years depending on the type of equipment.

The ages of Toronto Hydro's vaults vary from the relatively new URD and CRD vaults to the older network vaults in the downtown areas of the city. Over 28 percent of all network vaults will reach the end of their expected life within the next ten years, and the vast majority of network vault roofs are already beyond their useful life. In addition, over 55 percent of cable chamber roofs are past their useful life.

As below-grade structures age, the greatest concern becomes structural strength. Structural deficiencies affecting vaults include degradation of concrete and corrosion of supports such as beams and rebar. Once degradation and corrosion set in, conditions can deteriorate rapidly and in many cases from one season to the next. Of particular concern

[6] *Supra* note 1.

is the winter season when moisture and water (often containing road salt) enter below-grade structures and freeze and thaw. Figures 3 and 4 depict structural deficiencies that are common in older vaults.

Figure 3: Crumbling Vault Roof with Exposed Rebar

Figure 4: Corroded I-Beams

Below-Grade Equipment Maintenance mitigates the risks that the deterioration of civil and electrical assets poses, including public and employee safety, financial, environmental, and system reliability risks. Toronto Hydro mitigates these risks by identifying deficiencies in below-grade structures before they cause a failure. As illustrated in Figure 5 below, Toronto Hydro has identified on average over 25,000 deficiencies each year between 2020 and 2022. This is an increase over the average number of deficiencies found in the distribution system over 2015-2017 (approximately 12,000 deficiencies per year), which is partly attributed to enhancements made to inspection forms in order to capture greater details and enable more informed decision-making on follow-up actions and the inclusion of deficiencies that are repaired during inspection.[7] Toronto Hydro reviews these deficiencies to determine appropriate correction actions, and those that require corrective actions are addressed under the Corrective Maintenance and Reactive and Corrective Capital programs.[8][9]

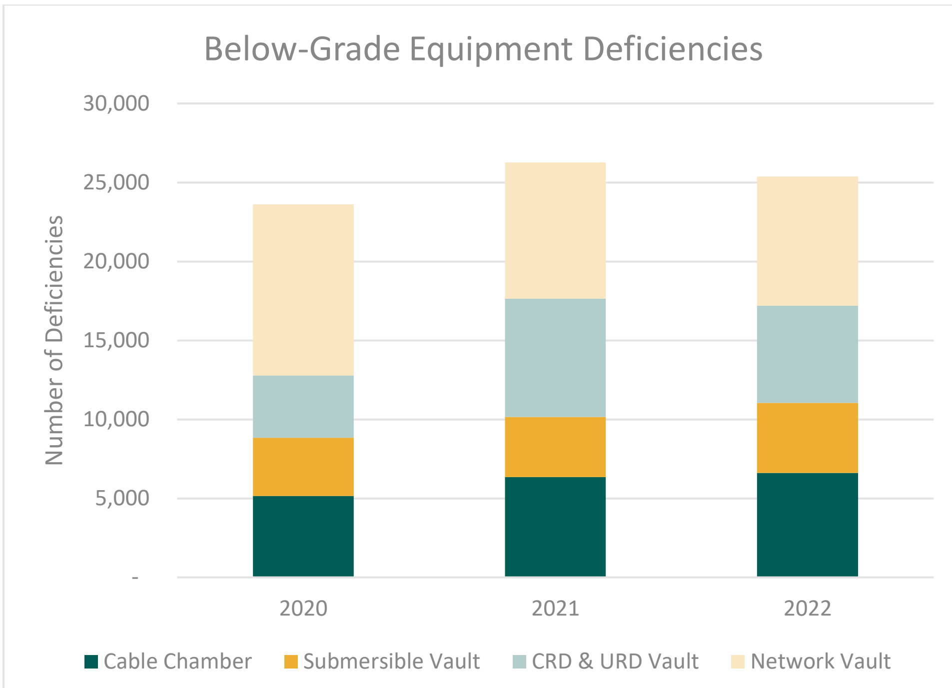

Figure 5: Below-Grade Equipment Deficiencies Identified Between 2020 and 2022

Below-grade structures are typically installed underneath roadways, pedestrian walkways and in residential neighbourhoods. Given their locations, it is important to identify and correct structural defects and potential failures proactively to mitigate potential safety risks to the public, such as trip hazards due to uneven elevation grading.

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[7] The average annual deficiencies for 2015-2017 did not include deficiencies fixed during inspections, which accounted for approximately 3,600 deficiencies per year over 2020-2025.
[8] Exhibit 4, Tab 2, Schedule 4
[9] Exhibit 2B, Section E6.7

In addition to the importance of their structural integrity, vaults must be maintained in a relatively clean state, and contain appropriate nomenclature, functional lighting, and drainage systems. Oil barrier devices installed in vault drains are also inspected and replaced as required. Vaults are naturally ventilated using grates to ensure uninterrupted ventilation. However, debris can enter over time, and, if not addressed, create slip and fall hazards for employees.

From a financial risk perspective, inspections and maintenance mitigate the risk of costly failures. For example, identifying a vault with significant dirt and debris (such as the one depicted in Figure 6) enables corrective action to be taken and reduces the risk that the debris will catalyse asset corrosion as shown in Figure 7, or potentially result in an arc flash or fire.

Figure 6: Vault Full of Dirt and Debris

Figure 7: Corrosion on Top of a Transformer

When equipment failures occur, emergency response and equipment replacement can result in tens of thousands or even hundreds of thousands of dollars in costly repairs costs. For example, a network transformer emergency replacement can cost in excess of $180,000, which is approximately 1.4 times the cost of a planned replacement, and a structural rebuild of a vault can exceed $500,000. These expenditures can be mitigated through proactive maintenance activities.

In addition to safety and financial risks, below-grade equipment maintenance mitigates environmental risks. For example, inspections enable the early identification of corroded equipment before an oil leak develops, potentially washing into the drainage system, which could result in regulatory penalties and environmental restoration costs. Figure 8 below depicts an oil leak within a vault. This type of deficiency is addressed by cleaning activities, as shown in Figure 9.

Figure 8: Oil Leaking from a Transformer Base Inside a vault

Figure 9: Crews Cleaning a Vault that had a Transformer Oil Leak

In addition to the value provided by mitigating the aforementioned safety, financial, and environmental risks, below-grade equipment maintenance provides value to customers by mitigating system reliability risks associated with civil infrastructure or electrical equipment failures. Between 2020 and 2022, the distribution system experienced approximately 50 incidents of below-grade equipment failures annually, which resulted in more than 46,000 customer interruptions and 39,000 customer hours of interruption annually.

Between 2020 and 2022, Toronto Hydro experienced an average of almost 6 incidents of cable chamber lid ejections annually as a result of failing cables within the cable chambers igniting gases and creating a shock wave.[10] Failures also occured in CRD, URD, and submersible vaults, where Toronto Hydro replaced over 300 defective or failed submersible transformers over the 2020-2022 period. These failures pose system reliability risks (e.g. interruptions to tens and even hundreds of customers).

The risk of equipment failure and the related system reliability risks are not only mitigated through routine visual inspections, but also by thermographic scanning. Thermographic or infrared scanning identifies thermal anomalies in the target equipment, and is an effective predictor of equipment failure. Figure 10 below shows an example of a thermographic photograph of cable splices inside a cable chamber. The deficiency, as evidenced by an 80°C increase in temperature on one of the splices, is not visually evident (see picture on the left), but is easily identified using the infrared image (see picture on the right) so it can be corrected before failure.

[10] Exhibit 2B, Section E6.3.

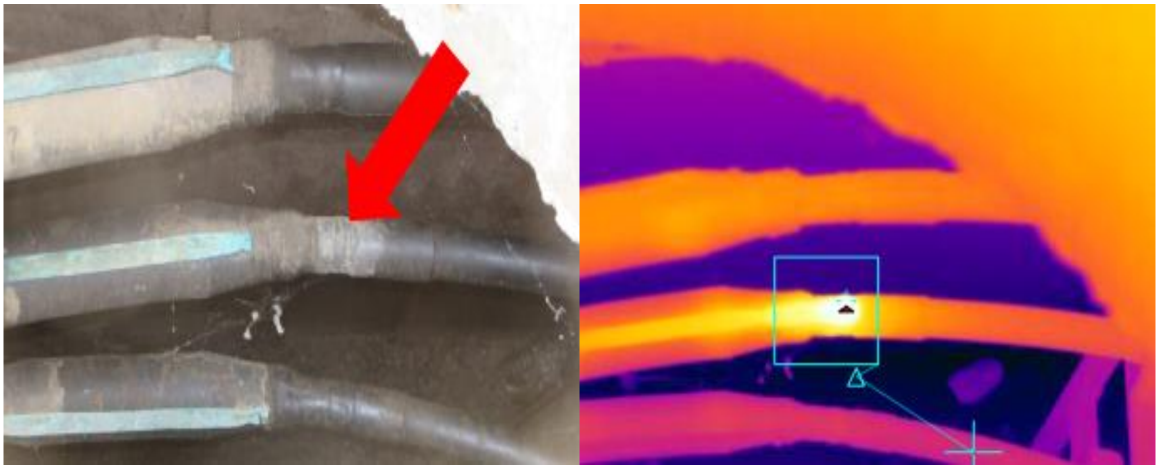

Figure 10: Cables Inside a Cable Chamber (Left) with an Infrared Thermography Image of the Same Cables Denoting a Hot Spot (Right)

5.2 Below-Grade Equipment Maintenance Segment Costs

Table 4 provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for this segment.

Table 4: Below-Grade Equipment Maintenance Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Below-Grade Equipment Maintenance	2.5	2.9	3.0	3.5	3.2	3.5	3.6	3.3	3.5	3.5

5.3 Below-Grade Equipment Maintenance Segment Year-over-Year Variance Analysis

2020-2021 Variance Explanation

From 2020 to 2021, expenditures increased by approximately $0.4 million, which was primarily due to an increase in the number of network protectors overhauled as well as an increase in the number of cable chambers inspected in order to reduce a backlog of overdue units.

<u>2021-2022 Variance Explanation</u>

From 2021 to 2022, expenditures increased by approximate $0.1 million which was primarily attributed to an increase in the number of network protector overhauls and an increase in the number of submersible transformer vaults due for inspection.

<u>2022-2025 Variance Explanation</u>

Between 2022 to 2025, expenditures are forecasted to increase by approximately $0.5 million, or an average of $0.2 million per year, due to:

- an increase in the number of network protectors scheduled for overhauls; and
- an increase in the total number of vaults due for inspection.

<u>2025-2029 Variance Explanation</u>

Between 2025 and 2029, costs in this segment are not expected to materially change as inflationary pressures are offset by a reduced number of network vault inspections. Year-to-year fluctuations are due to varying numbers of submersible, CRD, and URD vaults due for inspection. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks, including:

- Compliance risks associated with statutory and regulatory requirements.[1]
- Implementation risks, such as the inability to carry out the cyclical inspections necessary to maintain assets and prevent the below risks;
- Failure risks, such as increased numbers of failures and associated outages on the system due to a reduction in below-grade asset inspections and maintenance;
- Public and employee safety risks, such as the inability to mitigate exposure to blown cable chamber lid incidents due to the lack of prompt identification and resolution of failing cables that can result in electrical faults leading to these incidents;

- Financial risks, such as the inability to mitigate failures and the costs associated with emergency response and equipment replacement; and
- Environmental risks, such as the inability to prevent or mitigate the release of underground transformer oil into the environment.

6. PADMOUNTED EQUIPMENT MAINTENANCE SEGMENT

6.1 Segment Description

Padmounted transformers and switches (collectively referred to as "padmounted equipment") are metal-clad enclosures with lockable cabinet doors located on top of concrete pads within road allowances or on private properties. These assets are found on the underground distribution system where cables enter underground equipment through the pad. Padmounted transformers (see Figure 11) supply residential areas or commercial buildings and padmounted switches (see Figure 12) enable the sectionalizing of underground feeders. Toronto Hydro owns approximately 8,200 padmounted transformers and 1,280 padmounted switches.

Figure 11: Padmounted Transformer

Figure 12: Padmounted SF6-Insulated Switch

This segment also funds annual inspections for concrete tap box locations that are located in high traffic pedestrian zones along Yonge Street. These tap boxes may contain both primary and secondary circuits along with their associated connectors and splices. They are located within the public road allowance in the sidewalks, boulevards, and roadways. As a result, they are exposed to several external elements such as road snow and sidewalk plows which can cause damage to these structures, posing potential safety hazards to the public.

Padmounted Equipment Maintenance includes: visual inspection of pads and protective bollards for damage or deterioration; visual inspection of the elevation of the pad in relation to the grade; removal of overgrown vegetation that may be encroaching on the pad; and a visual inspection and verification of equipment labels and safety signs. Visual inspections focus on both the mechanical components (e.g. doors, locks, hinges, handles, latches, and paint) and electrical components (e.g. terminations, bushings, elbow connectors, transformer tank, primary and secondary switches, fuses, disconnects, barriers, fault indicators, relays, oil levels). In addition, maintenance includes thermographic scans and partial discharge testing of electrical connections.

The following additional maintenance activities are carried out for padmounted switches:

- Batteries in SCADA switches are replaced once every three years;
- Gas levels are verified on units that are filled with SF_6 gas;
- Cable duct entries are inspected to ensure they are sealed, and ultrasonic testing is conducted to identify any partial discharge; and

- Air-insulated switches that have significant dirt build-up on their insulators, show evidence of tracking, or have exposed electrical terminations, are scheduled for CO_2 cleaning.

CO_2 cleaning is performed as part of the Corrective Maintenance program, to remove dirt and other contaminants from the switch to prevent tracking, which can lead to an arc flash and equipment failure. [11]

Toronto Hydro carries out the above noted activities on a three-year cycle for padmounted transformers and annually for padmounted switches. Regular maintenance cycles ensure Toronto Hydro is able to comply with applicable inspection requirements and properly maintain padmounted equipment. [12]

The average useful life of padmounted transformers and switches are 30 and 40 years, respectively. As padmounted transformers and switches age, the likelihood of failure increases as a result of current surges, ingress of moisture, dirt, and salt leading to excessive corrosion, mechanical damage, and the degradation of insulating barriers for equipment.

As illustrated in Figure 13 below, Toronto Hydro's inspection activities identified over 4,000 padmounted equipment deficiencies per year on average between 2020 and 2022. Identifying those deficiencies that require corrective action and addressing them through the Corrective Maintenance and Reactive and Corrective Capital programs serve to

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[11] Exhibit 4, Tab 2, Schedule 4
[12] *Supra* note 1.

mitigates a wide variety of safety, environmental and system reliability risks, primarily in residential areas.[13][14]

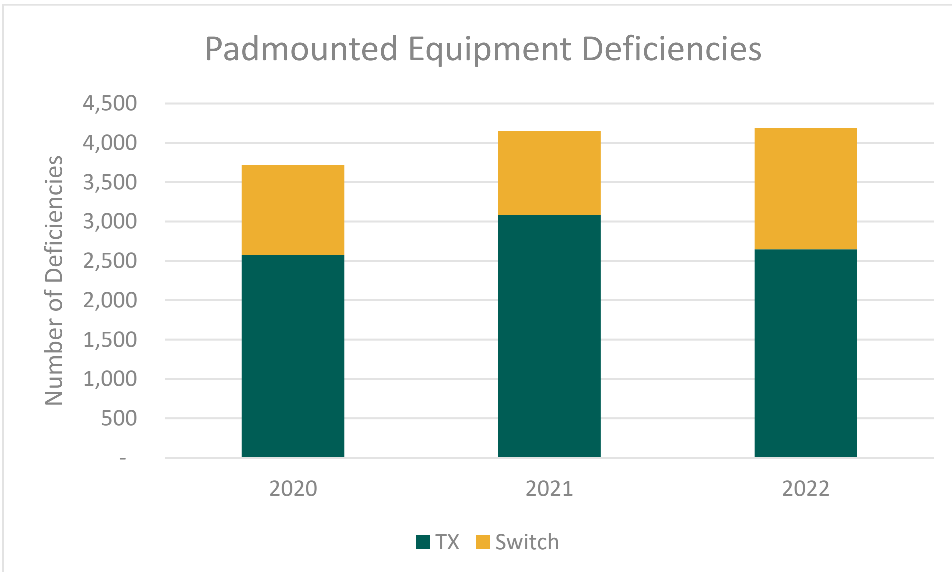

Figure 13: Padmounted Equipment Deficiencies Identified Between 2020 and 2022

An example of risk mitigation is promptly identifying a corroding enclosure as illustrated in Figure 14 below. If not identified and addressed, corrosion (which may also be present on internal components) can give rise to significant environmental, safety, and reliability risks. Through maintenance activities, Toronto Hydro also rectifies switches with rusted coil springs (as shown in Figure 15 below), which may break during activation and prevent the switch from opening and closing. If undetected, this condition can result in an arc flash and endanger employees operating the switch.

[13] Exhibit 4, Tab 2, Schedule 4
[14] Exhibit 2B, Section E6.7.

Figure 14: Padmounted Transformer with Surface Corrosion

Figure 15: Padmounted Switch with Rusted Coil Spring

Another example of risk mitigation is identifying and addressing excessive vegetation growth near equipment. If unaddressed, overgrown vegetation not only hinders access to the transformer during an emergency, but can also pose a safety and fire risk. Electricity can arc or flashover to nearby vegetation, even without physical contact. Figure 16 below illustrates an example of excessive vegetation growth.

Figure 16: Padmounted Transformer Requiring Vegetation Removal

Transformers also require maintenance where locks, hinges, or warning signage have been vandalized, broken, or removed. If unaddressed, these conditions can lead to serious safety-related incidents if someone inadvertently comes into contact with padmounted equipment.

Padmounted unit failures also impact Toronto Hydro's system reliability, potentially affecting anywhere from several residential and commercial customers (when a transformer fails), to hundreds of customers in the case of a switch failure. When a switch unit fails, multiple feeders can experience a power interruption, as switches often act as a tie point for multiple feeders. Maintenance activities are designed to mitigate the risk of such failures and ensure SCADA switches do not contain failed batteries that render switches inoperable remotely. Between 2020 and 2022, the distribution system experienced over 1,600 customer interruptions and 700 customer hours of interruption annually due to failures of padmounted equipment.

6.2 Padmounted Equipment Maintenance Segment Costs

Table 5 below provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for this segment.

Table 5: Padmounted Equipment Maintenance Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Padmounted Equipment Maintenance	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6

6.3 Padmounted Equipment Maintenance Segment Year-over-Year Variance Analysis

2020-2021 Variance Explanation

From 2020 to 2021, expenditures decreased by approximately $0.1 million which was primarily attributed to a decrease in the number of padmounted equipment inspected.

2021-2022 Variance Explanation

From 2021 to 2022, expenditures did not materially change.

2022-2025 Variance Explanation

Between 2022 and 2025, costs in this segment are expected to increase by approximately $0.1 million due to inflationary pressures.

2025-2029 Variance Explanation

Between 2025 and 2029, expenditures are not expected to materially change. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks, including:

- Compliance risks associated with statutory and regulatory requirements.[1]
- Implementation risks, such as the inability to carry out the cyclical inspections necessary to maintain padmounted equipment and prevent the below risks;
- Failure risks, such as increased numbers of failures and associated outages on the system due to a reduction in padmounted asset inspections and maintenance;
- Public and employee safety risks, such as the inability to mitigate safety hazards associated with padmounted equipment;
- Financial risks, such as the inability to mitigate costly failures; and
- Environmental risks, such as the inability to prevent or mitigate the release of SF_6 from leaking padmounted switches into the environment.

7. CABLE DIAGNOSTIC TESTING SEGMENT

7.1 Segment Description

Since 2015, Toronto Hydro has been performing diagnostic testing on select newly installed underground primary cables and cables at high risk locations (locations that exhibited underground faults based on reliability data). As of 2020, the utility has expanded this type of work into a dedicated maintenance program for performing diagnostic testing on cables installed in Toronto Hydro's underground system to provide a more accurate assessment of the condition of underground cables, splices, joints and terminations. Diagnostic testing is expected to support the delivery of more reliable service to customers, and allow more effective capital allocation by providing a stronger basis for informed underground project planning and prioritization.

Toronto Hydro intends to test all newly installed cables being commissioned as part of its regular practice. In addition, the utility plans to test high-risk feeders in the Downtown Core on a four-year cycle in alignment with downtown station maintenance cycles so as to minimize additional costs for outages and site visits. In addition, select subdivisions in the Horseshoe area will be chosen for testing to assist with making capital investment decisions with more condition-based data and to address areas with poor reliability.

The two most common types of cables installed in Toronto Hydro's underground system are Paper Insulated Lead-Covered ("PILC") and Cross-Linked Polyethylene ("XLPE"), as shown in Figure 17.

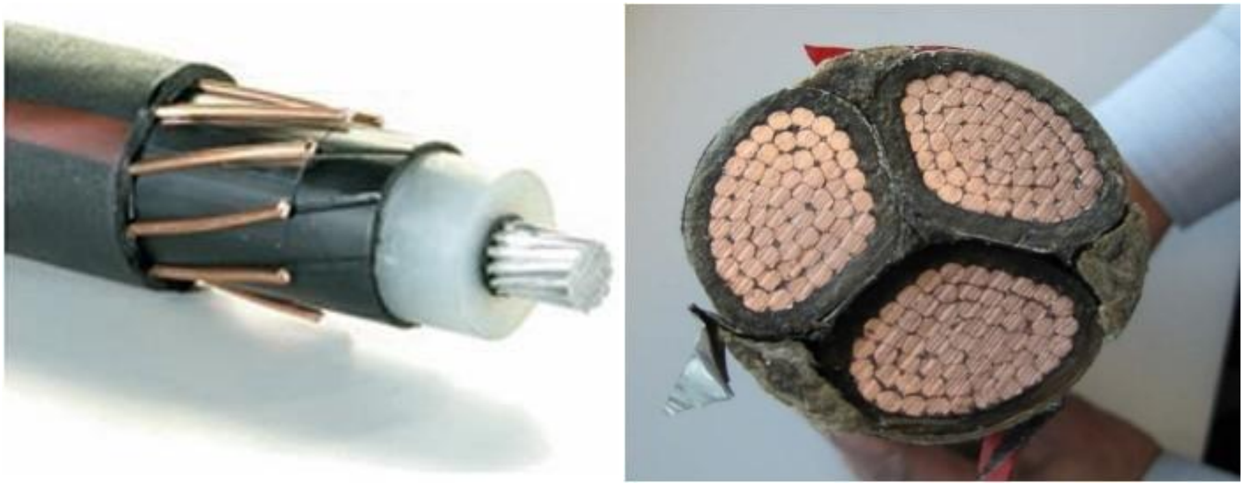

Figure 17: Example of XLPE Cable (Left) and PILC Cable (Right)

Toronto Hydro has approximately 1,030 circuit kilometres of PILC cables, and over 4,500 circuit kilometres of XLPE cable.

In the past, asset data such as age, historical failures, and number of joints etc. were used to determine appropriate replacement strategies for these cables. Utilizing cable diagnostic testing provides a more accurate assessment of the condition of underground cables, splices, joints, and terminations. It enables predictive analysis and allows Toronto Hydro planners and engineers to effectively determine the cables that currently are, or will soon be, at risk of failure.

Cable diagnostic testing is an accepted practice industry-wide and used in numerous other electrical utilities in Canada and the United States. Toronto Hydro follows industry standards that support and provide guidelines for cable testing in the field, including IEEE 400-2012, IEC 60060, IEC 60085, and IEC 60502.

The expected life of underground cable varies by type and construction. The expected life of XLPE cable is 40 years for jacketed direct-buried ("DB") cable, 20 years for un-jacketed DB cable, and 50 years for cable in concrete duct installations. The expected life of PILC cable is 65 years. A majority of the PILC and XLPE cable populations (which were installed in the beginning in the early 1900s and 1950s, respectively) have reached their expected useful lives.

As cables age, the likelihood of failure increases as a result of water treeing, electrical treeing, and insulation breakdown for cables.[15]

In addition, cables will experience aging differently depending on the following factors:

- Manufacturing quality;
- Damage during installation and workmanship issues;
- Installation environment (e.g. areas with high moisture levels result in water penetration of the insulation (or water treeing) and thereby causing insulation failure);
- Operating temperature and loading (e.g. higher loading and resulting temperatures accelerate the aging process); and
- Ambient temperature of the installation environment (e.g. higher temperatures accelerate the aging process).

Defective primary cables and cable accessories accounted for approximately 73 percent of all customer interruptions and 75 percent of all customer hours of interruption for underground equipment between 2020 and 2022. On average, over the same period, approximately 130 interruptions a year were related to defective underground primary

[15] Water ingress into the cable insulation in the presence of an electrical field causes microscopic tears called "water treeing." Over time, continued moisture penetration and the presence of electrical stresses causes these water trees to become electrical trees (whereby the tears become carbonized and can conduct electricity).

cables, which resulted in over 131,000 customers interrupted and 116,000 customer hours of interruption annually.

Based on Toronto Hydro's experience, when a cable fails once, repeated failures are very likely. Cables prone to failure not only impact system reliability, but also entail safety and environmental risks. Figures 18 depicts a leaking cable splice.

Figure 18: Oil Leakage from Cable Lead Splice

Cable Diagnostic Testing performed from 2021-2022 identified deficiencies as shown in Figure 19 below.

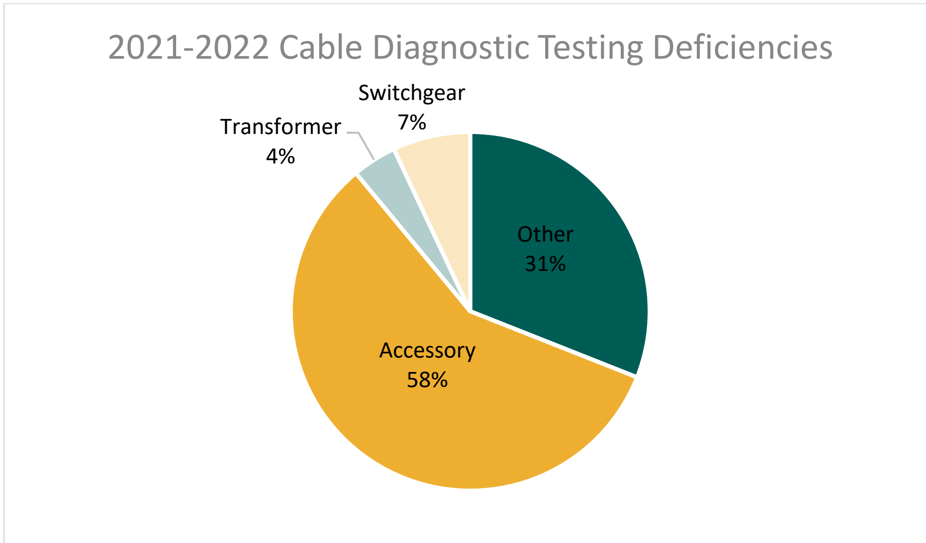

Figure 19 Cable Diagnostic Testing Deficiencies Identified Between 2021 and 2022

This program has helped identify deficiencies, such as accessory-related issues related to poor workmanship, incorrectly installed faulted circuit indicators, and hot spots or partial discharge on elbows, terminations and splices, enabling appropriate corrective work to be issued to mitigate failure risk.

As this program continues to mature, the diagnostic data available on cables will continue to grow and will allow Toronto Hydro to better understand how cables degrade over time, evaluate the variation between cable types, and provide feedback to system planning, standards, and quality groups to make improvements for future cable installations. The data collected from the tests will be used to help predict cables at risk of degradation and help in identifying problematic locations in the system with a higher degree of accuracy.

7.2 Cable Diagnostic Testing Segment Costs

Table 6 below provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for this segment.

Table 6: Cable Diagnostic Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Cable Diagnostic Testing	-	0.3	0.4	0.6	0.6	0.7	0.8	0.8	0.8	0.8

7.3 Cable Diagnostic Testing Segment Year-over-Year Variance Analysis

2020-2021 Variance Explanation

From 2020 to 2021, expenditures increased by approximately $0.3 million which was primarily due to an increase in the number of Horseshoe area feeders tested.

2021-2022 Variance Explanation

From 2021 to 2022, expenditures increased by approximately $0.1 million which was primarily due to an increase in the number of downtown feeders tested.

2022-2025 Variance Explanation

Between 2022 and 2025, expenditures are forecasted to increase by approximately $0.3 million, or an average of $0.1 million per year, due to the increasing number of feeders tested as this segment continues to ramp up.

2025-2029 Variance Explanation

Between 2025 and 2029, expenditures are expected to increase by approximately $0.1 million, due to inflationary pressures. The Cable Diagnostic Testing Segment is relatively new and as a result, is continuing to evolve with each additional year of testing. The expenditures and volume of work proposed over the 2025-2029 rate period are based on Toronto Hydro's estimate of feeder segment unit costs using 2020-2022 actuals. However, the volume of work executed can vary significantly as a result of the complexity of each feeder segment based on length, accessibility, and number of terminations along the feeder segment. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks, including:

- Risk of missed opportunity to identify and correct deficiencies to mitigate failure risk for biggest source of defective equipment related outages on underground system (i.e. cable and cable accessories); and
- Risk of not leveraging source of data and insights into cable degradation and failures to improve project planning and prioritization and future cable installations.

8. CONTACT VOLTAGE SCANNING SEGMENT

8.1 Segment Description

Most of Toronto Hydro's electrical distribution equipment is exposed to environmental elements, including wide seasonal temperature variations and accumulation of dirt or debris. This may result in the partial or total failures of electrical distribution equipment, and can lead to live wires making contact with nearby structures (poles, bus shelters, concrete housing etc.).

These issues can give create a public safety hazard known as contact voltage, which has the potential to cause electric shock. A typical example of a contact voltage hazard is an exposed secondary voltage wire in a sidewalk handwell or inside a street lighting pole that energizes the sidewalk or pole. Contact voltage endangers the public, workers, and pets that may come into contact with the energized surface.

The main activity in this segment is the use of a mobile scanning tool (i.e. a voltage detection system) mounted onto a vehicle to scan for contact voltage throughout Toronto

Hydro's service area. Data is collected and analyzed to determine the location and nature of the fault. Based on the results, a repair crew is dispatched to further investigate and eliminate the fault.[16]

Previously Toronto Hydro scanned the entire distribution system on a one-year cycle. However, to save costs without compromising safety, the utility now takes a risk-based approach. Of the total 25 wards that make up Toronto, the utility continues to scan 11 of them annually. These 11 wards include all high-risk wards that exhibit a higher amount of contact voltage incidents and wards in the downtown region which have a higher density of objects that may have contact voltage such as traffic lights, bus shelters, street light poles, and handwells. The remaining 14 wards, which are all in the Horseshoe area and have a lower average number of contact voltage incidents, are scanned once every three years.

The mobile scanning tool locates assets with contact voltages greater than 1 volt. Toronto Hydro uses the Third Harmonic ("3HD") as a guideline (as recommended by the IEEE Working Group on "Voltages at Publicly and Privately Accessible Locations") to prioritize corrective action for contact voltages found. If a contact voltage equal to or greater than 10 volts is found, the scanning crew will identify and barricade the relevant area and remain on site until a follow-up emergency response crew arrives to make permanent repairs. With respect to a contact voltage between 4.5 volts and 10 volts, the incident is analyzed and corrective action is issued. Notices are issued to affected parties if the contact voltage is found on customer or third party owned equipment. Contact voltage incidents less than 4.5 volts are reported to Toronto Hydro for review, and notices are

[16] The contract for the Contact Voltage Scanning program ended in March, 2021 and a new contract was not completed in time in order to continue the program for the rest of the year which led to a much lower number of contact voltage hits being reported in 2021.

issued to affected parties (where the contact voltage was found on customer or third party owned equipment).

Figure 20 below shows the volume of contact voltage incidents (>4.5 volts) identified between 2020 and 2022.

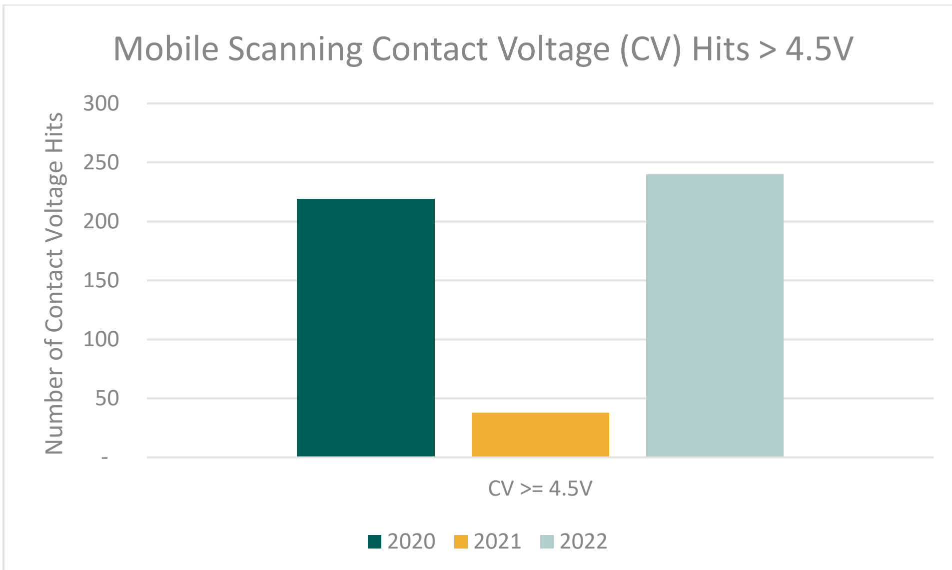

Figure 20: Contact Voltage Hits (>4.5 V) (2020-2022)

Traffic lights, bus shelters, street light poles, and handwells have been the primary sources of contact voltages throughout the City of Toronto in recent years as shown in Figure 21.

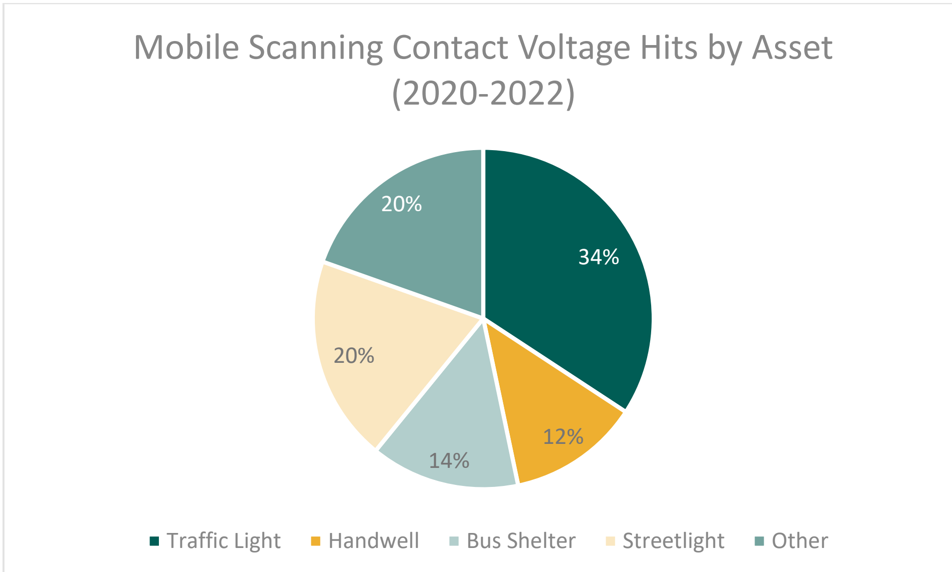

Figure 21: Contact Voltage Hits by Asset (2020-2022)

Scanning is performed during the months of January to March and September to December as Toronto Hydro's previous experience of scanning throughout the entire year indicated that most cases of contact voltage occur during the winter months. Underlying causes include aging infrastructure, freezing/thawing conditions, and vibrations at or below grade (which can cause wires to dislodge).

Contact voltage remains a risk for pedestrians and pets in the City of Toronto. By scanning for contact voltages across the city and addressing defective equipment through the Corrective Maintenance or Reactive and Corrective Capital program, the number of contact voltage related safety incidents can be reduced.

8.2 Contact Voltage Segment Costs

Table 7 provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for this segment.

Table 7: Contact Voltage Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Contact Voltage Scanning	2.0	0.7	1.8	1.7	1.8	2.0	2.0	2.0	2.2	2.1

8.3 Contact Voltage Segment Year-over-Year Variance Analysis

2020-2021 Variance Explanation

From 2020 to 2021, expenditures decreased by approximately $1.3 million, due to the lower number of wards scanned. In 2021, the contract for this work ended in March and was not re-signed in time for scanning to be done over September to December.

2021-2022 Variance Explanation

From 2021 to 2022, expenditures increased by approximately $1.1 million to fund the scanning of all high-risk wards on an annual cycle, with the remaining wards scanned on a three-year cycle.

2022-2025 Variance Explanation

Between 2022 and 2025, expenditures are expected to increase by approximately $0.2 million, or an average of $0.1 million per year, due to inflationary pressures.

2025-2029 Variance Explanation

Between 2025 and 2029, expenditures are forecasted to increase by approximately $0.1 million due to inflationary pressures. Year-to-year fluctuations are due to varying numbers of wards due for scanning. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks, including:

- Public safety risks, such as the inability to prevent safety hazards such as electrical shocks caused by contact voltage which endanger the public, workers, and animals that may come into contact with energized surfaces.

PREVENTATIVE AND PREDICTIVE STATION MAINTENANCE

1. OVERVIEW

Table 1: Preventative and Predictive Station Maintenance Program Summary

Preventative and Predictive Station Maintenance Program									
Outcomes: Operational Effectiveness - Reliability, Environment, and Operational Effectiveness – Safety									
Segments: • Customer Location Maintenance • Station Inspections and Auxiliary Equipment Maintenance • Station Switchgear Maintenance • Station Equipment Maintenance									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
5.9	6.4	5.5	6.5	7.0	8.0	7.6	7.7	8.6	8.8

The Preventative and Predictive Station Maintenance program (the “Program”) addresses maintenance activities on Toronto Hydro’s: (i) station assets; and (ii) assets located at customer-owned buildings or dedicated areas on customer premises. This Program involves inspection and maintenance tasks of equipment to identify and address predetermined conditions indicative of a potential failure. The activities comprising the individual segments in this Program are focused on preserving and maximizing the performance of assets over their expected useful life while mitigating a wide variety of system risks.

This Program is also designed to minimize overall costs and account for other factors such as the safety of Toronto Hydro’s work crews and the public, and ensures compliance with statutory and regulatory requirements.[1] The Station Maintenance Program is comprised of the following four segments:

- **Customer Location Maintenance:** A subset of Toronto Hydro's customers is supplied by electrical equipment, such as transformers and switches, located within customer-owned buildings (vaults) or dedicated areas on customer premises. The activities in this segment are aimed at inspecting and maintaining this equipment. In addition, the inspection and maintenance of primary Automatic Transfer Switches ("ATS"), communication systems for vaults located deep underground, and Distributed Energy Resource ("DER") sites, are conducted under this segment.
- **Station Inspections and Auxiliary Equipment Maintenance:** This segment focuses on two sets of work: (i) the periodic inspection of all Transformer Stations ("TS") and Municipal Stations ("MS") and associated equipment, as well as battery Energy Storage Systems ("ESS"); and (ii) maintenance of auxiliary equipment housed or used at stations, including station batteries, air compressors, and testing equipment.[2]
- **Station Switchgear Maintenance:** This segment includes the testing and maintenance of Toronto Hydro owned switchgear units and circuit breakers located at TSs and MSs across the utility's service territory.
- **Station Equipment Maintenance:** This segment includes the maintenance of equipment located at 23 TS and 139 MS locations, including 183 station transformers. Maintenance activities include the inspection, testing, cleaning, and calibrating of assets such as power transformers and their auxiliary equipment.

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[1] Ontario Energy Board, *Distribution System Code*, Appendix C (August 2, 2023).
[2] Transformer stations are points of power supply from the Hydro One Networks Inc. ("Hydro One") transmission system which step down supply voltages.

By preserving and maximizing the performance of station assets and assets located in customer-owned buildings, this Program contributes to maintaining safety and the environment, and overall system reliability at reasonable costs to Toronto Hydro's customers.

2. OUTCOMES AND MEASURES

Table 2: Preventative and Predictive Station Maintenance Program Outcomes and Measures Summary

Operational Effectiveness – Reliability	• Contributes to maintaining existing levels of system reliability (SAIDI/SAIFI) by inspecting station assets for deficiencies in compliance with the Ontario Energy Board's ("OEB") Distribution Systems Code ("DSC").
Environment	• Operate in an environmentally responsible manner and Rreduces the environmental impact of Toronto Hydro's distribution system by proactively identifying station equipment for replacement, such as transformers exhibiting signs of oil deficiencies or circuit breakers leaking SF_6 gas, for replacement and minimizing the likelihood of these associated contaminants from entering the environment.
Operational Effectiveness – Safety	• Contributes to Toronto Hydro's public safety performance (as measured by the OEB's distributor scorecard safety metrics), employee safety performance, and compliance with applicable safety requirements (including Ontario Regulation 22/04, the Ontario Fire Code, and the *Occupational Health and Safety Act*) by proactively performing inspections to reduce the risk of asset failures that may otherwise endanger the general public and Toronto Hydro crews (e.g. failure of a vault transformer, station power transformer or switchgear which can result in a fire). [3]

3. PROGRAM DESCRIPTION

The Preventative and Predictive Station Maintenance program funds maintenance activities in respect of: (i) Toronto Hydro's station assets; and (ii) Toronto Hydro's assets

[3] Ontario Regulation 213/07: Fire Code made under the *Fire Protection and Prevention Act, 1997,* SO 1997, Chapter 4.

located at customer-owned buildings or dedicated areas on customer premises. This Program involves inspection and maintenance tasks typically conducted on a fixed cycle and inspection of equipment for indications of potential failure. The activities comprising the individual segments in this Program are focused on preserving and maximizing the performance of assets over their expected useful life while mitigating a wide variety of system risks. This Program is also designed to minimize overall costs and account for other factors such as the safety of Toronto Hydro work crews and the public, and ensure compliance with statutory and regulatory requirements.

Maintenance activities in this Program include inspections to assess the condition of customer location building vault structures and the equipment housed inside (including transformers, switches, and cables), as well as inspections of station facilities and station assets (including power transformers, switchgear, and auxiliary station equipment). The Station Maintenance Program is comprised of the following four segments:

- **Customer Location Maintenance:** A subset of Toronto Hydro's customers is supplied by electrical equipment such as transformers and switches that are located within customer-owned buildings (vaults) or dedicated areas on customer premises. The activities in this segment are aimed at inspecting and maintaining this equipment. In addition, the inspection and maintenance of primary Automatic Transfer Switches ("ATS"), communication systems for vaults located deep underground, and Distributed Energy Resource ("DER") sites, are conducted under this segment.
- **Station Inspections and Auxiliary Equipment Maintenance:** This segment funds two types of work: (i) periodic inspection of all TSs and MSs and the associated equipment, as well as battery Energy Storage Systems ("ESS"); and (ii)

maintenance of auxiliary equipment housed or used at stations including station batteries, air compressors, and testing equipment.

- **Station Switchgear Maintenance**: This segment includes the testing and maintenance of Toronto Hydro owned switchgear units and circuit breakers located at TSs and MSs across the utility's service territory.
- **Station Equipment Maintenance** – This segment includes the maintenance of equipment located at 23 TS and 139 MS locations, including 183 station transformers.

Detailed descriptions of the segments are provided in sections 5-8 below.

4. PROGRAM COSTS

In 2025, Toronto Hydro requires $8.0 million in rate funding for the Preventative and Predictive Station Maintenance program, which represents an increase of $2.1 million over the previous rate period in 2020.

Over the 2025-2029 rate period, the utility expects the cost of this program to increase by a compounded annual growth rate of 2.7 percent, which is necessary to address station maintenance needs and deliver the customer outcomes enabled by this program.

The Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for each segment are summarized in Table 3 below.

Table 3: Stations Maintenance Program Expenditures by Segment ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Customer Location Maintenance	1.3	1.1	1.3	1.6	1.6	1.5	1.7	1.6	2.0	1.5
Station Inspections and Auxiliary Equipment Maintenance	1.1	1.1	1.2	1.1	1.1	1.3	1.2	1.2	1.3	1.6
Stations Switchgear Maintenance	2.7	3.2	2.4	2.8	3.4	4.1	3.6	3.6	4.2	4.5
Station Equipment Maintenance	0.8	1.0	0.6	1.0	0.9	1.1	1.1	1.3	1.1	1.2
Total	**5.9**	**6.4**	**5.5**	**6.5**	**7.0**	**8.0**	**7.6**	**7.7**	**8.6**	**8.8**

4.1 Cost Drivers

Year-over-year cost variances in this Program tend to be primarily driven by differences in the volume and complexity of units inspected and maintained. For example, air blast circuit breakers and switchgear with a higher number of circuits are generally more expensive to maintain on a per unit basis. Other recent cost drivers in this Program include the addition of new activities such as ESS site maintenance and Deep Vault Communication testing.

4.2 Cost Control and Productivity Measures

4.2.1 Cost Management

The sales, decommissioning, and conversions of stations and their equipment such as 4kV MS stations will in turn yield direct cost savings from the elimination of the inspection and maintenance of assets at these locations. Additional savings will be realised from the reduction in maintenance activities for station air compressors serving the TTC whose ownership is transferred to the TTC, and the elimination of legacy air blast circuit breakers.

Not all stations are equal and will vary in size and number of assets. This has resulted in a varying amount of labour and costs required in order to maintain all equipment in a given year. Work is being undertaken to reduce this variability in order to balance the amount of resources and costs required to maintain all station assets year over year.

In addition, in order to keep labour costs down, Toronto Hydro conducts analysis to determine the lowest cost resource (e.g. internal vs. external contractor) and allocates maintenance to the most cost effective resource.

4.2.2 Productivity

Toronto Hydro has placed significant emphasis on achieving greater output for the same or reduced input in each of the segments within the Preventative and Predictive Station Maintenance program. Toronto Hydro continues to rely on the Reliability Centered Maintenance ("RCM") approach and adjusts its maintenance tasks and frequencies based on RCM, Condition-Based Maintenance, and continuous improvement principles. Examples of these adjustments include:

- Continuously updating inspection forms to allow for the capturing of greater details about substandard conditions or deficiencies found during inspections. These updates enable better prioritization and determination of the most appropriate corrective action for each deficiency to better mitigate public and employee safety, as well as environmental, system reliability, and financial risks.
- Standardizing the scheduling of outage-based activities to align with station maintenance cycles wherever possible to minimize the need for multiple equipment outages (and significant switching resources), enable bundling of maintenance work, and minimize the need for multiple trips to particular sites.
- Implementing "find and fix" protocols whereby crews that identify minor asset deficiencies address the deficiencies by replacing them onsite instead of only logging the deficiencies for the Corrective Maintenance program.[4]

[4] Exhibit 4, Tab 2, Schedule 4.

- Issuing longer-term inspection maintenance contracts to third-party service providers to help keep unit costs stable and increases service quality levels over time as retaining the same service provider increases their experience and familiarity with identifying deficiencies on Toronto Hydro's distribution system.
- Introducing new tools or making greater use of technology such as Infrared Thermography, Electronic Maintenance Sheets, Furan Sampling, Doble Testing, Dissolved Gas Testing, Online Partial Discharge Testing, and Enhanced Battery Testing.

The following sections discuss the drivers of each of the segments that make up the Preventative and Predictive Station Maintenance program.

5. CUSTOMER LOCATION MAINTENANCE SEGMENT

5.1 Segment Description

A subset of Toronto Hydro's customers is supplied by electrical equipment, such as transformers and switches, that is located within customer-owned buildings (vaults) or dedicated areas on customer premises. These sites are found in or adjacent to industrial or commercial buildings, hospitals, schools, apartments, and condominiums, and are secured to prevent unauthorized access to energized equipment.

The equipment contained in these sites, including over 12,000 transformers, is owned by Toronto Hydro and requires regular inspection and maintenance. There are approximately 4,413 customer-owned locations where Toronto Hydro is obligated to maintain or inspect equipment. For maintenance purposes, these 4,413 locations are divided into two subsets based on customer load requirements: (i) 4,042 Customer

Building Vaults which possess transformation capacity less than 2,000 kVA; and (ii) 371 Customer Substations, which have transformation capacity of 2,000 kVA or above.

Toronto Hydro maintains Customer Building Vaults on a three-year cycle, in compliance with the OEB's Minimum Inspection Requirements (Appendix C of the DSC). Maintenance of Customer Building Vaults includes a visual inspection of the vault and equipment, thermographic scans and partial discharge testing of all electrical equipment and connections to detect thermal anomalies and corona, and general cleaning to reduce contamination build-up and electrical tracking. Deficiencies that are noted during inspections are either addressed immediately or subsequently addressed through corrective maintenance. The condition of the customer's civil structure is also assessed and any identified deficiencies are communicated to the customer for remediation.

Customer Substations are inspected annually and maintained every four years. Inspections ensure that ventilation, access, and drainage systems are operating as required and that equipment is not leaking, defective, or corroded. Maintenance includes visual inspections, thermographic scans, functional tests, oil testing, and general cleaning.

Through Customer Location Maintenance, Toronto Hydro identifies deficiencies in electrical equipment and verifies the integrity and security of the structures that house the equipment at Customer Building Vaults and Customer Substations. Identifying and addressing deficiencies minimize the likelihood of equipment failure, mitigating risks relating to public and employee safety, the environmental, financial impacts, and system reliability. As illustrated in Figure 1 below, since 2020, Toronto Hydro has identified on average over 5,700 deficiencies at Customer Locations each year. Those deficiencies requiring corrective action that cannot be addressed immediately are addressed as part of the Corrective Maintenance and Reactive Capital programs.

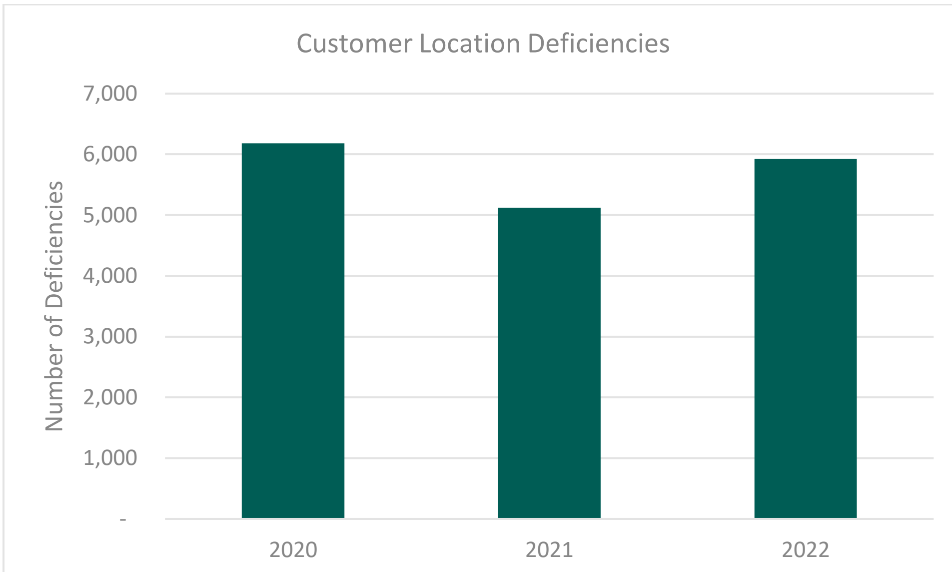

Figure 1: Customer Location Deficiencies Identified Between 2020 and 2022

Specific examples of deficiencies identified and their associated risks include:

- Dirty vaults that require cleaning to reduce the risks of flashover caused by contamination build-up and premature equipment failure, which can result in injury to employees, customers, and members of the public that are near these vaults, as well as property damage;
- Corrosion of equipment, locks and doors (as illustrated in Figure 2 below), which can result in unauthorized entry and pose a safety risk if individuals make contact with energized equipment;
- Oil leaking from cables or transformers (as illustrated in Figure 3 below), which if not addressed in a timely manner, can result in oil entering the drainage system and potentially spilling into environmentally sensitive areas;

- "Hot spots" on equipment identified using a thermographic cameras before excessively high temperatures cause burnt insulation and electrical faults, which pose serious safety risks (e.g. vault fire); and
- Degradation of a transformer's insulating oil properties due to the concentrations of certain gases (e.g. hydrogen, carbon monoxide, methane, and acetylene), which can be identified via transformer oil testing as indications of an elevated risk of transformer failure.

Beyond inspections of the electrical equipment, Customer Location Maintenance activities include inspections of the civil infrastructure housing the equipment. Such civil infrastructure is owned by Toronto Hydro's customers, who are responsible for repairs. Nevertheless, it is prudent for Toronto Hydro to continue inspections and issue follow-up Customer Action Forms given the risk that customers may fail to carry out necessary repairs in a timely manner. It is not uncommon for structural elements to be in poor condition to the point that walls (as illustrated in Figure 4 below) and roofs are at risk of collapsing on Toronto Hydro's equipment.

In addition, improperly maintained landscaping and vegetation at or near outdoor customer locations can pose safety risks (e.g. vegetation becoming energized and possibly catching fire) and prevent Toronto Hydro crews from entering the sites to carry out required work (as illustrated in Figure 5 below). Such serious deficiencies are communicated to customers so that they can be addressed.

Figure 2: Rusted Door

Figure 3: Transformer Leaking Oil

Figure 4: Cracked Walls

Figure 5: Vegetation Overgrowth

By preventing equipment failures and non-electrical deficiencies, Customer Location Maintenance activities also prevent power interruptions. A failure at a Customer Building Vault will typically impact one or more customers for a prolonged period of time depending on the type of failure. Failures at Customer Substations have a greater impact as more than 2,000 kVA of load may be interrupted for similar durations.

Beginning in 2020, Toronto Hydro began inspecting vaults containing primary ATS every three years. These switches are designed to automatically switch over to a standby feeder when the normal feeder has power interrupted and require functional testing to ensure they are operable. This program was created in response to a failure from an ATS for the Rouge Valley hospital back in 2018, which resulted in a prolonged outage.

Beginning in 2022, Toronto Hydro also initiated a Deep Vault Communication program to test radio antennas installed at vaults located in underground garages at P2 level or lower with poor radio signals. These antennas are installed in order to amplify radio signals and this equipment needs to be tested periodically to ensure the safety of crews working at these vaults.

Beginning in 2023, Toronto Hydro is piloting inspections of renewable and non-renewable Distributed Energy Resource ("DER") sites, which are electrical generation and storage sites connected to Toronto Hydro's distribution system. DER sites could potentially introduce safety or reliability issues to the grid. In order to mitigate this, the monitoring and control equipment installed at these sites require inspection and maintenance in order to ensure the safe and reliable disconnection and monitoring of DER sites.

The Electrical Safety Authority ("ESA") has identified that 3-Phase 3 Wire solidly grounded customer services to be a potential safety hazard. If the customer has a supply from a grounded wye connected transformer, a short circuit on the customer side could pose a potential fire hazard as the short circuit current tries to find a ground path through pipes or other metal structures. In response to this, Toronto Hydro developed an initiative under this segment in 2018 to inspect all of these locations (to be completed by the end of 2023) and take corrective measures (under the Corrective Maintenance program) to fix potential hazards by the end of 2025.

5.2 Customer Location Maintenance Segment Costs

Table 4 provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for this segment.

Table 4: Customer Location Maintenance Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Customer Location Maintenance	1.3	1.1	1.3	1.6	1.6	1.5	1.7	1.6	2.0	1.5

5.3 Customer Location Maintenance Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

From 2020 to 2021, expenditures decreased by approximate $0.2 million which was primarily attributed due to a reduction in the number of customer substations due for inspection.

2021 – 2022 Variance Explanation

From 2020 to 2021, expenditures increased by approximate $0.2 million which was primarily due to an increase in the number of customer substations due for inspection and the start of inspections of communication systems located in vaults deep underground.

2022 – 2025 Variance Explanation

Between 2022 and 2025, expenditures are expected to increase by approximately $0.2 million, or an average of approximately $0.1 million per year, primarily due to the introduction of inspections of DER sites. Higher costs in 2023 and 2024 are due to the number of customer locations due for inspection and the completion of Delta-Wye inspections in 2023.

2025 – 2029 Variance Explanation

Between 2025 and 2029, expenditures are not expected to materially change. Year-to-year fluctuations are primarily due to varying numbers of customer locations due for inspection. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks, including:

- Reduced ability to comply with applicable legislative and regulatory requirements such as the OEB's Distribution System Code;
- Increased safety risks from unauthorized access to energized equipment and faulty communication equipment used by crews in vaults;
- Increased frequency of equipment failures due to unidentified deficiencies or lack of maintenance leading to increased:
    - public and employee safety risks, such as from flashovers or vault fires;
    - environmental risks from oil leaks resulting from unidentified equipment deficiencies such as transformers and cables; and
    - reliability risks from interruptions due to equipment failures.

6. STATION INSPECTIONS AND AUXILIARY EQUIPMENT MAINTENANCE SEGMENT

6.1 Segment Description

Toronto Hydro owns equipment at 23 TSs and 139 MSs throughout the City of Toronto.[5] Equipment is located either inside buildings or outside in fenced yards. The Station

[5] Toronto Hydro's distribution system is serviced by 37 Terminal Stations. However, it only owns and operates assets at 23 of these stations.

Inspections and Auxiliary Equipment Maintenance segment funds the following two categories of work:

- Periodic inspections of all TSs, MSs, and battery stations and the associated equipment; and
- Maintenance of auxiliary equipment housed or used at stations including station batteries, air compressors, and testing equipment.

Figures 6 and 7 below show a typical MS found in a residential neighbourhood, and Figure 8 below shows a TS yard.

Figure 6: Residential Area MS (front view)

Figure 7: Residential Area MS (rear view)

Figure 8: The Station Yard at Cavanagh TS

Periodic inspections of stations are conducted either monthly or semi-annually. During semi-annual inspections, crews look for any signs of transformer oil leaks, confirm transformer cooling fan operation, check battery electrolyte levels, verify the condition of equipment alarms, and look for any visual signs of equipment deterioration or imminent failure. In addition, adjustments to heating and ventilation systems are performed during the spring and fall to ensure assets are protected from damage due to temperature (e.g. turning on or turning off control cabinet heaters) and in the fall, oil samples are collected from power transformers for testing. During monthly inspections, crews also look for deficiencies in station fences, gates, doors, building walls, roofs, danger signs, and lighting.

Beginning in 2022, Toronto Hydro began performing maintenance activities for Toronto Hydro owned Energy Storage Systems ("ESS"). ESS can be used to provide distribution-level grid support. Toronto Hydro's Bulwer BESS project has helped the utility develop processes for monitoring and controlling BESS assets on a daily basis, as well as gain experience with creating baselines and measuring peak-shaving success at the feeder level. The implementation of an ESS maintenance program will assist in upkeeping the ESS connected through the Energy Storage System capital segment.[6] The ESS maintenance activities are focused on inspecting, testing, and cleaning the assets related to the ESS annually. These assets include batteries, transformers, Power Conversion Systems ("PCS") Inverters, disconnect switches, fire suppression system, pad structures, and HVAC systems. Failure of such equipment can result in fire, oil leaks, significant emergency response, equipment replacement costs, reliability, and power quality issues. Maintenance activities are vital for mitigating the risk of such failures and associated consequences. These inspections will support the safe and reliable functioning of the ESS

[6] Exhibit 2B, Section E7.2

until it reaches its end of life. The inspections of ESS units is a relatively new activity and is expected to grow as more units are installed.

In addition to inspections, this segment includes the maintenance of station auxiliary equipment. This equipment provides a support or service function and can be described as being peripheral to station power and protection and control equipment. Station auxiliary equipment includes: (i) Battery Banks; (ii) Station Protection Systems; (iii) Station Compressed Air Systems; and (iv) other miscellaneous station apparatus, including station buses, specialized environmental protection systems, and testing equipment. This equipment is described as follows:

- **Battery Banks:** The protection and control equipment in stations is powered by a direct current ("DC") supply from battery banks that are similar to those depicted in Figure 9 below, and are charged by station rectifiers (chargers). Stations typically have lead-acid or nickel cadmium batteries. Specialized inspections and tests on these battery banks are conducted every six months for MS and monthly for TS and include cleaning, measurements of specific gravity, voltage, electrolyte level, and temperature, inspection for corrosion on terminals, connections, battery racks and cabinets, and load cycle testing.
- **Station Protection Systems:** TS and MS stations are equipped with alarms to monitor and ensure proper functioning of various assets in stations including buildings, batteries, compressors, switchgear, and service transformers. Maintenance includes assessing the physical and mechanical conditions of the alarms and coordinating with the control room to perform functional tests. This work is carried out on a one-year cycle.
- **Compressed Air Systems:** These systems are required to supply dry compressed air for the operation of air blast circuit breakers as depicted in Figure 10. Air blast

circuit breakers use compressed air to open their arcing contacts, and to extinguish the electrical arc that forms during breaker operation. There are approximately 14 air compressors used in Toronto Hydro's 4.16 kV and 13.8 kV stations. These assets are inspected and maintained twice a year.

Figure 9: Station Battery System at George and Duke MS

Figure 10: Air Compressor System

Station Inspections and Auxiliary Equipment Maintenance are undertaken to address two broad sets of needs: (i) the need to mitigate the risks posed by deficient or failed equipment and components, including public and employee safety, environmental, financial, and system reliability risks; and (ii) the need to ensure compliance with applicable regulatory requirements such as the Ontario Fire Code and the *Occupational Health and Safety Act, 1990*.[7]

6.1.1 Station Inspections

Over 2020-2022, Station Inspections identified over 800 deficiencies on average annually. Identified deficiencies requiring corrective action were addressed through the Corrective

[7] SO 1990, Ch O.9., ["*Occupational Health and Safety Act"].*

Maintenance program, or equipment replacement programs as discussed in the Stations Renewal program. [8,9]

From a safety perspective, deficiencies at stations within urban and residential settings can pose significant risks. For example, deficiencies at access points such as gates, doors, fences, signs, and other security infrastructure can result in a station becoming accessible to the general public. Such deficiencies can arise due to structural degradation or other common causes including vandalism and wildlife, and can contribute to risk of injury to the general public. Frequent inspections are critical to maintaining secure station sites in a densely populated environment.

From an employee safety perspective, inspections identify deficiencies with station safety features such as alarms, emergency lightning, burn kits, eyewash stations, first aid kits, and fire extinguishers. This equipment is critical in protecting employees during emergency situations such as station fires. Inspections also enable Toronto Hydro to remain compliant with the Ontario *Fire Protection and Prevention Act* which requires, among others, fire extinguishers to be inspected monthly.[10]

From an environmental perspective, inspections allow for the identification of equipment that is leaking oil (an example of a leaking transformer is depicted in Figure 11). Leaking transformers or cables pose environmental risks, where oil can enter waterways, ground water and potentially sensitive ecological areas. Frequent inspections can identify signs of oil leaks, which can indicate assets that are at risk of failing. Based on such findings, Toronto Hydro can address the leak and prevent equipment failures.

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[8] *Supra* note 5.
[9] Exhibit 2B, Section E6.6
[10] S.O. 1997, c. 4, [“*Fire Protection and Prevention Act”]*.

Figure 11: Oil Leak on a Station Transformer

Inspections also identify vegetation concerns and damage to grading and landscaping as depicted in Figure 12. Failure to address these deficiencies can result in customer complaints, damage to stations (i.e. due to poor drainage), and safety risks for employees including accessibility risks from vegetation overgrowth and slip-and-fall risks from poor landscaping.

Figure 12: Damaged Landscaping

In addition to identifying deficiencies to mitigate safety and environmental risks, Station Inspection work involves the oil sampling and the testing of power transformers in order to mitigate financial and system reliability risks. Industry-standard oil tests are performed to identify poor conditions and abnormalities that cannot otherwise be detected without a complete disassembly of the transformer. Such tests include: (i) Dissolved Gas Analysis; (ii) Furan analysis; and (iii) tests for acid levels, moisture levels, and other oil quality attributes.

Oil testing is particularly valuable because it allows Toronto Hydro to identify transformers that may be at a high risk of failure and to schedule corrective action such as oil reclamation or replacement before a catastrophic event occurs. Consequences of such an event can include oil spills, fire, emergency response, substantial equipment replacement costs, and a prolonged power interruption.

6.1.2 Auxiliary Equipment Maintenance

As discussed above, Auxiliary Equipment Maintenance is performed to mitigate a variety of risks. Maintenance of station backup battery systems reduces the risk that a station's protection and control system will not operate as required during a power interruption. During such an event, the system's DC power source allows all station protection and control equipment to function and communicate normally. Loss of the backup power supply can have consequences ranging from loss of communication and remote operation capability, to failure of a protecting device to function posing both safety and system reliability risks.

Maintenance of protection systems ensures the operability and dependability of alarms at station facilities so that Toronto Hydro can be notified and proactively respond to defective equipment before they lead to failure, which in turn can pose safety, environmental, and system reliability risks.

The maintenance of compressed air systems is designed to ensure that air blast circuit breakers are available to operate as designed when required. Without a certain pressure and volume of compressed air available, the circuit breakers will not close or trip. Failure to operate during fault conditions will expose employees to the risk of severe burns from arc flashes. When this occurs, protection devices upstream of the circuit breaker would need to operate resulting in outages to a far greater number of customers than would otherwise occur. For example, the failure of an air blast circuit breaker to clear a fault in July 2012 at George MS and Duke MS resulted in interruptions to 6,500 customers for nearly eight hours. Replacement costs for an air blast circuit breaker can range from $60,000 to $200,000 depending on factors including breaker type, voltage rating, and location. As Toronto Hydro eliminates these legacy assets from the system, this risk will be minimized.[11] Maintenance tasks that mitigate the risks described above include inspections of all components for deficiencies, cleaning of filters, replacement of pressure relief valves and pump-up time testing which is used to determine their correct operation.

6.2 Station Inspections & Auxiliary Equipment Segment Costs

Table 5 below provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for this segment.

Table 5: Station Inspections & Auxiliary Equipment Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Station Inspections and Auxiliary Equipment Maintenance	1.1	1.1	1.2	1.1	1.1	1.3	1.2	1.2	1.3	1.6

[11] Exhibit 2B, Section E6.6.

6.3 Station Inspections & Auxiliary Equipment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

There is no material variance during this period.

2021 – 2022 Variance Explanation

From 2021 to 2022, expenditures increased by approximately $0.1 million which is primarily attributed to the introduction of maintenance for ESS units and an increase in costs for semi-annual stations inspections.

2022 – 2025 Variance Explanation

Between 2022 and 2025, expenditures are expected to increase by approximately $0.1 million primarily due an increase in the number of ESSs and a higher volume of auxiliary equipment maintenance, offset by a reduction in the total number of stations requiring inspection and maintenance.

2025 – 2029 Variance Explanation

Between 2025 and 2029, expenditure are expected to increase by approximately $0.3 million, or an average of approximately $0.1 million per year, primarily due to inflationary pressures and an increase in the number of ESSs. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks, including:

- Reduced ability to comply with applicable legislative and regulatory requirements such as the OEB's Distribution System Code, Ontario Fire Code, and *Occupational Health and Safety Act* requirements.
- Increased frequency of station equipment malfunctions or failures due to unidentified deficiencies or lack of maintenance leading to increased:

- public safety risks from deficiencies at station access points and other security infrastructure,
- environmental risks from oil leaks resulting from unidentified equipment deficiencies such as transformers and cables, and
- reliability risks from the failure of station backup battery systems operating as required during power interruption.

7. STATION SWITCHGEAR MAINTENANCE SEGMENT

7.1 Segment Description

Station Switchgear Maintenance includes testing and maintenance of Toronto Hydro's switchgear units and circuit breakers that are located at TSs and MSs across the utility's service territory. A switchgear unit is a combination of switching devices and their associated controls, measuring, protection, and regulating equipment. Assemblies of these devices and equipment, with associated interconnections, accessories, enclosures and supporting structures, are found at Toronto Hydro's distribution stations. There are approximately 235 switchgears installed within the distribution system and they collectively contain over 1,800 circuit breakers.

Switchgears and circuit breakers must operate quickly and reliably when an electrical interference or equipment failure causes a fault on the distribution system. Switchgear maintenance activities mitigate the risk that the equipment will malfunction during a contingency, failing to protect the downstream feeders and equipment and possibly leading to a safety incident involving the public or Toronto Hydro employees.

Toronto Hydro owns and maintains two types of switchgears:

- The exposed bus type, used mainly for outdoor installations; and

- The enclosed type, further subdivided into metal clad, metal-enclosed, and brick structures, which are mainly used for indoor installations.

Examples of switchgear are illustrated in Figure 13 below.

Figure 13: (Left) Outdoor Enclosure Housing Metal clad Switchgear. (Right) Indoor Metal clad Switchgear

Station Switchgear Maintenance includes three sets of activities.

1) **Circuit Breaker Maintenance**: Circuit breakers (Figure 14) use various mediums to extinguish the electric arc that forms during an interruption operation. Toronto Hydro owns the following types of circuit breakers: air magnetic, air blast, Sulphur Hexafluoride (“SF_6”), oil, and vacuum units, which are maintained every four years. Circuit breaker maintenance work includes a visual inspection and verification of the integrity of the mechanical and electrical components in circuit breakers, functional testing of the unit, and replacement of worn components.

Figure 14: (Left) KSO Oil Circuit Breaker, (Right) Vacuum Circuit Breaker

2) **Protection & Control ("P&C") Maintenance**: P&C equipment maintenance includes inspection and testing of sensing devices and relays that monitor the magnitude and flow of electrical power. In the event of a fault on the distribution system, the protective relays detect the fault and trigger interrupting devices, such as circuit breakers, to operate and isolate the circuit, protecting the system from further damage. A protective relay system has to be periodically tested and verified to ensure that the system remains protected, the settings are appropriate for the current state and loads, and a failure event does not result in cascading outage events. More specifically, maintenance activities involve verifying the AC voltage and current to the fault detecting relay, testing the operating characteristics of the relay, validating relay settings, verifying the operation of auxiliary relays, and verifying output functions such as alarms and annunciations. This equipment is maintained every four years.
3) **Thermography and Ultrasonic Testing**: A thermographic scan of a switchgear unit provides Toronto Hydro with an advanced warning of developing electrical faults by identifying thermal anomalies on the equipment. Ultrasonic testing identifies high-frequency noise associated with surface tracking and corona, which are also

indicators of impending failure. All load break switches, disconnect switches, and bolted electrical connections undergo thermographic scans and ultrasonic tests every four years.

Maintenance activities are designed to reduce the likelihood of switchgear or breaker failure and to mitigate the associated risks. One way that this is accomplished is by identifying deficiencies that can lead to common switchgear failure modes. These deficiencies include worn components, loose connections, degradation, corrosion, and contamination. Examples of these are shown in Figures 15 and 16, which illustrate a corroded switchgear enclosure and pest infestation inside an outdoor switchgear.

Figure 15: Rusted Switchgear Enclosure

Figure 16: Pests Inside Outdoor Switchgear

Figure 17 below shows an example of an internal arc fault, which can be destructive and pose a risk of injury because of the energy levels reached within the confined compartment.

Figure 17: Impact of Internal Arc Fault in a Switchgear

Toronto Hydro has identified over 1,700 deficiencies on switchgear assets during between 2020 and 2022.

The likelihood of deficiencies existing and leading to a failure increases as switchgear and breakers age and approach their end-of-life. The average expected lives of switchgear enclosures and circuit breakers are 50 and 45 years, respectively.

Of particular concern are the high numbers of air magnetic, air blast, and oil breakers that have exceeded their expected life. The likelihood of failure increases for these assets due to wear and tear caused by high occurrences of operations, contamination, loose connections, and corrosion.

Toronto Hydro's Asset Condition Assessment indicates that over 35 percent of the population of switchgear have moderate to material deterioration and are at an increased likelihood of failure.[12] A failure of one of these assets has the potential to lead to a catastrophic fire, release harmful contaminants into the environment (e.g. oil spills, combustion by-products), and safety risks in the form of debris or arc-flashes that can cause injury and property damage. The replacement of worn and corroded components, the alignment of switch blades, the lubrication of switches, and the removal of dirt and other contamination during maintenance mitigates the risk of failures and associated employee safety, financial, environmental, and system reliability risks that are associated with switchgear failure.

An example of a catastrophic station failure occurred at Station J in East York in 2009. The station was over 50 years old at the time, and a fire broke out following a switchgear failure and subsequent fault. The switchgear had surpassed its expected life and the fault resulted in the destruction of Station J. Maintenance, including thermographic scans and ultrasonic tests, serves to prevent similar occurrences by detecting defective components (e.g. closing coil, pallet switch, closing spring, and relay systems) and incipient faults in loose connections, contacts, and insulators that could develop into a catastrophic failure from the failure of a protection and control asset to operate and clear a fault.

The financial consequences of failures of switchgear and circuit breakers are also significant. The replacement of a circuit breaker can exceed $100,000 and approach $1 million depending on various factors including breaker type, voltage rating, and location. The total replacement cost of a transformer station switchgear, including the costs of the enclosure and circuit breakers, is approximately $6 million and can take over 3 years to design and construct. These costs significantly exceed the annual cost of switchgear

[12] Exhibit 2B, Sections D1 and D3

maintenance activities. As such, the prevention of even one catastrophic failure over a multi-year period will offset the planned maintenance expenditures during the period.

In addition to mitigating safety, environmental, and financial risks, Switchgear Maintenance provides customer value by mitigating system reliability risks. A failure of station switchgear or a circuit breaker can result in a large number of customer interruptions and long interruption durations. Between 2020 to 2022, Toronto Hydro experienced four incidents on average annually that were related to switchgear failures, which resulted in an average of over 2,900 customers interruptions and 3,300 customer hours of interruption annually on average.

Not all switchgear failures are catastrophic in nature and some are as small as the failure of a breaker to open and close. This was the case on May 3rd, 2019, when a vacuum circuit breaker failed to trip and clear a fault, which resulted in over 4,400 customer interruptions and 17,000 customer hours of interruption. Nevertheless, these failures impact system reliability, as protection systems are designed to coordinate with each other, with the intent of isolating the fault or failure to the smallest possible area within the distribution system. If a protection device were to fail to function, a protection device located further upstream would operate. Such a scenario results in outages impacting greater numbers of customers and system assets as well as increasing the safety risks to employees and members of the public in proximity to the stations. Failure of protection devices on the distribution system could also result in the fault migrating to the transmission system, leading to even larger outages. Maintenance tasks are designed to ensure protection devices operate as designed. During maintenance, crews verify and correct improper settings onsite, including: (i) verifying that the voltage and current settings on the fault detecting relays are correct for the system element being protected;

(ii) verifying that the operating characteristics of the fault detecting relays are correct for the applied setting; and (iii) verifying that the operation of auxiliary relays and output functions, such as circuit breaker tripping and annunciation, are correct.

7.2 Station Switchgear Maintenance Segment Costs

Table 6 below provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for this segment.

Table 6: Station Switchgear Maintenance Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Stations Switchgear Maintenance	2.7	3.2	2.4	2.8	3.4	4.1	3.6	3.6	4.2	4.5

7.3 Station Switchgear Maintenance Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

From 2020 to 2021, expenditures increased by approximately $0.5 million which was primarily attributed to higher unit costs due to the complexity of the units maintained and higher material costs due to global supply chain issues.

2021 – 2022 Variance Explanation

From 2021 to 2022, expenditures decreased by approximately $0.8 million which was primarily attributed to maintaining fewer and less complex units.

2022 – 2025 Variance Explanation

Between 2022 and 2025, expenditures are expected to increase by approximately $1.7 million, or an average of $0.6 million per year, primarily due to inflationary pressures and the lower complexity of units maintained in 2022.

2025 – 2029 Variance Explanation

Between 2025 and 2029, expenditures are forecast to increase by approximately $0.4 million, or an average of $0.1 million per year, primarily due to inflationary pressures. Year-to-year fluctuations are due to differences in the relative volume and complexity of units maintained each year. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks, including:

- Increased frequency of station switchgear or circuit breaker malfunctions or failures due to unidentified deficiencies or lack of maintenance leading to increased:
  - public or employee safety risks from fire, debris, or arc flashes;
  - environmental risks from release of contaminants such as oil or combustion byproducts;
  - financial risks from high cost to replace station switchgear; and
  - reliability risks from the switchgear or circuit breaker malfunction during a contingency leading to additional outages.

8. STATION EQUIPMENT MAINTENANCE SEGMENT

8.1 Segment Description

The Station Equipment Maintenance segment addresses equipment located at 23 TS and 139 MS locations, including 183 station power transformers. TSs are points of power supply from the Hydro One transmission system to Toronto Hydro's distribution system. These stations step down supply voltages from 230 kV or 115 kV to 27.6 kV or 13.8 kV, utilizing transformers that, with two exceptions, are owned by Hydro One.[13] MSs are stations within Toronto Hydro's distribution system that are supplied by Toronto Hydro

[13] Copeland TS and Cavanagh TS.

feeders, at 27.6 kV or 13.8 kV, and step down voltage to 13.8 kV or 4.16 kV. Toronto Hydro owns and maintains all equipment at MSs, including the transformers, and while Toronto Hydro's distribution system is supplied by 37 TSs, it owns and maintains a large number of equipment at 23 TSs.

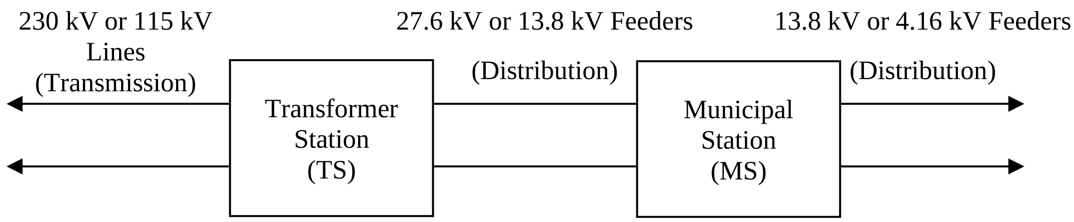

Figure 18: System Configuration

Figures 19 and 20 below depict examples of station power transformers at Toronto Hydro's stations.

Figure 19: Power Transformer at Cavanagh TS

Figure 20: Power Transformer at Neilson Dr. MS

Station power transformers are essential components of every station and a large number have exceeded their expected useful lives. A majority of Toronto Hydro's transformers were installed in the 1950s through the 1970s. The average useful life of these units is 45 years and over half of the entire population is beyond its useful life.

As transformers age, maintenance becomes increasingly important to ensure that the core and windings continue to function within acceptable parameters, insulating properties do not deteriorate excessively, and auxiliary equipment such as gauges and alarms are functioning properly to detect and provide early warnings of problems such as oil leakage, gases in the oil, and overheating.

Maintenance activities are focused on inspecting, testing, and cleaning assets, including power transformers and their auxiliary equipment, current transformers, potential transformers, station service transformers, DC batteries, chargers, disconnect switches, load break switches, fuses, interconnect cables, and remote terminal units. Failure of such equipment, and in particular, the failure of power transformers, can result in station fires, oil leaks, significant emergency response and equipment replacement costs, and power interruptions impacting a large number of customers. Maintenance activities are vital for mitigating the risk of such failures and associated consequences. Maintenance activities also help to extend the useful life of equipment by promptly identifying failing insulation, deterioration of insulating oil, and transformer winding irregularities such as shorted turns, all of which can cause catastrophic equipment failure if not addressed in a timely manner.

The Station Equipment Maintenance segment does not include maintenance of station switchgear, which is captured in the dedicated Station Switchgear Maintenance segment. Examples of activities that are undertaken as part of Station Equipment Maintenance are:

- Comprehensive transformer testing including winding resistance and power factor testing to evaluate the insulation integrity of the core and windings;
- Cleaning of power transformer bushings to remove contamination that can lead to tracking and flashovers;
- Inspections and calibrations of transformer auxiliary equipment such as relays, temperature and oil gauges, and alarms;
- Verifying the integrity of all clamped and bolted connections on primary feeders, insulators, bushings, secondary feeders and buses;
- Cleaning and testing of on-load tap changers, which are devices used to regulate voltage; and
- Testing of transfer trip relays between a MS transformer (at 4 kV) and the upstream 13.8 kV or 27.6 kV supply feeder.

Station Equipment Maintenance, including the aforementioned activities, requires planned outages and is scheduled on a four-year cycle. In this regard, preventative and predictive tools and tests are employed during maintenance to prevent and identify deterioration on equipment that can lead to failures and associated consequences.

As illustrated in Figure 21 below, Toronto Hydro has identified on average 44 deficiencies on station equipment each year since 2020.

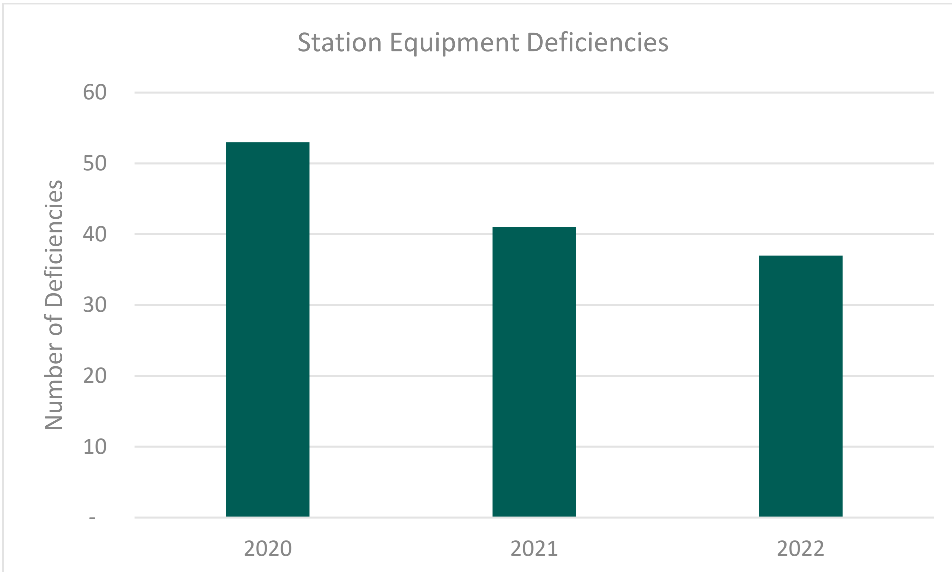

Figure 21: Station Equipment Deficiencies Identified Between 2020 and 2022

When equipment failures occur (e.g. on a power transformer), they pose significant safety, environmental, financial, and system reliability risks. An example of a transformer failure is one that occurred at Dupont MS in 2003. The 49-year old transformer failed and resulted in a fire that caused damage to two other power transformers at the station and caused oil and fluids to spill into the station. This event interrupted 5,675 customers, resulting in over 23,341 customer hours interrupted. The entire outage lasted for 6.6 hours. Figures 22 to 24 show the damage caused by this incident.

Figure 22: Failed Power Transformer

Figure 23: Damages to the MS Wall

Figure 24: Leaking Fluids from Failed Transformer

The safety risks associated with a failure of this nature include station fires and flashovers which can cause injury to employees in a station. Further, associated environmental risks include the spillage of oil from ruptured transformer oil tanks which can contaminate ground water, soil and environmentally sensitive locations, as well as the release of hazardous combustion by-products.

During 2020-2022, Toronto Hydro experienced seven outage incidents cause by failed station transformer equipment. Fortunately, none of these incidents were of the magnitude of the failure at Dupont MS in 2003; however, they did cause over 8,200 customer interruptions and 13,200 customer hours of interruption over the three-year period and thousands of dollars in emergency response costs. From a financial perspective, transformer failures can result in emergency response and equipment replacement expenditures that are estimated to range between $0.2 million and $4 million. Given these figures, the mitigation of even one costly failure can result in savings that substantially offset the cost of the Station Equipment Maintenance program.

Although power transformer failures pose the greatest risk within stations, it is important to note that Station Equipment Maintenance mitigates failures on various other types of station equipment which can also cause significant safety, environmental, financial and system reliability risks. One example is load break switches, which are used to supply and isolate the primary voltage feed to a power transformer at MSs. These switches are installed in outdoor enclosures at 27.6 kV. A failure of such a switch can cause a station outage and significant safety risks as these switches are often operated manually. To ensure the successful operation of a switch during fault conditions, maintenance activities include cleaning insulators, lubricating contacts and gears, checking blade alignment, and conducting electrical tests such as contact resistance, insulation resistance and fuse resistance tests. Another example is station service equipment, which supplies batteries, ventilating systems, lighting, and cranes. A failure of this equipment can result in the loss of power to station protection equipment, the loss of remote communication and control functions, overheating of switchgear, and various other risks. Maintenance mitigates the risk of these failures occurring.

8.2 Station Equipment Maintenance Segment Costs

Table 7 below provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for this segment.

Table 7: Station Equipment Maintenance Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Station Equipment Maintenance	0.8	1.0	0.6	1.0	0.9	1.1	1.1	1.3	1.1	1.2

8.3 Station Equipment Maintenance Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

From 2020 to 2021, expenditures increased by approximately $0.2 million due to a greater number and complexity of units maintained and higher material costs due to global supply chain issues.

2021 – 2022 Variance Explanation

From 2021 to 2022, expenditures decreased by approximately $0.4 million due to a decrease in the number and complexity of units maintained.

2022 – 2025 Variance Explanation

Between 2022 and 2025, expenditures are expected to increase by approximately $0.5 million, or an average of $0.2 million per year, primarily due to inflationary pressures and the lower complexity of units maintained in 2022.

2025 – 2029 Variance Explanation

Between 2025 and 2029, expenditures are forecast to increase by approximately $0.1 million due to inflationary pressures. Year-to-year fluctuations are due to differences in the relative volume and complexity of the units maintained. . If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks, including:

- Increased frequency of station equipment, such as power transformers or load break switches, malfunctions or failures due to unidentified deficiencies or lack of maintenance leading to increased:
    - safety risks due to fires or flashovers;
    - environmental risks from oil leaks or combustion by-products resulting from unidentified equipment deficiencies;
    - reliability risks from power interruptions impacting a large number of customers; and
    - financial risks from emergency response and equipment replacement costs.

CORRECTIVE MAINTENANCE

1. OVERVIEW

Table 1: Corrective Maintenance Program Summary

Corrective Maintenance Program									
Outcomes: Operational Effectiveness - Safety, Environmental, and Operational Effectiveness – Reliability									
Segments: • Corrective Maintenance									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
23.1	26.5	23.5	24.9	25.6	29.5	30.7	31.0	32.0	33.6

As part of the Corrective Maintenance program (the "Program"), the utility undertakes actions to address deficiencies or substandard conditions across the distribution system that are identified during the normal course of operations. This includes deficiencies or substandard conditions identified through activities undertaken as part of the Preventative and Predictive Maintenance programs or the Emergency Response program. [1] Corrective Maintenance activities are generally high priority, cover short planning horizons (given the risks that deficiencies and substandard conditions can pose if left unaddressed), and involve repairing/restoring assets to their normal operating conditions through maintenance, refurbishment, and/or minor component replacements, which include but are not limited to colour harmonization for Station breakers, Faulted Circuit Indicator ("FCI") replacement, and many more. This program also addresses Electrical Safety Authority ("ESA") related compliance issues, such as delta-wye corrective work and cap and grounding of unused lines above 750 volts for both the overhead and underground systems.

[1] Exhibit 4, Tab 2, Schedule 5.

Toronto Hydro's primary objective for this Program is to contribute to maintaining safety, environmental integrity, and overall system reliability by correcting or repairing deficiencies or substandard conditions on the distribution system. Additionally, where feeders are performing particularly poorly and are at risk of exceeding thresholds set for FESI-7 (Feeders Experiencing Sustained Interruptions of 7 or more), or FESI-6 Large Customer (Key Account Feeders Experiencing Sustained Interruptions of 6 or more), line patrols are conducted by field crews to assess the condition of equipment on the feeder and identify quick, targeted actions that yield immediate reliability improvements. Any capital work identified through these line patrols is addressed through the Worst Performing Feeder segment within the Reactive and Corrective Capital program.[2]

There has been a rise in the volume of corrective work requests attributed to deteriorating asset condition and asset-related safety risks to crews or the general public. Furthermore, the increase in corrective work requests is due to enhanced inspection forms and introducing new inspection work, such as cable diagnostic testing,[3] which identifies additional deficiencies that may need to be addressed. This results in approximately $20 million worth of backlog for the lower priority ("P3", requiring resolution within 180 days) work requests, which will need to be addressed before the issues worsen and cause a system fault which may lead to a power outage, or other safety incidents. Hereafter, any reference to backlog is for P3 deficiencies only. To help manage this risk, the corrective work requests in the backlog have been further prioritized by level of risk (e.g. High, Medium and Low) within P3 priority, and by the primary and secondary impact (e.g. Environmental, Safety, Reliability, Operations) of the deficiency so that Toronto Hydro can target the work that address the greatest risk. An example of a high-risk deficiency includes, but is not limited to, extensive rotting on a crossarm which need

[2] Exhibit 2B, Section E6.7.
[3] Exhibit 4, Tab 2, Schedule 2.

to be replaced or a leaning pole that will need to be straightened to avoid reliability and safety issues. A low-risk example includes, but is not limited to, replacing a cracked phase barrier or removing graffiti.

With aging assets and the enhancements of Toronto Hydro's Preventative and Predictive Maintenance programs,[4] and ramp up of newer inspection programs such as cable diagnostic testing, additional deficiencies are expected to be identified, resulting in a continuous overall increase in corrective follow-up work as reflected in the proposed 2025-2029 expenditures for the Corrective Maintenance program.

2. OUTCOMES AND MEASURES

Table 2: Corrective Maintenance Program Outcomes and Measures Summary

Operational Effectiveness - Safety	• Contributes to Toronto Hydro's public and employee safety objectives by: • Promptly repairing high-risk assets approaching imminent failure. • Eliminating risks such as trip hazards caused by sink holes on sidewalks, lack of pole guy(s) and/or washing insulators located in high contamination areas to prevent flashover and pole fires. • Detecting and eliminating energized stray/contact voltage (4.5 volts or greater), on surfaces and structures within Toronto Hydro's distribution system.
Environment	• Contributes to Toronto Hydro's environmental objectives by: • Repairing cables and splices exhibiting signs of oil deficiency to prevent oil spills into the environment. • Preventing excessive corrosion by cleaning oil-filled equipment and applying corrosion inhibiting coatings.

[4] Exhibit 4, Tab 2, Schedules 1-3.

Operational Effectiveness - Reliability	• Contributes to Toronto Hydro's system reliability objectives (e.g. SAIFI, SAIDI, FESI-7, FESI-6 Large Customer) by: • Repairing and restoring assets through corrective maintenance to acceptable operating conditions. Examples include but are not limited to, FCI replacement, animal guard installation, spot tree trimming and crossarm replacement due to rotting.

3. PROGRAM DESCRIPTION

Toronto Hydro's primary objective for this program is to contribute to maintaining the safety of Toronto Hydro's work crew and general public, environmental integrity, and overall system reliability. This is accomplished by correcting or repairing deficiencies or substandard conditions on the distribution system. Furthermore, this program addresses ESA compliance issues, such as the cap and grounding of unused lines above 750 volts for both overhead and underground systems and the delta-wye program.

Deficiencies or substandard conditions across Toronto Hydro's distribution system are identified through the normal course of field operations, which include line patrols conducted on poorly performing feeders (Worst Performing Feeders, or "WPF"), the Preventative and Predictive Maintenance programs, the Emergency Response program and/or customer communication, as shown in Figure 1 below. Identified deficiencies or substandard conditions are subsequently addressed through a variety of programs: [5]

- Corrective Maintenance program;
- Reactive and Corrective Capital program[6];

[5] Exhibit 2B, Section D3.
[6] *Supra* note 2.

- Preventative and Predictive Maintenance programs; when non-critical deficiencies are identified and are feasible to repair on-site, they are addressed as part of the "find it and fix it" practices.

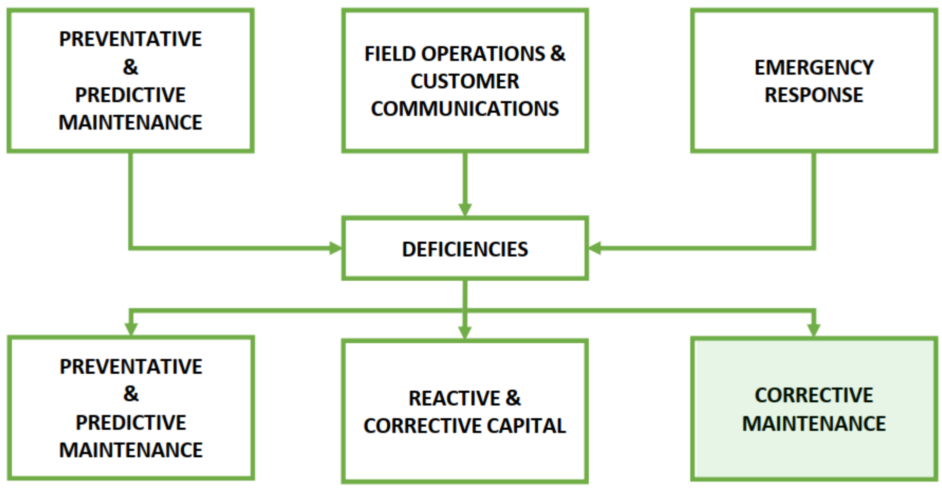

Figure 1: Deficiency Capturing Process

- **Preventative & Predictive Maintenance Activities:** Field crews identify asset failures and deficiencies as part of scheduled maintenance inspection activities. The inspection cycle depends on the maintenance program as per Reliability Centered Maintenance ("RCM"). The RCM framework is a comprehensive approach to the lifecycle maintenance of distribution system assets. RCM enables Toronto Hydro to leverage a methodological approach to preserve the asset's function by implementing failure management practices that target the potential functional failure.

- **Field Operations & Customer Communication:** Corrective work can also be triggered by sources outside scheduled/planned maintenance activities. These include, but are not limited to:

  - Phone calls from customers to Toronto Hydro;
  - External emails to Toronto Hydro;
  - Observations by field crews during the normal course of operations;
  - Customer inquiries requiring field assessment and follow up;
  - Line patrol for Worst Performing Feeder Program.
- **Emergency Response:** Corrective work can also be required as a result of emergencies or unplanned system events. These include asset failures and deficiencies identified outside of Toronto Hydro's daily (planned) operations but requiring follow-up remediation in order to permanently restore power or eliminate safety or environmental risks.

All deficiencies from the above sources are reviewed to validate the need for reactive intervention, assess the nature of reactive intervention required (Capital versus Maintenance), and the priority level to be assigned to each deficiency request. For the Corrective Maintenance Program, Toronto Hydro uses a prioritization framework that classifies asset deficiencies into four categories and addresses the deficiencies by generating a work request notification:[7]

(i) P1 requires resolution within 15 days;
(ii) P2 requires resolution within 60 days;
(iii) P3 requires resolution within 180 days; and
(iv) P4 which indicates that conditions are to be monitored.

The scope of the corrective maintenance work includes all overhead and underground assets, municipal and transformer stations. It also includes other work, such as stations

[7] Work requests are forms issued to assign and schedule corrective work to be performed by Toronto Hydro crew.

decommissioning, work required to address ESA Compliance issues, and temporary follow-up repairs to assets during an emergency event, but excludes emergency repair work managed under the Emergency Response program. More specifically, the Corrective Maintenance program consists of the following activities:

- **Distribution Overhead Maintenance:** Corrective restoration of equipment and replacement of components that are part of the overhead distribution system, including conductor, conductor splices, insulators, brackets, surge arresters, pole-mounted transformers, and overhead switches. Work includes, but is not limited to:
  - Vegetation management in response to off-cycle requests; spot trimming needs identified by Toronto Hydro crews or direct customer communication, such as dying or damaged tree limbs and branches, major storm damages, or excessive tree growth that threatens overhead distribution lines or poses system reliability risks;
  - Installing missing animal guards, guy guards, ground wire and/or surge arresters; and
  - Patrols and spot maintenance of poorly performing feeders, which targets non-Key Account feeders that are at risk of experiencing seven or more sustained outages (FESI-7) or Key Account feeders that are at risk of experiencing 6 or more sustained outages (FESI-6 Large Customer) over a rolling 12-month period. Typical work includes installation of insulated drop leads, animal guards, and replacement of vintage porcelain cut-out switches mounted on steel brackets at overhead transformer locations that are prone to tracking.

- **Distribution Underground Maintenance:** Restoration of equipment that is part of the underground and network distribution system, including cables, cable splices, vaults, ducts, vents, hatchways, transformers, and switchgears. Work includes, but is not limited to:
  - Leveling surfaces to eliminate tripping hazards;
  - Installing or replacing FCIs and/or fuses; and
  - Equipment CO_2 washing, which cleans excessive dirt, debris, and contamination from energized equipment in below-grade and pad-mounted installations to prevent arcing and flashover risks.

- **Stations Maintenance:** Corrective repairs to station equipment such as transformers, tap changers, cooling systems, switchgear, bus-bars, air compressors, circuit breakers, relays, remote terminal units, and SCADA systems. Work includes, but is not limited to:
  - Repairing battery charger, breakers, alarms, gauge, fuses, RTU and repeater radio;
  - Installing ground, locks or barriers; and
  - Replacing arrester, FCI, sensor and/or silica gel.

These activities are critical to maintaining distribution lines and stations assets, as assets are exposed to normal degradation processes (e.g. corrosion, water ingress, heavy loading) and external forces (e.g. adverse weather, tree contacts, foreign interference) that cause deficiencies and accelerate asset deterioration. The Preventative and Predictive Maintenance program sets out the number of deficiencies that Toronto Hydro identifies annually for a variety of assets.[8] Figure 2 below shows a breakdown of the number and types of corrective work issued and the P3 backlog between 2019 and 2022.

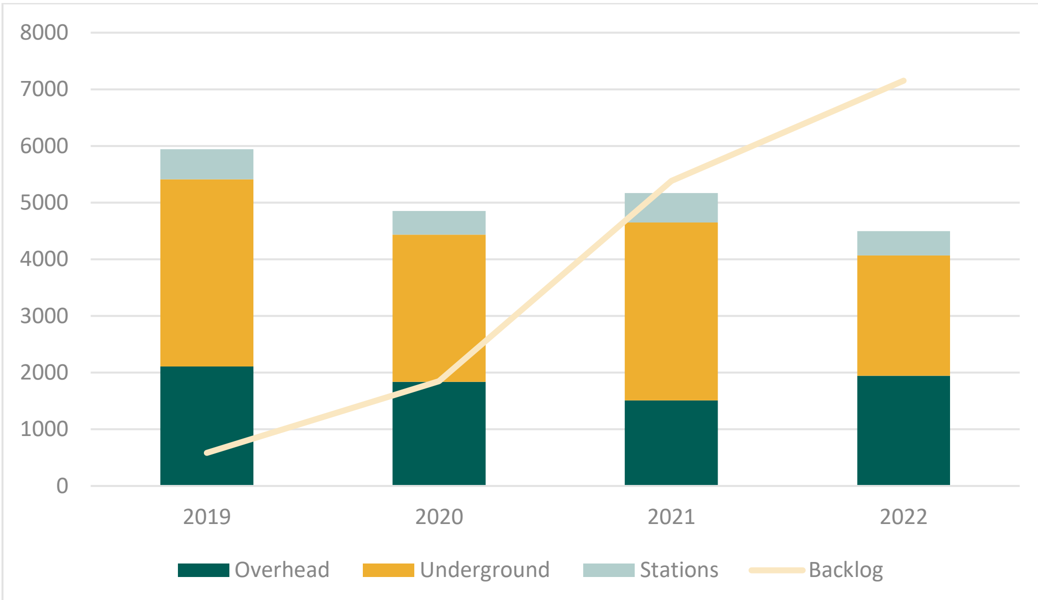

Figure 2: Historical Corrective Work Requests Issued and P3 Backlog

As shown in Figure 2, there has been a rise in the volume of corrective work in the P3 backlog due to the proportion of assets exhibiting deteriorating conditions and exceeding their expected lives, thereby elevating the risk of failure across the distribution system.

Toronto Hydro also enhances inspection forms when required, which contributes to capturing greater details about substandard conditions found during inspections and therefore increasing the P3 backlog volume. As a result of these updates, Toronto Hydro continuously improves its process for capturing deficiencies and determining the appropriate corrective action. This provides the utility with greater visibility into asset health and allows for more effective condition assessment and risk mitigation.

[8] Exhibit 4, Tab 2, Schedules 1-3.

Consequently, the number of deficiencies reported from Preventative and Predictive maintenance activities increased significantly for deficiencies such as trip hazards, vault grounding, rack repair, and nomenclatures which contributed to the higher volume of corrective work requests and the P3 backlog.

There is approximately $20 million in the P3 backlog, of which the medium and high risks items make up approximately 35 percent and will need to be resolved before a fault in the system occurs that could lead to a bigger issue. However, even for the low-risk deficiencies, there is still a possibility of the deficiency worsening over time. For example, a damaged pole anchor may be considered a medium risk initially, but if not addressed over time then it could lead to the pole leaning and subsequently breaking, which will affect safety and reliability. Similarly, for a low-risk deficiency such as replacement of primary cable rack, if left unaddressed for too long could lead to cable damage which can cause an outage. For this reason, Toronto Hydro needs to invest in reducing the P3 backlog, and manage it moving forward.

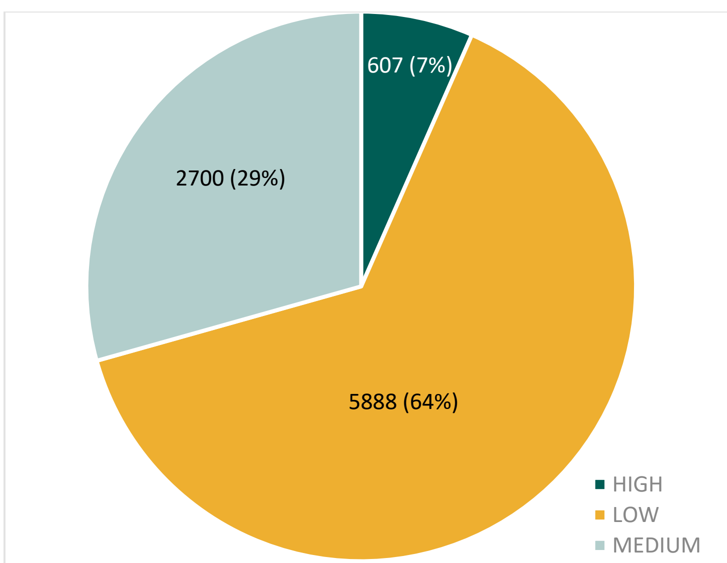

Figure 3: Risk Levels for P3 Backlog of Work Requests

On average, approximately 8,000 corrective work requests were generated each year between 2019-2021, which increased to over 11,000 requests in 2022, with the majority targeting underground system assets such as vaults, cable chambers, and pad-mounted equipment. In general, corrective maintenance needs tend to vary both in the volume and type of work required from year to year.

From a safety perspective, corrective maintenance addresses deficiencies that, if ignored, could endanger members of the public and/or Toronto Hydro employees. For example, a deficiency that is routinely found during overhead line patrols, using infrared thermography, is a thermal anomaly (or "hot spot") on a conductor splice. Hot spots are evidence of over-heating within the splice and, if not addressed in a timely manner, could result in a live conductor failing, falling to the ground, and energizing the surrounding area. Such a condition presents an unacceptable risk that must be mitigated through corrective maintenance in a timely manner. Other examples may include trip hazards on sidewalk due to unlevel ground around Toronto Hydro owned assets, which contributes to the total number of Public Incident Risks or presence of stray voltage which can impact public safety.

From an environmental perspective, corrective maintenance mitigates the risk of oil leaks and premature equipment failures. For example, a cable splice leaking oil must be repaired promptly to prevent oil from entering the soil, drains, and waterways. Furthermore, an oil-filled transformer that is at risk of corroding should be maintained in a clean state, free of contaminants that can act as catalysts for corrosion. As part of the Corrective Maintenance program, Toronto Hydro cleans dirty vaults and padmounted installations and applies corrosion inhibiting coatings to equipment to prevent excessive corrosion and the possibility of subsequent oil leaks. Corrective maintenance activities directed at corrosion prevention also serves to mitigate financial risks. Over recent years, greater emphasis has been placed on identifying the year manufactured on underground transformers to confirm potential risk of PCB containing assets, and identifying corrosion at the base of the transformer. In 2021, inspection questions were modified to include the manufactured year for all transformers.

From a reliability perspective, corrective maintenance addresses deficiencies that, if ignored, will result in unnecessary interruptions for customers and affect reliability metrics such as SAIDI, SAIFI, FESI-7 or FESI-6 Large Customer. For example, depending on the specific location of a spliced conductor (e.g. main trunk, lateral, sub-lateral), there may be a power interruption to hundreds of customers and key customers (e.g. hospitals) if the splice fails due to a hot spot. Other deficiencies that pose similar system reliability risks include, but are not limited to, deteriorated components such as insulators, mounting brackets, cross-arms, broken ground wire, guy wires, overgrown vegetation, failed surge arresters and/or conductor clearance issues (e.g. excessive conductor sag). In aggregate, these individual deficiencies pose significant reliability risks.

As part of Customer Engagement,[9] "Reliable Service" was identified as a top customer need, and ranked in the top three needs for residential, small business, commercial and industrial for both Key Account and non-key account customers. When asked specifically about their top three reliability priorities, the frequency of power outages was identified across all customer classes. This program is intended to address these needs, among others, by ensuring essential work is issued in a timely manner to reduce unnecessary interruptions.

[9] Exhibit 1B, Tab 3, Schedule 1.

Corrective maintenance work can extend the life of assets and defer the need for capital equipment replacement expenditures. An example is caulking which is applied to civil infrastructure such as underground vaults. Caulking seals cracks in concrete and minimizes damage from moisture ingress. If caulking is not applied, cracks can grow to threaten the structural integrity of civil infrastructure and result in expensive vault rebuilds which can increase the cost of repair from hundreds of dollars to thousands of dollars to repair. Water ingress can also accelerate corrosion of equipment, leading to premature failure and associated costs.

Toronto Hydro needs to address any ESA Compliance issues as they are identified, and this type of work is funded by this Program. Two recent examples of work Toronto Hydro has been doing in this Program to address such issues are cap and grounding unused lines above 750 volts and 'Delta-Wye' corrective work. Unused primary lines above 750 volts are required to be removed completely and, if the removal is not feasible, then the cable is required to be deenergized, disconnected, and grounded at each end in order to provide permanent protection and compliance with ESA requirements and Section 11 of Ontario Regulation 22/04. The unused lines are found both overhead and underground, such as in submersible vaults, URD (Underground Residential Design), CRD (Compact Radial Design), and building vaults.

Regarding Delta-Wye corrective work, the ESA has identified potential fire and shock hazard posed by 3-phase grounded wye-connected secondary transformation with no grounded neutral conductor between the transformer's secondary neutral terminal and the customer's service entrance equipment. When there is a phase-to-ground fault, there is no defined path for the fault current to follow. A fire hazard could be present where the fault current tries to find an alternate path (e.g. metallic gas pipe, communication cable, etc.). The ESA issued a Flash Notice in 2018 to ensure that utilities have a path forward to address these issues and ensure compliance with the ESA requirements under Ontario Regulation 22/04.

The emergence of such compliance issues and the extent of the work (and costs) required to address them are unpredictable. If anything, as the complexity of the distribution system increases with the energy transition and electrification, the emergence of such compliance issues is likely to grow. Toronto Hydro must address these risks in a timely manner, and without sufficient funding in this Program, this could compromise the utility's ability to complete other work and lead to an increased backlog of unaddressed deficiencies and their associated risk.

4. PROGRAM COSTS

In 2025, Toronto Hydro requires $29.5 million in funding for the Corrective Maintenance program, which represents an increase of $6.4 million over the last rate application in 2020.

Over the 2025-2029 rate period, the utility expects the cost of this program to increase by a compounded annual growth rate of 3.3 percent, which is necessary to address forecast corrective work request volumes, high risk deficiencies in the P3 backlog, and emerging compliance issues, and deliver the customer outcomes enabled by this program.

The Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures are summarized in Table 3 below.

Table 3: Corrective Maintenance Program Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Corrective Maintenance	23.1	26.5	23.5	24.9	25.6	29.5	30.7	31.0	32.0	33.6
Total	**23.1**	**26.5**	**23.5**	**24.9**	**25.6**	**29.5**	**30.7**	**31.0**	**32.0**	**33.6**

4.1 Cost Drivers

As discussed above, corrective maintenance needs tend to vary both in the volume and type of work required from year to year. Toronto Hydro continues to process increasing volumes of corrective work requests to address identified deficiencies. Overall, the observed variances are primarily attributable to:

- The type of work addressed each year (e.g. overhead, underground and stations);
- Gradual increase in corrective work due to greater deficiencies found via enhanced inspection forms;
- High volume of P3 backlog work that needs to be addressed to avoid issues across the system;
- Introducing new inspection programs such as cable diagnostic testing and DERs; and
- Increased volume of emergency corrective work for defective equipment.

Toronto Hydro's 2025-2029 forecast program expenditure of $29.5 million is based on historical spending levels and work request volumes and accounts for the high-risk P3 backlog of work and ESA compliance work.

4.2 Cost Control and Productivity Measures

Corrective maintenance expenditures are driven largely by work request volumes and the types of repairs required. Toronto Hydro has taken steps to manage costs and improve work processes in this Program.

- Toronto Hydro enhances the inspection forms when necessary to capture more objectively quantifiable and measurable facts from field inspections. The revised inspection forms provide greater visibility into asset health and allow for more effective condition assessment and risk mitigation.
- Toronto Hydro also continues to emphasize "find it and fix it" practices in the Preventative and Predictive Maintenance programs, which promotes the on-site repair of minor deficiencies as they are identified. Examples of minor deficiencies and associated corrective actions include but are not limited to, replacing nomenclature, replacing faulted circuit indicators and/or installing missing guy guards. This eliminates the need to create a separate work request and additional travel time for a different crew to complete repair, resulting in savings of approximately $700,000 per year.
- Toronto Hydro has introduced the prioritization of the high volume of P3 backlog to further determine risk level (e.g. High, Medium or Low) and classify the deficiency impact (e.g. safety, environmental, reliability) which will contribute to issuing work effectively based on available budget.
- The work request process has been improved in several ways in recent years, including through the introduction of the Asset Deficiency Automated Prioritization Tool ("ADAPT") process in March 2021, which reduced manual reviews and improved processing time. See Figure 4 below.

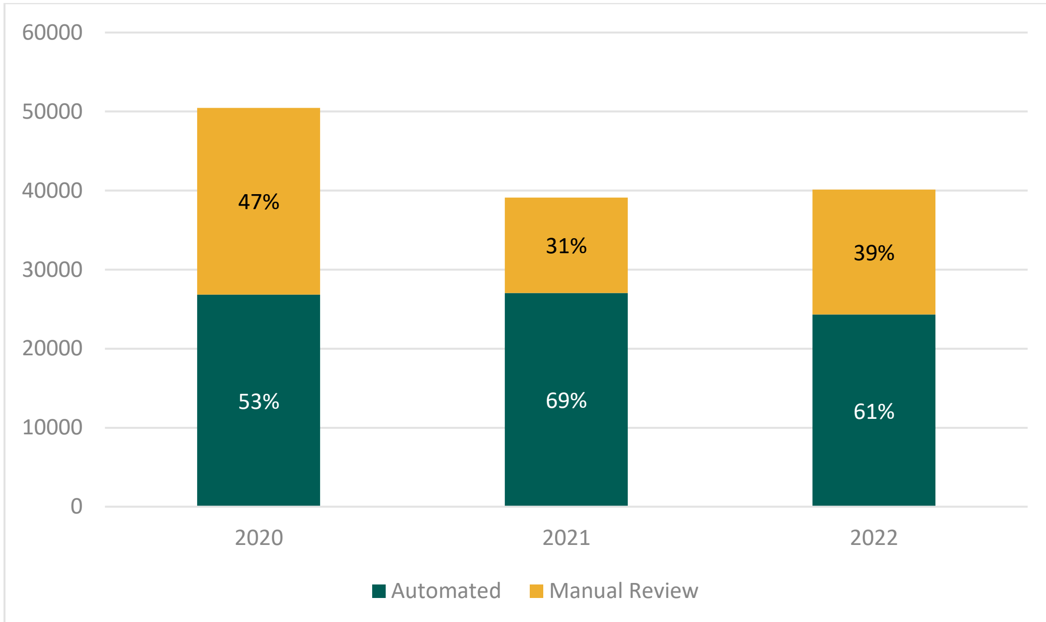

Figure 4: Manual vs. Automated Review of Work Requests

- The work request process has also been improved by introducing a mass creation process for notifications submitted to the work request desk mailbox. Improved tracking and reporting by eliminating multiple, redundant Excel master lists through the adoption of the SAP system, Netezza warehouse data/table and subsequent enhancements in managing work requests. This has improved the process time of each work request as well as increasing data accuracy and traceability. The Work Request Desk ("WRD") workflows are linked directly to Netezza data warehouse. This has resulted in a 20 percent reduction in the time taken to create a notification.
- Improved quality of submission requests via the Asset Deficiency Web Portal using standardized forms to submit work requests when deficiencies are identified. This ensures higher accuracy, completeness, and consistency when submitting requests thereby reducing the need for follow-ups.

- Better communication and coordination within Toronto Hydro (e.g. Supply Chain) to ensure material availability to support effective work execution and completion in compliance with the priority assigned.
- Under the Delta-Wye ESA compliance work, transformers that were scoped for replacement through capital projects were automatically removed from the inspection list, thus saving inspection and corrective costs.
- Lastly, deficiency and work request reviews are currently performed electronically via Electronic Red Construction Folder ("eRCF"). This leads to efficient records keeping, easier accessibility and better visibility of returned eRCFs from crews.

4.3 Corrective Maintenance Program Variance Analysis

2020 – 2021 Variance Explanation

The costs from 2020 to 2021 increased by approximately $3.4 million due to increased corrective work required to support environmental and safety risks, including station decommissioning, Delta-Wye corrective work, and cap and grounding of unused primary lines. The increase was also driven by a higher number of deficiencies identified through inspections programs such as overhead line patrols and cable diagnostic testing.

2021 – 2022 Variance Explanation

The costs from 2021 to 2022 decreased by approximately $3.0 million, primarily due to the significant progress that was made in 2021 in the capping and grounding of unused lines, requiring less of this work in 2022. This decrease was partially offset by increased spending on work such as stations decommissioning and addressing the backlog of P3 work requests.

2022 – 2025 Variance Explanation

Between 2022 and 2025, costs are expected to increase by $6.0 million, or an average of $2.0 million per year, due to:

- The need to address the P3 deficiency backlog;
- Expected increases related to spot tree trimming and corrective work for Distributed Energy Resource ("DER") sites (pilot inspections of these sites are starting in 2023);
- Remediation work required for Copeland Station (Phase 1); and
- The need to replace obsolete FCIs.

2025 – 2029 Variance Explanation

Between 2025 and 2029, costs are forecast to increase by $4.1 million, or an average of $1.0 million per year, to address forecast work request volumes, continue to mitigate the P3 deficiency backlog, and ensure that the utility has the ability to address emerging compliance issues in a timely manner without compromising other corrective work. If Toronto Hydro was forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks, including:

- Reduced ability to address deficiencies that pose safety risks to the public and Toronto Hydro employees such as hot spots on conductor splices and/or trip hazards on sidewalks due to underground assets;
- Reduced ability to address failed or corroded equipment that could negatively impact the environment through oil leaks;
- Reduced ability to address deficiencies that pose risks to system reliability such as deteriorated or failed components, overgrown vegetation, and/or rotting crossarms;

- Increased need for capital expenditures to replace equipment that otherwise could have been deferred through maintenance such as caulking of civil infrastructure or installing animal guards;
- Reduced ability to address high volume of P3 backlog which may contribute to worsening problems if left unaddressed;
- Reduced ability to mitigate outages on poorly performing feeders caused by systemic issues, such as animal contacts at overhead transformer locations due to lack of animal guards; and
- Reduced ability to address any emerging ESA compliance issues.

EMERGENCY RESPONSE

1. OVERVIEW

Table 1: Emergency Response Program Summary

Emergency Response Program Summary									
Outcomes: Customer Focus, Public Policy Responsiveness, Operational Effectiveness - Reliability and Operational Effectiveness - Safety									
Segments: • Emergency Response Program									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
22.1	23.0	22.0	20.4	23.1	25.9	26.4	27.2	27.9	28.6

The Emergency Response program (the "Program") entails the provision of emergency response and restoration services related to unplanned and urgent events affecting Toronto Hydro's distribution system. The Program ensures that the utility is able to comply with applicable Distribution System Code ("DSC") requirements regarding emergency response, maintain customer service and system reliability, and address urgent public safety risks.

The Program consists of three major functions:

- Dispatch Logistics;
- Grid Response; and,
- Storm and Major Event Restoration.

2. OUTCOMES AND MEASURES

Table 2: Emergency Response Program Outcomes and Measures Summary

Customer Focus	• Contributes to Toronto Hydro's customer focus objectives by: ○ Improving communications in relation to urgent events and emergency response, including urgent planned events which customers have identified as a priority for them; and ○ Maintaining timely and accurate outage restoration time.
Public Policy Responsiveness	• Contributes to Toronto Hydro's public policy responsiveness objectives by responding to police, fire and ambulance calls, where necessary, with qualified staff within 60 minutes, 80 percent of the time as prescribed by section 7.9 of the DSC.
Operational Effectiveness - Reliability	• Contribute to Toronto Hydro's system reliability objectives (e.g. SAIFI, SAIDI, FESI-7) by ensuring crews are available 24/7/365 to respond to power system events and minimizing outage restoration times.
Operational Effectiveness - Safety	• Contributes to Toronto Hydro's public and employee safety objectives and performance (as measured via metrics like Total Recordable Injury Frequency) by: ○ Ensuring timely response to failing assets and cascading asset failures, to mitigate the risk of injury to the City of Toronto's emergency first responders, the general public and Toronto Hydro crews; and ○ Remaining compliant with Electrical Distribution Safety Regulation O. Reg. 22/04 (particularly, section 4 – safety standards) by ensuring that Toronto Hydro facilities present no undue hazard to the public).

3. PROGRAM DESCRIPTION

3.1 Purpose and Need:

The primary purpose of the Emergency Response Program is to provide 24/7 emergency response and restoration services for unplanned and urgent distribution system events. The program also ensures that Toronto Hydro remains compliant with sections 4.5 (Unplanned Outages and Emergency Conditions) and 7.9 (Emergency Response) of the

DSC while responding to and restoring services during and following these events. The Program includes three main functions:

- **Dispatch Logistics**: This function involves communications intake (e.g. telephone calls, email, social media, web chat, and online outage submissions) from external stakeholders (e.g. customers, government authorities), information collection about events on the distribution system, and field resource assignment and dispatch for the purposes of investigating and resolving abnormal conditions and safety issues, and other customer service related deficiencies.
- **Grid Response**: This function is executed by specialized field crews that are dispatched in response to emergency situations, including compromised or failing distribution assets, primary and secondary service interruptions, power quality issues, and other customer service related deficiencies.
- **Storm and Major Event Restoration:** This function involves the efforts to restore power after major events, extended loss of supply, and damage and safety hazards arising from severe weather-related events.

Emergency response may be required for a variety of reasons, including: (i) response to requests for support from Toronto Emergency Management Services ("EMS") (i.e. police, firefighters, and paramedics) or the public; (ii) equipment failure; (iii) events related to severe weather; (iv) motor vehicle accidents (shown in Figure 1, below); (v) power quality issues; and (vi) reactive equipment isolations.

Due to the unpredictable nature of severe weather systems and large-scale events, Toronto Hydro cannot forecast the number of events requiring the mobilization of the Program's resources. However, to ensure preparedness to address events 24/7/365, the Program engages: (i) specialized grid response crews working on shift around the clock for immediate response, making temporary repairs, and restoring power where possible, (ii) reactive and standby crews for emergency repair and re-construction, and (iii) dispatchers to communicate with stakeholders, collect information, and coordinate emergency responses.

The City of Toronto's dense urban environment impacts the Program's operations and crew response. For example, high pedestrian and vehicle traffic can affect crew travel times to emergency events, and can increase the risk to the public. In addition, due to the diversity and vintage of different parts of Toronto Hydro's distribution system, grid response crews have to be prepared to work with a wide variety of equipment.

Figure 1: Crews were engaged to respond to a motor vehicle accident with a Distribution Pole (2022)

3.1.1 Dispatch Logistics

Dispatchers address inbound communications from internal and external stakeholders:

- External stakeholders include customers, members of the public, EMS, the City of Toronto, and other utilities; and,
- Internal stakeholders include field crews and other staff which include Toronto Hydro employees and external contractors.

Customers and other stakeholders are using increasingly diverse methods to convey information to Toronto Hydro. The utility serves a large customer base with a diverse set of needs and expectations that continue to evolve. Customers and other stakeholders expect to be able to report a power system concern through a variety of methods and receive a timely response and resolution. As a result, the utility is modernizing the Program to meet these ever-evolving needs

Toronto Hydro's dispatch staff address a wide variety of inbound communications. On a given shift, a dispatcher can attend to concerns reported through inbound calls, web chat engagement, social media requests, and online outage reports. For each method of communication, a dispatcher must interpret the nature of the event that has occurred, validate the veracity of the concern (for example, confirming that the reported incident is related to assets owned by Toronto Hydro or otherwise within the utility's responsibility to address), prioritize the event, confirm that it has not been already queued for response, and dispatch the most appropriate resource. In addition to attending to inbound communications from external stakeholders, dispatchers also engage in inbound and outbound communications with field resources to respond to emergency events.

From 2018-2022 the dispatch logistics function received an average of 81,000 inbound calls per year from external and internal stakeholders, including 54,000 external customer interactions from social media, outage web chat, and online outage reporting. Although customer calls typically constitute the majority of external customer interactions, social media report and outage web chat volumes increased in 2021 and 2022.

Call volumes in 2018 were substantially higher due to an increased volume of significant events than in subsequent years. While call volumes vary depending on system conditions, the volume of inbound calls from crews steadily declined year over year between 2019-2022 thanks to the new system and resource monitoring tools that Toronto Hydro continues to implement during the current rate period, as discussed in greater detail below under Section 4.2, Cost Control and Productivity. This decline has been partially offset by an increase in calls from external stakeholders during the same time period (Figure 2).

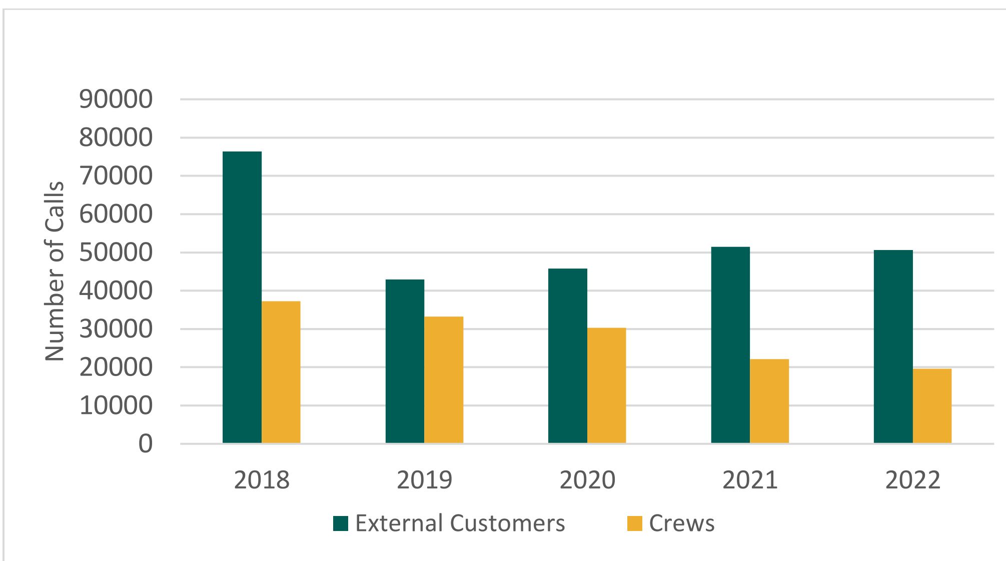

Figure 2: Total inbound calls received by dispatch between 2018-2022.

Toronto Hydro experienced a relatively lower volume of Major Event Days between 2019-2022 compared prior years. Furthermore, during the height of the COVID-19 pandemic in 2020 and part of 2021, many residents worked from home, businesses were closed, and public events were disrupted, resulting in decreased traffic volume in the City of Toronto. Event volumes in 2020 and 2021 were lower than those in the pre-pandemic years of 2018 and 2019. Nonetheless, customer interactions with the dispatch logistics function continued to increase from 2019 to 2022 (Figure 3).

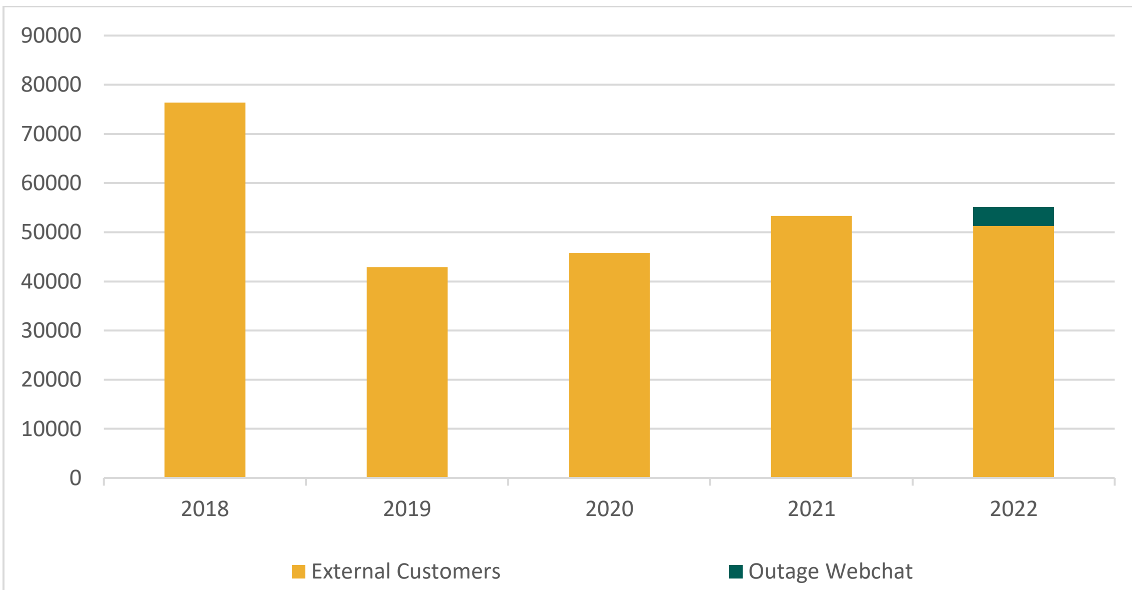

Figure 3: shows total inbound customer interactions dispatch received 2018-2022

Customers also have the option to submit outage reports online, through Toronto Hydro's website. Dispatchers validate these online outage reports using multiple tools at their disposal, including communicating directly with the customer, if necessary. After determining the nature of a customer's outage report, re-prioritizing or cancelling the event if required, dispatch will assign appropriate resources to respond to the event. To accomplish this, dispatchers gather the required information and interact with relevant Toronto Hydro systems, as described in Section 3.1.2 below. Between 2018-2022, there were an average of 25,000 online outage submissions and after validation was completed, dispatchers submitted 2,800 unique outage tickets, for execution (Figure 4).

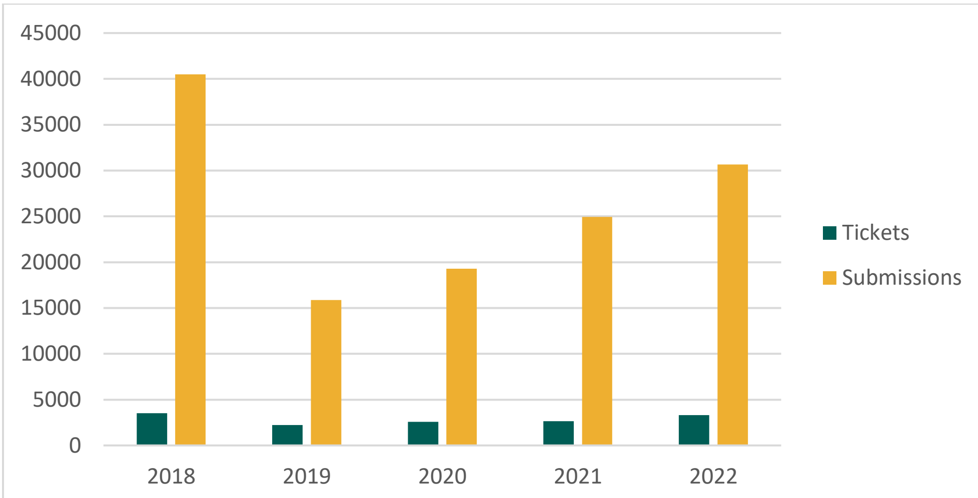

Figure 4: Online outage report submissions and tickets created 2018-2022

As further detailed in Section 3.1.2 below, dispatchers manage daily power system events using two applications, the Outage Management System ("OMS") function of the Network Management System ("NMS"), and Oracle Field Service Cloud ("OFSC").

3.1.2 Grid Response

Over the 2018-2022 period, approximately 20,000 events were created per year that required crew dispatch. The total number of events requiring crew dispatch represents approximately one quarter of the total communications intake dispatchers addressed, as discussed in the previous section.

Toronto Hydro classifies events that require crew dispatch into four main categories:

- **Emergency Events**: Emergency calls reported by Toronto EMS or members of the public may involve significant public health and safety risks. Pursuant to the section 7.9 of the Distribution System Code, a crew must arrive at the location of the event within one hour of being notified, 80 percent of the time. Of the approximately 3,000 emergency events logged annually over the 2018-2022 period, over 1,100 were from Toronto EMS or validated reports by members of the public.

- **Power Off (Primary):** "Power off" calls attributed to power interruptions on primary facilities (i.e. on the primary high voltage side of the distribution transformer). Primary "power off" events involve power disruptions to sizeable loads and large numbers of customers, typically requiring coordinated switching, load transfers, and often direct engagement with customer building superintendents and operations staff on location.
- **Power Off (Secondary):** "Power off" calls attributed to interruptions on secondary facilities (i.e. the distribution transformer or equipment on the secondary low voltage side of transformer), and "power on" events where power has not been interrupted but an issue has been identified on primary facilities such as voltage fluctuations or flickering lights.
- **Other**: Situations such as sparking wires, objects on wires, feeder patrol findings,[1] and planned outages.

[1] Results of visual inspections of feeder assets that Toronto Hydro crews/contractors perform in accordance with section 4.4 of the Distribution System Code.

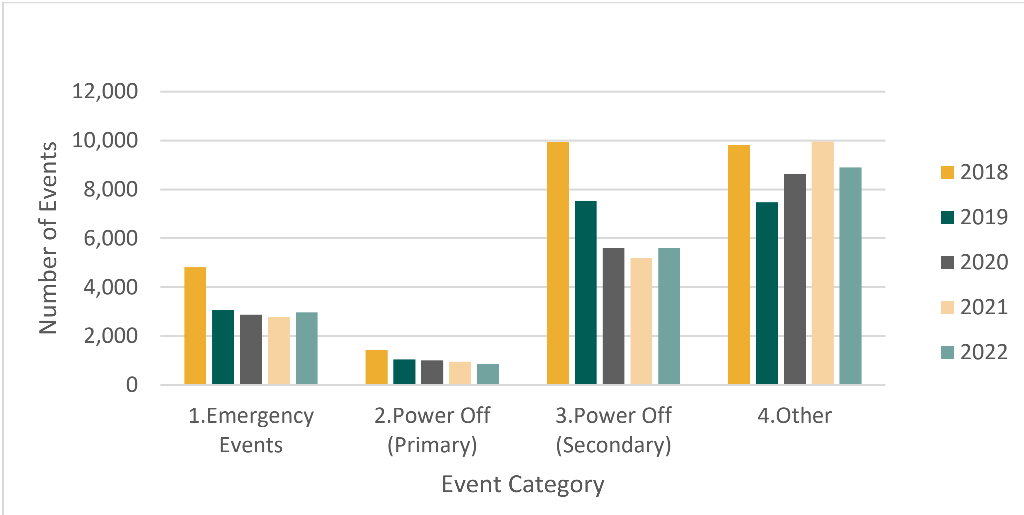

Figure 5: shows the number of events by category during the 2018-2022 period

Categories 1 and 2 constitute the highest priority events for dispatchers and grid response resources.

Category 3 and 4 events represent the largest number of calls and typically involve power interruptions to a small number of customers or lower risk situations. These events, which occur daily as part of the utility's routine operations, require timely response by crews that are properly equipped and trained to address repairs on high voltage equipment that can pose safety risks. Due to the frequency of these events, Toronto Hydro assigns dedicated crews to the grid response function, which typically involves:

- An emergency crew restoring power to all customers and making all necessary permanent repairs (e.g. when current-limiting fuses have ruptured, primary or secondary conductors are down, or insulators or arrestors have failed);
- An emergency crew restoring power to all customers but only making temporary repairs or isolating the deficiency (necessitating follow-up repairs, usually commencing the next day); or

- An emergency crew arriving on site and, after assessing the situation and making the area safe for the public and employees, determining that the scope of the repair is beyond that crew's capabilities and that construction or civil crews are required to fully address the situation (Figure 6).

Figure 6: shows a leaning distribution pole Grid Response crews attended to and forwarded for permanent reactive repair (2021)

The grid response function also addresses deficiencies in equipment or components that are identified in the course of planned activities and that require immediate attention. For example, a subset of deficiencies found from Toronto Hydro's Preventative and Predictive Maintenance programs are directed to grid response for immediate action on an emergency basis to address any unacceptable safety/public safety, environmental, or system reliability risks. This process is used to create a diverse mix of work to ensure 24/7 crew productivity and response time to emergency events as they arise.

Given the nature of the events that the grid response function attends to, the vast majority of its work is non-discretionary. Restoration efforts after power interruptions, for example, are expected to be expedient to minimize customer outage time and maintain system reliability. As previously noted, the DSC mandates timely responses to EMS calls. Therefore, the utility must respond to serious equipment deficiencies to mitigate potential public safety, environmental, and system reliability risks. Such deficiencies may include, for example, damaged poles that could collapse and harm members of the public or oil leaks from a transformer that could contaminate residential or environmentally sensitive areas (Figure 7).

Figure 7: shows an Overhead Transformer taken down by a falling tree, spilling oil onto the roadway and sidewalk (2022)

To assist with situational reporting requirements such as event clearances or estimated time of restoration updates and situational awareness, the grid response and dispatch logistics functions interact with the following Toronto Hydro systems: Outage Management System ("OMS"), Distribution Management System ("DMS"), Oracle Field Service Cloud ("OFSC"), Oracle Customer Care & Billing (i.e. Toronto Hydro's customer information system or "CIS"), Geo Electrical Mapping Records Viewer ("GEAR"), GeoTab, Work Management Tool ("WMT"), Batch Request Tool ("BRT") for meter pinging, and Toronto Hydro's enterprise resource planning system ("SAP") for emergency maintenance work order creation.

3.1.3 Storm and Major Event Restoration

The grid response function also attends to outages and public safety hazards on major or significant event days,[2] including significant storm damage. Severe weather systems and large-scale events (e.g. loss of upstream supply from Toronto Hydro's transmitter Hydro One Networks Inc.) can necessitate significant crew efforts on a number of days each year. The effort is typically in response to widespread damage on the distribution system and power interruptions to customers. The largest of these events are referred to as "major events".

While severe weather and significant events are inherently unpredictable, any resulting increase in customer calls and system issues can produce a tangible increase in event volumes year over year. Severe weather such as high wind or freezing rain can result in fallen trees knocking down power lines (Figure 8), broken poles, and pole fires. During the 2018-2022 period, Toronto Hydro experienced seven major event days, with five occurring in the spring and summer of 2018, impacting a total of 624,000 customers. There was one major event day in July 2020, with wind gusts reaching 119km/h and impacting 54,000 customers. In May 2022, extreme weather resulted in a major event

[2] Major Event Days are defined in accordance with the IEEE 1366 Standard as: "a day in which the daily System Average Interruption Duration Index (SAIDI) exceeds a Major Event Day threshold value". The OEB's Electricity Reporting and Record Keeping Requirements defines a "Major Event" as an event that is beyond the control of the distributor and is a) unforeseeable, b) unpredictable, c) unpreventable, or d) unavoidable.

day impacting 142,000 customers. Table 3, below shows Extreme Weather events in the city of Toronto between January 2020 through March 2023.

Table 3: Extreme Weather (January 2020 through May 2022)

Event	Description of Impact
High Winds Storm (May 2022)	• 142,052 Customers impacted at its peak • 5 days to restore power to all customers
Flash Storm (August 2021)	• 20,000 customers impacted at peak • 2 days to restore power to impacted customers
Thunderstorm High Volume Event (July 2021)	• A line of thunderstorms with windspeeds in excess of 75 km/h. • 12,000 customers were impacted at its peak • Service restored for the majority of customers within 2 days
High Wind Event (April 2021)	• Wind expected to reach ~95hm/hr • 22,000 customers impacted at its peak • 1 day to restore power to impacted customers
High Wind Event (November 2020)	• Winds in excess of 100 km/h • Estimated 8000 customers impacted and 101 outages at its peak
Flash Storm (July 2020)	• Approximately 50-70mm of rain • 50,000 customers impacted at peak • Impacted customers restored within 2 days
Adverse Weather (January 2020)	• Approximately 60mm of rain, 5-15mm of ice and 90 km/h winds • 4900 customers impacted at its peak • Impacted customers restored within 3 days

Since 2012, there have been a total of 21 Major Event Days in Toronto Hydro's service territory and 81 percent have resulted from inclement weather, of which 57 percent occurred between March and August.

Figure 8: Crews respond to a fallen tree on power lines due to a wind storm event (2021)

During a storm, shift managers and dispatchers will support the event response by coordinating all available field resources to repair the damage and restore power, scaling up resource levels as required. A shift manager will assign team members to different areas of focus. For example, some dispatchers address customer calls and some dispatchers focus on field crew communications. Assigning dispatchers to more specific tasks during storm response allows for the more effective management of increased event and call volumes.

When there is a substantial influx of outage and hazard reports in a short period, duplicate events are likely. The dispatch logistics function also heavily focuses on ensuring the information in the work agenda is accurate, removing redundant events to ensure field resources are effectively used. For very large events such as the 2013 ice storm or the May 2022 weather event that caused tremendous, widespread damage, Toronto Hydro utilizes all available internal and external resources, which are funded through the

Emergency Response Program. In such situations, grid response resources are complemented by resources typically deployed for planned work, such as re-purposed design and construction crews to address widespread damage on the distribution system and power interruptions to customers.

Toronto Hydro's approach to Major Event Days and other incidents is largely driven by the need to ensure that critical infrastructure and services such as EMS facilities, transit, hospitals, and water pumping stations remain functional and to restore power to customers as quickly as possible. This approach is also reinforced by the need to mitigate risks associated with storm damage and major events to public and employee safety (e.g. from hazards posed by downed conductors or damaged poles), system reliability (e.g. to prevent unreasonably long durations of customer interruptions), and the environment (e.g. from failed transformers leaking oil).

4. PROGRAM COSTS

In 2025 Toronto Hydro requires $25.9 million in rate funding for Emergency Response Program, which represents an increase of $3.8 million over the last rebasing in 2020.

Over the 2025-2029 rate period, the utility expects the cost of the Program to increase by annual growth rate of 2.5 percent which is necessary to address the emergency response needs and deliver the customers outcomes enabled by this Program.

Table 4 provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for each of the Program's segments.

Table 4: Emergency Response Program Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Emergency Response	22.1	23.0	22.0	20.4	23.1	25.9	26.4	27.2	27.9	28.6
Total	**22.1**	**23.0**	**22.0**	**20.4**	**23.1**	**25.9**	**26.4**	**27.2**	**27.9**	**28.6**

4.1 Cost Drivers

Year-over-year variances in historical actual costs are primarily attributable to storm events.

Due to the nature of the events addressed by the Program, the costs incurred are completely demand driven and can vary from year to year, with Major Event Days and smaller storms as the major cost drivers.

Toronto Hydro determines its complement of grid response and dispatch logistics staff in accordance with the utility's obligations to meet emergency response requirements on a 24/7/365 basis. The utility continually monitors and optimizes complement and shift arrangements to ensure requisite resources are available to support the level of response and volume of work.

4.2 Cost Control and Productivity

4.2.1 Dispatch Logistics

Toronto Hydro's implementation of various technological solutions between 2019-2022 to improve event validation by dispatchers contributed to a decrease in average event volumes over the same period, which in turn helped the utility reduce truck rolls and save on deployment costs. Dispatchers interact with a number of systems throughout a given shift to assist in validating a reported concern and deciding the appropriate course of action:

- Network Management System (OMS and DMS): Dispatchers log events to the OMS work agenda. In addition, dispatchers can confirm whether there is an outage at a customer's smart meter using NMS' Advanced Metering Infrastructure ("AMI") functionality. During emergencies, dispatchers use NMS to support damage assessment and wire guarding activities, as the system provides a view of all devices and asset types in the field from a single screen, facilitating the accurate determination of the devices impacted, customer counts, and boundaries to set event priority and send the event to the appropriate field resources.

- Oracle Field Service Cloud ("OFSC"): OFSC allows dispatchers the ability to view pending events, traffic, and real-time crew locations on a single display. This interface assists in logistical decision making, reducing crew travel time between events. Incoming smart dispatching functionality will factor in crew location, traffic, estimated duration, event priority, device type, and crew qualification when used for emergency dispatch functionality. Toronto Hydro also expects additional cost-savings and productivity improvements from the planned go-live of NMS-SAP integration in summer 2023. The utility's dispatchers currently create 20,000 emergency maintenance work orders per year. SAP integration will allow dispatchers to create an emergency maintenance work order directly from the NMS work agenda. This process improvement will streamline the day-to-day work order creation process for field crews to charge costs against when completing system events, resulting in considerable time savings annually and presenting an opportunity for dispatchers to take on additional duties during their shifts. In addition, OFSC provides a chat feature where dispatchers and field staff can communicate electronically, which has the potential to mitigate phone queue wait times in high-volume scenarios and communicate important safety messaging to all electronic crews without the need for a phone interaction. Toronto Hydro expects to leverage future phases of OFSC to introduce a more automated, productive platform that can assign events to the most appropriate qualified resources.

- Batch Request Tool ("BRT"): Dispatchers use the BRT to confirm if there is voltage to a customer's meter using AMI functionality. All initial outage reports are validated with the use of BRT, allowing dispatchers to assign confirmed outages to crews in the field. If a customer is shown to have full power after pinging their meter, dispatchers correspond with the customer and reprioritize or cancel the event accordingly, optimizing the use of field resources.

- Geo Electrical Mapping Records Viewer ("GEAR"): Since a significant part of work under the Program involves attending to asset damage reports, such as wires down situations, dispatchers use GEAR to determine asset ownership in the field and confirm that Toronto Hydro is responsible for corrective or reactive actions. The consistent use of the GEAR viewer saves costly truck rolls in regards to issues involving non-Toronto Hydro assets such as telecommunications wires or customer-owned equipment.

- Work Management Tool ("WMT"): WMT is a database of all electronic system response reports, including pictures and files crews upload with their event clearances. In 2021, Toronto Hydro leveraged the OFSC implementation to enhance WMT to allow for enhanced documentation, photos and files to be uploaded.

Dispatchers use WMT to understand the historical context of a customer concern. For example, if there is a recurrent issue in a particular location or repeated inquiries from a customer, dispatchers are able to review previous event clearance details and possibly forward the event to another work group for follow up if the issue no longer falls under the Program. The enhancements allow for improved documentation when follow up or research is required.

To ensure optimal resource utilization during low event volume periods, dispatchers and crews attend to planned work that supports overall system health, such as planned customer isolations, inspections, and maintenance tasks.

Toronto Hydro dispatchers work on a shift schedule that the utility has optimized based on current staffing levels and to enable compliance with applicable legislative and regulatory requirements, as well as providing timely response to internal and external stakeholder concerns. In the event of a sudden influx of call and event volumes, a 24/7 standby complement is available to scale up and manage higher call and event volumes. This scalability allows dispatch logistics to generally handle a significant event in an end-to-end manner before having to engage the Disaster Preparedness Management program under Exhibit 4, Tab 2, Schedule 6.

4.2.2 Grid Response

Predicting the number and timing of system events, and the severity and frequency of adverse weather with a high level of accuracy is generally not practical. However, Toronto Hydro’s capital investments through the System Renewal programs help mitigate the risk of asset failure by renewing assets in poor condition and improving overall asset performance.[3] In addition, the utility's continuous improvement in engineering and the work of its standards committees, as well as preventative and predictive maintenance programs (including vegetation management and storm hardening) all contribute to the resilience of the distribution system.[4] Collectively, these efforts are expected to improve the overall resiliency of the distribution system and help alleviate cost pressures in the Program over the long term.

Toronto Hydro goes through a competitive bid process to tender out the operations in grid response function and ensure that costs for these services are in line with market rates. The nature of the services requires highly trained and experienced field workers who can efficiently and safely troubleshoot distribution system problems, identify the necessary repairs and execute the work under all weather conditions while working under pressure. Currently, work is split between two independent service providers. Each provider has crews working 24 hours, 7 days a week. To account for the ever-changing needs of Toronto Hydro's distribution system, the grid response function continues to assess and review the shift complements on an ongoing basis and adjusts schedules accordingly to balance performance with costs. Crews are also cross-trained and set up in a way to enable the combination of two trouble crews to complete reactive work as required and avoid the need to call in a standby construction crew on overtime, resulting in reduced costs.

When event volumes are relatively low, the grid response function assigns less urgent maintenance work under the Corrective Maintenance and Preventative and Predictive Maintenance programs to maximize labour utilization and improve system reliability.[5]

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[3] Exhibit 2B, Section E6.
[4] Exhibit 4, Tab 2, Schedules 1-4.
[5] *Ibid*.

In addition, through the use of the systems discussed under Section 4.2.1, Toronto Hydro assesses and monitors the number of crews on shift throughout each day of the week to optimize available resources. For example, the utility staggers crew start and stop times and prioritizes events to increase the number of events responded to per crew shift.

4.3 Emergency Response Program Year-over Year Variance Analysis

2020 – 2021 Variance Explanation

Between 2020 and 2021 there was an increase of $0.9 million due to multiple high wind storm events over the months of March, May, August, October, and December.

2021 – 2022 Variance Explanation

Between 2021 and 2022 there was a decrease of $1 million. Compared to the previous year, 2022 had less severe and milder storm event days, with the exception of the May storm which resulted in a Major Event Day (“MED”).

2022-2025 Variance Explanation

Between 2022 and 2025, costs in this segment are expected to increase by $3.9 million, or an average of $1.3 million per year due the increased cost of providing emergency services as a result of inflationary cost pressures including increased labour and vehicle costs. In addition, a new contract for external resources will become effective in 2025.

2025-2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $2.7 million, or an average of $0.7 million per year, to maintain the resourcing capacity and capabilities required to support the volume and complexity of work discussed above. If

Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various legal compliance risks and drawbacks, including:

- Potential non-compliance with the Distribution System Code service quality requirement for emergency response,
- Delayed responses to safety and environmental risks, which would increase customer and crew exposure to unsafe conditions and the potential for fines or penalties by federal, provincial and municipal regulatory bodies for failure to report and or mitigate environmental spills in a timely manner,
- Extended customer outage durations,
- More frequent and longer outage durations, adversely affecting the health of distribution assets and increasing the likelihood of more prolonged outages, and
- Delayed responses to urgent customer and stakeholder concerns.

DISASTER PREPAREDNESS MANAGEMENT

1. SUMMARY

Table 1: Disaster Preparedness Management Summary

Disaster Preparedness Management Program									
Outcomes: Customer Focus, Operational Effectiveness - Reliability, Operational Effectiveness - Safety, Operational Optimization									
Segments: • Disaster Preparedness Management									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
6.0	5.5	4.9	1.3	1.8	1.9	1.9	2.0	2.1	2.2

The Disaster Preparedness Management program (the "Program") entails the implementation of a robust and comprehensive disaster preparedness framework for Toronto Hydro. The Program is comprised of activities to prepare for, respond to, and recover from disasters or large-scale emergencies (e.g. severe storms, major system/facility disruptions) at both the distribution system and corporate levels. It delivers the requisite governance, planning, and training that enables Toronto Hydro to mobilize and deploy its resources rapidly and effectively during and following disasters in order to mitigate the public safety, reliability, and financial risks that can materialize at such critical times. The Program also uses those same methodologies to prepare an effective response to internal disruptions of normal operations by identifying critical work and prioritizing the necessary supporting resources such as workspace, equipment, technology, people, etc.

As the largest city in Canada, Toronto is home to over 3 million people and 190,000 active businesses including the country's largest financial institutions, leading medical and research facilities, educational institutions, major transportation hubs, and federal, provincial and municipal government offices.[1] In addition, the City frequently hosts events of regional, national, and international significance. Extended power disruptions within Toronto Hydro's service territory can have significant impacts on these important organizations and events, causing far-reaching social and economic consequences. In addition, with the energy transition leading to increased electrification—including the electrification of heating and transportation—as well as the widespread adoption of work from home and hybrid working models, it will be even more important for residents and businesses to have consistent and reliable access to electricity.

Accordingly, it is essential that Toronto Hydro respond quickly and effectively to minimize disaster-related power disruptions. The urgency of this need is further heightened given the growing likelihood and intensity of extreme weather events and deliberate threats (e.g., cyber-attacks).

This Program is a continuation of the activities described in the Disaster Preparedness Management Program from Toronto Hydro's 2020-2024 Rate Application.[2] The Program is necessary to ensure the continued implementation of a comprehensive and industry-leading disaster readiness program that satisfies customer expectations, maintains adequate service levels, ensures public and employee safety during and following disasters, and enables the utility to comply with applicable legislative and regulatory requirements.

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[1] City of Toronto, *Toronto Economic Dashboard, Labour Demographics*, online: <https://www.toronto.ca/city-government/data-research-maps/toronto-economy-labour-force-demographics/toronto-economic-dashboard/>.
[2] EB-2018-0165, Exhibit 4A, Tab 2, Schedule 6.

2. OUTCOMES AND MEASURES

Table 2: Program Outcomes and Measures Summary

Customer Focus	• Contributes to Toronto Hydro's customer focus objectives by: o Establishing and communicating accurate estimated outage restoration times for disaster incidents; o Coordinating effectively with impacted customers, particularly those identified as key customers; and o Restoring customers efficiently and effectively, using all available internal and external resources (e.g. through the utilization of mutual aid assistance as necessary).
Operational Effectiveness - Reliability	• Contributes to Toronto Hydro's system reliability objectives (ex. SAIDI, SAIFI, FESI-7) by: o Responding efficiently (including through the effective utilization of available resources) to major disruptions; o Reducing response times by conducting regular assessments to understand the utility's exposure to hazards and align preparatory activities based on expected event outcomes; o Maximizing and expanding potential resources for disaster response and restoration by building mutual assistance relationships with external partners; and o Using digital and physical damage assessment capabilities to enable more effective and informed prioritization of restoration efforts, in alignment with industry best practices. • Ensuring compliance with Section 39 of the *Electricity Act, 1998* and Chapter 5, Section 11 of the Independent Electricity System Operator ("IESO") Market Rules that aim to alleviate the effects of an emergency on the electricity system by preparing and implementing emergency plans. • Ensures minimal impacts following an internal disruption by implementing a corporate business continuity program to assess and prioritize supporting resources for critical work process.
Operational Effectiveness - Safety	• Contributes to Toronto Hydro's safety objectives, measured through metrics such as the Total Recordable Injury Frequency ("TRIF"), by: o Responding to disasters in a timely manner and mitigating the public health and safety risks.

	o Adjusting the number of staff on duty to maintain a perimeter for safety or risk hazards following a disaster event. o Providing clear role assignment and training with respect to disaster and emergency incident response. o Ensuring all employees know their role and expectations, so that the appropriate actions can be taken to limit the scope and duration of an incident.

Figure 1: Damage caused by derecho wind storm in May 2022

3. PROGRAM DESCRIPTION

Disruptions and disasters are unpredictable in timing or scope, but are virtually certain to affect a distribution system as large and complex as that of Toronto Hydro. The Program aims to increase the reliability of grid operations by implementing mechanisms to more effectively and efficiently restore operations in response to disaster events and disruptions. This is consistent with legislative and regulatory requirements regarding market participants' obligations to prepare and plan for disasters.[3]

Customers also expect the utility to deliver services safely and provide accurate and timely communications of restoration times during outages. However, providing electricity distribution services to a city as large and complex as Toronto already presents a host of operational challenges even under normal operating conditions. These challenges are drastically amplified during events such as severe storms, pandemics, and critical system disruptions. Table 3 below outlines several recent examples of incidents that exceeded the utility's standard response practices and triggered the deployment of additional planning and response resources under the Program.

Table 3: Examples of Recent Events in the City of Toronto

Event	Description
COVID-19 Pandemic Response (Mar 2020 – Oct 2022)	• A Level 2 Emergency Declaration led to the establishment of an Incident Management Team and supporting response infrastructure in March 2020. • Toronto Hydro needed to quickly pivot to remote and social distancing work for all employees when lockdowns began. • Personal protective equipment (PPE) including masks, face shields, disinfectant wipes needed to be procured, warehoused and distributed to protect working staff. • Social distancing rules prevented shared vehicle use, increasing mileage and vehicle utilization. • All employees, vendors and contractors were directly impacted by necessary measures. • Zero cases of at-work COVID-19 transmission were recorded.

[3] Independent Electricity System Operator Market Rules for the Ontario Electricity Market, Chapter 5, Section 11.

Event	Description
Derecho Wind Storm (May 2022)	• Wind storm struck in a line from southern Ontario to Quebec City. • High winds of 120+ km/h were recorded at Pearson International Airport. • ~142,000 Toronto Hydro customers experienced an outage at peak. • 98% of customers were restored within 24 hours, 99% after 48 hours.
Mutual Aid Deployment to Ottawa (May-Jun 2022)	• Hydro Ottawa (“HO”) requested assistance on May 23 through the Ontario Mutual Aid Group (“OnMAG”) following the May Derecho Wind Storm. • HO experienced 110,000 customer outages. • Following the stand-down of internal response, Toronto Hydro deployed 26 employees on May 25 to aid HO’s restoration efforts. • Deployment continued until June 5.

Climate change is a significant factor influencing Toronto Hydro’s planning and operations. Scientists worldwide overwhelmingly agree that the planet is warming. [4] A warmer climate is expected to lead to more frequent and severe extreme weather events. Toronto Hydro also expects an increase in deliberate hazards including cyber-attacks and transnational threats to critical infrastructure Both weather incidents and deliberate hazards can rapidly escalate in scope, cross jurisdictional lines, and result in significant losses. In this regard, the risk exposure of Canadian utilities – particularly those in the country’s largest City – is a complex and urgent issue that could materialize in far-reaching social and economic consequences at the local, regional, and national levels. In this context, it is imperative for Toronto Hydro to implement a comprehensive disaster

[4] Toronto Hydro engaged Stantec for a report titled Climate Change Vulnerability Assessment Update, which was completed on November 18, 2022.

preparedness framework that underpins its multi-faceted approach to planning, response, operations, and recovery.

Temperatures in Toronto are expected to increase in the coming decades. For example, by 2050, the average number of daily maximum temperatures of 25°C are expected to occur 110 times per year compared to 86 times per year currently. A warmer climate is expected to lead to more frequent and severe extreme weather events. In addition to extreme weather events, Toronto experiences a wide range of weather conditions that may not be classified as extreme, but nevertheless have the potential to adversely affect the distribution system at various times during the year including heat, high winds, heavy rainfall, and heavy snowfall. As customers come to rely more on electricity to meet their energy needs, it will become even more important for Toronto Hydro to have systems in place to ensure reliability and that power is restored quickly following storms.

In addition, the COVID-19 pandemic highlighted the potential impact of non-grid events on Toronto Hydro's capabilities. The pandemic significantly affected normal operating procedures of in-office work and close-contact working conditions in the field. A robust incident management system and business impact analyses allowed Toronto Hydro to efficiently pivot to a work-from-home system and social distancing measures in the field. Toronto Hydro continued to reliably distribute electricity to its customers while protecting the safety of its employees, contractors, and the public.[5]

[5] An incident management system is comprehensive system for incident management that can be used to coordinate a structured incident response of any scale. The Province of Ontario provides a standard Incident Management System (IMS 2.0), which has been implemented by Toronto Hydro. Government of Ontario, *Incident Management System (IMS) Guidance Version 2.0* (March 31, 2021) online: <https://files.ontario.ca/solgen-ims-guidance-version-2.0-en-accessible.pdf>.

Overall, the Program enhances the utility's capacity for effective planning, communications, and response activity coordination in anticipation of, during, and following disasters that result in significant and widespread supply interruptions and threats to public safety. It does this through two complementary disciplines: emergency management ("EM") and business continuity ("BC"). Planning under the Program is calibrated to reflect Toronto Hydro's current risk profile and relevant standards and best practices.[6]

The Program consists of the following three functions:

1. Hazard and Risk Profiling & Disaster Planning;
2. Program Implementation and Evaluation; and,
3. Maintenance and Improvement.

Each function is summarized below.

3.1 Hazard/Risk Profiling & Disaster Planning

Hazard or risk profiling and disaster planning is the primary and largest function of the Program. This component encompasses Hazard Identification Risk Assessment, Business Impact Analysis, Response Planning, and External Partnerships Management.

3.1.1 Hazard Identification Risk Assessment ("HIRA")

HIRA entails the identification of specific hazards and risks to Toronto Hydro's operations. Through HIRA, the utility determines how frequently such hazards can materialize, the

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[6] The Program follows the Canadian Standards Association's Z1600 Emergency and Continuity Management Program (CSAZ1600) standard. CSAZ1600 outlines requirements for emergency and continuity management programs that address disaster prevention, mitigation, preparedness, response, and recovery. Canadian Standards Association, *Emergency and continuity management program,* (2017).

severity of the potential impact, and which hazards pose the greatest threat to distribution system operations. HIRA findings enable the utility to prepare for worst-case scenarios and most likely risks, and efficiently allocate resources to hazards that may occur within its service territory.

Toronto Hydro has fully operationalized a sustainable enterprise-wide HIRA framework. This framework has improved the utility's understanding of its up-to-date hazard exposure profile and has enabled the development of hazard risk models by correlating anticipated external events (e.g. weather forecasts) to power system impacts, enhancing operational decision-making. For example, thanks to this system, Toronto Hydro's ability to anticipate and respond to weather events has improved during the 2020-2024 rate period, through the use of dedicated forecasting tools. In addition, the implementation, training, and use of incident management system procedures has allowed for a more effective response architecture when emergencies or incidents occur.

3.1.2 Business Impact Analysis ("BIA")

Through BIAs, the utility predicts the consequences of a temporary loss of key business functions and gathers the information needed to develop business recovery strategies. BIA results show how operational disruption will impact the reliable distribution of electricity and enables Toronto Hydro to identify which key services, facilities, and equipment are of the highest criticality and what resources it needs to secure to ensure key services can continue at acceptable levels.

In 2020, Toronto Hydro initiated an expansion into business continuity planning ("BCP"), which included hiring qualified staff and securing a BCP software platform. The utility is currently conducting initial BIAs for all departments, which will allow the prioritization of critical processes and implementation of a standardized approach to BCP across the entire organization. This will allow Toronto Hydro to monitor for gaps and plan remediation, and test its capabilities in the coming years. By the end of 2024, Toronto Hydro will have a full business continuity management program with BIAs completed and reviewed on annual cycles, feeding to updates of BCPs and validated by testing and exercises covering all aspects of Toronto Hydro. This Program will ensure Toronto Hydro has a robust response infrastructure to manage internal disruptions and complement the Emergency Response program discussed in Exhibit 4, Tab 2, Schedule 5.

3.1.3 Response Planning

Toronto Hydro adopts an all-hazards approach to disaster preparedness, which involves the identification and integration of common disaster response elements across all hazard types (e.g. severe storms, cyber-attacks, large-scale system failures, etc). The utility accomplishes this through the use of the Ontario Incident Management System approach to emergency management, which includes recommendations on how personnel, facilities, equipment, procedures, and communications should be coordinated during an incident. This approach increases planning efficiency, improves the utilization of internal resources, and ensures a standardized and efficient response if and when the utility must react rapidly. It also streamlines processes and improves the utility's ability to focus on unique response requirements for specific hazards and risks.

The Program produces and houses key disaster preparedness frameworks, including planning documents covering corporate disaster preparedness governance, emergency management, hazard-specific planning in respect of system damage and restoration strategies, Toronto Hydro's role in participating in a province-wide, black-start restoration of the provincial grid, planning for the management of supply chain, purchasing, and material distribution during emergencies, and the utility's approach to effectively engaging with customers and external stakeholders during emergencies.

In addition, public authorities and organizations hosting events or responding to situations in the city frequently approach Toronto Hydro to provide assurance in the form of contingency plans for specific events (e.g. the 2019 Toronto Raptors victory parade, support for mass vaccination clinics in 2021-2022, "trucker protests" blockading downtown areas in February 2022) that bring together thousands of attendees. Each of these events and situations is unique in nature, requiring custom response plans that are tailored in scope and approach relative to the existing grid emergency plans.

3.1.4 External Partnerships

The utility collaborates closely with electricity sector partners (e.g. Ontario Power Generation, Hydro One Networks Inc., the Independent Electricity System Operator, Electricity Canada) to ensure consistent response and collaborative restoration.

Toronto Hydro is an active participant in the working groups of the departments, agencies, and corporations ("DACs") of the City of Toronto, contributing to both the Extreme Winter Weather Working Group and the Extreme Heat Emergencies Working Group. This work highlights the foundational nature of the utility's line of business, and how critical its resiliency is to the social and infrastructure work the other DACs conduct, as without power they cannot effectively operate.

In addition, through mutual assistance ("MA") agreements with other utilities, Toronto Hydro has access to "at cost" crews, equipment, supplies, or expertise following a disaster. Toronto Hydro is an active member of the North Atlantic Mutual Assistance

Group and a founding member of the Ontario Mutual Assistance Group, which enables the utility to leverage assistance from a number of neighbouring jurisdictions when the need arises.

Figure 4: Repair Work by Toronto Hydro Crews Deployed to Hydro Ottawa Territory (May 2022)

The Program includes planning for the deployment and onboarding of MA crews. MA can give rise to operational challenges and requires significant planning and coordination to be leveraged safely and efficiently. To ensure the safety of external crews assisting Toronto Hydro during disasters, the utility needs to undertake significant research, negotiation, and planning to implement the necessary MA arrangements and derive the maximum benefits of such arrangements. Jurisdiction-specific legislative and regulatory regimes, along with different operating standards and system configurations, can limit the host utility's ability to take full advantage of MA within a short timeframe. While the adoption of the common Utility Worker Protection Code has simplified some matters, operational complications associated with differences in safety practices, construction standards and restoration practices and lack of familiarity with the requesting utility's system may result in MA crews being assigned simpler, non-critical tasks, which ultimately leads to longer restoration timelines and prevents the full utilization of highly qualified resources. Furthermore, the difficulties encountered in the deployment of mutual aid resources can lead to an increase in overall restoration costs without proper advance planning and coordination. During the 2025-2029 plan period, the utility will update and expand on its plan for sourcing, onboarding, and utilizing non-Toronto Hydro crews following a potential disaster event.

3.2 Program Implementation and Evaluation

This Program function entails the delivery of required workforce training and the execution of approved plans and processes during a disaster incident. The Program provides employees with training on updated disaster preparedness frameworks and processes, emergency roles, and incident management. It also integrates emergency response and preparedness requirements into corporate IT systems. This shows Toronto Hydro's commitment to plan ahead and ensure resiliency is integrated into core processes and systems.

The Program evaluates ongoing disaster planning and procedures through testing, exercises, and reviews of actual events (e.g. through after-action reviews and Major Event Day reporting). Toronto Hydro conducted an after-action review after an incident to gather the lessons learned from direct experience and enable their incorporation into business practices. Relevant incident commander(s) then draft and signed off on an after-action report ("AAR") and present it to the Disaster Planning Forum ("DPF") at the next opportunity.[7] Smaller scale actions resulting from the AARs are implemented without delay. For large scale actions, recommendations are made to the DPF members to determine if large-scale changes to corporate practices are necessary.

In addition, using simulation techniques (e.g. drills, system tests, etc.), the utility is able to identify gaps in its disaster planning including with respect to training, internal and external coordination, communications, and resource availability. For example, since 2020 Toronto Hydro has:

- Participated in a continent-wide industry response validation (GridEx VI 2021);[8]
- Conducted 3 rounds of incident management software (Disaster LAN) exercises to practice and validate knowledge of the tool across the corporation;
- Used Disaster LAN to manage roll-out of Utility Work Protection Code in 2021/22 across Toronto Hydro; and
- Validated and tested the incident management system processes and capabilities in numerous potential and actual disruptions.

During the 2025-2029 rate period, Toronto Hydro expects to build and enhance a comprehensive exercise and testing program for disaster preparedness. It will continue to design and conduct disaster simulations and tests that identify program gaps with a view to informing adjustments and improvements in the overall disaster planning framework and supporting plans and procedures.

[7] The Disaster Planning Forum is a forum for leadership from across Toronto Hydro to review and provide feedback on the utility's Disaster Preparedness Program.
[8] This is a voluntary continent-wide exercise is focused on cyber- and infrastructure-attacks on critical grid components, and participants' capabilities to respond and cooperate. The IESO coordinated participation among Toronto Hydro and other Ontario participants. Toronto Hydro intends to participate in GridEx VII in November 2023.

3.3 Program Maintenance & Improvement

This function consists of reviewing all elements of the Program including hazard and risk assessment, planning, business continuity planning, and exercises and testing, in order to maintain a current framework that meets the utility's needs and risk profile. Given the unique characteristics of disaster events and the need to respond efficiently and effectively in each case, dedicated resources and processes are required in order to research, identify, evaluate, and implement adjustments and enhancements to existing practices.

Toronto Hydro aims to maintain and improve the effectiveness of the Program on an ongoing basis through the use of both internal and external reviews and assessments. For the 2025-2029 rate period the utility intends to continue its systematic reviews of the Program by gathering feedback from internal personnel involved in disaster response and impacted stakeholders through the previously discussed AAR process.

In addition, the Program will ensure continued alignment with applicable legislative and regulatory requirements and industry standards. Toronto Hydro intends to align its business procedures with the tenets of the Canadian Standards Association Z1600 body of guidelines, which provide best practices for emergency and continuity management. Toronto Hydro currently aligns to 88 percent of Z1600 components and has a target of increasing alignment to above 95 percent by the end of 2023. This is an ongoing effort that will require continuous programmatic maintenance. To date, the utility has observed an improvement in incident response across departments through greater familiarity with the incident management system. This is a direct result of the Program's training and information sessions and efforts to promote habitual conformance to standards when responding to disruptions. A strong example of the effectiveness of this work was the rapid and relatively smooth response by Toronto Hydro management and operations to the storm of December 22-24, 2022. The utility declared a Level 2 Emergency in advance of the forecasted heavy winter weather and the incident management team was rapidly rostered and deployed to manage the event, while Emergency Response and Control Centre Operations ramped up operations to provide enhanced coverage.[9]

Where appropriate, Toronto Hydro uses third-party consultants to ensure that its disaster planning processes are robust and effective. Accordingly, in addition to training program development and facilitation, the utility requires funding to retain auditors and emergency management consultants to periodically evaluate and provide recommendations as the Program evolves.

4. PROGRAM COSTS

In 2025 Toronto Hydro requires $1.9 million in rate funding for the Disaster Preparedness Management Program, which represents a decrease of $4.1 million over the last rebasing in 2020.

Over the 2025-2029 rate period, the utility expects the cost of this Program to increase by annual growth rate of 4.4 percent which is necessary to address the disaster and disruption planning needs and deliver the customers outcomes enabled by this Program.

[9] For more information on the latter two functions, please refer to Exhibit 4, Tab 2, Schedules 5 and 7.

Table 4: Disaster Preparedness and Management Program Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Disaster Preparedness Management Program	6.0	5.5	4.9	1.3	1.8	1.9	1.9	2.0	2.1	2.2
Total	**6.0**	**5.5**	**4.9**	**1.3**	**1.8**	**1.9**	**1.9**	**2.0**	**2.1**	**2.2**

For 2020-2022, many non-routine operational and emergency expenses related to the COVID-19 response were attributed to the Program. These expenses are itemized in Table 1 and include:

- Incremental facilities, vehicle and equipment signage;
- Personal protective equipment (PPE);
- Additional health services resources to support contact tracing and monitor employee quarantine, testing, etc.
- Equipment rental including trailers and vehicles to support the ongoing execution of operating and capital programs while ensuring social distancing and the safety of our employees;
- Incremental facility costs such as increased cleaning services, supplies, trailer rentals, etc.
- IT support and incremental costs related to ensuring business continuity including the transition to and working from home (e.g. conference call WebEx, support to the control room, etc.);
- Unproductive time due to employee quarantine;
- Support to the implementation of customer relief programs including the new Time of Use rates for customers during the pandemic;
- Incremental outage costs and time incurred resulting from the execution of work during a pandemic (e.g.: compensation to customers such as gift cards, etc.); and
- Costs related to the administration of vaccines to employees.

Table 1: Itemized list of Corporate Costs attributed to DPM Budget

COVID-19 response costs	2020 Actual	2021 Actual	2022 Actual
Facilities modification (physical distancing measures, cleaning, protective equipment, etc.)	2.1	2.7	3.2
Health services support (testing, contact tracing, etc.)	0.6	0.7	0.2
Business continuity and remote work enablement	0.5	0.1	0.2
Lost productivity due to employee sickness and quarantine	0.3	0.1	0.2
Time of Use (TOU) implementation costs	0.1	-	-
Miscellaneous	0.3	-	-
Total	**3.9**	**3.6**	**3.8**

4.1 Cost Drivers

The variances are attributable to the following factors:

- **Reduction in unplanned COVID-19 costs:** As discussed above, costs incurred by Toronto Hydro as a result of the COVID-19 pandemic were attributed to the Disaster Preparedness Management budget, resulting in the appearance of significantly higher Program costs for the years 2020-2022.
- **Increase in net payroll/labour costs and employee expenses:** These costs are associated with the recruitment, training, and development of employees who are skilled, knowledgeable, and qualified in the fields of emergency management, business continuity, and utility operations. Effective development and sustainment of the Program require dedicated employees with specialized skills and knowledge in utility operations and emergency management. Due to a period of employee turn-over the Program has been operating with reduced staffing levels throughout 2022 and 2023. The utility plans to restore staff levels, which will result in concurrent increases in payroll costs.
- **External testing and assessment costs:** Ongoing evaluation through testing and exercises provides insight into the effectiveness of the Program. The consulting

costs for the 2025-2029 rate period are associated with external auditing and benchmarking to maintain the Program's efficacy and continued alignment with industry best practices. This portion of the budget will also be allocated for conducting large scale emergency response exercises across the utility.

4.2 Cost Control and Productivity Measures

The Program aims to maintain an up-to-date and robust utility-wide disaster preparedness framework while utilizing cost control and productivity initiatives to manage costs. For example, Program staff proactively review administrative costs, such as contracted software access, to ensure that adequate benefits are derived to justify the expense.

In addition, the Program facilitates efficient use of internal resources with a view to controlling external labor costs and aims to leverage existing emergency response capabilities within the utility by assigning Toronto Hydro employees to emergency functions. The Program trains employees on the utility's emergency structure and the emergency roles they will need to fulfill to assist with system operation and restoration. Finally, in partnering with other utilities via MA agreements, Toronto Hydro has access to "at cost" crews, equipment, supplies, and expertise following a disaster event. These initiatives enable the utility to significantly and rapidly increase the number of resources available for disaster response without an increased reliance on external resources and other labor costs.

Since 2020, Toronto Hydro has continued to utilize a number of tools, processes and related improvements in support of Program execution during actual events, including:

- Full utilization of the Ontario Incident Management System, which is the response system used by the vast majority of responders in the Province. The adoption of this system positions Toronto Hydro for collaborative response with other utilities (e.g. Enbridge), public safety organizations (e.g. Toronto Police, Fire, and Paramedic Services) and municipal and provincial governments. This provides the utility with access to all levels of emergency management and response organizations (e.g. municipal public works and forestry crews) during disaster response;
- Implementation of statistical and comprehensive damage assessment tools aimed at enabling more rapid and effective estimation of restoration times following a disaster event. This increases Toronto Hydro's understanding of which areas of the system have been most significantly impacted and require the most immediate attention, enabling the utility to plan its resource allocation more effectively, focusing restoration efforts on areas requiring immediate response and those which will most positively impact the greatest number of customers and the impacted community; and
- Use of dedicated and deep weather forecasting feeds that provide an enhanced view on potential storm events, a primary cause of disruptions to grid operations. Daily updates on weather conditions and modelling predictions allow Toronto Hydro to be proactive in resource planning (i.e. placing response crews on standby).

4.3 Disaster Preparedness Management Program Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

Program costs decreased by $0.5 million from 2020 to 2021 due to a reduction in COVID-19 costs, namely the procurement, warehousing and distribution of PPE and other health measures, and a decrease in compensation costs.

2021 – 2022 Variance Explanation

Program costs decreased by $0.6 million from 2021-2022 reduction of headcount and consulting costs which was partially offset by an increase in the COVID-19 response costs.

2022 – 2025 Variance Explanation

Between 2022 and 2025, costs in this segment are expect to decrease by $3 million, or an average of $1 million per year due to:

- ending COVID-19 response and commensurate spend;
- This is partly offset by:
  - inflationary pressures; and
  - Increased headcount to support improving and implementing the functions of the Program.

2025 – 2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $0.3 million, or an average of $0.1 million per year, to maintain the resourcing capacity and capabilities required to support the increased volume and complexity of work discussed above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks and drawbacks, including:

- Reduced disaster preparedness and response activities, potentially leading to longer outage restoration times during disaster events;
- Adoption of an ad-hoc, reactive approach to disaster management (compared to a modern, proactive, systematic approach that includes ongoing risk/hazard assessments) that will prolong disruptions, increase emergency response costs, and overall expose customers to worse reliability and customer service levels;
- Reduced ability to adequately perform drills and testing on current disaster frameworks;
- Reduced ability to retain internal expertise required to continuously improve the Program and bring it in line with industry best practices;
- Reduced ability to provide essential disaster preparedness training to employees; and
- Potential impediment of the utility's efforts to render its distribution system more responsive and resilient.

CONTROL CENTRE OPERATIONS

1. OVERVIEW

Table 1: Control Centre Program Summary

Control Centre Program									
Outcomes: Operational Effectiveness - Reliability, Operational Effectiveness - Safety, Customer Focus, Public Policy Responsiveness									
Segments: • Control Centre Program									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
7.6	6.0	6.5	7.4	7.9	8.3	9.0	9.5	10.0	10.5

Toronto Hydro's Control Centre Operations program (the "Program") facilitates the safe and reliable operation of the utility's distribution grid through real-time system control and monitoring activities on a 24/7, 365-day basis. The Program coordinates system switching and restoration work through the utility's Control Centre to mitigate the effects of outages on customers and to enable safe load transfers for capital and maintenance work. The Program further leverages the Control Centre to monitor the flow of electricity and asset performance across Toronto Hydro's distribution system to provide real-time information and system condition data for future use in system planning activities. The Control Centre plays a critical role in enabling and supporting the growth of the utility's distribution system and ensuring that core operational services continue to be delivered in an efficient and reliable manner. The Program includes the following functions:

- **Distribution System Operations:** Real-time, 24/7 operation of the distribution grid to monitor system conditions, respond to outages, enable field crews to safely work on the distribution system, and coordinate operations with third parties such as Hydro One Networks Inc. (Toronto Hydro's transmitter), and the Independent Electricity System Operator ("IESO");

- **Work and Outage Scheduling/Coordination**: Review and approval of work on the distribution system and scheduling system outages or work to minimize system and customer impact;
- **Grid Analytics**: Reliability reporting and grid analysis to monitor risks, performance, and project design of approved construction;
- **Supervisory Control and Data Acquisition ("SCADA") System Maintenance and Support**: Maintenance, configuration and troubleshooting of the utility's SCADA system, which enables power system controllers to monitor and operate distribution system equipment remotely and in real time; and
- **Energy Centre**: The operation of Toronto Hydro-owned energy storage systems and the monitoring of grid impacts from customer-owned distributed energy resources.

The Program is a continuation of the activities described in the Control Centre Operations program in Toronto Hydro's 2020-2024 Rate Application.[1] The utility expects the size and scope of the Program to evolve as the nature and needs of distribution system users (such as load, electricity generation, and storage customers) change in accordance with broader industry preferences and trends as part of the energy transition. Toronto Hydro accordingly plans to increase the workforce capacity of the Program to modernize its Control Centre functions during the 2025-2029 rate period.

[1] EB-2018-0165, Exhibit 4A, Tab 2, Schedule 7.

2. OUTCOMES AND MEASURES

Table 2: Control Centre Operations Program Outcomes and Measures Summary

Operational Effectiveness - Reliability	• Contributes to Toronto Hydro's system reliability objectives (e.g. SAIDI, SAIFI, FESI-7) by: ○ Responding to system disruptions on a 24/7/365 basis and, in conjunction with field crews, taking the necessary actions to restore service in a safe and expedient manner; ○ Supporting and enabling the successful execution of the distribution system's capital and maintenance investment programs; ○ Maintaining the integrity of the registry database that pertains to system asset quantity and type, which is used for planned and reactive distribution system work; and ○ Ensuring compliance with all legislative and regulatory requirements related to grid emergency preparedness and business continuity, including emergency preparedness requirements outlined in Section 39 of the *Electricity Act, 1998* and IESO's Market Rules relating to emergency preparedness planning and system restoration planning.
Operational Effectiveness - Safety	• Contributes to Toronto Hydro's safety objectives measured through metrics such as the Total Recordable Injury Frequency ("TRIF") by: ○ Providing seamless visibility over the distribution system, including load management and control over inadvertent energizing of equipment; ○ Administers application of the Utility Work Protection Code, which is a critical tool for eliminating electrical hazards for working on distribution plant; and ○ Ensuring compliance with electrical distribution safety regulations through timely reporting of serious electrical incidents involving Toronto Hydro infrastructure.

Customer Focus	• Contributes to Toronto Hydro's customer focus objectives by: ○ Receiving and responding expeditiously to trouble calls from customers and/or external stakeholders; ○ Maintaining the capability to effectively manage, prioritize and resolve multiple concurrent system issues impacting customers; and ○ Providing relevant and timely outage information for customers, such as estimated outage restoration times and other situational information relating to system outages.
Public Policy Responsiveness	• Contributes to Toronto Hydro's public policy objectives by ensuring compliance with: ○ Emergency response-related service quality requirements of the Distribution System Code ("DSC") by ensuring the utility responds to emergency calls within sixty minutes, 80 percent of the time;[2] ○ DSC requirements governing the connection and integration of distributed energy resources to the distribution system through the development and implementation of necessary tools and processes; and ○ Electricity Reporting and Record Keeping Requirements relating to Major Event Day reporting by efficiently communicating with external and internal parties, prioritizing system alarms, external and internal reports, and dispatching resources effectively.

3. PROGRAM DESCRIPTION

3.1 Control Centre Functions

3.1.1 Distribution System Operations

The Control Centre is responsible for the safe and efficient operation of the distribution system. This includes monitoring the status and operational state of the distribution system on a 24/7/365 basis. Power system controllers maintain a real-time model and

[2] *Distribution System Code* (August 2, 2023).

record of switch positions, device states, power flows, loading, work-in-progress, trouble alarms and abnormal system events across all 1,700+ circuits.

To support these functions, power system controllers utilize a wide range of processes and specialized tools, such as directly opening and closing remotely operable switches to redirect the flow of electricity, instructing field crews with respect to the operation of locally operable switches, and administering the Utility Work Protection Code ("UWPC") to ensure that work on, or in proximity to, Toronto Hydro's infrastructure can be conducted safely. Power system controllers are responsible for identifying the necessary steps to safely complete the work and minimize interruptions to customers, instructing field crews regarding the execution of these steps, and maintaining records of which steps have been completed and which workers are actively working on the system.

Between 2018 and 2020, UWPC was implemented across Toronto Hydro. UWPC implementation was a company-wide strategic initiative led by the Control Centre team to adopt the provincial standard work protection code. It involved process development, modifications to core operating platforms, and the training of all power system controllers and electrical field workers. Previously, Toronto Hydro utilized its own unique work protection code. The purpose of this initiative was to align Toronto Hydro's practices more closely with those of other Ontario utilities and with provincial Electrical Utility Safety Rules. This alignment has reduced barriers to mutual aid, reduced onboarding requirements for crews to work on Toronto Hydro's distribution system, and mitigated compliance risks.

Other processes administered by the Control Centre include the preparation of switching sequences and the issuance of "hold-offs." Switching sequences are documented as

"Order to Operate" ("OTO") safety documents. Each OTO is comprised of a list of switching instructions that enable operations crews to safely transfer customer load and establish suitable work protection over a specified range of system devices. A hold-off is a condition applied to a device by the controlling authority that prevents equipment operations for the duration of time that a field crew is working in proximity to Toronto Hydro's infrastructure. Power system controllers record the location of workers within proximity of electrical equipment (e.g. working on energized apparatus) to limit the possibility that other concurrent activities may increase the risk of equipment damage. Application of hold-offs for certain activities are a requirement of the Electrical Utility Safety Rules and Toronto Hydro's work procedures, and failure to apply hold-offs can result in equipment damage and create extended outages should an incident occur in the physical or electrical proximity to the work site.

The Control Centre also plays a significant role with respect to outage restoration. When a feeder circuit breaker trips, the Control Centre is notified immediately through the SCADA system. Power system controllers take immediate action to isolate the issue, restore power where possible by switching to alternate supplies, coordinate with grid response crews to identify the specific location of the fault, make repairs, and plan the final restoration. The Control Centre will relay known situational information such as outage boundaries, numbers of customers affected, and estimated restoration times to the Communications and Public Affairs team for dissemination to the public.[3] Similarly, the Control Centre is the direct point of contact for the IESO and Hydro One in situations where issues on the transmission system impact supply to Toronto Hydro's system, or for the coordination of restoration efforts following a major disruption to the provincial electricity grid.

[3] Exhibit 4, Tab 2, Schedule 18.

The Program relies on highly sensitive and secure systems that can only be accessed by authorized individuals who are physically located at the designated facilities. By the end of 2023, Toronto Hydro will have two fully functional Control Centre facilities upon completion of the Control Operations Reinforcement Program as described in the utility's 2020-2024 rate application.[4] Each of these facilities is designed to be capable of supporting full operations for an indefinite period of time, ensuring that the Control Centre will maintain full capability even in the event that the alternate location is unavailable due to unanticipated circumstances. Such circumstances could include a fire in the building or in the immediate vicinity, flooding, civil unrest, extreme traffic congestion, or any other situation that prevents or constrains access to a Control Centre facility or otherwise impedes operations. This arrangement will also further mitigate operational risk in the event of another pandemic that necessitates physical distancing or restrictions on interpersonal contact. The additional Control Centre space will also support the delivery of training programs and enable the maintenance of IT hardware and software assets and facility systems with minimal interruption to 24/7 operations.

In the longer term, the increased Control Centre capacity will provide flexibility to the future expansion of Toronto Hydro's real-time operational capabilities in scale and scope. For example, such an evolution could be necessary due to a significant increase in the scale of the distribution system resulting from customers' drive for electrification and decarbonization, or as an outcome of potential future developments in public and regulatory policies and various IESO engagements focused on market renewal and grid innovation. Under the scenarios that are currently being considered, Toronto Hydro could have a need to provide new real-time operational services related to energy management, market operations and distributed energy resource management. The

[4] EB-2018-0165, Exhibit 2B, Section E8.1.

utility does not anticipate that the implementation of the alternate Control Centre facility will have a material impact on ongoing operational costs under the Program.

3.1.2 Work and Outage Coordination

The Control Centre acts as a central authority for the operational assessment of designs, scheduling, and coordination of work on the distribution system. All construction work involving modifications to the distribution system is submitted to the Control Centre for review. Control Centre engineers and technicians consider the operational impacts and safety of the proposed designs and provide feedback and approval. Prior to work initiation, execution groups also submit work requests to the Control Centre for planning and coordination purposes. This information is used to develop a plan that eliminates conflicts between jobs, identifies synergies (e.g. the grouping of work requiring similar isolations to reduce the number of switching activities), and allows the work execution groups and the Control Centre to coordinate and optimize the use of shared field switching resources.

The Control Centre is also responsible for planning service isolations and restorations at the request of customers who require these services to safely work on their electrical systems.

3.1.3 Grid Analytics

The Control Centre analyzes system performance, calculates reliability statistics, reviews outage restoration performance, and plays a role in processing system record changes following the completion of work in the field. In addition, Control Centre engineers and technicians maintain the outage reporting and tracking system, which stores data related to outages, including impacted devices/circuits, the duration of customer outages, the number of customers impacted, and the restoration sequence. From this database, the team compiles system performance statistics for reporting to internal and external stakeholders. The group also conducts in-depth reviews of outages on a case-by-case basis to assess performance and identify continuous improvement opportunities.

Toronto Hydro's distribution grid is in a state of perpetual change as new customers connect to the system and capital projects make modifications to the permanent physical design and configuration of the grid. The Control Centre requires access to the most current information in order to effectively and safely carry out its work. Therefore, the Program plays an important role in ensuring that system records are consistently and expediently updated by maintaining a real time record of distribution system changes and driving the change request process to permanently update record systems following completion of projects. This work helps protect Toronto Hydro crews and customers from exposure to unsafe conditions and ensures that switching and other Control Centre activities achieve planned results without compromising system integrity and reliability.

3.1.4 SCADA System Maintenance and Support

As Toronto Hydro's SCADA system is integral to the efficient operation of the Control Centre, a team of specialized engineers oversee the activities related to maintaining, improving, and modifying it to maintain cyber security and facilitate system operation efficiency. The SCADA team consists of trained engineers and technicians that possess specific skill sets in SCADA and similar industrial control systems. Their efforts facilitate remote system monitoring and control, and help ensure that decisions and orders from the Control Centre are quickly and efficiently executed. When Toronto Hydro installs new system monitoring and control equipment, it relies on SCADA engineers to configure and enable these devices to work seamlessly with the existing equipment and applications. Figure 1 shows the SCADA display of a typical Toronto Hydro Station.

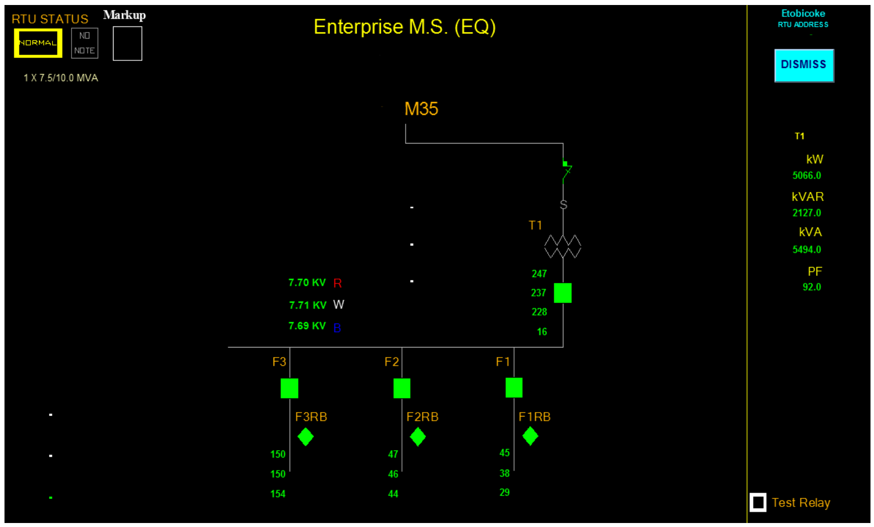

Figure 1: SCADA Display of a Typical Toronto Hydro Station

3.1.5 Energy Centre

In recent years, Toronto Hydro has experienced an increase in the volume and scale of distributed energy resources ("DERs") connected to the grid. This trend is expected to continue and will likely result in a significant increase in DER penetration over the coming years as governments and private organizations adopt policies to significantly reduce their greenhouse gas emissions. In addition, Toronto Hydro intends to continue to pursue the development of energy storage resources, local demand response programs and advanced grid pilots.[5]

A greater prevalence of distribution-connected energy sources and non-traditional distribution infrastructure necessitates a shift in the way distribution systems are

[5] Exhibit 2B, Sections E3 and E7.2.

operated. Rather than being geared primarily towards energy delivery, operators must also consider the importance of energy management as it relates to the safe and efficient operation of the distribution system. Historical processes and tools are not always well suited to account for this growing consideration and distribution system operators must introduce new processes and tools to ensure that future needs are met and customer expectations are fulfilled.

Examples of emerging functions that may need to be developed and implemented at scale include energy resource dispatching, scheduling, aggregation, and settlement. Such resources may also require more active management of short circuit levels, system voltages, and advanced protection schemes. To this end, in 2019, Toronto Hydro implemented a Distributed Energy Resource Management System ("DERMS") to enhance its capability to manage energy flows. Figure 2 below shows the DERMS system display for a battery storage site. This platform is currently used to directly operate Toronto Hydro-owned battery storage sites and to monitor and manage grid-level impacts of customer-connected DERs. As the need for these functions grows, Toronto Hydro intends to continue to develop and integrate energy management tools and processes into core Control Centre functions.

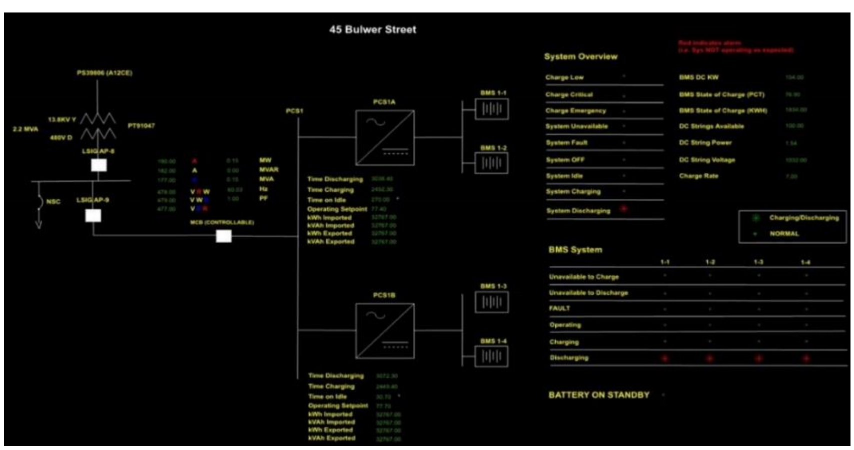

Figure 2: Energy Centre Display of a Battery Storage Site

3.2 Control Centre Priorities

3.2.1 Renewal, Development, and Sustainment of Skilled Resources

The Control Centre is primarily staffed by power system controllers, power system controller apprentices and distribution grid operations managers who work on a 24/7/365 shift schedule. The Control Centre is also supported by a team of technical staff.

Control Centre functions require a highly trained, skilled and knowledgeable workforce. The density and uniqueness of Toronto Hydro's urban setting adds additional complexities and challenges. For example, in downtown Toronto there are several unique legacy distribution configurations that are generally not found at the same scale elsewhere in the province, including the secondary network, underground residential distribution assets, and various underground radial configurations for supplying large loads. Each of these systems requires highly specialized knowledge and experience to operate efficiently and safely, and to effectively respond to unplanned outages. The impacts of any potential outages in these systems would be significant, which includes infrastructure critical to Canada's largest city (e.g. subways, streetcars, major hospitals, emergency services facilities, community support centres, telecommunications hubs, and financial institutions).

Power system controller qualifications are primarily developed through a combination of in-class training and on-the-job experience. Power system controller apprentices, irrespective of educational backgrounds and prior experience, are required to complete a 4.5-year apprentice program, which involves the assignment of progressively more complex responsibilities, to substantially familiarize themselves with Toronto Hydro's system and become fully qualified power system controllers.

The sustainment and development of this workforce possessing highly specialized knowledge and skills is critical to ensure that Toronto Hydro has the capability to realize the outcomes listed in Table 2 and to ensure that the Control Centre is well positioned to embrace and overcome the challenges associated with the evolution of the nature and needs of users on the utility's distribution system and its impact on roles, responsibilities, and systems. Toronto Hydro needs to continuously and proactively renew its Control Centre workforce in order to offset the impacts of natural attrition. Toronto Hydro mitigates these impacts with its workforce renewal program and in-house apprentice development program. The Control Centre's current staffing levels are anticipated to remain generally constant; however, hiring for backfill purposes may occur 1-2 years prior to anticipated retirements.

The Control Centre team also requires the support of a team of technical staff whose duties include work scheduling, design review, system analysis, energy management, reporting, and maintenance/development of core operating technology platforms and tools (SCADA, Energy Centre, Network Management System, etc.) Over the next several years, Toronto Hydro expects a significant increase in workload associated with these functions to support increased distribution system automation, the development and sustainment of energy management functions, distribution system growth (load and connection volumes), and the expansion of the SCADA system to enable more remote and autonomous operational capabilities.

For example, as shown in Table 3 below, the number of assets connected to Toronto Hydro's SCADA system is going to increase significantly—by approximately tenfold in some cases—over the 2025-2029 rate period as part of the investments under the Contingency Enhancement segment of the System Enhancements program.[6]

Table 3: Increase in Number/Volumes of SCADA-connected Assets across 2020-2024 and 2025-2029 rate periods

Asset Type	2020-2024	2025-2029
Switches	33	299
Reclosers	49	220
Feeders to Meet Minimum Requirement for Distribution Automation (DA)	15	63

Similarly, growth in the volume of DERs driven by both Toronto Hydro and its customers more broadly will increase the workload of the Program. By 2029, the expansion of the Non-Wires Solutions program will require the Energy Centre function of the Program to support the procurement of up to 30 MW of capacity under the Flexibility Services initiative (compared to 10 MW in the 2020-2024 period) and manage the operation of nine Toronto Hydro-owned battery energy storage systems ("BESS") (compared to only one in the 2020-2024 period). [7]

In addition, the utility forecasts total DERs installed on the grid to increase approximately 67% to 2029,[8] which is driving investments in the Generation Protection, Monitoring and Control program.[9] Each additional device installed in the system pursuant to these programs requires oversight by Control Centre personnel for: 1) commissioning and testing devices in the field to reliably communicate with the SCADA system, and 2) daily

[6] Exhibit 2B, Section E7.1.
[7] Exhibit 2B, Section E7.2.
[8] Exhibit 2B, Section E3.
[9] Exhibit 2B, Section E5.5.

operations and troubleshooting, e.g. when responding to alarms or asset management tasks. Therefore, headcount increases in this area will be essential to enabling Toronto Hydro to safely and reliably accommodate these utility- and customer-driven changes to its grid.

Technological advancements and the modernization of system operation tools is another area that will require the Program to upskill and enhance its workforce. For example, the advanced applications that Toronto Hydro will adopt as part of the Advanced Distribution Management System ("ADMS") Upgrade will require the utility to significantly improve data modelling in the Network Management System ("NMS") to enable the self-healing grid and other automation functions through modernization projects such as Fault Location, Isolation, and Service Restoration ("FLISR").[10] This is because the operation of FLISR will depend on not only traditional types of data relating to connectivity attributes of distribution equipment, but also engineering attributes, such as device limits, impedances, and power transformer data, representing an increase in data point types from 13 to 36. Adequate staffing for the Control Centre Operations program to gather these additional types of data and input them into modelling systems will be essential for the successful and timely implementation and daily operation of modernization initiatives such as FLISR.

Finally, Program staff act as subject matter experts for a number of internal and external activities. Internally, program staff support investments in cellular SCADA upgrades under the Communication Infrastructure segment of the Information Technology and Operational Technology ("IT/OT") Systems program,[11] where the expertise of Control

[10] Exhibit 2B, Section E8.4, Appendix A.
[11] Exhibit 2B, Section E8.4.

Centre operators is crucial to the timely and reliable completion of critical infrastructure upgrades. Externally, Program staff support Toronto Hydro's participation in industry forums and working groups such as the Electric Power Research Institute ("EPRI") Distribution Operations & Planning Group and the IESO's Transmission-Distribution Coordination Working Group.[12][13] The operational expertise that Control Centre operators bring to these engagements benefits both Toronto Hydro, by enabling the utility to expand its knowledge of the industry through connections with stakeholders, and the industry, by contributing to policy design and development with Toronto Hydro's unique experience as a distributor.

To collectively address these needs, Toronto Hydro forecasts a significant increase in the headcount of technical staff supporting Control Centre functions between 2023 and 2029.

3.2.2 Workforce Management

The Toronto Hydro Control Centre operates under a 24/7 supervision model whereby Control Centre managers work a rotating schedule of twelve-hour shifts. The schedule ensures that at least one manager is present in the Control Centre at all times and ensures effective outage response, communication with customers, and the protection of public safety. As power system controllers coordinate with field crews to analyze, plan, execute and resolve public safety incidents or restore power outages, accurate customer-centric information must be available in a timely manner. The 24/7 supervision model supports consistent operational decision-making, more accurate and timely dissemination of information to customers, and increased service for customer

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[12] Electric Power Research Institute, *Distribution Operations and Planning* (June 8, 2023) online: <https://www.epri.com/portfolio/programs/108271>.

[13] Independent Electricity System Operator, *Transmission-Distribution Coordination Working Group* (November 17, 2023), online: <https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Transmission-Distribution-Coordination-Working-Group> .

escalations. Having a manager present also provides support for more junior apprentices as they develop their skills and knowledge and helps them benefit from leadership guidance for public safety incidents and customer communication escalations. Consistent management oversight also allows operators to focus on their individual responsibilities for managing system events, while the manager monitors the overall situation, aligns priorities and strategies across the team, communicates to interested stakeholders, and activates additional resources as necessary to resolve the situation.

4. PROGRAM COSTS

In 2025 Toronto Hydro requires $8.3 million in rate funding for the Control Centre Program, which represents an increase of $0.7 million over the last rebasing period in 2020. Over the 2025-2029 rate period, the utility expects the cost of this Program to increase by an annual growth rate of 6.0% which is necessary to address the Program needs and deliver the customers outcomes enabled by this Program. The Program's costs are comprised almost entirely of payroll.

Table 4 provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for the Program.

Table 4: Control Centre Operations Program Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Control Centre Operations	7.6	6.0	6.5	7.4	7.9	8.3	9.0	9.5	10.0	10.5
Total	**7.6**	**6.0**	**6.5**	**7.4**	**7.9**	**8.3**	**9.0**	**9.5**	**10.0**	**10.5**

4.1 Cost Drivers

As noted previously, the costs of the Program are primarily driven by payroll, which is partially offset by departmental labour recoveries, whereby a portion of Control Centre payroll is allocated to capital projects supported by the Control Centre. Minor cost drivers include temporary contract labour, which is typically used where there is a limited term need for specialized expertise and knowledge (such as training), and an allocation for the procurement of technical analysis and research on an as-needed basis.

4.2 Cost Control and Productivity Measures

A functional and efficient Control Centre is critical to meeting operational objectives, sustaining reliability performance and enabling delivery of the capital and maintenance work programs. Productivity improvements in Control Centre operations typically translate to productivity opportunities for field crews, and/or enable a greater throughput of work without a comparable increase in resource compliment. On an ongoing basis, Toronto Hydro monitors several key areas of Control Centre performance and productivity, as described below.

4.2.1 Hold-offs

Each hold-off requires a power system controller to research the work location, prepare documentation, apply a condition to the circuit breaker, and verbally issue the hold-off to the requestor. Toronto Hydro issues over 21,500 hold-offs each year, most of which are requested between 6:30 am and 9:00 am on weekdays. In order to efficiently deliver this work and minimize delays in the field, several years ago Toronto Hydro implemented a planned hold-off process whereby requests are researched and prepared a day in advance. This has resulted in an average transaction time of approximately 3 minutes per hold-off, down from approximately 29 minutes in 2014, which allows crews to spend less time waiting for hold-offs to be issued and more time on their responsibilities in the field. Toronto Hydro continuously assesses and revises Control Centre processes to optimize resourcing for the delivery of hold-offs and to ensure continuous improvement in performance.

4.2.2 Switching Orders

Most planned distribution system work requires power system controllers to prepare and check multiple switching orders, also referred to as PC17A forms. These documents prescribe the steps necessary to eliminate and/or control electrical hazards in the field. An individual PC17A can be anywhere from one step to over 100 steps, depending on the complexity of the distribution system. In 2021, Toronto Hydro issued almost 7,500 PC17A forms to field stakeholders, accounting for a total of nearly 185,000 individual switching steps. In order to schedule and execute field work efficiently, field crews need to have their switching documentation issued prior to the planned start of their work. Control Centre managers monitor PC17A production relative to work volume and allocate resources accordingly. In 2022, 80% of PC17As were issued two or more days in advance of the requested work start date, helping to ensure that field crews can start their work on time.

4.2.3 Call Queuing

Nearly all work on or in proximity to the distribution system requires at least one transaction with the Control Centre. In 2021, the Control Centre handled over 92,000 individual calls. Depending on the volume of crews calling in at any given time, the Control Centre is at risk of becoming a bottleneck for work execution in the field. Recognizing this, in 2019 Toronto Hydro harmonized the primary mode of communication between the field and the Control Centre by establishing the phone system as the primary method.

This ensured that all transactions are received through the same communication channel and enabled the implementation of a phone queuing software which provides managers and power system controllers real-time visibility of crew wait times. This insight enables managers to dynamically allocate resources based on actual need, reducing wait times for field crews. The phone queuing system also provides historical data with respect to call volumes and wait times, enabling performance reporting and process optimization. In 2021, over 94 percent of calls had a wait time of less than 10 minutes.

4.2.4 Other Initiatives

Table 5 below provides examples of other productivity initiatives under the Program. Note that the future implementation of the Advanced Distribution Management System ("ADMS") project will be a prerequisite for the successful implementation of many of these initiatives. [14]

[14] *Supra* note 8.

1 **Table 5: Examples of Control Centre Productivity Initiatives**

Initiative	Timing	Outcomes and Benefits
Development of Apprentice Programs	Ongoing	Enhancement of specialized skill sets in power system controllers, which will enable efficiencies in performance. Harmonization of processes and practices across the workforce results in fewer errors and more efficient operating decisions. As apprentices progress and are qualified to take on more responsibility, it allows for more resilient shift scheduling, reducing overtime and improving day-to-day capacity of the Control Centre accommodate work without delay.
Network Management System Updates	Ongoing	Multiple times a year, the Control Centre updates the core network management system platform used by power system controllers to operate and mimic the distribution system. Changes are focused on stability, cyber security, and productivity improvements such as data validation, streamlining work flows, and automating repetitive tasks.
Supervisory Control and Data Acquisition (SCADA) System	Ongoing	The SCADA system controls approximately 4,000 field devices and is a critical operating tool for power system controllers. Power system controllers work closely with SCADA engineers to ensure that system improvements incorporate automation and streamline critical information flow to optimize outage restoration and system monitoring. Upgrades and enhancements are required for field personnel safety, improved system stability, cyber security resilience, and productivity improvements.
Automated Model Build	2023 - 2024	This initiative will provide the ability to automatically extract distribution system changes and implement them into the Network Management System ("NMS"), reducing record update latency and the amount of effort required to maintain the NMS network model.
Fault Localization, Isolation & Service Restoration (FLISR)	Ongoing	Refers to the implementation of automated fault location and system restoration following an outage. This project is intended to improve reliability and productivity by using technology to automate initial outage restoration steps and enable a self-healing grid. Work will be comprised of two major segments: the first with the Information Technology group and the second with the Control Centre's engineering team.

Initiative	Timing	Outcomes and Benefits
Work Request Tool	2022 - 2025	Implementation of a single software tool to manage all operational work requests with integration to core systems (GEAR,[15] NMS, and SAP).[16] This project will result in the retirement of several legacy databases and platforms, and enable efficiencies in scheduling and administering distribution system work requests (work protection, planned outages, hold-offs, design review, etc.).
Operational Analytics	Ongoing	Enhances access to operational data that eliminates several manual reports and enables advanced reporting and analytics. These changes enable more efficient storm event reporting and more informative system condition reporting. In the future, it will also eliminate the need for manual outage reporting currently undertaken by power system controllers. Currently each outage requires a controller to enter outage details and restoration steps into a stand-alone outage tracking platform. In a typical year, controllers enter approximately 2,200 individual reports. The Operational Analytics program will modernize reliability calculation processes and enable auto-generation of outage reports based on restoration actions recorded in the NMS.
Digitization	2020	In 2020, partially motivated by operational constraints arising from the COVID-19 pandemic, the Control Centre completed the digitization of virtually all paper-based processes in the Control Centre. This initiative enhanced business continuity and ensured that critical operational information is readily available to all power system controllers and managers in real time.

[15] GEAR refers to the Geospatially Enabled Asset Registry, a geospatial information system used by Toronto Hydro that provides a graphic representation of distribution assets and their relationship to other assets within Toronto Hydro's network.
[16] SAP is Toronto Hydro's Enterprise Resource Management (ERP) system.

Initiative	Timing	Outcomes and Benefits
UWPC	2020	UWPC implementation was a company-wide strategic initiative led by the Control Centre team to adopt the provincial standard work protection code and involved process development, modifications to core operating platforms, and the training of all power system controllers and electrical field workers. Previously, Toronto Hydro utilized its own unique work protection code. The purpose of this initiative was to align Toronto Hydro's practices more closely with those of other Ontario utilities and with provincial Electrical Utility Safety Rules. This alignment has reduced barriers to mutual aid, reduced onboarding requirements for crews to work on Toronto Hydro's distribution system, and mitigated compliance risks

4.3 Control Centre Operations Program Year-over-Year Variance Analysis

2020-2021 Variance Explanation

Costs decreased by $1.6 million from 2020 to 2021. This variance is attributable to:

- a higher department labour recovery rate in 2021 compared to 2020 (i.e. a higher portion of labour costs were allocated to capital projects);
- higher one-time costs in 2020 directly related to the implementation of the Utility Work Protection Code ("UWPC") across the organization.[17] The one-time costs of $1.1 million incurred in 2020 were primarily driven by workforce training and the re-tagging of field devices pursuant to UWPC.

2021-2022 Variance Explanation

Costs increased by $0.5 million from 2021 to 2022. This variance is primarily attributable to higher compensation costs.

2022-2025 Variance Explanation

Between 2022 and 2025, costs in this segment are expected to increase by $1.8 million, or an average of $0.6 million per year due to:

- Normal-course compensation increases; and,
- Increased headcount including additional technical and management staff to fill vacant positions and support a growing volume of work related to continued implementation of the intelligent grid, automation, and energy transition.

[17] UWPC implementation was a company-wide strategic initiative led by the Control Centre team to adopt the provincial standard work protection code and involved process development, modifications to core operating platforms, and the training of all power system controllers and electrical field workers. Previously, Toronto Hydro utilized its own unique work protection code. The purpose of this initiative was to align Toronto Hydro's practices more closely with those of other Ontario utilities and with provincial Electrical Utility Safety Rules. This alignment has reduced barriers to mutual aid, reduced onboarding requirements for crews to work son Toronto Hydro's distribution system, and mitigated compliance risks.

Increases in headcount are necessary to support grid modernization, analytics, and the development of energy centre capabilities.

2025-2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $2.2 million, or an average of $0.6 million per year, to maintain the resourcing capacity and capabilities required to support the increased volume and complexity of work discussed above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, Toronto Hydro will be unable to resource this critical function in an optimal and sustainable manner. Such a scenario would result in a number of operational risks, including:

- Inability to successfully execute the capital and maintenance investment programs due to Control Centre-related constraints and delays in administering field work;
- Significantly longer restoration times for outages resulting from Control Centre capacity constraints;
- Inability to efficiently and effectively modernize Toronto Hydro's operations to meet customer and stakeholder expectations with respect to the continued transition to new and diverse energy resources;
- Less effective coordination with Hydro One and the IESO with respect to bulk system issues, resulting in prolonged outages for customers and possible non-compliance with relevant legislative and regulatory requirements;
- Less effective dissemination of outage information to support customer communications, including estimated times of restoration;
- Reduced operating efficiency and higher safety risks as a result of the reduced ability to manage data on changing system configuration in a timely manner; and

- Persistence of abnormal system configurations, which can cause additional or prolonged outages.

CUSTOMER OPERATIONS

1. OVERVIEW

Table 1: Customer Operations Program Summary

<table>
<tr><td colspan="10">Customer Operations Program</td></tr>
<tr><td colspan="10">Outcomes: Customer Focus, Operational Effectiveness - Reliability, Operational Effectiveness - Safety</td></tr>
<tr><td colspan="10">Segments:
• Customer Connections
• Key Accounts
• Public Safety and Damage Prevention
• Customer Owned Equipment Services</td></tr>
<tr><td colspan="10">Program Costs ($ Millions)</td></tr>
<tr><td>2020A</td><td>2021A</td><td>2022A</td><td>2023B</td><td>2024B</td><td>2025F</td><td>2026F</td><td>2027F</td><td>2028F</td><td>2029F</td></tr>
<tr><td>9.3</td><td>7.5</td><td>9.0</td><td>12.6</td><td>12.8</td><td>12.7</td><td>13.1</td><td>13.7</td><td>14.1</td><td>14.6</td></tr>
</table>

The Customer Operations program (the “Program”) delivers services that respond to requests from customers. The specific activities under this Program include field work and support functions to safely, efficiently, and promptly meet customer requests. This work is categorized into four segments as follows:

- Customer Connections;
- Key Accounts;
- Public Safety and Damage Prevention; and
- Customer-Owned Equipment Services.

2. OUTCOMES AND MEASURES

Table 2: Customer-Driven Work Program Outcomes and Measures Summary

Customer Focus	• Contributes to Toronto Hydro's compliance with legislative and regulatory requirements (including Ontario Energy Board-mandated Electricity Service Quality Requirements (ESQR) measures[1]) on customer connections, appointments, written responses to enquiries, and the provision of information concerning the location of the utility's underground infrastructure, pursuant to the *Ontario Underground Infrastructure Notification System Act, 2012*[2]. • Contributes to meeting Toronto Hydro's customer service objectives by providing customers access to customer-owned vaults (including of one free vault access per 12-month period in accordance with the utility's Conditions of Service). • Contributes to meeting Toronto Hydro's obligations for customer connections (including Ontario Energy Board mandated ESQR measures) by ensuring sufficient planning staff and required tools or resources are available to efficiently plan and design service connections and meet service request volumes • The Key Accounts team ensures enquiries from large customers, developers, and key accounts are resolved appropriately and in a timely manner
Operational Effectiveness - Reliability	• Contributes to Toronto Hydro's reliability objectives (e.g. SAIFI, SAIDI, FESI-7) by working with customers to ensure customer-owned civil structures containing distribution equipment on customer property are adequately maintained and protected to prevent any risk of damage or interruption to parts of the distribution system.

[1] More specifically, Toronto Hydro's customer connection-related obligations include obligations under the following sections of the DSC: Connection of New Services (7.2) Appointment Scheduling (7.3), Appointments Met (7.4), Written Response to Enquiries (7.8).
[2] SO 2012, c 4.

Operational Effectiveness - Safety	• Contributes to Toronto Hydro's public and employee safety performance and objectives (as measured via metrics like Total Recordable Injury Frequency) by: ○ Providing underground infrastructure locates in a timely manner and providing timely and accurate information to excavators, to reduce the likelihood of damage to energized underground distribution assets and consequent safety hazards to the public; ○ Providing vault safety agents (VSAs) during vault access appointments to ensure customer access does not cause any safety risks and that safe limits of approach are maintained; and, ○ Disconnecting and reconnecting (also known as "isolating") customers' service connections upon request to enable electrical work on the customer side of the demarcation point with minimal safety risk.[3]

3. PROGRAM DESCRIPTION

Most of the activities in the Program are driven by legislative and regulatory requirements, including the *Electricity Act, 1998*,[4] the Ontario Energy Board's Distribution System Code ("DSC"), the *Ontario Underground Infrastructure Notification System Act, 2012* ("OUINSA"),[5] the O. Reg. 213/91 ("Construction Projects") under the *Occupational Health and Safety Act*,[6] and other applicable requirements governing building and fire safety standards.

The Program covers the interactions between Toronto Hydro's customers and its distribution system with a focus on the safe completion of work in proximity of Toronto

[3] The costs of this program include isolations for low-voltage isolations requested by eligible low-income customers only. See section 6.1.3 of this Schedule for more information.
[4] SO 1998, c 15, Sch A
[5] SO 2012, c 4
[6] RSO 1990, c O.1

Hydro equipment, improving the customer experience for requests for access to the grid and meeting the unique needs of Toronto Hydro's largest customers. More specifically, the four Program segments are:

- **Customer Connections:** Focuses on enhancing the experience for customers requesting access to the grid by providing a dedicated team to communicate and manage connection requests from initial contact through completion. This segment also includes the administrative and unrecovered costs associated with the investigative engineering, design, and field work to facilitate customer connection requests in accordance with applicable customer service and regulatory obligations. Most of the activities in the Program are driven by legislative and regulatory requirements, including the *Electricity Act*, 1998, and the Ontario Energy Board's Distribution System Code ("DSC");
- **Key Accounts:** Manages the utility's relationships with large electricity consumers (i.e. 1MW and greater and other critical customers) across all business sectors. Key Accounts collaborates across internal departments to provide an integrated customer experience while building trust, meeting the unique needs of large customers and delivering value;
- **Public Safety and Damage Prevention:** Which aims to provide the general public, other utilities, and Toronto Hydro's capital projects crews with timely information regarding the location of Toronto Hydro's underground infrastructure in accordance with applicable legislative and regulatory requirements; and
- **Customer-Owned Equipment Services**: Which aims to provide customers the means to safely access and service their equipment operating on the distribution system, through services such as vault access and isolations.

4. PROGRAM COSTS

In 2025, Toronto Hydro requires $12.7 million in rate funding for the Customer Operations program, which represents an increase of $3.4 million over the last rate application in 2020.

Over the 2025-2029 rate period, the utility expects the cost of this program to increase by annual growth rate of 3.4 percent which is necessary to address the program needs and deliver customers outcomes enabled by this program.

Table 3 provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for each of the Program's segments.

Table 3: Customer Operations Expenditures by Segment ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Customer Connections	3.7	1.6	1.6	3.2	3.6	3.2	3.3	3.5	3.6	3.8
Key Accounts	-	0.5	0.8	0.9	1.2	1.5	1.5	1.7	1.8	1.9
Public Safety & Damage Prevention	4.7	4.4	5.4	7.3	6.8	6.7	6.9	7.0	7.2	7.3
Customer-Owned Equipment Services	0.9	1.0	1.2	1.2	1.2	1.3	1.4	1.5	1.5	1.6
Total	**9.3**	**7.5**	**9.0**	**12.6**	**12.8**	**12.7**	**13.1**	**13.7**	**14.1**	**14.6**

4.1 Cost Drivers

The largest drivers of cost increases in the Program are attributable to underground infrastructure locates under the Public Safety and Damage Prevention segment. Specifically, these drivers are the proliferation of large multi-unit segment locates and the effects of the more stringent locate compliance requirements introduced by Bill 93.[7] Both drivers are discussed in greater detail below.

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[7] *Getting Ontario Connected Act, 2022*, SO 2022, c 9, formerly known as Bill 93.

The variances in the Customer Connections segment are attributable to the complexity of the initial investigation required prior to making an offer to connect. As both the number and complexity of expansion projects have been increasing over time, it is expected that the overall time and administrative burden involved in these investigations will also increase. Projects that do not proceed are not capitalized. Any unfunded costs (including administrative resources) relating to such investigation are funded through this Program.

Key Accounts was previously a function within the Customer Care segment. It was separated out as a segment in 2021 to reflect the evolution of Toronto Hydro's Key Accounts strategy. The variances in Key Accounts segment for the 2020 – 2024 period reflect the development of this team. Costs are expected to remain relatively flat for the 2025-2029 period.

The variances in the Public Safety and Damages Prevention segment are attributable to a significant increase in the volumes of construction and development in the city of Toronto which has led to an unprecedented increase of construction projects requiring large, "multi-unit segment" locates, whereas a "single unit" locate typically relates to a single property or premises, multi-unit segment locates are often requested by developers working on projects with large geographic footprints such as building complexes or subdivisions and require the identification of underground infrastructure in a much larger area or in greater numbers. Therefore, multi-unit segment locates are more complicated and require more time or greater numbers of resources to complete, and therefore require the utility to incur greater costs. As of 2023, the proportion of multi-segment locates are almost doubled compared to April 2022.

In addition, in April 2022, Bill 93*, Getting Ontario Connected Act, 2022*, received royal assent. This legislation resulted in major changes to the *Ontario Underground Infrastructure Notification System Act, 2012* ("OUINSA"), which governs the mandatory identification of underground infrastructure ("locates") in Ontario. The new legislative framework is significantly more onerous on utilities and other infrastructure owners due to mandatory, penalty-backed, and increased compliance obligations, intended to impose stricter performance standards with respect to the timeliness and accuracy of locates. The legislative amendments also enhanced the powers of the Ontario One Call Corporation to monitor and enforce compliance. Collectively, these developments have greatly increased the demand for locate services and consequently, demand for workers with the appropriate qualifications. However, it will take the construction industry time and effort to ramp up service levels since low wages for personnel performing locate work had historically constrained the supply of such qualified labour.[8] As the industry raises wages to attract, train, and retain more personnel, labour costs have been increasing since April 2022.

Toronto Hydro expects the cost increases resulting from the above developments to persist beyond 2023 as it adapts its locate service levels to achieve and sustain the compliance targets and performance requirements imposed by the amended legislation over the 2025-2029 rate period. Specifically, the following factors will likely continue to drive increased costs:

- Increased operational costs to comply with the stricter compliance targets for locate service providers and infrastructure owners (i.e. increased work

[8] For example, prior to 2022 the average hourly wage for locators in Toronto was less than $25. <https://www.toronto.ca/wpcontent/uploads/2023/03/8d36-2022-Utility-FW-Sched.pdf>.

management processes, incremental costs for the extension of shifts, including into holidays and weekends and bringing in resources from other geographical areas to manage peak volumes, stricter requirements to reschedule appointments in writing, which previously could be done verbally).

- Incremental costs to ensure resources are available to manage peak capacity requirements and contingencies. Locate request volumes are typically seasonal, in alignment with overall construction activity. However, the locate request submission process administered by Ontario One Call does not require excavators to submit tickets in advance, regardless of the complexity of the locate work, which significantly constrains the utility's resource and work planning and optimization. The new compliance requirements under OUINSA also make no allowance for inclement weather, emergency situations, or force majeure, and therefore the utility is required to rapidly deploy incremental capacity to handle such scenarios or catch up from delays within the required timelines to ensure full compliance.

- Administrative monetary penalties will be in place as of April 1, 2024. In order to achieve compliance targets and mandated performance requirements under OUINSA, Toronto Hydro will be obligated to meet customer driven and fluctuating work demands at all times, as the utility's ability to forecast volumes is limited. This will require external contractors providing locate services to maintain a sufficient complement of rapid response resources.

- Increased locate request volumes due to increased awareness and compliance obligations across the construction industry, including the greater incentive for excavators' compliance due to penalties that Ontario One Call could levy under the amended legislation.

- Process and system enhancements, including changes to process and technology, for Toronto Hydro and its locate service providers to efficiently monitor and manage increased volumes of locate work.

The cost forecasts in the Public Safety & Damage Prevention segment include increased labour costs and other types of costs known at the time of filing. However, there is still a great degree of uncertainty regarding the full extent of locates-driven costs that Toronto Hydro may need to incur in the 2025-2029 period to achieve compliance with OUINSA. For example, the Government of Ontario delayed the effective date of administrative monetary penalties ("AMPs") pursuant to Ontario Regulation 87/23 under OUINSA until April 1, 2024. Furthermore, through a joint letter by the Minister of Public and Business Service Delivery and Minister of Energy issued on May 11, 2023, the Government of Ontario signalled that it will consult on additional enhancements to locate delivery requirements under the OUINSA, which may result in future legislative and regulatory changes affecting demand for locate services and accompanying costs. If there are any additional material developments that may affect the 2025-2029 cost forecasts for the Public Safety & Damage Prevention segment while the evidentiary record is open during this rate application proceeding, Toronto Hydro will adduce additional evidence as required.

On October 31, 2023, the Ontario Energy Board established the Getting Ontario Connected Act ("GOCA") Variance Account to allow utilities to record the incremental costs of locates resulting from the implementation of Bill 93.[9] Given the ongoing uncertainty regarding the incremental costs, Toronto Hydro requests the continuation of this variance account for the 2025-2029 rate period. This approach is in the best interests of ratepayers, as it allows Toronto Hydro to adequately fund the locates work, which is non-discretionary, in compliance with the utility's legislative and regulatory obligations during the next rate term. Further details on this variance account can be found in Exhibit 9, Tab 1, Schedule 1.

The primary driver of cost increases under the Customer-Owned Equipment Services segment over the 2025-2029 rate period is the increase in customer demand for vault access services. Currently, approximately 30 percent of customers who own vaults containing distribution equipment access their vaults every year. Access requests are increasing due to a number of factors, including an increase in the effectiveness of the Customer Action Form process (detailed under subsection 6.1.2 below) for requiring customers to address deficiencies, which in turn drives repeat customer requests. Moreover, the growth of the city of Toronto's buildings naturally increases the number of vaults present and the subsequent requests for access.

[9] EB-2023-0143 Decision and Order (October 31, 2023).

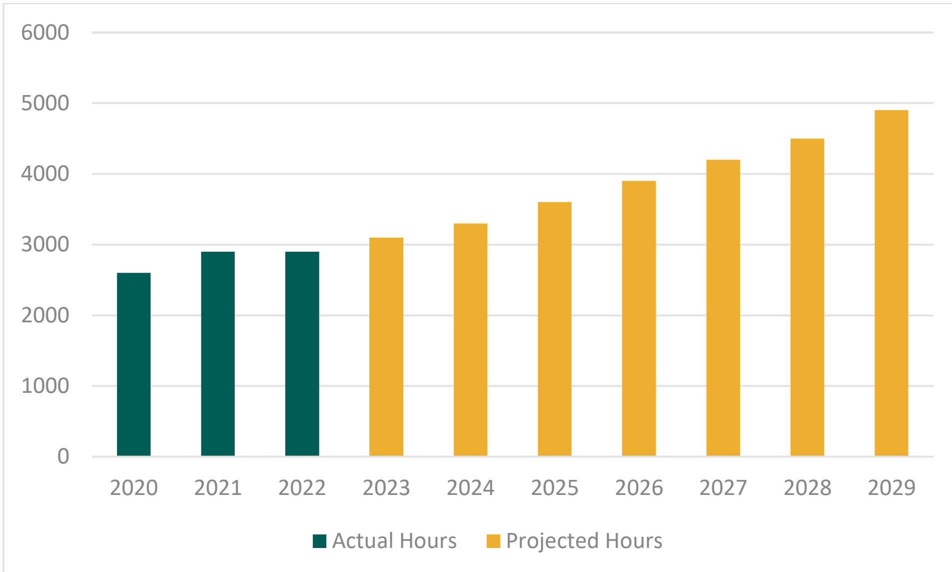

Figure 1 – Actual and Projected Vault Access Hours

4.2 Cost Control and Productivity Measures

4.2.1 Cost Management

Toronto Hydro undertakes a number of measures to control costs in this Program. Under the Customer Connections segment, Toronto Hydro reviews pre-payment values on a project basis to ensure they cover a reasonable portion of the initial investigation work and mitigate financial risks should the project not proceed.

At the end of 2023, Toronto Hydro is expected to launch the Service Request Form Enhancements on the Customer Connections Portal. This portal will allow customers to submit service request forms online, including with attachments, for new and existing services. These enhancements will streamline the process and increase efficiency for customers by having unique forms for different kinds of requests ensuring that the appropriate information is collected, minimizing back and forth with the customer. The

online portal will also improve data collection and reporting for regulatory and governance purposes, which will also assist with future capacity planning.
Under the Key Account segment, the Key Accounts team integrates data from numerous sources which allows for a more complete understanding and timely analysis of customer issues and requirements.

For the Public Safety and Damage Prevention segment, the utility is working with its locate service providers ("LSPs") to streamline the "clear" process, which indicates to customers and excavators that their work will be clear of any Toronto Hydro equipment. The "clear" process is when a locate request is screened in office by a trained worker prior to being sent out for field locating. This process eliminates the need for an LSP to spend time and effort verifying the location of Toronto Hydro assets where they do not exist and allows LSPs to focus on locates that require physical presence. LSPs perform this process at a lower rate due to the fact that the locate does not require a vehicle rollout or field resources to attend the excavation site, improving Toronto Hydro's compliance with OUINSA requirements and saving the cost associated with dispatching LSP resources to the field to conduct a physical locate.

Under the Customer-Owned Equipment Services segment, Toronto Hydro provides customers vault access at its expense, recognizing that the utility gains safety and reliability benefits from doing so, including the identification of potential hazards and deficiencies, and ensuring that customers access the vault in a safe manner with appropriate supervision to prevent damage to the utility's distribution equipment. Toronto Hydro limits free access to one 4-hour appointment per 12-month period per customer.[10] Customers requiring access to vaults more than once per year or for durations longer than four hours are responsible for the incremental costs of access, such as VSA time. This incentivizes customers to be efficient with their free access appointment and better plan and optimize their paid access appointments.

In addition, to facilitate customers' interactions with the vault access program, Toronto Hydro is investing in a Customer Connections Portal which will allow customers to book and pay for vault access appointments online. This initiative will improve customer experience by increasing the convenience of booking vault access appointments and reduce the administrative costs of the program by reducing manual work for appointment scheduling and payment processing.

4.2.2 Productivity

Customer Connections

In 2021, Toronto Hydro integrated its Customer Offers and Sustainment group and Execution team with the Distribution Projects East and West teams (designers, construction teams and managers) into one team enabling any project (capital or connections) to be executed by this team. Previously, these groups were separated and dedicated to either capital or connections projects. This change allows the team to better coordinate customer connection work with capital work in order to find efficiencies because the designers have more direct information about the planned projects in each category. This change also enables the designers to adapt to variable volumes of work between capital and connections projects.

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[10] The appointment length is based on the average historical appointment duration that customers have required to complete their vault access visits.

In 2022, Toronto Hydro created two new teams – the customer intake team and the pre-design team – to streamline the customer connection process and ensure an efficient allocation of resources:

- **Customer Intake team:** Improves the customer experience by creating a single point of contact for all customer inquiries related to connections. Previously, customers could initiate a connection request through several different channels creating the risk of inefficiencies and an inconsistent customer experience. By having a single point of contact, Toronto Hydro ensures that all connection-related requests are directed to the appropriate teams. The intake team also ensures that customer application forms are complete and contain accurate information.
- **Pre-Design team:** Acts a single point of contact for customers to ensure all the information required by the design teams for large connections (i.e. requiring expansion) is collected before moving forward to the design phase. This team also performs administrative functions previously handled by designers, such as collecting and reviewing pre-payment values. As a single point of contact, the pre-design team avoids the need for customers to repeat information through out the process and minimizes delays with proceeding with the project due to lack of required information. By assisting with administrative functions, the Pre-Design team frees up capacity for the design team to stay focused on design work.

Key Accounts

Key Accounts has continued to mature since formation in 2021 and now carries out an important role in managing large connections projects during the design and construction phases, acting as a single point of contact to the customer. By performing this function, it improves the customer experience by streamlining responses, and allows technical resources to focus their efforts on value added activities, rather than managing the overall project.

Public Safety and Damage Prevention

Toronto Hydro is working with the Locate Alliance Consortium ("LAC"), through which utilities and other infrastructure owners coordinate in purchasing locate services in specific geographical areas and share costs accordingly. This approach allows a single LSP to perform locates on behalf of all participating utilities within a geographical area, which streamlines the quality, timing, and efficiency of the locate process compared to multiple LSPs individually performing a locate for each infrastructure owner. This approach is also environmentally friendlier as fewer vehicles are required to attend the job site and conduct each locate.

Toronto Hydro is also working with other infrastructure owners and Ontario One Call to reduce the amount of unjustified locate requests, i.e. where an excavator requests a locate without the intent of excavating within the statutory validity period of 60 days. Early and unjustified locate requests in this manner result in the utility having to complete multiple locates for the same work, increasing costs without providing any benefits to the excavator or other stakeholders. By working to educate excavators and the general public on appropriate locate use, Toronto Hydro expects to encourage more prudent and efficient locate requests in order to minimize excavators' wasteful mobilization of locate resources.

Customer-Owned Equipment Services

When possible, Toronto Hydro schedules VSA appointments to multiple addresses in clusters to ensure one VSA can cover numerous appointments in a single day. As requests are received Toronto Hydro staff also optimize the scheduling and planning of vault access requests by considering the relevant vault locations and access times to reduce travel time for VSAs between appointments. In addition, the utility coordinates with customers who own multiple vault locations to schedule a single VSA for a day to maximize the efficiency of the customer's vault access.

5. CUSTOMER CONNECTIONS SEGMENT

5.1 Segment Description

The Customer Connections segment is driven by customer requests to connect to Toronto Hydro's distribution system or service upgrades for existing customers. Serving one of the fastest growing cities in North America, Toronto Hydro receives a high volume of requests for connections and upgrades for residential and commercial developments each year.

The Customer Connections segment is responsible for handling all communications with customers relating to connection and upgrade requests. The team manages a project from intake through to closure providing a single point of contact for all customer requests and communications related to a connection. This ensures a consistent and efficient customer experience.

Requests for connection vary in location, load requirements and the complexity of underlying planning or construction work. In accordance with its regulatory obligations, Toronto Hydro must connect a customer to its distribution system within prescribed timelines if that customer and the associated connection meet all technical requirements outlined in the DSC (Section 7.2) and the utility's Conditions of Service. Customer connections can be in the form of a basic connection, or a connection requiring expansion work. The types of connections Toronto Hydro performs can generally be divided into two categories as follows:

- **Low Voltage Requests:** These requests primarily relate to residential and small commercial customers that utilize existing Toronto Hydro transformation for their connection. As shown in Figure 1, the high volume of requests presents challenges as they require extensive project coordination and administrative oversight. The level of work is typically seasonal and has a relatively short turnaround time. To meet its service obligations, Toronto Hydro works with customers to provide options for a new connection or service upgrade.
- **High Voltage Requests:** These requests primarily relate to larger residential and commercial developments with dedicated transformation on customer property. These customers typically engage Toronto Hydro years before service is required. Figure 2 provides a year-over-year comparison of the volume of new formalized High Voltage requests that Toronto Hydro receives on an annual basis.

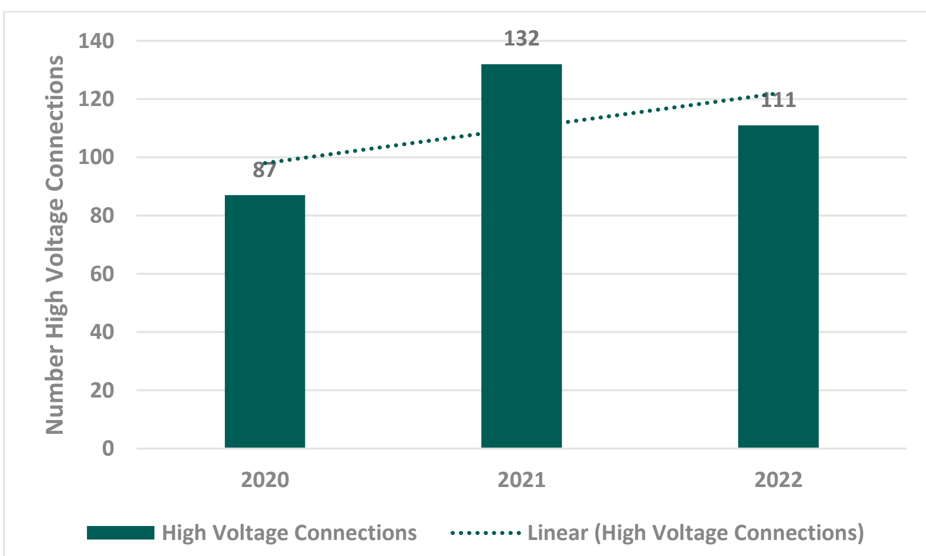

Figure 2: High Voltage Connection Requests (2020-2022)

Following the receipt of a connection request, Toronto Hydro works with prospective customers to develop an appropriate connection design, calculate the design pre-payment, and establish a mutually satisfactory construction schedule. Given the high density of Toronto's urban core, there could be instances of localized capacity constraints at many of the utility's Transformer Stations and Municipal Stations as well as spatial restrictions of existing underground or overhead easements. As such, Toronto Hydro may be required to undertake expansion and enhancement work to enable safe and reliable power. Projects with expansion work typically require connections that extend beyond the closest pole or cable chamber, resulting in work on various sections of the circuit or sometimes the entire circuit. Such work is complicated and requires a specialized team (including designers and distribution and stations engineers) to plan the system to accommodate the connection. Customer jobs requiring expansion work entail significantly more resources to prepare an offer to connect.

Figure 3 illustrates the year-over-year volumes of Offers to Connect requiring expansion projects. Over the past three years, both the volume and average complexity of expansion work remains high.

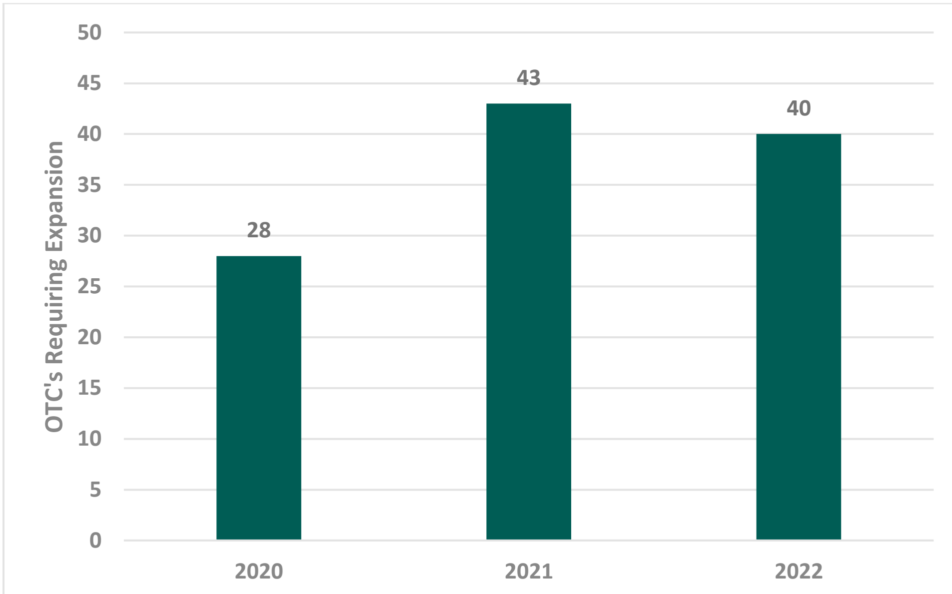

Figure 3: Number of Connections Requiring Expansion Work (2020-2022)

Given the current pace of Toronto's growth and the volume of large connection requests, Toronto Hydro identifies and addresses areas where insufficient connection capacity exists or is projected to materialize in the near or medium term. In this regard, the utility's customer connection work also entails an analysis of development plans prepared by provincial and municipal agencies and private development firms. Toronto Hydro incorporates the results of this analytical work into its load forecasts, system upgrade, and expansion plans.

Throughout the duration of connection planning and design activities, Toronto Hydro maintains frequent communications with prospective customers to effectively manage their expectations and accommodate their evolving requirements or concerns, where applicable. This includes the Key Accounts team which supports existing and new key account customers. If planned or ongoing connection work may temporarily affect service quality, reliability or otherwise cause disruptions for existing Toronto Hydro customers, the utility endeavours to ensure that affected customers receive timely notifications and are able to provide input regarding the scheduling of planned activities.

The utility recovers eligible costs associated with the planning and execution of connection work from the requesting customers in accordance with the DSC and other relevant Ontario Energy Board and internal policies. The remainder of the costs are either capitalized or recovered through operating costs as described below.

Finally, operating costs related to customer connection work also include Program support costs such as tools and equipment, information technology, vehicle and occupancy costs.

5.2 Customer Connections Segment Costs

Toronto Hydro requires approximately $3.5 million each year during the 2025 to 2029 period to execute the functions in this segment.

Table 4 provides the Actual (2020-2022), Bridge (2023-2024), and Forecasted (2025-2029) expenditures for the Customer Connection segment.

Table 4: Customer Connections Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Customer Connections	3.7	1.6	1.6	3.2	3.6	3.2	3.3	3.5	3.6	3.8

The 2025-2029 forecast represents an increase of $0.8 million over Toronto Hydro's 2020-2024 average annual cost of $2.7 million.

5.3 Customer Connections Segment Variance Analysis

2020-2021 Variance Explanation

The costs from 2020 to 2021 decreased by $2.1 million due to restructuring of the customer connections team and costs being allocated to other teams.

2021-2022 Variance Explanation

There was no variance from 2021 to 2022.

2022-2025 Variance Explanation

Between 2022 and 2025 costs in this segment are expected to increase by $1.6 million or an average of $0.5 million per year due to:

- Increased headcount to address increased volumes and complexity of connections activity to support increased growth and electrification in the city of Toronto;
- Normal course compensation increases;
- the creation and ramping of two new teams, the Customer Intake Team and Pre-Design team;
- This is offset by slight decreases due to expected retirements.

2025-2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $0.6M, or an average of $0.2M per year, to maintain the resourcing capacity and capabilities required to support the increased volume and complexity of work discussed above. If Toronto Hydro was forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks and drawbacks, such as a reduced ability to provide potential customers safe and reliable connection options in a timely manner. An in-depth analysis is required to determine the impact of a new customer on the grid to ensure system integrity, and insufficient funding could compromise the ability to properly conduct this analysis;

6. KEY ACCOUNTS

6.1 Segment Description

Toronto Hydro's Key Account customers are those customers who have critical loads, including:

- Customers who have electricity use greater than 1MW at a single site or combined across a number of sites – this is increasingly including data centres and large developments;
- Priority loads such as hospitals and financial institutions;
- Essential public services including the TTC and schools; and
- Developers.

Many of these customers are critically important to the economic and social fabric of Toronto. These customers often have distinct needs and priorities including:

- **Power quality and reliability:** Generally, a top priority for these large customers. Depending on the nature of their operations, even momentary interruptions can incur high costs due to loss of product or create health and safety issues in the operation of critical infrastructure.
- **Complex Connections and Expansions:** Many Key Account customers have large or complex connections, such as data centres and real estate developments, which require additional support and resources through all phases of their projects.

- **Environmental Social & Governance (ESG) goals**: Many Key Account customers are already planning for the energy transition towards decarbonization and may have their own ESG goals to meet.

- **Behind-the-Meter (BTM) energy solutions:** Many Key Account customers are interested in adopting BTM energy solutions to address a range of issues from back up supply, ESG targets and cost management through peak shaving and load shifting.

Because of these unique needs, Key Account customers require a tailored level of customer service. The Key Accounts team proactively engages with these customers on a wide range of topics (described below) to ensure that work is coordinated with customers and Toronto Hydro's crews can complete work in a timely and efficient manner. Specifically, Key Accounts acts as a single point of contact within Toronto Hydro for work related to these customers, including:

- Facilitating and assisting with scheduling and planning for major capital and maintenance projects, operational requirements, and regulatory compliance;
- Liaising with departments across Toronto Hydro including: engineering, design and construction, and operations;
- Meeting with customers to resolve billing issues, coordinate planned outages, and provide business-specific updates during unplanned outages;
- Resolving issues related to reliability and power quality;
- Discussing opportunities for reducing emissions and meeting decarbonization goals;
- Partnering with the IESO to support the delivery of Local Incentive Programs;[11] and,

[11] Under previous Conservation and demand Management frameworks, the Key Accounts function worked with large customers to access provincial funding for energy efficiency programs.

- Providing account and sector specific information through various channels such as direct mail, newsletters, workshops, and association outreach.

As the needs of large customers continue to evolve, the Key Accounts function has also evolved to emphasize more proactive engagement with these customers. The Key Accounts team had 490 meetings with customers in 2021. In 2022, the Key Accounts team had 1139 engagements with customers, including 723 customer meetings, as well as emails and phone calls.

Through regular outreach and structured meetings with developers and current and future customers, the Key Accounts team is able to obtain information and insight into development and growth plans across the City of Toronto and gain insight into connections much earlier in the planning process. This can include projects that are contemplated for ten or 20 years in the future. Where necessary, the Development Planning team will be involved, along with the Key Accounts team, to provide technical information and ensure that relevant information is incorporated into future forecasting information.[12] Traditionally, Toronto Hydro would not be engaged until much later in the development process –approximately a year or two before the project was set to begin – which provided less opportunity to efficiently integrate necessary expansions into system-level planning.

Key Accounts is also engaged by the Customer Connections team when large connection requests are received, validated, and pre-design payments are made. This is the beginning of the relationship that Key Accounts has with the customer (or a continuation in the case of an existing Key Account customer). Through initial meetings, the team understands the

[12] See Exhibit 2, Sections E7.4 Stations Expansions and E5.3 Load Demand.

customers' goals, and shares a high-level overview of the connections process that the customer will experience. Engagements continue with the customer throughout the life cycle of the project, ensuring a streamlined customer experience. A significant area of value that Key Accounts delivers is in ensuring timely handoffs between internal teams; when cross-departmental decisions must be made pertaining to connections, the team coordinates meetings and ensures internal alignment before communicating with customers.

Key Accounts also works with customers to understand their energy management needs, including supporting customers with their decarbonization goals. If customers are considering incorporating new technologies[13], the Key Accounts team consults with customers to ensure that new technologies meet Toronto Hydro standards and Conditions of Service, generally with support from the appropriate teams internally.
Key Accounts leverages its relationships to support the distribution system more broadly including through the procurement of demand response and other flexibility services to the benefit of both key account customers and the grid as a whole. In addition, by engaging early with Key Account customers, Toronto Hydro is provided with insight into areas of growth and changing customer needs which allows Toronto Hydro to better plan for future system needs.[14]

6.2 Key Account Segment Costs

Table 5 provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for this segment.

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[13]For example, electrification of space and water heating, electric vehicles, energy efficiency and demand management, or installation of behind the meter solar and/or battery systems.
[14] For more information see Exhibit 2B, Section B3 – Coordinated Planning.

Table 5: Key Account Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Key Accounts	-	0.5	0.8	0.9	1.2	1.5	1.5	1.7	1.8	1.9

6.3 Key Accounts Segment Costs Variance Analysis

2020-2021 Variance Explanation

The costs from 2020 to 2021 increased by $0.5 million due to team formation and onboarding of resources midyear.

2021-2022 Variance Explanation

The costs from 2021 to 2022 increased by $0.3 million due to this being the first full year of resource expenditures.

2022-2025 Variance Explanation

The costs from 2022 to 2025 are expected to increase by $0.7 million or an average of 0.2 million per year due to increases in headcount to ramp up operations of the team and inflationary increases.

2025-2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $0.4M, or an average of $0.1 million per year, to maintain the resourcing capacity and capabilities required to support the increased volume and complexity of work discussed above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks and drawbacks, including:

- Limited opportunity for ongoing interactions and collaborative relationships with large customers to identify and meet their unique needs; and
- Potentially becoming a barrier to customer choice for electrification and other new technologies for large customers who may require additional support and coordination in order to execute electrification strategies.

7. PUBLIC SAFETY AND DAMAGE PREVENTION SEGMENT

7.1 Segment Description

The Public Safety and Damage Prevention segment consists of the governance, oversight, and execution of work to ensure public safety and prevent potential damage to Toronto Hydro's distribution equipment when customers (or their contractors) perform work in proximity to the utility's assets. The primary activity in the segment is identifying the location of Toronto Hydro's underground infrastructure (commonly referred to as "locates") pursuant to the OUINSA. The utility responds to locate requests forwarded through Ontario One Call by identifying and marking the location of its underground infrastructure in accordance with applicable statutory requirements.

The OUINSA mandates all excavators in Ontario, who may be homeowners, contractors working for property and infrastructure owners, developers, or other utilities, to use the Ontario One Call service to request a utility locate to confirm that the work area does not contain any underground infrastructure. The locate process is intended to ensure public safety and prevent damage to underground infrastructure. As previously discussed, following the enactment of Bill 93 in April 2022, the OUINSA incorporates strict compliance requirements for both infrastructure owners and excavators, and provides recourse for both sides in the event that a party suffers losses or expenses due to another's failure to fulfill statutory obligations. Therefore, Toronto Hydro is required by law to comply with the OUINSA framework and is responsible for the costs of performing requested locates its service territory.

The utility outsources the locate function to LSPs, who process requests received through Ontario One Call and identify the location of Toronto Hydro's underground infrastructure. The utility currently provides locate services upon request at no charge to the requesting excavator and recovers the costs through its distribution revenue requirement. This encourages widespread use of the service, which yields significant public safety and reliability benefits from properly locating underground infrastructure and enabling safe excavation practices. By avoiding damage to distribution equipment and infrastructure, the risk of outages and the likelihood of safety hazards for construction and utility workers and the public are significantly reduced.

As an infrastructure owner and thus a "member" under the OUINSA, Toronto Hydro is required to pay Ontario One Call for the locate request intake services and general oversight the latter provides. The utility must also cover the costs of LSPs performing the actual locate work. The cost of an individual locate varies depending on the nature of work requested and the timeline for its execution.

Segment activities also include the planning and execution of alternate locate agreements ("ALAs") with any excavator that meets Toronto Hydro-specified requirements. ALAs allow excavators who use the hydrovac excavation method to excavate without the requirement of a utility locate because the excavation method presents a significantly lower risk of damage to utility infrastructure. Through an ALA, the utility assigns the excavator a blanket locate clearance through a contractor identification number. This identification number allows Ontario One Call to filter related locate requests out of the general intake of locate requests and into the ALA clearance process, allowing the excavator to obtain immediate approval to perform shallow excavation. Through this approach, excavators are able to commence excavation work earlier than the standard five-day turnaround time for locates and Toronto Hydro is able to minimize the costs associated with completing the locate. As a result, ALAs lead to higher customer satisfaction, require less coordination and oversight from Toronto Hydro, and enable cost efficiencies.

7.2 Public Safety and Damage Prevention Segment Costs

Table 6 provides the Historical (2020-2022), Bridge (2023-24), and Forecast (2025-2029) expenditures for this segment.

Table 6: Public Safety and Damage Prevention Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Public Safety & Damage Prevention	4.7	4.4	5.4	7.3	6.8	6.7	6.9	7.0	7.2	7.3

As discussed in section 4.1 above, this cost forecast includes increased labour costs and other types of segment costs known at the time of filing, although there remains a great degree of uncertainty regarding the full extent of locates-driven costs that Toronto Hydro may need to incur in the 2025-2029 period to achieve compliance with OUINSA. Therefore, if there are any additional material developments that may affect the 2025-2029 segment cost forecasts while the evidentiary record is open during this rate application proceeding, the utility will adduce additional evidence as required. To enable adequate funding of locates work, which is non-discretionary, while ensuring compliance with the utility's legislative and regulatory obligations during the next rate term, Toronto Hydro also requests continuation of the GOCA Variance Account to record the incremental costs of locates resulting from the implementation of the OUINSA, as discussed in Exhibit 9, Tab 1, Schedule 1.

Alternatively, if the OEB were to approve neither the forecasted costs laid out in Table 6 above nor the request for continuation of the GOCA variance account, Toronto Hydro would have to provision in its forecast of 2025-2029 rates for a higher recovery of locates costs that the utility would have to incur to achieve 100 percent compliance with OUINSA during the 2025-2029 rate period. Table 7 below shows the estimated costs for this scenario.

Table 7 Public Safety and Damage Prevention Segment Expenditures Provisioning for Lack of Continued Availability of the GOCA Variance Account ($ Millions)

2025	2026	2027	2028	2029
10.4	11.4	12.3	13.4	13.9

7.3 Public Safety and Damage Prevention Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

There was a decrease of $0.3 million between 2020 and 2021 due to continued impacts on the construction industry from COVID-19 shutdowns, reducing volumes of locates. During COVID-19 shutdowns, locates were mainly driven by excavations related to large projects, essential services, and critical infrastructure.

2021 – 2022 Variance Explanation

There was an increase of $1 million between 2021 and 2022 primarily driven by inflationary labour costs and an increase in the volume of costlier multi-segment locate requests.

2022 – 2025 Variance Explanation

Between 2022 and 2025 costs in this segment are expected to increase by $1.3 million or an average of $0.4 million due to:

- Cost increases arising from stricter locate performance standards imposed by Bill 93 including:
    - Increased labor costs due to Toronto Hydro new contract with the LSPs; and,
    - Cost increases arising from stricter locate performance standards (including increased volumes);
- Annual inflationary cost increases;
- Increased volumes due to general growth;

2025-2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $0.6M, or an average of $0.2M per year, to maintain the resourcing capacity and capabilities required to support the increased volume and complexity of work discussed above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks and drawbacks, including:

- Digs by excavators without proper information about the location of underground infrastructure, which could potentially result in damage to distribution assets, system outages, and major safety risks to field workers or the public;
- Reduced performance in providing locate information in a timely manner, resulting in administrative monetary penalties and other compliance enforcement actions by Ontario One Call; and,
- Inability to comply with stricter locate performance standards imposed by Bill 93.

8. CUSTOMER-OWNED EQUIPMENT SERVICES SEGMENT

8.1 Segment Description

The work comprising this segment enables Toronto Hydro's commercial, industrial and multi-unit residential building customers to safely perform periodic maintenance activities on their (customer-owned) civil infrastructure and other equipment, and facilitates the notification of deficiencies, thereby improving the reliability and safety of the distribution system.

8.1.1 Vault Access

Customers are responsible for supplying, maintaining, repairing, and otherwise modifying all civil assets located on their property, and any civil infrastructure located on public road allowances that serve unmetered connections. The applicable infrastructure includes poles, cable chambers, transformer rooms, transformer vaults, hand wells, junction boxes, and other equipment housing or supporting Toronto Hydro's connection assets. The most common type of customer equipment access relates to transformer vaults located on customers' property. In the interest of public safety, the utility places locks on transformer vault doors, to ensure that only qualified personnel have access to these rooms and the high-voltage electrical equipment they contain. From time to time, Toronto Hydro customers require access to vaults for periodic maintenance and inspections, or to perform repairs identified as necessary during prior site visits, e.g. through the Customer Action Form process described below in subsection 6.1.2.

There are over 8,600 customer-owned vaults in Toronto Hydro's service territory that contain distribution equipment. Where required, a customer-owned vault may contain fire detection equipment, which must be inspected annually in accordance with the applicable legislative and regulatory requirements. During vault inspections by customers and/or third parties, Toronto Hydro requires qualified staff, i.e. a vault safety agent ("VSA") to attend for safety purposes and to prevent damage to the utility's assets. VSAs ensure that access to the customer-owned vault is completed safely by all who enter by ensuring that limits of approach are maintained and proper personal protective equipment ("PPE") is worn. VSAs are authorized to refuse to commence or end an appointment if safety practices are not being maintained. When Toronto Hydro identifies structural deficiencies with or within the vault structure, access doors, grounding equipment, drainage, or other physical attributes, it provides the customer with a completed Customer Action Form, which explains the nature of the deficiencies and recommends corrective steps, as discussed in the next subsection.

8.1.2 Customer Action Form ("CAF") Process

Toronto Hydro issues customers and property owners a CAF when any electrical or civil deficiencies are found in the field on customer-owned equipment or structures. Customers are responsible for replacing or repairing their defective electrical equipment and those that own a transformer vault are responsible for inspecting, maintaining, repairing and replacing their vault when necessary.[15] As unaddressed deficiencies may cause damage to equipment or expose them to other risks (such as weather exposure, flooding, or premature deterioration of asset conditions), corrective work by customers is necessary to maintain the safety and reliability of both utility-owned and customer-owned electrical equipment and civil infrastructure, and mitigate the risk of potential outages. In addition, the Electrical Safety Authority ("ESA") requires distributors to address deficiencies with customers to ensure public safety and Toronto Hydro's CAF process plays the primary role in fulfilling this obligation. The utility issues approximately

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[15] Examples of such electrical equipment or civil assets include electrical meter bases, stand pipes, transformer vaults that house high voltage equipment, etc.

2,000 electrical and 1,500 civil defect CAFs each year. The vault access process discussed above in section 6.1.1 is key to enabling many customers' compliance with the requirements of CAFs.

Toronto Hydro continues to improve upon its rigorous CAF process to ensure that customers are clearly made aware of their deficiencies and corrective obligations and are able to easily communicate with the utility. This supports the repair or mitigation of noted deficiencies and contributes to the continued safe and reliable operation of the distribution system. For example, where a customer increases the frequency of debris removal from their vaults and drain cleaning in response to a CAF, the risk of flooding within the vault decreases, which in turn reduces the risk of transformer and vault equipment damage and corrosion.

8.1.3 Low-Voltage Isolations

Toronto Hydro currently provides eligible low-income customers ("ELIC")[16] one free disconnection and reconnection ("isolation") per 12-month period. The utility's rationale for this approach is to encourage repairs to address deficiencies identified in CAFs and other customer-side work that may otherwise remain incomplete and jeopardize safety or grid reliability, as the cost of isolations may be prohibitive for this group of customers. In addition, this approach reduces the cost barrier for these customers where they require an isolation for service modifications or upgrades, including for electrification purposes, such as installing solar panels or electric vehicle chargers. It is estimated that approximately two percent of customers who request low-voltage isolations are designated as ELICs.

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[16] As defined in the Distribution System Code.

8.2 Customer-Owned Equipment Services Segment Costs

Table 8 provides the Historical (2020-2023), Bridge (2024-2025), and Forecast (2025-2029) expenditures for the Customer-Owned Equipment Services segment.

Table 8: Customer-Owned Equipment Services Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Customer-Owned Equipment Services	0.9	1.0	1.2	1.2	1.2	1.3	1.4	1.5	1.5	1.6

8.3 Customer-Owned Equipment Services Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

There was an increase of 0.1 million between 2020 and 2021 due to increases in vault access volumes, as well as inflation.

2021 – 2022 Variance Explanation

There was an increase of 0.2 million between 2021 and 2022 due to increases in vault access volumes as well as inflation.

2022 – 2025 Variance Explanation

Between 2022 and 2025, costs in this segment are expected to increase by $0.1 million due to increases in vault access volumes as well as inflation.

2025-2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $0.3M, or an average of $0.1 million per year to maintain the resourcing capacity and capabilities required to support the volume and complexity of work discussed above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various risks and drawbacks, including:

- Inability to provide free access in a timely manner to customer-owned equipment and vaults, reducing customers' ability to maintain their equipment and civil infrastructure, and potentially jeopardizing public safety and the reliability of Toronto Hydro's system; and
- Inability to work with customers for the timely resolution of deficiencies and hazards through the Customer Action Form process, resulting in increased safety and reliability risks.

ASSET AND PROGRAM MANAGEMENT

1. OVERVIEW

Table 1: Asset and Program Management Program Summary

Asset and Program Management Program									
Outcomes: Customer Focus, Operational Effectiveness - Reliability, Operational Effectiveness - Safety, Public Policy Responsiveness, and Environment									
Segments: • System Planning • Standards and Policies • Flexibility Services • Program Management and Support									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
13.4	11.9	13.1	13.5	14.0	14.2	15.8	16.6	17.9	18.7

Toronto Hydro's Asset and Program Management program (the "Program") encompasses a wide range of asset management functions to support the reliable and safe operation of the utility's electricity distribution system.

The functions in this Program are performed under four segments: (i) System Planning; (ii) Standards and Policies; (iii) Flexibility Services;[1] and (iv) Program Management and Support. The activities performed in these segments include:

- Equipment, materials and standards research;
- Stations and distribution system planning;
- Forecasting customer and system needs;
- Outage investigations and reliability planning;

[1] Previously referred to as Local Demand Response in Toronto Hydro's 2020-2024 Rate Application (EB-2018-0165).

- Integration of new technologies into the utility's system;
- Asset Information Management and Records;
- Flexibility services programs targeted at reducing system constraints at times of maximum demand in targeted grid areas to defer or avoid the need for specific distribution or transmission projects at a lower total resource cost;[2] and
- Program strategy, planning, budgeting, scheduling, resourcing, tracking and reporting of Toronto Hydro's distribution-related programs

The key outputs of the Program are long and short-term plans and scopes of work, organized in annual work programs, for capital and maintenance investments all aimed at maintaining and improving Toronto Hydro's distribution system performance. While a portion of the associated costs are capitalized (i.e. for work directly related to capital planning and the execution of capital programs), this Program funds the remaining costs through operational expenditures.

2. OUTCOMES AND MEASURES

The most significant output of this Program is the Distribution System Plan ("DSP") and Maintenance Plans, and their annual updates.[3] As such, the outcomes detailed in the DSP are indirectly enabled by this Program. The following table summarizes specific outcomes directly attributable to this Program.

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[2] Exhibit 2B, Section E7.2.
[3] Exhibit 2B.

Table 2: Asset and Program Management Program Outcomes and Measures Summary

Customer Focus	• Contributes to meeting Toronto Hydro's obligations for customer connections (including Ontario Energy Board mandated ESQR measures)[4] by: o Processing and executing, in a timely manner, customer connection requests and offers to connect (both load and generation customers) as prescribed in section 7.2 of the Distribution System Code ("DSC"), o Routinely meeting with, engaging, and responding to customer and stakeholder requests and concerns.
Operational Effectiveness - Reliability	• Contributes to Toronto Hydro's system reliability objectives (e.g. SAIDI, SAIFI, FESI-7) by: • Maintaining and actively managing Toronto Hydro's system and customer-specific reliability performance, • Ensuring ongoing stewardship of the distribution system and its ability to safely and reliably function in the long-term by maintaining asset records, scheduling maintenance activities, and developing capital investment scopes of work, and • Maximizing the usage of existing assets by conducting asset condition assessments.
Public Policy Responsiveness	• Contributes to Toronto Hydro's public policy responsiveness objectives by: o Ensuring regular inspection of assets to, at a minimum, comply with Appendix C of the DSC, o Responding to the Ontario Energy Board's direction for utilities to consider and leverage non-wires alternatives where possible to drive rate-payer value, and

[4] Toronto Hydro's customer connection-related obligations include:
(i) completing low and high voltage connections within five and ten business days respectively at least 90 percent of the time, as measured pursuant to the OEB's new connection metrics and section 7.2 of the DSC;
(ii) completing customer appointments in accordance with the OEB's Appointment Scheduling and Appointments Met metrics 90 percent of the time, as per sections 7.3 and 7.4 of the DSC; and
(iii) responding to inquiries requiring a written response within ten business days at least 80 percent of the time, as measured pursuant to the OEB's Written Response metric and section 7.8 of the Distribution System Code.
Ontario Energy Board, *Distribution System Code* (August 2, 2023).

	○ Developing long-term plans for grid investment and capability-building that are responsive to the emerging pressures of electrification and the energy transition.
Operational Effectiveness - Safety	• Contributes to Toronto Hydro's public and employee safety objectives by: ○ By reviewing inspection findings, scheduling timely corrective work to address deficient equipment and infrastructure, and planning asset renewal investments over the medium to long-term thereby mitigating safety risks, ○ Monitoring system capacity conditions to minimize the risk of operating the system in violation of applicable design parameters through load transfer or capacity expansion projects, and ○ Actively reviewing, researching, and updating material and standards documentation related to system assets and operating procedures.
Financial Performance	• Contributes to Toronto Hydro's financial performance objectives by: ○ Actively mitigating system risks that can result in costly failures and associated restoration work, and ○ Enabling deferral or avoidance of capital investment where demand is uncertain to optimize capital allocation.

3. PROGRAM DESCRIPTION

The Asset and Program Management program encompasses all functions supporting Toronto Hydro's asset management work and its coordination through the following segments:

- **System Planning:** This segment enables Toronto Hydro to analyze distribution system performance and needs, develop the utility's asset management strategy, develop the utility's grid modernization plan, develop the DSP and scopes of work for executing the DSP, and manage record keeping.
- **Standards and Policies**: This segment entails the development of all design and construction standards, Conditions of Service documents, management of the

utility's quality programs, and facilitation of load connections through the offer to connect process.

- **Flexibility Services**: Flexibility Services refers to programs that address localized distribution issues through targeted procurements with customers or other third-parties.[5]
- **Program Management and Support**: This segment funds activities that enable the planning, budgeting, scheduling, resourcing, and tracking and reporting of Toronto Hydro's distribution-related programs. It also manages changes throughout the lifecycle of capital and maintenance projects.

4. PROGRAM COSTS

In 2025 Toronto Hydro requires $14.2 million in rate funding for Asset and Program Management program, which represents an increase of $0.8 million over the last rebasing in 2020. When normalized for shared services recoveries outlined in Exhibit 4, Tab 5, Schedule 1, the expected increase in this program is $1.2 million.

Over the 2025-2029 rate period, the utility expects the cost of this program to increase by an annual growth rate of 7.1 percent which is necessary to address the program needs (e.g. Planned Capital and Maintenance Work, Integrated Planning & Grid Modernization, and, Work Program Management) and deliver the customers outcomes enabled by this program.

Table provides the Historical (2020-2022), Bridge (2023-2024), and Forecast Years (2025-2029) expenditures for each of the Program's segments.

[5] *Supra* note 2.

Table 3: Asset and Program Management Program Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
System Planning	5.6	6.1	7.5	8.1	8.1	8.4	9.1	9.5	10.0	10.3
Standards and Policies	4.7	4.5	4.3	2.8	3.0	3.2	3.2	3.3	3.4	3.5
Flexibility Services	0.4	0.2	0.2	0.8	0.8	0.2	0.9	1.1	1.6	1.9
Program Management and Support	2.7	1.1	1.1	1.8	2.1	2.4	2.6	2.7	2.9	3.0
Total	**13.4**	**11.9**	**13.1**	**13.5**	**14.0**	**14.2**	**15.8**	**16.6**	**17.9**	**18.7**

4.1 Cost Drivers

The high-level cost drivers are described below. Specific variance explanations can be found under the detailed description of each Program segment in the sections below.

4.1.1 Planned Capital and Maintenance Work

The Program is driven by the amount of capital (system access, renewal, and service) and maintenance work, and associated scopes of work that must be developed. The costs of work that is required to support these programs is generally proportional to their magnitude. For example, expenditures in system access, renewal and service will increase by approximately 30 percent in the period. Furthermore, growth and electrification, system studies and development planning need and distributed energy resource ("DER") connections will require incremental studies, forecasts and planning, and the deployment of Intelligent Grid, Energy Storage technologies, and Non-Wires Solutions.

4.1.2 Reactive Capital and Maintenance Work

Costs are driven by the number of deficiencies identified through maintenance and inspections, and these costs are expected to increase as a result of the growing volume of deficiencies and reactive and corrective work requests generated through planned maintenance programs as well as through normal course of operations.

4.1.3 Integrated Planning & Modernization

Costs in the Integrated Planning & Modernization segment are driven by the need to administer the annual Investment Planning and Portfolio Reporting ("IPPR") process, continuous improvement of the Asset Management System (including ISO 55001 alignment and certification), Grid Modernization Strategy research, development and implementation, and Future Energy Scenarios modelling. There are also opportunities for leveraging advanced analytics to enable data-driven decision making for applications like predictive asset management, grid planning and optimization, load forecasting, etc. which will require the development of additional skillsets and capabilities and greater efforts to ensure accurate, up-to-date, and accessible asset information and records. These programs are essential to ensure future reliability, security and cost efficiency.

4.1.4 Standards Change Requests

Costs in the Standards and Policies segment are driven by the number of standards change requests submitted and required, including an anticipated increase in Standards change requests to meet the needs of electrification demands.

4.1.5 Evolving Design Standards

The Standards and Policies segment costs are also driven by the need to comply with applicable requirements, including Ontario Regulation 22/04 ("Electrical Distribution Safety Regulation").[6] For instance, all installation work must be based on standard design drawings and specifications, and all electrical equipment installed on the distribution system must be approved pursuant to that regulation. With revisions to industry standards, including Canadian Securities Administrators ("CSA") standards on Overhead and Underground Distribution Lines, standard design drawings and specifications are

[6] Ontario Regulation 22/04, under the *Electricity Act, 1998*, S.O. 1998, c. 15, Schedule A.

subject to change to ensure that safety standards as per the Electrical Distribution Safety Regulation are met. In addition, as Toronto Hydro continues to explore the use of new technologies in its distribution system to improve reliability and operational efficiency, and reduce overall operating costs, standard designs will also need to evolve to reflect industry best practices.[7]

4.2 Cost Control and Productivity Measures

Toronto Hydro expects cost control and productivity measures within the Program to enable cost savings and increased efficiency throughout the rate period. The overall costs of the program are projected to increase throughout the rate period, but these measures moderate the rate of increase.

In the System Planning segment, there is a large increase in workload due to multiple new initiatives including: development of the grid modernization roadmap, support in implementation of Asset Investment Planning ("AIP"), and broader technical support for the customer care function that interfaces with customers considering electrification activities. Despite an increased workload due to expanded scope of planning, Toronto Hydro plans to manage these increasing costs through continuous improvement measures, including:

- Leveraging existing and new analytics tools to improve data quality within Toronto Hydro;
- Providing licenses to more employees for existing tools, such as Alteryx Designer to improve productivity;[8]
- Implementing centralized online tools including:

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[7] *Supra* note 5.
[8] Alteryx Designer is a software application used for advanced data analysis, including data preparation, blending, reporting, predictive analytics and data science.

    - A new Microsoft SharePoint page which will be used as a central platform for the System Studies team to receive submissions, complete reviews and track requests;
    - Integrating Toronto Hydro's station relay and asset data into a consolidated database and management platform developed for Toronto Hydro. This database acts as a central location to store and track all settings used for maintenance and construction activities at our Municipal Substations and Transformer Stations, improving record keeping for all Toronto Hydro stakeholders; and
- Strategic usage of records service providers to more cost effectively update and maintain asset records within core systems such as the GIS, ERP, and document management systems.

In the Standards and Policies segment, Toronto Hydro expects to maintain segment expenditures below 2020-2024 levels as a result of continuous improvement measures which will reap benefits in the 2025-2029 period, including:

- Implementing the Intelex Quality Management module replacing Excel workbooks and Access databases. The module improves productivity over previous tools and creates a seamless workflow to manage end to end defect investigation, and provide transparency and visibility of defect investigation progress to all stakeholders;
- Leveraging analytic tools (Alteryx) to automate the information extraction process necessary for an Equipment Failure Analysis; Outputs from the workflow are displayed through interactive dashboards (Tableau); This was implemented over the 2020-2024 rate period.

- Redesigning Toronto Hydro's priority decision framework, and implementing a new tool, Asset Deficiency Assessment Priority Tool ("ADAPT"), resulting in a significant reduction in manual engineering reviews. Specifically, between 2020 and 2021, the quantity of manual engineering reviews for major assets was reduced by approximately 40 percent and escalations by crews was reduced by 25 percent;
- Launching the Asset Deficiency Web Portal - This portal allows internal personnel to submit reactive work requests when deficiencies are identified. When this portal was launched, Toronto Hydro also standardized the processes of gathering information, and creating and reporting work request information back to the requester and affected stakeholders. Standardization allows consistency and limits the number duplicate work request, reducing the overall process time; and
- Migrating the Product Change requests database from Microsoft Access to Customer Relationship Management ("CRM"), resulting in a centralized work platform to manage Product Change requests and better communication among teams involved. This was implemented in 2020. The migration to CRM also resulted in drastic improvement of classification of Product Change requests, resulting in better reporting and process efficiency;

In addition, much of the work performed in this segment is initiated through formal change requests (e.g. change a construction standard to accommodate new equipment) or informal requests for support (e.g. technical clarification regarding a design policy). All instances of such services provided by this segment are tracked and categorized. The data is then used to identify trends and recurring issues, and opportunities for improvement and efficiency gains.

Please see section Exhibit 2B, Section E7.2 for details of the Flexibility Services Program productivity and efficiencies.

In the Program Management and Support segment, productivity and operational efficiencies are gained through broad productivity enhancements including:

- Developing a number of workflows using Alteryx data processing to automate complex data analytics tasks, allowing staff to focus on other value-add tasks. For example, the Preventative Maintenance Units Tracking workflow, developed in 2022, translates Plant Maintenance order status from SAP to maintenance unit attainments. This workflow resulted in approximately 300 hours of time saved per year. Overall, the total recorded 69 workflows within Program Management and Support segment are estimated to have saved approximately $420,000 saved per year;
- Implementing an electronic red construction folder system to replace a physical red construction folder. It is estimated that this resulted in a savings of $276,000 in 2022. In addition, this contributed to significant operational benefits including, decreased time to release and complete work, efficiency in searching for and retrieving electronic documents, and improved access capabilities to internal and external users;
- Establishing a Weekly Switching Work Plan process that ensures that the feeder switching,[9] necessary to complete the planned Capital and Maintenance program, are delivered. Toronto Hydro uses synergies or bundling to reduce the number of times a feeder is removed from service, leading to savings on switching costs, reduced risk of not completing capital and maintenance programs on time,

[9] Feeder Switching creates a safe work zone for field crews by de-energization of feeder to complete work

reduced exposure to high-voltage equipment and improved customer reliability. From 2019 to 2022, approximately 2606 switching hours per year were saved through bundling of outages;

- Enhancing SAP Business Planning and Consolidation ("BPC") tool that delivers planning, budgeting, forecasting, reporting and financial consolidation capabilities. The new enhancements, which were implemented in July 2022, aim to address gaps in the current planning process through automation of existing manual efforts and processes, reduction in offline data, and use of an integrated solution with a central repository, to execute end to end planning cycles between finance and operations.
- Introducing new software to more efficiently track project information and associated change management.

5. SYSTEM PLANNING SEGMENT

5.1 Segment Description

The work done through the System Planning segment is divided into four functional areas:

- Investment Planning;
- Capacity Planning & Intelligent Grid;
- Integrated Planning and Grid Strategy; and
- Records Management.

Together, these functional areas enable Toronto Hydro to analyze the distribution system's performance and needs, develop the utility's asset management strategy, and produce the DSP as well as scopes of work for DSP execution.

5.1.1 Investment Planning

The Investment Planning function allows Toronto Hydro to monitor and analyze performance measures for its distribution system, identify system needs, and develop the capital portions of the DSP. The analytical work undertaken includes:

- **Reliability Analysis**: System power outage data is analyzed to: (i) identify performance patterns and trends related to specific types of equipment or geographical areas, and (ii) develop reliability forecasts based on investment scenarios. Outage data captured in specialized outage software is used to conduct detailed analyses of outage events, and identify worst performing areas as well as customers most affected by system outages. The analytical work performed under this function is critical to identifying system needs, informing investment decisions, and prioritizing work in various System Renewal and System Service capital programs. The results of reliability forecasting for the plan based on the DSP are provided in Exhibit 2B, Section E2. This analysis also forms the basis for managing reliability targets for measures such as SAIFI, SAIDI, and FESI-6,[10] both from year to year and over the longer term.
- **Asset Condition Assessment**: This is done at the discrete equipment level and the feeder (or station) levels to identify assets showing signs of significant deterioration and in need of replacement, refurbishment or other forms of intervention. This ensures the continued safe and reliable operation of the distribution system. Further details on the ACA can be found in Section 6.1.2 below. [11]

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[10] Exhibit 2B, Section C2

[11] Exhibit 2B, Section D3, Appendix C.

- **Capital System Planning**: Based on the system analysis described above, the planning function creates station and distribution capital work plans for design and construction, to enhance the reliability of the distribution system.

  Other Analyses: The planning function supports the works of engineering groups by assessing risks relating to: environment and safety (e.g. oil leak deficiencies), customers (e.g. customer interruption costs, impact on large account customers), legal (e.g. claims relating to property damage), and corporate brand and reputation (e.g. with respect to various stakeholders, the media, specific communities).

This analytical work, conducted as part of the Investment Planning function, forms the basis of the development of Toronto Hydro's DSP, and contributes to individual projects that together enable the utility to execute its capital and maintenance programs and address reliability, condition, or system risk needs at local levels (e.g. individual equipment, line sections, stations). Insights from the detailed analyses are used to explore feasible mitigation options to determine optimal solutions to specific issues. If the preferred solution for a particular issue is a capital investment, a scope of work is created. Figure 1 below illustrates Toronto Hydro's historic and forecasted capital expenditures initiated by a scope of work. Scoped work represents planned work that requires design, whereas demand program represents work that is reactive in nature, or requested or initiated by customers or a third party.

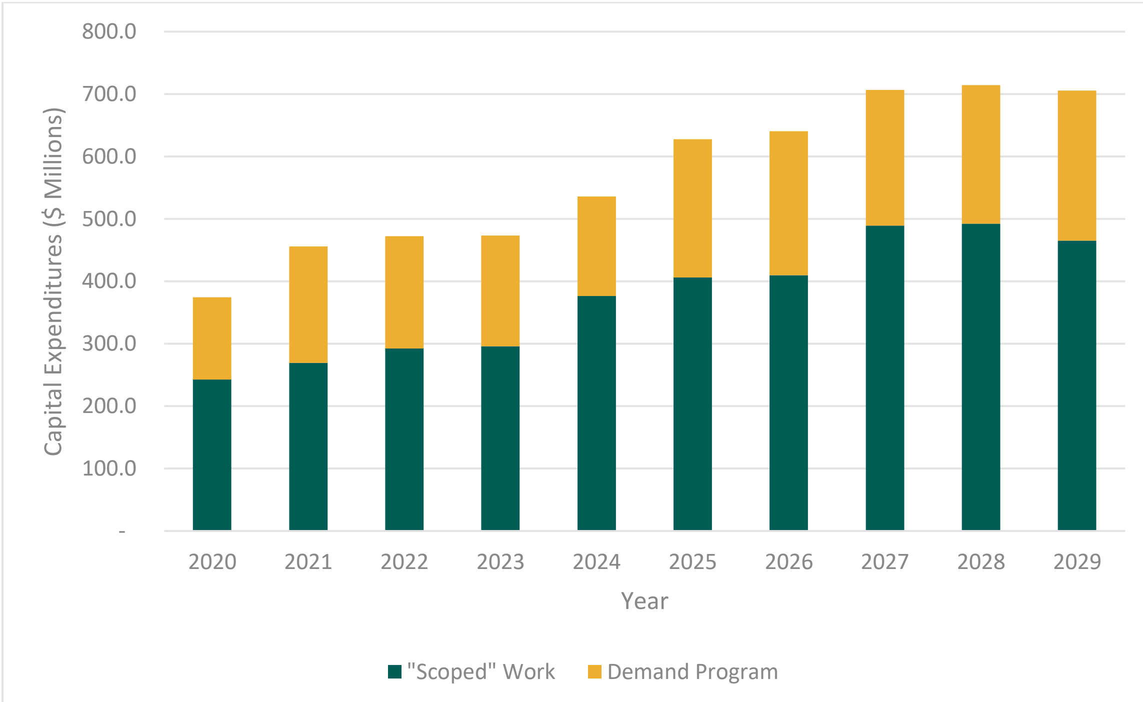

Figure 1: Value of Scopes of Work (Renewal, Service, Access)

5.1.2 Capacity Planning and Grid Innovation

This functional area is responsible for planning the distribution system's future load requirements driven by customer growth, and the requisite connection capacity to accommodate current and forecasted levels of DERs in Toronto Hydro's service area. This group also identifies opportunities for adopting non-wires alternatives (including flexibility services, local demand response) to maximize the use of existing distribution system assets.

Capacity planning work requires constant monitoring of changing system characteristics, such as feeder and transformer station loadings, short-circuit levels and system performance measures. Combining system performance data with past system demand trends and known requests for load and generation connections, Toronto Hydro produces system demand forecasts to determine what our system demands might be in the future.[12]

Toronto Hydro has a dedicated DER Connections team that works closely with customers to ensure the DER connection process is followed and timelines are met. The Capacity Planning and Grid Innovation function is responsible for the capacity plan in the Customer Connections Program.[13]

5.1.3 Integrated Planning & Grid Modernization

The Integrated Planning function includes staging and administering the annual IPPR process, coordinating the engineering division's Distribution System Plan preparation for regulatory applications, as well as developing and implementing analytics and support tools to drive more effective and efficient investment planning. The function is also responsible for the continuous improvement of the Asset Management System, aligning to best-in-class standards, and developing the long-term asset management strategy.

The Grid Modernization function is responsible for facilitating the development, integration, and strategic oversight of Toronto Hydro's long-term Grid Modernization Strategy and associated roadmaps, in addition to providing market intelligence and strategic forecasting of future electricity system needs and opportunities, and change-management support capacity to help accelerate innovation initiatives. This function has been introduced in recognition of the fact that Ontario's energy system is set to undergo significant long-term changes as it becomes increasingly decarbonized, decentralized and digitized. These demands have established the need for incremental resources, new

[12] Exhibit 2B, Section D2.
[13] Exhibit 2B, Section E5.1

skillsets and additional third-party support within the planning and engineering functions of the utility, with a specific focus on providing the specialized support and strategic inputs necessary to manage a greater pace of change and level of uncertainty.

An early example of these new strategic insights is the Future Energy Scenarios ("FES") model. FES is scenario-based model developed with leadership from the Grid Modernization function and support from an external modelling expert. This model provides granular data on possible future changes to power demand, energy consumption, generation and storage across Toronto due to decarbonization, changing customer behaviours and evolving economic and policy conditions out to 2050. The model also provides an assessment of the potential impacts of these changes on the network. [14]

The 2025-2029 Grid Modernization Strategy, the development of which was coordinated by the Grid Modernization function.[15] Going forward, Toronto Hydro plans to mature and expand the Integrated Planning and Grid Modernization functions to provide the dedicated and specialized support required to deliver and accelerate the associated grid modernization and innovation programs. Given the increasingly long-term and strategic nature of integrated investment planning in the emerging environment, it will be necessary for Toronto Hydro to continue augmenting its traditional, largely project-focused planning and engineering functions with dedicated resources carrying specialized skillsets, including strategic planning, smart grid engineering, cost-benefit analysis, research and development, analytics, change management, and innovation expertise. For

[14] Exhibit 2B, Section D4.
[15] Exhibit 2B, Section D5.

more information on the variety of programs, initiatives, and activities these functions are supporting, refer to the Grid Modernization Strategy.[16]

5.1.4 Records Management

The Records Management function involves the maintenance and upkeep of digital records of Toronto Hydro's distribution system. Toronto Hydro's system is constantly changing due to new customer connections (which results in evolving system capacity and configuration), as well as equipment failures, retirements, additions and reconfigurations. The utility must maintain up-to-date records to enable efficient and effective system planning and operations. Toronto Hydro also maintains records of its distribution asset inspections pursuant to the Electrical Distribution Safety Regulation.[17] When Toronto Hydro installs new assets on its distribution system on a planned or reactive basis, key data management systems must be updated based on relevant installation and inspection records.[18] Approximately 5,500 equipment change-outs are processed annually through the above systems.

Failure to update systems and records when equipment is replaced or reconfigured in the system raises significant safety and reliability risks as this data is referenced and relied on daily by investment planners, system controllers, designers, and trades staff across the organization. The Records Management function plays a crucial role in ensuring the quality and accuracy of data maintained and used at Toronto Hydro.

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[16] *Ibid*.
[17] *Supra* note 6.
[18] For example, Geographic Information System (GIS) – Referred to as GEAR (i.e. Geospatially Enabled Asset Registry), which also serves as the source of information for Toronto Hydro's DMS/NMS, and Enterprise Asset Management System (EAM) – Referred to as SAP.

Toronto Hydro expects the costs in the Records Management function to increase in 2025-2029 to keep pace with the growing investment program and customer demands. Another driver will be an overall increase in the expected quality, availability, and integration of critical asset and system information. As discussed in Exhibit 2B, Sections D1 and D5, unlocking the potential value of advanced analytics and distribution automation will require a higher overall level of data quality and governance, which will place more demands on the Records Management function and associated departments that are responsible for handling critical asset information.

5.2 System Planning Segment Costs

Table 4 provides the Historical (2020-2022), Bridge (2023-2024), and Forecast Years (2025-2029) expenditures for the segment.

Table 4: System Planning Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
System Planning	5.6	6.1	7.5	8.1	8.1	8.4	9.1	9.5	10.0	10.3

5.3 System Planning Segment Year-over-Year Variance Analysis

<u>2020-2021 Variance Explanation</u>

From 2020 to 2021, costs in this segment increased by $0.5 million. This is attributable to the then new Integrated Planning & Modernization function. Grid Strategy was a new team created in 2021 under Integrated Planning & Modernization for the purpose of development of a Grid Modernization Strategy for Toronto Hydro, development of FES and pursuing ISO 55001 certification for asset management.

2021-2022 Variance Explanation

From 2021 to 2022, costs in this segment increased by $1.4 million. There was a continued ramp up of the new functions initiated in 2021 that contributed to an increase in costs. In particular, the costs related to the development of FES which kicked off in 2022 and a third-party consultant to perform a gap analysis and prepare plan for ISO 55001 certification for Toronto Hydro's Asset Management System.

2022 – 2025 Variance Explanation

Between 2022 and 2025, costs in this segment are expected to increase by $0.9 million, or by an average of $0.3 million per year due to the need to further expand:

- Integrated Planning & Modernization activities to better manage planning uncertainty and accelerate the adoption of value-added digital capabilities. For example, analytical capability to support more rigorous long-term investment plan development in response to energy transition and electrification and the development and implementation of enhanced analytics and decision-support tools; and,
- All increases are also generally affected by inflationary pressures.

2025-2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $1.9 million, or an average of $0.5 million per year, to maintain the resourcing capacity and capabilities required to support the increased volume and complexity of work discussed above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various legal compliance risks and negative consequences, including:

  - Inefficient and ineffective system planning;

- Inability to support or plan capitalized work due to reduced ability to monitor and analyze distribution system performance measures, identify system needs, or develop the capital portions of the DSP;
- Decreased short- and long-term reliability of the distribution system;
- Inability to manage risks around growth and electrification;
- Inability to capitalize on synergies or maximize the use of existing distribution system assets;
- Sub-optimal coordination with the IESO and regional planning groups, and with customers for purposes of enabling distributed generation ("DER") connections (resulting in potential non-compliance with Ontario Energy Board prescribed processes and timelines);
- Inability to develop and integrate improved analytics capabilities and productivity improvement in planning, and decision support system;
- Inability to manage risks around modernization initiatives. For example, failure to maximize benefits of new technologies due to inadequate training of employees; and
- Significant safety and reliability risks if records and data updates are not synchronized with equipment or system configuration changes (given that such data is relied on by investment planners, system controllers, designers, and trades staff across the organization), incomplete data returned from the field and projects not completed in a timely manner.

6. STANDARDS AND POLICIES SEGMENT

6.1 Segment Description

The Standards and Policies Segment is responsible for the development of the utility's design and construction standards, Maintenance Planning, managing the utility's quality programs, and facilitating load connections through the offer to connect process.

6.1.1 Design and Construction Standards

One of the core functions of the Standards and Policies segment is the development and maintenance of design, construction and equipment standards and specifications for the electrical and civil construction work executed by Toronto Hydro. It is driven by the Electrical Distribution Safety Regulation, which requires distributors to create standard design drawings and specifications for all equipment comprising the distribution system. This function has a significant focus on safety of utility workers in the public. "Safety by design" is a core principle routinely applied in the utility's decision making. Toronto Hydro has more than 1,000 construction standards managed by this function. Changes to these standards are driven by reliability improvements, new technologies, regulatory changes, and industry standards (e.g. CSA standards) revisions. Toronto Hydro processes an average of 550 standard change requests per year.

6.1.2 Maintenance Planning

The Maintenance Planning function includes the analysis and preparation of Toronto Hydro's maintenance plans and schedules for all components of its distribution system. Toronto Hydro uses a Reliability-Centered Maintenance ("RCM") framework as the foundation for its maintenance planning. RCM is an established engineering framework that determines failure management policies for any physical asset in its present operating context to maximize reliability and extend useful life based on the asset's function and the consequences of functional failure on the distribution system. RCM analyses are critical in scheduling asset maintenance programs and activities. From 2016 to 2018, Toronto Hydro updated the RCM results and analyses for each asset certified to align with RCM best practices.[19] See Exhibit 4, Tab 2, Schedules 1, 2, and 3 for details on Preventative and Predictive Maintenance.

Beginning in 2017, extensive work was performed to update the ACA (based on the most recent inspection results) and adopt a new ACA framework. Toronto Hydro now uses an ACA framework and algorithm adopted from the Common Network Asset Indices Methodology ("CNAIM"). The ACA is crucial to guiding planners in deciding which assets to include in their investment plans. Since 2017, changes have been made to reflect inspection program changes and to model empirical field observations. In addition, Condition-driven Probability of Failure has been developed leveraging ACA data. Over the 2023 to 2024 period, Toronto Hydro is working to leverage its Value Framework initiative to develop a full risk view within the ACA methodology.[20]

The Maintenance Planning function also entails the review of all asset deficiencies identified through maintenance and inspection activities. During the 2020-2022 period, between 30,000 and 50,000 deficiencies were reported annually, and reviewed and categorized for the purposes of formulating corrective and reactive responses (as detailed in Exhibit 4, Tab 2, Schedule 4 Corrective Maintenance). The work undertaken in Maintenance Planning is critical to both the short-term viability (e.g. by addressing

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[19] Applicable Standards: SAE JA-1011 (Evaluation Criteria for Reliability-Centered Maintenance (RCM) Processes). Applicable Guideline: SAE JA-1012 (A Guide to the Reliability-Centered Maintenance (RCM) Standard)
[20] For details regarding the ACA model are provided in Appendix C of Exhibit 2B, Section D.

equipment deficiencies) and long-term viability (e.g. by prudently maintaining assets) of the distribution system.

6.1.3 Quality Control

The segment also provides services in the area of quality control throughout the equipment lifecycle. Quality audits, and reviews and investigations are conducted from when equipment and materials are procured from suppliers to when they fail in the field. Root cause analysis is the cornerstone of this segment's quality activities. Corrective and preventative actions, often issued through non-conformance reports to Toronto Hydro's equipment suppliers, drive improvements to standards and equipment. This segment's quality programs play a critical role in ensuring Toronto Hydro receives equipment of the highest quality from its suppliers. Toronto Hydro receives an average of 650 pieces of failed equipment returned from the field per year.

6.2 Standards and Policies Segment Costs

Table provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for the Standards and Policies segment.

Table 5: Standards and Policies Segment Expenditures ($ Million)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Standards and Policies	4.7	4.5	4.3	2.8	3.0	3.2	3.2	3.3	3.4	3.5

6.3 Standards and Policies Segment Year-over-Year Variance Analysis

2020-2021 Variance Explanation

Between 2020 and 2021 costs in this segment decreased by $0.2 million per year. This is primarily attributed to productivity initiatives as noted in Section 4.2.

2021-2022 Variance Explanation

Similarly, between 2021 and 2022 costs in this segment decreased by $0.2 million per year. This is primarily attributed to productivity initiatives as noted in Section 4.2, and organizational restructure.

2022-2025 Variance Explanation

Between 2022 and 2025, costs in this segment are expected to decrease by $1.1 million or an average of $0.4 million per year due to the aforementioned productivity initiatives and associated organizational restructuring.

2025 – 2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $0.3 million, or an average of $0.1 million per year to maintain the resourcing capacity and capabilities required to support the increased volume and complexity of work discussed above. [21] If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various legal compliance risks and drawbacks, including:

- Reduced ability to facilitate load connections through the offer to connect process, thus resulting in potential non-compliance with Ontario Energy Board prescribed timelines;
- Risk of not receiving the highest quality equipment from suppliers;
- Less effective management of Toronto Hydro's quality programs; and
- Reduced access to highly specialized engineering expertise.

7. FLEXIBILITY SERVICES SEGMENT

Please see section Exhibit 2B, Section E7.2 for details of the Flexibility Services Program.

8. PROGRAM MANAGEMENT AND SUPPORT SEGMENT

8.1 Segment Description

The work in the Program Management and Support segment can be subdivided into four functional areas:

- Scope Issuance and Tracking
- Work Program Management
- Stations-Based Maintenance and Annual Feeder Scheduling
- Work Execution Support

Together, these activities enable the planning, budgeting, scheduling, resourcing, tracking and reporting of Toronto Hydro's distribution system-related programs. The segment also manages changes throughout the lifecycle of capital and maintenance projects.

Additionally, this function effectively allocates work, identifies and mitigates emerging risks, and coordinates and tracks capital projects and maintenance activities across the utility's service territory.

8.1.1 Scope Issuance and Tracking

The high-level objectives for the Scope Issuance and tracking function are to:

- Receive, audit, issue and track all received scopes from the system planning group;
- Assign and schedule capital projects to support the generation of detailed designs for the construction of projects in the proposed project execution year;

- Ensure that the proposed work has complete details required for resourcing and budgeting prior to its issuance to the operations teams for detailed design and construction;
- Ensure documented budgetary estimates and changes to said estimates for capital construction projects to support budgeting and resource allocation by the work execution management team; and
- Track all issued scopes to completion; capturing cancellations, as well as unassigned scopes to ensure assignment and execution.

8.1.2 Work Program Management

Part of the process of creating the execution work program is to check the resulting project labour requirements against the available labour schedules to make the appropriate resource allocations to discrete projects. Once the individual project-based analysis is complete, the combined program (i.e. a collection of individual projects or demand/unplanned work) is reviewed against available resources and other relevant reference information on an aggregate level, to identify any inconsistencies, deficiencies or sub-optimal resource utilization trends.

In addition to maintaining the program-wide resource balance, Program Management staff track the status of projects in the work program and the roll-up of the projects into programs and portfolios. While tracking project execution progress, Toronto Hydro seeks to proactively identify and monitor known or emerging risks that can impact the successful delivery of the work program, and develop the appropriate mitigation strategies.

Lastly, Program Management staff provide regular reporting to all the stakeholders through monthly reporting of divisional scorecards, meeting updates, program delivery status reporting amongst others, to ensure programs are tracked, reported, risks identified along with mitigation actions and visibility is provided on the executive level.

8.1.3 Project & Work Execution Function Support (E.g. Stations-Based Maintenance and Annual Feeder Scheduling

Program Management also provides various support activities to operational departments that execute capital and maintenance work. One example is annual feeder scheduling. Many projects require feeders to be taken out of service to create a safe work zone in accordance with safety requirements and practices. Each time a feeder is taken out of service in downtown Toronto, a combination of network and customer locations need to be switched. Each of these switching steps requires a crew to visit the location and manually move switch handles. Once a feeder has been switched out, work on the system (such as maintenance or installation of new assets) can be performed.

Toronto Hydro has utilized a “stations-based maintenance” approach to completing its maintenance program dating back to 2016 to help align work requiring outages in the downtown core. Given the cost and safety implications associated with switching feeders on the network system, every effort is taken to combine or synergize work to achieve efficiencies in work coordination.

Program Management and Support staff work with Operations and Control Room Teams to identify synergies on downtown feeders to create safety, reliability, customer, productivity and environmental benefits.

Other key benefits include:

- Higher attainment of capital and maintenance programs;
- Reduced execution costs and feeder outage costs due to smaller amounts of outages required;
- Improved customer reliability due to fewer outages; and
- Enhanced system stability and flexibility with fewer feeders in an abnormal configuration.

Other support functions include:

- Supply and equipment planning;
- Customer connection program analysis;
- Material forecasting, scheduling and management through aligning material requirement with forecasted execution dates and liaising with the procurement team to identify current and future year material requirements to ensure availability;
- Aligning system and capacity planning priorities with the work execution program as required i.e. flagged system priorities due to reliability or regulations are scheduled timely by PMO for execution by the OPS teams;
- Key portfolio reporting and management e.g. NCMC program coordination, management and reporting where PMO coordinates with all stakeholders (Planning, Operations, IT and Control Room) to effectively execute the program; and
- Performance reporting through monthly scorecards for the various departments and divisions to flag required improvements.

During project execution, Toronto Hydro coordinates its work with the anticipated work of other utilities and City of Toronto planners. This is done iteratively, from the inception of a project to its completion. In the City of Toronto, it is especially critical to coordinate projects and obtain permits given the scale of new development, infrastructure renewal and major transit projects currently in development or construction. Work Execution staff maintain the databases and business processes necessary to coordinate the work and facilitate circulation of project data with other utilities. It seeks to maximize collaboration between multiple teams to complete work in the most efficient manner, prevent potential conflicts and reduce potential disruptions from construction projects to Toronto Hydro's customers.

Work Execution staff is responsible for securing timely and accurate approvals for the multiple roadway work permits Toronto Hydro requires throughout a given year. This involves coordination across Toronto Hydro engineers, designers, construction teams and City officials to ensure all relevant documentation is prepared in accordance with Municipal Consent Requirement for the installation of plant within City of Toronto streets.

Finally, the work execution support function provides oversight and governance over project and program management practices. This aims to ensure that business processes, including forecasting, risk identification, change management, continuous improvement, progress tracking and analytics are being used for all applicable projects and programs. Given the number and variety of projects in Toronto Hydro's capital and maintenance work programs, the governance function is critical to ensure the integrity and accuracy of work plans and financial forecasts submitted to the Ontario Energy Board, its shareholders and other neighbouring utilities. Some of these governance functions include; monthly executive and senior management performance reporting, key program status reporting, change request process management, project variance analysis and numerous metrics to drive process adherence and continuous improvement. In addition to providing oversight, it is also responsible for designing and maintaining procedural documents and project management tools in alignment with industry standards and best practices. This group also has ownership of the governance software systems that support these areas.

8.2 Program Management and Support Segment Costs

Table provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for the Program Management and Support segment.

Table 7: Program Management and Support Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Program Management and Support	2.7	1.1	1.1	1.8	2.1	2.4	2.6	2.7	2.9	3.0

8.3 Program Management and Support Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

The decrease of $1.6 million from 2020 to 2021 is attributable to organizational restructure.

2021 – 2022 Variance Explanation

There is no material variation in this period.

2022 – 2025 Variance Explanation

Between 2022 and 2025 costs in this segment are expected to increase by $1.3 million, or an average of $0.4 million per year due to:

- The Permit Delivery Office moving under the Program Management and Support department;
- Normal course escalation and increases; and
- Headcount increases to support a higher volume of work.

2025 – 2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $0.6 million, or an average of $0.2 million per year, to maintain the resourcing capacity and capabilities required to support the increased volume and complexity of work discussed above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various legal compliance risks and drawbacks, including:

- Decreased service levels in respect of customer service connections requests;
- Less efficient use of design and construction labour resources, raising the risk for resource stranding;
- Less effective project coordination, including sub-optimal alignment and integration with third party projects;
- Reduced program delivery and integration across multiple internal stakeholders such as efficient translation of strategic changes, compliance requirements from planning to operations for execution, or facilitating budget creation by Finance;
- Reduced governance and reporting functions that drive crucial elements of project management, such as cost controls, project performance and change management; and
- Decreased risk management during operational phases.

WORK PROGRAM EXECUTION

1. OVERVIEW

Table 1: Work Program Execution Program Summary

Work Program Execution Program									
Outcomes: Operational Effectiveness - Reliability, Operational Effectiveness - Safety, and Financial Performance									
Segments: • External Work Execution • Internal Work Execution									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
11.0	14.2	17.3	14.3	15.2	16.0	16.8	17.9	18.5	19.4

Work Program Execution (the "Program") is responsible for oversight, administrative training, and other functions performed in the process of executing Toronto Hydro's capital and maintenance work programs, which are not eligible for capitalization in accordance with the utility's capitalization policy. The Program consists of the following two segments:

- External Work Execution; and
- Internal Work Execution.

The Program and its constituent segments are a continuation of the activities described in Work Program Execution in Toronto Hydro's 2020-2024 rate application.[1]

[1] EB-2018-0165, Exhibit 4A, Tab 2, Schedule 10.

2. OUTCOMES AND MEASURES

Table 2: Work Program Execution Program Outcomes and Measures Summary

Operational Effectiveness - Reliability	• Contributes to Toronto Hydro's system reliability objectives (e.g. SAIDI, SAIFI, FESI-7) by: ○ Undertaking oversight, administrative training and other functions performed in the process of executing Toronto Hydro's capital and maintenance work programs; and ○ Managing the administration associated with external contractors who respond to outages and reactive calls.
Operational Effectiveness – Safety	• Contributes to Toronto Hydro's safety objectives, measured through metrics such as the Total Recordable Injury Frequency ("TRIF"), by ensuring Toronto Hydro employees receive legislated safety training and possess the requisite tools and Personal Protective Equipment ("PPE") to perform their roles in a safe manner.
Financial Performance	• Contributes to Toronto Hydro's financial performance objectives by ensuring that any work completed by external contractors is allocated based on a variety of factors including safety, costs, performance and qualifications. As a result, Toronto Hydro is able to determine the most qualified and cost-efficient contractor for a specific project.

3. PROGRAM DESCRIPTION

The Program encompasses the labour costs for oversight and training activities relating to the execution of Toronto Hydro's capital and maintenance programs. This includes coordination and support of external contractors executing a portion of Toronto Hydro's capital and maintenance programs, the utility's internal design and construction crews, and apprentices. These activities are performed through two segments:

- **External Work Execution**, which covers the costs required to directly administer planning and execution of the portion of Toronto Hydro's capital and maintenance program that is completed by external contractors. This includes the issuance and oversight of capital and maintenance work to meet legislated and regulatory health and safety requirements; and

- **Internal Work Execution**, which covers the administrative and support costs for the portion of Toronto Hydro's capital and maintenance program that is completed by internal labour. This segment includes safety training costs (including training costs associated with the utility's Trade School) for employees, including apprentices, as well as costs for small tools issuances, PPE, logistics, tracking, project-specific planning, and supervisory time not directly attributable to a specific program or project. [2,3]

4. PROGRAM COSTS

In 2025, Toronto Hydro requires $16 million in rate funding for the Work Program Execution program, which represents an increase of $5 million over the previous rate period in 2020. When normalized for shared services recoveries outlined in Exhibit 4, Tab 5, Schedule 1, the expected increase in this program is $4.9 million.

Over the 2025-2029 rate period, the utility expects the cost of this Program to increase by an annual growth rate of 5 percent. This increase is necessary to address the Program needs while delivering the customer outcomes enabled by this Program.

Table 3, below, displays the Historical (2020-2022), Bridge (2023-2024), and Forecast Years (2025-2029) expenditures for the two segments comprising the Program.

[2] Exhibit 4, Tab 4, Schedule 3.
[3] With the exception of Power System Controllers, see Exhibit 4, Tab 2, Schedule 7.

Table 3: Work Program Execution Program Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
External Work Execution	1.0	1.5	1.1	1.2	1.4	1.5	1.6	1.7	1.8	1.8
Internal Work Execution	10.0	12.7	16.2	13.1	13.8	14.5	15.2	16.2	16.7	17.6
Total	**11.0**	**14.2**	**17.3**	**14.3**	**15.2**	**16.0**	**16.8**	**17.9**	**18.5**	**19.4**

4.1 Cost Drivers

Over the 2025-2029 rate period, Toronto Hydro's capital program is increasing by approximately 47 percent. In addition, the complexity of the utility's work program, particularly in areas of System Access, System Renewal and System Service, is increasing as Toronto Hydro makes investments to lay the foundation for the energy transition by expanding and modernizing the grid to enable customer choice to connect new technologies such as solar panels, heat pumps and electric vehicles. To support Toronto Hydro and its customers on this electrification journey, this Program must keep up with managing increased oversight and training activities. Primarily, this means an increase in headcount in both segments as well as related increases in training costs, tools and safety equipment, and PPE.

For the Internal Work Execution segment, Toronto Hydro anticipates headcount increases for a number of key Certified and Skilled Trades and Designated & Technical Professional positions such as Power Line Technician ("PLT"), Distribution System Technologist ("DST"), Engineers and Engineering Technologist ("ETL"). All of these professions require a minimum number of hours training in order to fulfill their roles.

Engineers and ETL's, for example, are trained on a broad range of technical topics to ensure that their solutions are practical and safe by design. PLT's and DST's are required to complete a number of hands on technical proficiency and legislative courses that equip them to implement these designs safely and skillfully. These resources together provide Toronto Hydro with the ability to design and construct its capital program. An increase in this population will make it possible for the utility to achieve the increased program anticipated for 2025 to 2029.

For the external segment, Toronto Hydro anticipates headcount increases for a number of roles including field and project managers and project management staff to ensure that Toronto Hydro is able to appropriately manage external contractors and respective capital programs. As capital programs increase in both size and complexity of work, resourcing requirements necessarily increase in order to maintain prioritization of safe work practices, design and construction standards, and overall efficient use of capital budgets. In Toronto Hydro's experience, an appropriate resource level has each manager, with a supporting analyst, executing approximately $11-13 million in capital projects annually.[4] As shown in Figure 1, Toronto Hydro's headcount plan ensures sufficient resources to maintain manager numbers at this level of execution while also maintaining the ratio of supporting analysts at about 1:1.

[4] Gross EWP per year.

Figure 1: Gross EWP Output by Manager ($ Millions)

4.2 Cost Control & Productivity Measures

4.2.1 Cost Management

Toronto Hydro undertakes a number of measures to control costs within this Program, some of which are aimed at reducing training costs. Through the implementation of online training modules, employees now receive a substantial portion of their requisite training online. This eliminates added costs relating to travel time, and affords employees the flexibility to view the training at times that do not interfere with operations and delivery of the work program.

Starting in 2018, Toronto Hydro concentrated annual training for design and construction field crews in two-week blocks. This allows training to be delivered in a more efficient manner, leveraging full consecutive days. This is predominantly done in full crew compliments to better coordinate planning and minimizing the impact to work execution. Training included in these blocks is based on specific training requirements, as well as any new, timely or emerging requirements. In 2023, this training approach was applied to the station and distribution automation groups, modified to one week based on the department’s specific training requirements.

4.2.2 Productivity

Toronto Hydro continues to look for opportunities to improve the overall productivity of this Program.

As all of Toronto Hydro’s external contractors have the requisite qualifications and experience to engage in all areas of capital work, the utility has implemented a process whereby work is allocated to specific contractors based on a variety of factors including, safety, costs, performance, qualifications and resourcing capability. As a result, Toronto Hydro is able to determine the most qualified and cost-efficient contractor for a specific project.

With regards to training, Toronto Hydro is trialing virtual reality technologies for equipment-specific tasks. This allows for a risk-free learning environment for the internal work force and is productive, effective and innovative.

Administratively, a move to an online work distribution process has also allowed for some productivity gains in the planning process for the reactive segment of work (supported by both the internal and external work crews).

5. EXTERNAL WORK EXECUTION SEGMENT

5.1 Segment Description

The External Work Execution segment consists of the administration of capital and maintenance work performed by external contractors. This function serves as the primary point of contact between Toronto Hydro and external contractors, including evaluating and administering competitive tenders for contractor services, providing oversight of the resulting contracts, and administering support of the specific projects assigned to external contractor crews, such as:

- Job package development and issuance;
- Liaising with system planners to address specific design matters;
- Field issues management;
- Ordering of materials;
- Facilitating changing of project scopes;
- Monitoring contractor safety practices;
- Invoicing and receipting; and
- Inspection of newly constructed assets.

This segment ensures that Toronto Hydro provides the employees overseeing this function with training, safety equipment, and tools that ensure external contractors are adequately monitored and compliant with legislated, regulatory and safety requirements.

The External Work Execution segment proactively engages with customers through the Community Relations team.[5] This is an integral part of the project management and execution process. In addition to working with the Community Relations team, Project

[5] Exhibit 4, Tab 2, Schedule 18.

Execution Managers may also meet directly with customers on site to address any concerns that customers may have, before, during and after construction.

The External Work Execution segment also includes the administration costs associated with managing external contractors who respond to outages and reactive calls. Since this function is shared with Toronto Hydro employees, costs may also be included in the Internal Work Execution segment depending on the responding crew. Consequently, there are slight year-over-year cost variations depending on the identity of the response crews.

5.2 External Work Execution Segment Costs

Table 4, below, provides the Historical (2020-2022), Bridge (2023-2024), and Forecast Years (2025-2029) expenditures for the External Work Execution segment.

Table 4: External Work Execution Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
External Work Execution	1.0	1.5	1.1	1.2	1.4	1.5	1.6	1.7	1.8	1.8

The costs for this segment can be separated into two categories:

- **Capital and Maintenance**: which includes the Program Support Office and Construction groups; and
- **Reactive Contractor Administration**: which covers the oversight of non-capital reactive work (e.g. digging a splice pit to access a failed cable). This budget is currently under the Internal Work Execution segment and is transferred annually to account for the external assistance for reactive work.

5.3 External Work Execution Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

From 2020 to 2021 costs in this segment increased by $0.5 million due to an increase in work being performed by Toronto Hydro's Energy Services affiliate.[6] While costs incurred appear in this program, they are recovered through the shared services program as set out in Exhibit 4, Tab 5, Schedule 1.

2021– 2022 Variance Explanation

From 2021 to 2022, costs in this segment decreased by $0.4 million. This is attributed to a minor variance in oversight costs of external resources.

2022 – 2025 Variance Explanation

Between 2022 to 2025, costs in this segment are expected to increase by $0.4 million or an average of $0.1 million per year due to:

- A return to baseline in oversight costs following the decrease in 2021;
- headcount increases to support an increasing capital program; and
- inflationary pressures.

2025 – 2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $0.3 million, or an average of $0.1 million per year to maintain the resourcing capacity and capabilities required to support the increased volume and complexity of work discussed above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various legal compliance risks and drawbacks, including:

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[6] Toronto Hydro Energy Services Inc.

- Execution risks relating to a reduced ability to perform capital and maintenance plans due to a decrease in recruitment of field managers, engineers, project managers and other staff;
- Decreased ability to meet legislated training targets, thereby exposing Toronto Hydro to unnecessary safety and legal risk;
- Reduced productivity due to inadequate tools and equipment; and
- Increased risk of injury to employees resulting from the lack of requisite PPE, clothing and equipment such as hard hats.

6. INTERNAL WORK EXECUTION SEGMENT

6.1 Segment Description

The Internal Work Execution segment includes the administrative support and training costs associated with construction work performed by Toronto Hydro's internal construction and design employees. Among the costs included in this segment are small tools issuance, legislated training costs, including training costs associated with the utility's Trade School, office-related expenditures, as well as time not directly attributable to any specific capital program or project. This Program ensures that Toronto Hydro employees are receiving legislated safety training and possess the requisite tools and PPE to perform their roles in a safe and financially responsible manner.

6.1.1 Safety Training

As described in detail in the Human Resources, Environment and Safety program, employee health and safety are core values at Toronto Hydro.[7] Underlying this commitment is the extensive health and safety awareness and training work conducted throughout the year. Toronto Hydro certified tradespersons and apprentices participate

[7] Exhibit 4, Tab 2, Schedule 15.

in an average of over 8.6 days of health and safety training per year. The training is aimed at providing employees with the tools and knowledge to perform their work safely and efficiently, thereby maximizing the value of their work for the utility and its customers.

In addition, due to the complexity of Toronto Hydro's distribution system and the number of legacy assets that are largely unique to the utility (e.g. paper-insulated lead-covered cable), apprentices are required to complete several years of theoretical and practical training to gain the skills and knowledge required to safely work on Toronto Hydro's distribution system.

6.1.2 Apprenticeships

The Internal Work Execution segment also includes a portion of (non-capitalized) expenditures associated with capital construction work performed by Toronto Hydro's skilled trades' apprentices. Certified and skilled trades are critical resources in the execution of Toronto Hydro's capital and maintenance programs. Over time, Toronto Hydro has strengthened the workforce to prepare for retirements and unplanned exits as necessary, and allow for the extended lead-time required to safely train new workforce entrants (apprentice programs run from 4.5 to 6.5 years in length).

6.2 Internal Work Execution Segment Costs

Table 5, below, provides the Historical (2020-2022), Bridge (2023-2024), and Forecast Years (2025-2029) expenditures for the Internal Work Execution segment.

Table 5: Internal Work Execution Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Internal Work Execution	10.0	12.7	16.2	13.1	13.8	14.5	15.2	16.2	16.7	17.6

The variances are largely attributable to a staged approach to safely absorb and integrate almost 40 individuals to the apprenticeship program during the 2025-2029 timeframe. This approach will facilitate workforce renewal in a safe and effective manner without jeopardizing the utility's objectives or ability to safely and effectively deliver its capital and maintenance work programs.

6.3 Internal Work Execution Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

Between 2020 and 2021, costs in this segment increased by $2.7 million due to an increase in headcount in the apprentice program, and increased payroll costs due to increased sick time.

2021 – 2022 Variance Explanation

Between 2021 and 2022, costs in this segment increased by $3.5 million due to an increase in operational costs due to a higher proportion of sick time compared to 2021 as a result of the omicron wave of the COVID-19 pandemic. Also contributing to this increase is an increase in the apprentice program, as well as an increase in tool repair, PPE and other consumables.

2022 – 2025 Variance Explanation

Between 2022 to 2025, costs in this segment are expected to decrease by $1.7 million, or an average of $0.6 million due to:

- A decrease in operational costs due to an anticipated return to pre-pandemic sick time usage;

- better allocation of costs to other operations, maintenance and administration programs (attributed to the transition to SAP), as well as a decrease in tool repair and PPE costs; and
- This decrease was partially offset by an increase in the headcount to support an increasing capital program, and inflationary pressures.
-

2025 – 2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $3.1 million, or an average of $0.8 million per year, to maintain the resourcing capacity and capabilities required to support the increased volume and complexity of work discussed above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various legal compliance risks and drawbacks, including:

- Decreased ability to meet legislated training targets, thereby exposing Toronto Hydro to unnecessary safety and legal risk;
- Reduced productivity due to inadequate tools and equipment;
- Increased risk of injury to employees and the public resulting from the lack of requisite PPE, clothing and equipment such as pylons, barriers, and hard hats; and
- Execution risk relating to a reduced ability to perform capital and maintenance plans due to lack of support and decrease in recruitment of skilled tradespeople.

FLEET AND EQUIPMENT SERVICES

1. OVERVIEW

Table 1: Fleet and Equipment Services Program Summary

Fleet and Equipment Program Summary									
Outcomes: Operational Effectiveness - Reliability, Environment, Operational Effectiveness - Safety, Financial Performance									
Segments: • Fleet and Equipment Services									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
9.3	8.5	7.8	8.7	9.1	9.3	9.6	9.8	10.0	10.3

Toronto Hydro's Fleet and Equipment Services program (the "Program") governs the utility's vehicle and equipment procurement, operation, maintenance, and disposal policies. The primary objective of the Program is to ensure that the utility's vehicle assets and equipment operate safely and reliably at the lowest overall lifecycle cost. To achieve this objective, the Program delivers the services required to maintain Toronto Hydro's 456 vehicle fleet. The Program continues the activities described in Toronto Hydro's 2020-2024 Rate Application Fleet and Equipment Services program. The Program's services ensure that ensures that fleet vehicles are available so that the utility can carry out its electricity distribution activities and meet customer expectations in a safe, reliable, and expedient manner.

The activities administered by this Program are closely governed by legislative and regulatory requirements such as those administered by the Ministry of Transportation (the "MTO"), the Electrical Utility Safety Rules ("EUSR"), and the *Occupational Health and*

Safety Act, 1990 (Ontario) ("OHSA").[1] The majority of the Program's activities are mandatory to meet these legislative and regulatory obligations and must be carried out by certified trade technicians.

2. OUTCOMES AND MEASURES

Table 2: Fleet and Equipment Services Program Outcomes and Measures Summary

Operational Effectiveness - Reliability	• Contributes to Toronto Hydro's system reliability objectives (e.g. SAIDI, SAIFI, FESI-7) by:
	  ○ Helping to ensure work crews have access to appropriate and sufficient vehicles and equipment to perform distribution work when required; and
	  ○ Ensuring that the fleet and equipment are in good working order and assets are replaced before critical equipment failures arise that necessitate lengthy and costly offsite repairs.

Environment	• Contributes to Toronto Hydro's environmental objectives by aiming to reduce greenhouse gas ("GHG") emissions associated with fleet fuel consumption by:
	  ○ Utilizing hybrid and electric vehicles and biofuels where possible; and
	  ○ Implementing proactive mitigation measures such as anti-idling technology, GPS reporting to drive best practices for driver behaviour, and the use of biofuels.[2]

Operational Effectiveness - Safety	• Contributes to Toronto Hydro's safety objectives as measured by metrics like Total Recordable Injury Frequency ("TRIF") by helping to ensure employees are working safely with minimal exposure to hazards by completing vehicle and equipment (e.g. personal protective equipment) safety inspections.

[1] R.S.O. 1900, c. O.1. [*"Occupational Health and Safety Act"].*

[2] The use of technology to drive these results is constrained by funding and classes of vehicles where the return on investment is justifiable.

Financial Performance	• Contributes to Toronto Hydro’s financial performance objectives as measured by the total cost and efficiency measures by: ○ Managing fleet and equipment assets to the lowest overall lifecycle costs; and ○ Mitigating fuel expenses by aiming to reduce fuel consumption through a combination of utilizing hybrid and electric vehicles; anti-idling technologies; and optimizing vehicle lifespans in accordance with the utility’s asset management strategy.

3. PROGRAM DESCRIPTION

The successful execution of the Program’s activities enables Toronto Hydro to maintain a safe and reliable fleet that is capable of meeting the utility’s safety, reliability and customer service objectives. Activities to fulfill the Program’s objectives include:

- Managing the lifecycle of Toronto Hydro’s vehicle and equipment assets
- Administering a preventative vehicle maintenance program in accordance with MTO requirements and original equipment manufacturers’ (“OEM”) guidelines
- Equipping vehicles with the necessary onboard equipment that is optimized to align with each vehicle type. This equipment includes ruggedized laptop mounts, truck grounds, air rescue kits, safety retrieval lines, and telematics systems. This equipment enables fleet operators to perform their duties safely, efficiently, and with minimized wear and tear on vehicles.
- Employing technologies to reduce engine wear and idle time
- Work required to manage vehicle and equipment asset lifecycles, and to test related safety equipment, including executing competitive bids for equipment assets and related services such as fuelling, telematics, washing, lab testing and onboard technology services, and

- Managing contracts and vendors and employing skilled fleet mechanics. Toronto Hydro's fleet mechanics hold a number of specialized licenses and certifications that enable them to perform repairs on utility equipment.

All vehicles, regardless of power source, are part of regular preventative maintenance inspections according to each vehicle's class. Additional reactive maintenance costs may arise at undetermined times and the cost is generally comparable between electric vehicles and internal combustion engine vehicles. The primary difference in repair costs between the two types of vehicles is attributable to potential major repairs. Toronto Hydro factors in these types of repairs into its asset lifecycle analysis, which accounts for the degradation of major vehicle components and the expiry of warranties on major parts such as batteries.

The Program's activities are also aimed towards reducing Toronto Hydro's scope 1 greenhouse gas emissions to achieve Net Zero by 2040, as detailed in Exhibit 2B, Section D6. Sample activities to this end include maintaining equipment to reduce engine idle time and wear in compliance with engine idling reduction by-laws,[3] and using maintenance measures to optimize the fuel efficiency of the utility's internal combustion engine (ICE) vehicles. Finally, the Program employs the services of technicians capable of maintaining and repairing both hybrid and electric vehicles, enabling the utility to maintain its growing complement of low-emissions fleet vehicles.

The Program also governs the administration of services provided by a third-party lab certified by North American Independent Laboratories. This lab acquires, certifies, and tests the safety tools, implements, and employee personal protective equipment ("PPE")

[3] Toronto Municipal Code, Chapter 517, Idling of Vehicles and Boats.

that are mandated by law for utility work. Defective or insufficient safety equipment risks exposing workers to electrocution and to harmful gases within vaults and cable chambers. The faults or failure of this equipment could also compromise grid integrity, thereby reducing the reliability of Toronto Hydro's distribution system. The use of this third-party service provider enables the utility to receive these services as the demand arises without the costs and logistical challenges of continually maintaining skilled staff and infrastructure in-house.

Toronto Hydro also outsources non-core maintenance work to qualified third-party service providers if the work meets the following criteria:

- The work entails greater physical safety risks, such as vehicle suspension work;
- The work does not require the technical expertise of a licensed mechanic, such as tire replacement;
- The work requires specific skills or credentials that Toronto Hydro employees do not possess and which may be sourced through a third-party service provider, such as aerial lift dielectric testing; or
- The work uses equipment not owned by, or not readily accessible by the utility, such as vehicle emissions testing equipment.

Toronto Hydro outsources generic maintenance work to free up its in-house mechanics' time for skilled monthly maintenance work. This enables the utility to allocate high value and specialized work to its internal employees while ensuring that intermittent work that can be easily contracted out to market is completed at optimum efficiency and cost.

4. PROGRAM COSTS

Toronto Hydro is requesting an average of $9.8 million over the 2025-2029 period to efficiently execute the functions in the Fleet and Equipment Services program. The Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for the program are summarized in Table 3 below. Program costs have remained fairly stable since the last rebasing period.

Table 3: Fleet and Equipment Services Program Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Fleet and Equipment Services	9.3	8.5	7.8	8.7	9.1	9.3	9.6	9.8	10.0	10.3
Total	**9.3**	**8.5**	**7.8**	**8.7**	**9.1**	**9.3**	**9.6**	**9.8**	**10.0**	**10.3**

The Program costs cover the labour, parts, services, and fuel attributable to the core Program functions. The labour costs also involve the services of third-party technicians who maintain, repair, and test all capital assets within the Program (such as vehicles, equipment, and safety tools). The volume and pace of the program's activities, as well as the testing requirements, are influenced by several factors such as applicable legislative and regulatory requirements, and the size and condition of the utility's fleet. Toronto Hydro must complete repairs to equipment in a timely and periodic manner to ensure that vehicles are safe for operators and the public, and test safety tools in a continuous fashion to protect field employees on the job.

The Program also includes the costs for fuelling, parts, tools, licences, and insurance associated with the operation, maintenance, and repair of fleet equipment and with safety programs. These costs are non-discretionary and are required for continued operations under the Program. Other operating costs include compensation for the

Program's managers and employees, who perform a variety of functions including but not limited to, advising on vehicle conditions, administering the centralized vehicle pool, and advising on standard vehicle selections for optimal safety and technical functionality at the lowest available cost.

To manage the costs under the Program, as detailed below under subsection 4.2 Cost Control and Productivity Measures, Toronto Hydro has invested in fuel-saving technologies and opts for electric and hybrid vehicles, where possible, to further save on fuel and engine-related maintenance costs. The utility also decreased its overall fleet size from 588 vehicles in 2017 to 456 in 2023, which reduced the Program's maintenance, repair, and administrative costs.

4.1 Cost Control and Productivity Measures

4.1.1 Cost Management

- **Elimination of Under-Utilized Vehicles:** Toronto Hydro optimizes its fleet size on an ongoing basis, as discussed in detail in Exhibit 2B, Section E8.3, Fleet and Equipment Services (capital). Over the past two rate periods, the utility eliminated some costly and specialized vehicles and equipment that were expensive to repair and where the relevant services could be obtained through outsourcing (e.g: cable trucks and forestry units). Each vehicle reduction results in cost savings by eliminating the need for associated maintenance, repair, licensing, insurance, and fuel costs. On average, each vehicle removed from the fleet reduces operating costs by $2,000 to $7,000 per year. Since 2017, Toronto Hydro's fleet size has decreased by 132 vehicles (a net 22 percent reduction).
- **Fuel Consumption Reduction:** The Program has also achieved an average annual reduction in fuel needs (estimated to be approximately 20,000 litres per year) as

a result of replacing internal combustion engine vehicles with hybrid and fully electric vehicles, in accordance with Toronto Hydro's Decarbonization Strategy discussed in Exhibit 2B, Section D6 and the Fleet and Equipment Services (capital) program discussed in Exhibit 2B, Section E8.3, which contributes to lower fuel costs.

- **Optimization of Vehicle Services:** In 2020, Toronto Hydro eliminated costs attributed to truck-to-truck fuelling services and selected a more cost-competitive mobile wash vendor, which collectively resulted in an annual savings of approximately $0.25 million.
- **Repair Avoidance:** Toronto Hydro has begun a ten-year corrosion prevention pilot project with 18 pickup trucks that were put into service in 2020. The goal of this project is to determine the best form of corrosion protection to minimize repair and replacement costs by extending the life of the vehicles. The pilot includes testing three forms of protection on six vehicles each: (1) a single base protection application of initial oil-based rust inhibitor spray, (2) a single base protection application of initial oil-based rust inhibitor spray plus the installation of a rust inhibitor module, and (3) a single base protection application of initial oil-based rust inhibitor spray plus an annual application of oil-based rust inhibitor spray. Toronto Hydro's aim is to increase the age vehicles can reliably remain in the fleet, as corrosion to critical components of units are one of the primary factors leading to vehicle replacements.
- **Optimization of Program Resources:** The Program's employees improve processes, evaluate service agreements, and make ongoing adjustments where cost savings can be realized without increasing labour requirements. Specific examples include: (i) utilizing GPS data for daily reporting on engine issues to proactively reduce breakdowns and towing; ii) continually evaluating the capacity

of internal resources and determining the appropriate approach to optimize their utilization; and iii) shifting work to externally sourced services where deemed appropriate (in accordance with capacity, specialization, or cost effectiveness needs).

- **Driver Safety Reporting:** From 2018 onwards, Toronto Hydro has leveraged driver safety reporting on speeding, harsh braking, and reversing from parked position to influence improvements in driver safety behaviour, and thus help minimize safety incidents and resulting repair costs. Thanks to these measures, from 2020 to 2022 the number of speeding infractions has decreased by approximately 174 percent.

4.1.2 Productivity

The Program proactively monitors and manages vehicle utilization by continuously evaluating the optimal usage of different types of vehicles according to operational needs and work volumes. For example, vehicles that are not required for dedicated uses by field crews are allocated to a centralized vehicle pool for shared use across the utility. Specialized equipment, such as dump trucks, derricks with augers, and specially equipped trailers are allocated to the pool to eliminate the redundancy that would otherwise result from several crews relying on dedicated use of a particular piece of equipment. For more information on Toronto Hydro's fleet vehicle utilization statistics, please refer to Exhibit 2B, Section E8.3.

4.2 Fleet and Equipment Services Program Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

From 2020 to 2021, costs decreased by $0.8 million. This variance is comprised from:

- Payroll savings of $1.2 million due to significant attrition; and

- An increase in external contractor services of $0.4 million to support the decreased capacity.

2021 – 2022 Variance Explanation

From 2021 to 2022, costs decreased by $0.7 million. This variance is comprised from:

- Continued vehicle reductions that occurred throughout 2021 and 2022, resulting in lower operating and repair costs.

2022 – 2025 Variance Explanation

From 2022 to 2025, costs are expected to increase by $1.5 million. This variance is comprised from:

- Increased headcount and payroll costs due to an increase in hiring mechanics to adequately manage the necessary demands of vehicle repairs within the fleet.
- As well, a larger than average number of vehicles were commissioned at this time requiring support from external service providers.

2025-2029 Variance Explanation

Between 2025 and 2029, costs in this segment are expected to increase by $1 million, or an average of $0.3 million per year. Without the requested funding, Toronto Hydro faces the following risks:

- Reduced ability to procure all parts, services, and fuel required for proper vehicle functionality, which could result in vehicle downtime, impaired ability to perform distribution work, and potentially prolonged outages;
- Reduction in the frequency, scope, and timeliness of vehicle maintenance work, resulting in undetected faults and potential employee and public safety risks, as well as inefficiencies in asset lifecycle management;

- Reduced ability to provide constant availability of certified and tested safety implements and PPE that are required by law;
- Inability to implement technologies and programs that would yield sustained reductions in GHG emissions and compliance with idling by-laws;
- Reduced ability to perform management functions related to the continuous monitoring of and compliance with legislative and regulatory requirements; and
- Increases in costly and complex vehicle and equipment faults as a result of reduced labour capacity to perform routine maintenance.

FACILITIES MANAGEMENT

1. OVERVIEW

Table 1: Facilities Management Program Summary

Facilities Management Program Summary									
Outcomes: Operational Effectiveness - Reliability, Public Policy Responsiveness, Environment, Operational Effectiveness - Safety, and Financial Performance									
Segments: • Facilities Maintenance Services • Rentals & Leases • Utilities & Communications • Property Taxes									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
24.3	26.0	25.0	26.0	27.9	27.9	28.4	28.9	29.6	30.3

Toronto Hydro's Facilities Management program (the "Program") delivers the workspace and property management services that enable the utility's employees to perform their work in optimally configured, safe, and structurally sound surroundings. The Program aims to maintain the utility's facilities in good working order and in compliance with applicable legislation and regulations. The Program is comprised of the following four segments:

- **Facilities Maintenance Services**: Work directed at maintaining the utility's facilities in good working order and in compliance with applicable legislation and regulations;
- **Rentals & Leases**: The costs associated with Toronto Hydro's leasehold agreements, including short-term equipment needs;

- **Utilities & Communications**: Enabling technologies that allow Toronto Hydro to run and operate its facilities; and
- **Property Taxes**: Municipal taxes on the value of property held by Toronto Hydro.

The Program and its constituent segments are a continuation of the activities described in the Facilities Management program in Toronto Hydro's 2020-2024 Rate Application.[1]

2. OUTCOMES AND MEASURES

Table 2: Facilities Management Program Outcomes and Measures Summary

Operational Effectiveness – Reliability	• Contributes to Toronto Hydro's system reliability objectives (e.g. SAIDI, SAIFI, FESI-7) by:
	  ○ Complying with the applicable legislative and regulatory requirements for key assets in work centres and distribution system facilities (e.g. lifting devices, overhead doors, dock levellers, etc.); and
	  ○ Maintaining building systems and elements that secure and mitigate the risk of damage to critical infrastructure (e.g. sump pumps, building envelopes).

Public Policy Responsiveness	• Contributes to Toronto Hydro's public policy responsiveness objectives by ensuring compliance with applicable regulatory and legislative requirements such as the Ontario Energy Board's Cyber Security Framework[2] by:
	  ○ Leading the implementation, maintenance and continuous lifecycle management of modern commercial security systems and technology in partnership with security subject matter experts and in alignment with enterprise risk assessments;
	  ○ Applying security management policies and procedures across all Toronto Hydro sites; and
	  ○ Maintaining the physical security measures that help safeguard sensitive or confidential personal or system

[1] EB-2018-0165, Exhibit 4, Tab 2, Schedule 11.
[2] EB-2016-0032, *Cyber Security Framework to Protect Access to Electronic Operating Devices and Business Information Systems within Ontario's Non-Bulk Power Assets*.

	information through measures that prevent unauthorized physical access to work centres, stations, and job sites.
Environment	• Contributes to Toronto Hydro's environmental objectives by: ○ Supporting the achievement of goals outlined in Toronto Hydro's Net Zero 2040 Strategy in Exhibit 2B, Section D6 by reducing greenhouse gas emissions. (E.g. through the use of more energy efficient HVAC and lighting fixtures); and ○ Conducting annual waste audits and monthly diversion reports which help Toronto Hydro comply with requirements of the *Waste Reduction and Waste Audit Work Plans* (O. Reg. 102/94),[3] and maintain the *ISO 14001* certification for environmental management.
Operational Effectiveness – Safety	• Contributes to Toronto Hydro's safety objectives, measured through metrics such as the Total Recordable Injury Frequency ("TRIF") by: ○ Ensuring compliance with the Ontario Building Code[4] and the Ontario Fire Code[5]; ○ Repairing deficiencies which may cause safety (e.g. trip and fall) hazards; ○ Addressing legacy structural deficiencies such as the absence of secondary exits, non-compliant stairs, and inaccessible doors along pathways; ○ Improving internal lighting conditions and repairing external damaged lighting in work areas; ○ Implementing measures to minimize the risk of unauthorized access into Toronto Hydro's work centres and stations; ○ Maintaining *ISO 45001* certification for Occupational Health and Safety Management using the Program's maintenance management system; and ○ Conducting Designated Substance Surveys, required under the *Occupational Health and Safety Act, 1990,*[6] which help identify and dispose of designated substances (e.g. asbestos, lead, etc.).

[3] *Waste Reduction and Waste Audit Work Plans,* Ontario Regulation 102/94.
[4] Ontario Building Code, Ontario Regulation 332/12.
[5] Ontario Fire Code, Ontario Regulation 213/07.
[6] R.S.O 1990, c. O.1. ["*Occupational Health and Safety Act*"].

Financial Performance	• Contributes to Toronto Hydro's financial performance objectives through the utility's total cost and efficiency measures by: ○ Utilizing detailed asset condition assessments in order to efficiently manage assets in accordance with the utility's Facilities Asset Management Strategy[7] and replace assets that are at their end of life or in poor condition; ○ Undertaking security enhancements at work centres and stations facing the highest level of need and risk; ○ Prioritizing preventative maintenance actions for end of life assets in poor condition to mitigate against costly reactive repairs; ○ Deterring theft and vandalism through the installation and usage of enhanced security systems; ○ Utilizing benchmarking data (e.g. by the Building Owners and Managers Association ("BOMA")) to optimize the space utilization of existing buildings and facilities and control maintenance and utility costs; and ○ Reducing utility costs at Toronto Hydro's work centres through energy efficient HVAC and lighting systems.

3. PROGRAM DESCRIPTION

As of 2023, Toronto Hydro owns or operates 205 sites. The condition of these buildings and stations varies widely and their age ranges from historic sites covered by heritage property requirements to new buildings. Each Toronto Hydro property has unique features and considerations that drive its maintenance and service requirements. These include applicable legislative and regulatory requirements on safety, accessibility, emergency preparedness, and environmental protection, Toronto Hydro's own environmental, health, and safety policies, and the needs of the distribution system. The Program's activities are categorized into the following four segments: (i) Facilities Maintenance Services; (ii) Rentals & Leases; (iii) Utilities & Communication; and (iv) Property Taxes.

[7] Exhibit 2B, Section D5.

4. PROGRAM COSTS

In 2025 Toronto Hydro requires $27.9 million in rate funding for the Facilities Management program, which represents an increase of $3.6 million over the last Custom Incentive Risk Application in 2020. When normalized for shared services recoveries outlined in Exhibit 4, Tab 5, Schedule 1, the expected increase in this program is $3.8 million.

Over the 2025-2029 rate period, the utility expects the cost of this program to increase by annual growth rate of 2.0 percent which is necessary to address the program needs and deliver the customers outcomes enabled by this program

The Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for each of the Program's segments are summarized in Table 3 below.

Table 3: Facilities Management Program Expenditures by Segment ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Facilities Maintenance Services	16.6	18.4	17.4	18.0	19.6	19.4	19.8	20.1	20.6	21.0
Rentals & Leases	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6
Utilities & Communications	2.3	2.2	2.1	2.3	2.4	2.5	2.5	2.6	2.6	2.7
Property Taxes	5.0	4.9	5.0	5.2	5.4	5.5	5.6	5.7	5.8	6.0
Total	**24.3**	**26.0**	**25.0**	**26.0**	**27.9**	**27.9**	**28.4**	**28.9**	**29.6**	**30.3**

4.1 Cost Control and Productivity Measures

Toronto Hydro uses the following tools and initiatives to control overall Program costs:

- **Real Estate Management**: Toronto Hydro employs a data-driven framework for making real property investments and managing owned properties in a manner that is responsive to the utility's forecasted distribution and load-demand needs in relation to its current capacity. The utility strategically makes investments to support the utility's critical functions and goals of grid reliability and resiliency and divests properties that are deemed to be no longer used or useful for distribution purposes. Refer to Exhibit 2B, Section D6 for a discussion of these approaches under the umbrella of Toronto Hydro's Facilities Asset Management Strategy.

- **Hybrid Maintenance Approach:** Toronto Hydro uses a combination of internal resources and a third-party service provider to execute a cost-effective facilities maintenance approach. This approach balances preventative maintenance and run-to-fail strategies. Preventative maintenance is scaled up or down to optimize the lifecycle of an asset depending on its cost and ease of replacement. This is done through a hybrid approach by augmenting the internal team with third-party service providers acting as a single source of support. The utility modifies service modes, services, and maintenance routines as required through change order management. This allows the internal team to focus on stakeholder management, strategy, and the alignment of the Program to core business activities.

- **Performance Benchmarking:** Toronto Hydro leverages parametric data it obtains from various industry resources such as the Building Owners and Managers Association ("BOMA") and International Facilities Management Association ("IFMA") to improve the utility's operating efficiency. Toronto Hydro studies data from the regional industry reports to measure the cost per square-foot of key facilities management functions and benchmarking data retrieved from the Energy Star Portfolio Manager. The utility uses this information to measure and track its energy and water consumption against other commercial and institutional buildings, analyze its performance and make recommendations for improvements to areas such as energy and utilities conservation. Toronto Hydro also utilizes the five-level BOMA BEST certification program and assessment framework to improve environmental performance. To date, three sites have been enrolled in the program, and their certifications are shown below.

Table 4: Toronto Hydro Sites – BOMA Certification

Toronto Hydro Site	Certification Level	Score
71 Rexdale	Gold	80-90 percent
715 Milner	Gold	80-90 percent
500 Commissioners	Silver	50-79 percent

- **Data Driven Decision Making:** Toronto Hydro uses a computerized maintenance management system ("CMMS") that manages, tracks and schedules maintenance work. The CMMS, in conjunction with departmental performance measures such as the On-Time in Full ("OTIF") metric that steers the completion criteria for tenant requests, enables Toronto Hydro to maximize the effectiveness of its maintenance resource dispatching strategy. The CMMS provides users with a range of functions that display new, existing, and historical work orders for repair, maintenance, cleaning, and external grounds segments and for each work centre, and track the resources allocated to a given activity or segment.

- **Competitive Procurement:** Given its hybrid maintenance approach, Toronto Hydro routinely solicits bids to maintain the currency of its key service contracts. This process introduces competition and offers the utility a venue for negotiation, which facilitates cost control.

5. FACILITIES MAINTENANCE SERVICES SEGMENT

5.1 Segment Description

The purposes of the Facilities Maintenance Segment are a) to provide Toronto Hydro's employees with a safe work environment that encourages the effective and efficient execution of their duties, and b) to ensure that the utility's properties, buildings, and stations are structurally sound and safe for employees and the public. The Facilities Maintenance Segment is driven by legislative and regulatory requirements, internal environment, health and safety policies, building and asset condition reports, and industry best practices. This segment governs a broad range of daily, monthly, and annual maintenance activities including all the necessary tasks and services to maintain the offices, work centres and buildings housing the utility's transformer and municipal stations ("TS" and "MS", respectively). Toronto Hydro's attention to regular preventative maintenance of its office buildings, work centres, and stations contributes to the utility's safety record.

If the utility were to fail to comply with applicable legislative and regulatory requirements, temporary equipment lock-outs and fines could be imposed, leading to costly interruptions in the utility's business activities that impact distribution customers.

As described in section 3.2.2, Toronto Hydro relies on a combination of internal resources and a third-party service provider to execute the Program functions. This arrangement allows Toronto Hydro to react to issues rapidly and scale its service model to changing needs or strategies.

Toronto Hydro's maintenance strategy applies a balance of preventative maintenance and run-to-fail strategies. Run-to-fail strategies are used to manage low impact and low-cost equipment that have readily available parts or replacements, and where preventative work would not be cost-effective. The level of preventative maintenance is predicated by asset criticality, cost and system complexity (i.e. special orders, long lead times, etc.), which justify the recurring lifecycle costs. Balancing the two methods keeps vital building systems operating while enabling technicians' capacity for proactive and reactive work. Even the most robust preventative maintenance routine will require reactive work as a by-product. Toronto Hydro's approach balances the upfront cost and monitors the degree of reactive work to ensure critical tasks are manageable for its complement of internal and external trades. Through the CMMS, the utility applies this maintenance approach by tracking and scheduling the following maintenance activities:

Preventative Maintenance: Routine inspections and tasks to ensure that equipment, systems, and their respective components are fully operational. This includes activities such as the periodic inspections of facilities assets (e.g. magnetic locks on emergency exits to prevent unauthorized entry and release when a fire alarm is activated). If the frequency of Toronto Hydro's maintenance activities were to fail to meet manufacturer recommended schedules and regulated maintenance standards, the utility could experience premature failures, locked-out equipment, potential fines (e.g. by the Technical Standards and Safety Authority), and unsafe work conditions.

Corrective Maintenance: Through routine preventative inspections, Toronto Hydro identifies the systems and equipment requiring corrective work, ensuring that any malfunctions are proactively rectified. For example, a blower motor bearing noise may be heard during HVAC maintenance and would indicate a pending failure. Logging a corrective work order when this noise is heard permits timely replacement before the unit fails and contributes to the air quality in work centres and other facilities.

Reactive Maintenance: Toronto Hydro employs reactive maintenance strategies to address specific issues that are observed from time to time through various reports and requests. Program employees, other employees, and contractors all contribute to the effort of flagging failures, near misses, and related observations in the field. Despite the utility's effective preventative maintenance program, reactive work is a recurring element of the Program driven by run-to-fail assets, external factors (e.g. extreme weather, property damage), and a deferred maintenance backlog (e.g. work deferred due to budget constraints). The deferred maintenance backlog represents real-time deficiencies in the field that at the time of diagnosis were deemed less critical (i.e. postponed repairs), but could deteriorate to the point of unplanned asset failure or impacted building functionality. The decision to defer work is the result of budget constraints, which means deficiencies are evaluated based on system criticality, building functionality, safety, tenant comfort, etc. This is a repetitive process that compares incoming work orders to the deferred maintenance backlog to manage the budget. Furthermore, the utility uses an industry metric called the Facilities Condition Index (FCI) to evaluate, monitor, and project the level of in-field deficiencies. The FCI represents the ratio of the estimated value of deferred maintenance to the replacement value of the respective assets. Therefore, it relates the predicted impact of planned capital to the allocated operational expenditures. Figure 1 shows the mix of FCI scores by building age. The colour represents the classification of the condition.

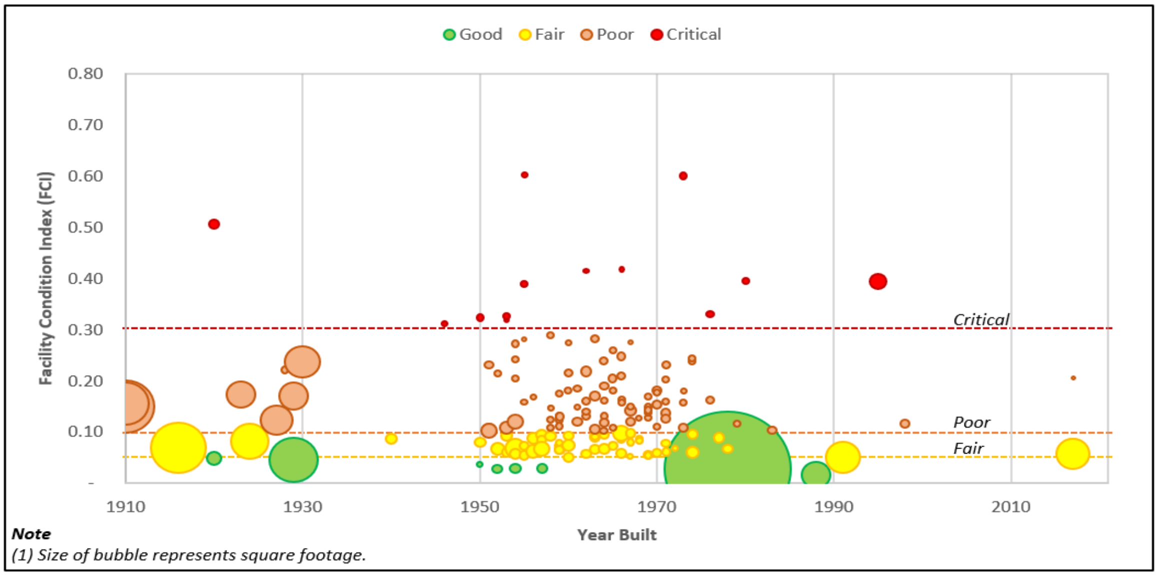

Figure 1: Current State of the Facilities Condition Index ("FCI")

Using the FCI allows for the monitoring and projection of the index score by accounting for the utility's planned operational and capital investments. Therefore, Toronto Hydro is able to predict and control the level of deficiency that it experiences period over period as seen in Figure 2.

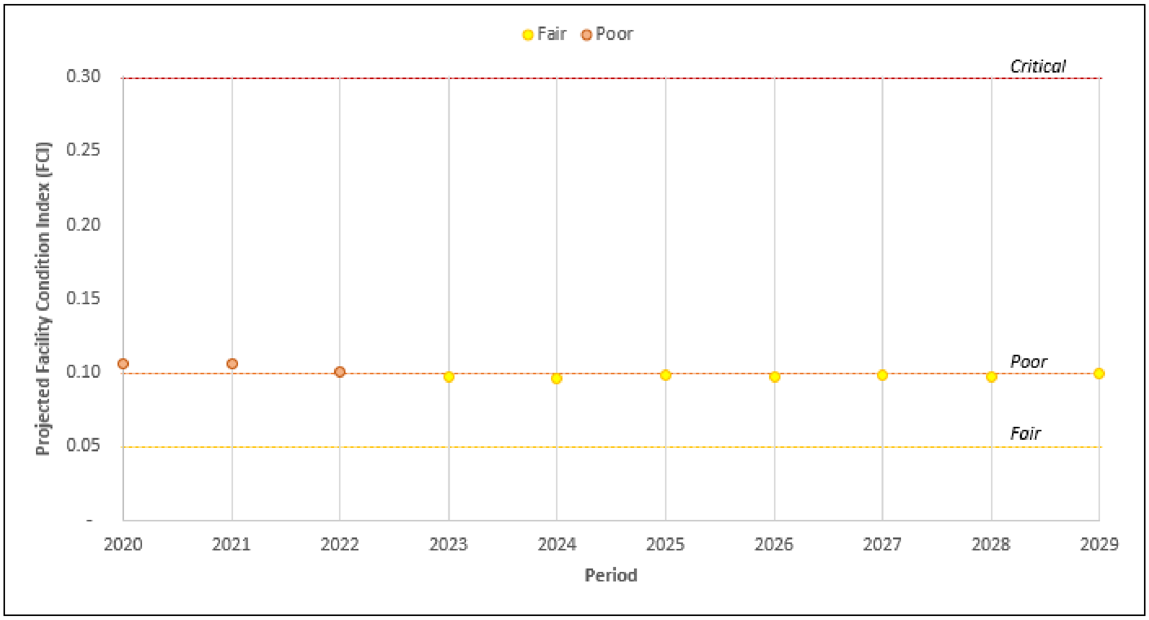

Figure 2: Current and Projected State of the Consolidated Facilities Condition Index ("FCI")

The utility anticipates that it will sustain the current consolidated FCI level around the 'Fair-Poor' threshold for the duration of the 2025-2029 rate period through a combination of the operational expenditures for the Facilities Maintenance Services Segment discussed in Section 4.2 below and the planned capital investments discussed in Exhibit 2B, Section E8.2.

5.2 Facilities Maintenance Services Segment Costs

Table 5 below provides the Historical (2020-2022), Bridge (2023-2024) and Forecast Years (2025-2029) expenditures for the Facilities Maintenance Services Segment. These costs include both internal and external work, vehicle costs for travel between sites, and other related expenses, driven by the factors discussed above under subsection 3.1.1.

5.2.1 Facilities Maintenance Services Segment Cost Control Measures

Through competitive procurement, the Program reduced the base cost of its hybrid maintenance approach described in section 3.2.2 by applying lessons learned from previous vendor contracts and better customizing scopes of work for the third-party service providers in accordance with the utility's property and business needs. The reduction of base contract costs enabled the allocation of more funds to reactive and deferred maintenance while controlling the growth of the overall Program. This is further outlined in the 2021-2022 variance description of the segment found at section 4.3.

Table 5: Facilities Maintenance Services Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Facilities Maintenance Services	16.6	18.4	17.4	18.0	19.6	19.4	19.8	20.1	20.6	21.0

5.3 Facilities Maintenance Services Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

The $1.8 million increase from 2020 to 2021 is attributable to:

- A $1.5 million increase resulting from a combination of corrective and reactive maintenance activities. This increase in maintenance activities was driven by the need to address the increasing age of assets and the backlog of deferred maintenance which grew due to the slowdown of work during the COVID-19 pandemic; and
- A $0.3 million increase resulting from inflationary pressures on contractual agreements, reactive maintenance (i.e. material and service pricing), and compensation increases.

<u>2021 – 2022 Variance Explanation</u>

The $1 million decrease from 2021 to 2022 is attributable to:

- Contract management related to a new RFP; and
- Offsetting inflationary pressures.

<u>2022 – 2025 Variance Explanation</u>

The $2 million increase from 2022 to 2025 is attributable to:

- A $0.2 million decrease in operational cost drivers, corresponding to capital investment in the 2023 period;
- A 0.3 million decrease to adjust investments to sustain facilities assets in alignment with the Fair-Poor threshold of the consolidated FCI and management of the deferred maintenance backlog;
- An increase of $1.7 million to address an increased emphasis on security equipment maintenance and strategy due to increased criminal activity (e.g. cable thefts, trespassing, vandalism, etc.); and access control availability for system reliability and response;
- An increase of $0.8 million dollars in headcount and compensation to support increased capabilities to perform a higher complexity of work;
- The go-live of functional operations at Toronto Hydro's second control room;[8] and
- Inflationary pressures.

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[8] From the completion of the Control Operations Reinforcement program in Exhibit 2B, Section E8.1 of Toronto Hydro's 2020-2024 Custom Incentive Rate Application (EB-2018-0165). See also Exhibit 2B, Section E4 of this application.

2025-2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $1.6 million, or an average of $0.4 million per year. Without the requested funding over the upcoming rate period, Toronto Hydro faces the following risks:

- Costly business interruptions caused by fines, penalties, and equipment lockouts for non-compliance with applicable legislative and regulatory requirements;
- Deferred maintenance that compromises building envelope integrity and puts at risk the functioning of critical distribution assets, jeopardizing the reliability of the utility's key systems;
- Physical security threats and vulnerabilities (e.g. theft, trespassing, vandalism) due to the inability to maintain security equipment such as the video management and access control systems;
- Diminished productivity resulting from malfunctioning or unavailable assets and other pending repairs that put the utility's office safety, office ergonomics, and air quality initiatives at risk; and
- Employee and public safety risks resulting from deteriorating assets, inadequate response times, and deferred maintenance that fails to identify and rectify in a timely manner safety issues or equipment malfunctions.

6. Rentals & Leases Segment

6.1 Segment Description

The utility's rentals and leases expenditures are driven by electrical distribution assets located within transmission corridors and on private lands. Furthermore, many of the joint tenancy agreements are with other utilities, which maximises the utility of the properties.

6.2 Rentals & Leases Segment Costs

Table 7 below provides the Historical (2020-2022), Bridge (2023-2024), and Forecast Year (2025-2029) expenditures for the Rentals and Leases segment.

6.2.1 Rentals and Leases Segment Cost Control Measures

Toronto Hydro minimizes costs within this segment by routinely reassessing agreements for distribution related leases. This strategy focuses on delineating space usage and holding partners to fair market value ("FMV") when Toronto Hydro is the lessor.

Table 7: Rentals & Leases Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Rentals & Leases	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6

6.3 Rentals & Leases Segment Year-over-Year Variance Analysis

Variance Year-Over-Year Explanation

The primary driver of variances is the amendment of long-standing agreements with different utilities and agencies (e.g. Hydro One, City of Toronto, Toronto Community Housing Corporation) that expire and require renewal. As some of these agreements date back more than 20 years, at time of renewal, renegotiation with the landlords typically results in the utility's costs increasing to FMV.

2025-2029 Variance Explanation:

Between 2025 and 2029 costs in this segment are expected to increase by $0.1 million. Without the requested funding over the upcoming rate period, Toronto Hydro would face the following risk:

- An inability to pay for rentals and leases, diminishing the utility's ability to obtain access to real property and equipment and impeding operational effectiveness.

7. Utilities & Communications Segment

7.1 Segment Description

The Utilities & Communications segment includes the costs of providing water, electricity, natural gas, and related services to Toronto Hydro's office buildings, work centres, and stations. The utility's costs for this segment are primarily driven by the prescribed costs charged by various service providers. Additional drivers of year-over-year cost variances are weather fluctuations, such as extremely hot summers that increase electricity consumption or cooler-than-normal winters that result in higher heating expenditures.

Toronto Hydro works to manage its costs by promoting conservation and improving the energy efficiency of its facilities. To facilitate consistent implementation of energy efficiency standards, Toronto Hydro developed standards that outline the relevant energy, water, and gas efficiency criteria for the utility's new and renovated work spaces. The utility routinely reviews and amends these standards are to align with emerging conditions and corporate objectives such as the utility's Net Zero 2040 Strategy.[9] Examples of decarbonization actions by Toronto Hydro include the conversion to energy efficiency lighting, the implementation of building automation system ("BAS") controls for new space build-out, and retrofitting activities for corrective maintenance when feasible.

To support the utility's goal to reach Net Zero by 2040 by reducing scope 1 greenhouse gas ("GHG") emissions, Toronto Hydro also continues to integrate and revise the

[9] Exhibit 2B, Section D6.

programming for its legacy HVAC units to reduce energy consumption of its existing equipment. For more information on the capital investments in fuel switching Toronto Hydro is making to support this goal, please refer to the Facilities Management & Security capital program in Exhibit 2B, Section E8.2.

7.2 Utilities and Communications Segment Costs

Table 9 below provides the Historical (2020-2022), Bridge (2023-2024), and Forecast Year (2025-2029) expenditures relating to Utilities and Communications.

7.2.1 Utilities and Telecommunication Segment Cost Control Measures

To mitigate energy costs, Toronto Hydro is using BAS integration and programming to improve the electricity, natural gas, and water consumption efficiency of the utility's legacy equipment. These efficiency gains directly support the utility's Net Zero by 2040 goal by reducing the utility's associated scope 1 GHG emissions.

Table 9: Utilities and Communications Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Utilities & Communications	2.3	2.2	2.1	2.3	2.4	2.5	2.5	2.6	2.6	2.7

7.3 Utilities and Communications Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

The $0.1 million decrease from 2020 to 2021 was attributable to:

- Low building occupancy during the COVID-19 pandemic reducing overall HVAC load.

2021 – 2022 Variance Explanation

The $0.1 million decrease from 2021 to 2022 was attributable to:

- Continuing to integrate legacy HVAC equipment into the BAS to improve efficiency as part of Toronto Hydro's Net Zero 2040 Strategy.

2022 – 2025 Variance Explanation

Between 2022 and 2025, costs in this segment are expected to increase by $0.4 million or an average of $0.1 million per year. This increase is attributable to:

- Increases in costs attributable to building occupancy due to the adoption of hybrid work at Toronto Hydro's work centres as of July 2022 and inflationary pressures;
- Continued enhancement of the BAS controls and optimization of the BAS programming to hybrid work trends;
- Continued enhancement of the BAS controls; and
- Impacts from fuel switching, and offsetting efficiency gains from asset replacements related to Toronto Hydro's Net Zero by 2040 Strategy.

2025-2029 Variance Explanation:

Between 2025 and 2029 costs in this segment are expected to increase by $0.2 million, or an average of $0.1 million per year. Without the requested funding over the upcoming rate period, Toronto Hydro faces:

- An inability to pay for utility and communications services, resulting in productivity losses.

8. Property Taxes Segment

8.1 Segment Description

Property taxes are calculated based on the amount of the property owned by Toronto Hydro, in accordance with municipal tax rates and any applicable credits. With more than 5,000,000 square feet of property in the City of Toronto, property taxes are a significant expense for the utility. Historically, Toronto Hydro's property taxes have increased at the rate of inflation and a similar trend is expected to continue through the 2025-2029 rate period, which is reflected in the utility's forecasts.

8.2 Property Taxes Segment Costs

Table 11 below provides the Historical (2020-2022), Bridge (2023-2024) and Forecast Years (2025-2029) expenditures relating to Property Taxes.

Table 11: Property Taxes Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Property Taxes	5.0	4.9	5.0	5.2	5.4	5.5	5.6	5.7	5.8	6.0

8.3 Property Taxes Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

The $0.1 million decrease from 2020 to 2021 was attributable to:

- The sale of one property; and
- Tax cap adjustments for two work centres.

2021-2022 Variance Explanation

The $0.1 million increase from 2021-2022 was attributable to municipal property assessments and inflationary escalation.

2022-2025 Variance Explanation

Between 2022 and 2025, costs in this segment are expected to increase by $0.5 million, or an average of $0.2 million pear year due to municipal property assessments and inflationary escalation

2025-2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $0.5 million, or an average of $0.1 million per year. Without this level of funding for this segment over the upcoming rate period, Toronto Hydro faces:

- An inability to pay property taxes in full and on time, leading to higher costs due to interest payments on deferred amounts and a deterioration of the utility's relationship with the City of Toronto, affecting the overall viability of distribution operations.

SUPPLY CHAIN SERVICES

1. OVERVIEW

Table 1: Supply Chain Services Program Summary

Supply Chain Program Summary									
Outcomes: Operational Effectiveness - Reliability, Environmental, Financial Performance									
Segments: • Supply Chain Services									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
15.8	12.9	13.8	16.7	18.8	21.5	23.5	24.9	25.5	27.1

The Supply Chain Services program (the "Program") provides procurement and warehousing activities that support the execution of Toronto Hydro's capital and operating programs. The objectives of the Program are to facilitate timely and cost-effective acquisition of services, materials and equipment, maintain sufficient inventory to support uninterrupted work execution, and manage material handling costs. This Program is anticipated to grow significantly over the upcoming 2025-2029 rate period in order to facilitate the utility's growth, modernization and sustainment investments, and fulfil its capital plan.

The Program consists of two interrelated functions: (i) Demand and Acquisition Services; and (ii) Warehouse and Logistics. The Demand and Acquisition Services function secures the requisite equipment, materials and services for Toronto Hydro within specified timelines and at an optimal cost. It also monitors vendor performance to ensure that the goods and services acquired are being delivered to Toronto Hydro in an efficient and effective manner. The Warehouse and Logistics function facilitates coordinated, cost-effective and timely receiving, stocking and distribution of materials and equipment required to execute Toronto Hydro's capital and maintenance work programs. The Program and its activities are a continuation of the Supply Chain Services program described in Toronto Hydro's 2020-2024 rate application.[1]

2. OUTCOMES AND MEASURES

Table 2: Supply Chain Services Program Outcomes and Measures Summary

Operational Effectiveness - Reliability	• Contributes to Toronto Hydro's system reliability objectives (e.g. SAIDI, SAIFI, FESI-7) by:
	  o Supporting the effective execution of capital and maintenance programs by fulfilling warehouse orders and fulfilling supplier deliveries; and
	  o Supporting Toronto Hydro's ability to respond to outages promptly and restore power through effective management of inventory.

Environment	• Contributes to Toronto Hydro's environmental objectives by ensuring Toronto Hydro meets all Municipal, Provincial and Federal regulations related to managing hazardous materials by safely collecting, storing, and removing hazardous waste from work sites. • Supports Toronto Hydro's decarbonization efforts by procuring materials and equipment (e.g. electric vehicles) with a view to reducing greenhouse gas emissions where possible and cost-effective

Financial Performance	• Contributes to Toronto Hydro's financial performance objectives as measured by the total cost and efficiency measures by:
	  o Implementing processes such as automating the disbursement of certain inventory stock and purchasing certain equipment directly from the manufacturer; and
	  o Maintaining an optimal level of inventory of materials and equipment to support uninterrupted work execution with minimal carrying cost.

[1] EB-2018-0165, Exhibit 4A, Tab 2, Schedule 13.

3. PROGRAM DESCRIPTION

The Program is comprised of two interrelated functions: Demand and Acquisition Services and Warehouse and Logistics, each of which are described in the sections below.

3.1 Demand and Acquisition Services

The Demand and Acquisition Services function supports Toronto Hydro's capital and maintenance work programs, and enables the utility's day-to-day operations, by providing the goods and services required to perform the work. The employees who deliver this function require an extensive set of supply chain and electricity industry-specific skills, including understanding of the competitive bid process, in-depth knowledge of quantitative analysis and inventory management tools, familiarity with changing electricity system equipment standards, and advanced negotiation and communication skills.

3.1.1 Procurement and Contract Management

Demand and Acquisition Services' activities involve sourcing of reputable and reliable suppliers, monitoring their performance to ensure that they meet their contractual obligations, and generating the purchase orders that underlie each agreement. Working with the various parts of the utility's operations, Demand and Acquisition Services leads the competitive bid generation and evaluation processes, and conducts market trend analysis to identify emerging industry trends and locate suitable suppliers.

Toronto Hydro's competitive bid selection process is based on pre-established selection criteria that balance the quantitative and qualitative aspects of each desired proposal. The proposals and the criteria are developed in collaboration with the internal business units that require the goods or services in question.

After the supplier is chosen, Toronto Hydro negotiates the contract terms and conditions relevant to the goods or services provided. Demand and Acquisition Services monitors supplier performance through collaboration with other departments and regular meetings with the supplier.

In 2021, Demand and Acquisition Services implemented an enhanced Contract Management Framework (CMF). CMF is a set of guiding principles, documents, procedures, and Management Control and Reporting System (MCRS) designed to govern the end-to-end sourcing process. The framework is a part of the Contract Management section of Demand and Acquisition Services' overall Supplier Relationship Management Framework (SRM), as shown in Figure 1, below. The full SRM is in the process of development and is expected to be fully executed by 2027.

Figure 1: Supplier Relationship Management Framework (SRM)

CMF allows proactive governance of active contracts while ensuring full compliance with internal policies and contractual obligations. The implementation of CMF has enhanced the Demand and Acquisition Services team's ability to:

- Engage business units more frequently to keep them up to date on contract spend, which enables a proactive management approach;
- Immediately highlight violations to contract spend and contract data integrity through implementation of KPIs, reporting, and short interval control;
- Better forecast and balance annual workload, which helps manage resource constraints and reduce bottlenecks;
- Standardize training and data management approach to ensure process consistency and data integrity; and
- Enhance visibility and increase alignment of aggregate data from SAP and Ariba.

The enhanced CMF has resulted in the following impacts from 2022 to 2023:

- Greater compliance with internal policies related to authorized spend amounts, resulting in a 76% decrease in over-committed contracts;
- Improved proactive management of contracts to reduce compliance, legal, and operational risks, resulting in an 84percent decrease in expired contracts;
- Improved purchase order management and reduced open liability, resulting in a 54 percent decrease in aging purchase order balances; and
- Increased alignment of aggregate data from SAP and Ariba, resulting in a 25 percent increase in data accuracy and integrity.

The outcome of the enhanced CMF contributes to improved contract management practices, productivity and data integrity, and ensuring efficient procurements at the most favourable acquisition cost.

3.1.2 Material Requirements Planning

The Demand and Acquisition Services function manages inventory levels in Toronto Hydro's warehouses in support of the utility's capital and maintenance programs. This involves reviewing historic use trends and known work projects to develop planned work requirement forecasts and supplier orders.

In addition, Demand and Acquisition Services oversees materials and equipment inventory for reactive work driven by adverse weather, system contingencies and other unforeseen events. To facilitate efficient and expedient execution of reactive work, Toronto Hydro establishes minimum and maximum inventory settings for each warehouse location, and determines appropriate material re-order points and quantities that trigger purchase order generation as inventories are gradually depleted. Toronto Hydro maintains inventory levels by setting and regularly reviewing reorder points, which consider historic demand, material lead time, service requirements, and critical spare requirements. Late shipments that can affect available inventory for either planned or reactive work are expedited with suppliers, and optimal delivery dates are ascertained and communicated to warehouses and requesting areas of the utility.

Demand and Acquisition Services also works with other operational groups at Toronto Hydro to identify certain materials and equipment that are critical to the ongoing operation of the distribution network (e.g. various models and vintages of pad mounted switchgear and transformers) and to introduce new technology and models of equipment. Once critical materials are identified, these inventory items are flagged as critical spares and segregated from general stock for specific use in reactive situations, which ensures investment levels are sufficient to support system reliability. New technology is researched thoroughly by subject matter experts to ensure compatibility with the distribution network. Demand and Acquisition Services supports the rollout of new technology and models of equipment by setting up stock codes and negotiating contracts with suppliers to ensure favourable lead times and pricing are in place.

3.1.3 Third-Party Procurement Provider

Since 2015, Toronto Hydro has been using a Third-Party Procurement ("3PP") provider to complement internal resources and improve productivity. This approach:

- Reduces the overhead cost per purchase order;
- Provides better operational cost certainty; and
- Provides more operational flexibility to meet Toronto Hydro's varying operational requirements consisting of managing over 10,000 active inventory codes linked to individual assets, issuing 32,000 purchase order lines, and executing 76 solicitations, averaged over 2020-2022.

The 3PP provider's employees are now fully integrated and act as an extension of the core Demand and Acquisition Services team by performing the full range of procurement and vendor performance and inventory management activities. In 2022, the 3PP provider was responsible for managing 96 percent of 10245 active inventory codes, issuing 97 percent of 34656 purchase orders, and executing 97 percent of 79 solicitations annually. From 2020 to 2022, this represents an increase of 3 percent of active inventory codes, 32 percent of purchase orders, and 2 percent of solicitations managed by the 3PP provider.

The 3PP provider has demonstrated its ability to effectively adapt to Toronto Hydro's business processes and systems and work alongside other operational groups at Toronto Hydro. The Demand and Acquisition Services team leveraged the competencies of the 3PP provider's employees to expand their responsibilities to:

- Coordinate equipment repairs with repair and recertification suppliers and liaise between suppliers and Toronto Hydro quality assurance engineers;
- Attend capital project planning meetings with other operational groups to provide inputs related to material forecasts; and
- Support the product change committee with the introduction or change of stock coded items used in Toronto Hydro's distribution system.

By complementing the core Demand and Acquisition Services team, the engagement of the 3PP provider has resulted in the following productivity impacts from 2022 to 2023:

- Improved competitive sourcing turnaround times, resulting in a 64 percent reduction in median business days between contract award to fully published state; and
- Increased agility to process purchase orders, resulting in a 46 percent reduction in purchase requisition to purchase order conversion days.

The integration and expansion of responsibilities of the 3PP provider has allowed the core Demand and Acquisition Services team to focus on strategic endeavours to secure a reliable supply of materials and equipment and mitigate supply chain challenges, including:

- Implementing system enhancements and upgrades to enable better decision making for forward buys and material demand planning;
- Optimizing inventory schedules with suppliers and improving and embedding material demand planning across the organization;
- Conducting frequent short interval control meetings with operational leaders to maintain visibility, provide status updates of expected deliveries, and prioritize material allocations; and

- Creating critical asset forecasting models to anticipate, predict, and accommodate market changes in real-time by implementing predictive forecasting.

3.1.4 Response to Global Supply Chain Disruption

Major world events in the 2020-2024 rate period, such as the COVID-19 pandemic, changes to work patterns, geopolitical conflict, and high inflation, significantly disrupted the global supply chain by adversely affecting manufacturing capacity and transportation networks. These disruptions have caused a number of risks to materialize with respect to the timely and cost-effective procurement of materials and equipment. As examples, the lead times for acquiring certain items have significantly increased, requiring capital projects to be planned further ahead of time. Higher raw material and labour costs have put upward pressure on the price of materials. The timely delivery of orders has become less reliable, requiring greater stock to ensure the availability of critical spares. Collectively, all of these effects have increased the risk of materials shortages, with the potential to adversely affect project schedules.

To mitigate these issues and ensure reliability of supply, Demand and Acquisition Services updated its procurement strategy to incorporate a comprehensive assessment of supply chain risks and address challenges with a combination of proactive, long-term measures and reactive, short-term actions. The revised strategy adopts a 360-degree view of Toronto Hydro's supply needs in the present and into the short- and medium-term, as informed by engagements with business units, while simultaneously keeping track of market conditions through touchpoints with vendors and manufacturers. In light of these inputs, Demand and Acquisition Services has adopted an approach that focuses on 5 critical factors:

- **Product**: In order to increase resiliency against material constraints, Demand and Acquisition Services conducts diligent reviews of alternative sources of supply and alternative products for equipment, and negotiates forward buys with suppliers for major components and materials in order to secure manufacturing slots with factories ahead of time. Sharing known work projects and planned work requirement forecasts with supplier partners more frequently and at longer time horizons affirm supply plans and provisions. Demand and Acquisition services prudently negotiate proposed price increases and structure supply and service contracts to maintain a favourable position for Toronto Hydro.
- **Parameter**: Inventory parameters, including re-order points, lead times, and critical spares, are strategically reviewed and adjusted to proactively respond to changes in the demand forecast.
- **People**: Internal and outsourced resourcing are ramped up to increase flexibility of the workforce and manage ongoing disruptions and challenges.
- **Program**: Internal business units are continuously engaged to provide status updates on expected deliveries, prioritize material allocation for major assets, and conduct material demand planning workshops for planned projects.
- **Process**: With respect to the governance of materially impactful price increases and streamlining processes, additional due diligence procedures are implemented and used to evaluate change requests and other procurement decisions.

Examples of achievements resulting from this strategy between 2020 to 2022 include:

- **Product:** In 2020, the Utility's primary transformer supplier advised that they were not able to keep up with the demand due to global supply chain challenges. In order to maintain a steady supply of critical assets to sustain the capital program, Demand and Acquisition Services, along with Standards and Quality, diligently sourced and approved two new suppliers to supply the equipment, with pricing in line with market rates, and lead times 12 weeks shorter than the industry average of 60 weeks. Detailed tests were conducted to ensure specifications meet approved standards and that the transformers are compatible with existing infrastructure. Furthermore, with respect to cable, the Utility's primary cable supplier was faced with labour disruptions between 2021-2022 and the unexpected loss of one of their copper suppliers in 2022 due to an incident at the plant, which constrained their ability to supply and extended lead times. Demand and Acquisitions Services worked closely with the supplier to ensure production slots are allocated to the utility, increase communication in regards to production and shipping statuses of existing commitments, and negotiate forward buys to secure production slots for future demand ahead of lead time. In tandem, a secondary cable supplier was sourced to minimize material disruptions and establish forward buy agreements. This outcome successfully reduced the risk of material shortage for planned capital and reactive work, and ensured critical materials were on hand for emergency situations.

- **Parameter:** In 2022, Demand and Acquisition Services updated contract lead times for major assets in SAP to reflect current vendor lead times for material requirements planning. With global disruptions significantly effecting lead times, it was necessary to adjust the lead times in the system to align with the current macroeconomic environment. This outcome enables more accurate forecasting, project planning, and re-order point calculation, and thus contribute to strengthening the ability to manage and minimize the risk of material disruptions.

- **People**: In 2022, Demand and Acquisition Services put together a dedicated demand planning team to work with execution business units on the alignment of strategic project planning, forecasting and budgeting, and materials management to enable balanced, dynamic, and choreographed execution and decision making. This outcome enhances information sharing, establish greater control and monitoring, and drives discussions for future state improvement opportunities to further increase resiliency in Toronto Hydro's supply chain.

- **Program**: In 2020, Demand and Acquisition Services sourced a supplementary transformer supplier to ensure a steady supply of padmount and vault transformers, which are major assets commonly used in the distribution system. Internal business units were continuously engaged to provide status updates on expected deliveries, and to shift projects into future periods when material will be available. This outcome contributes to the sustainment of Toronto Hydro's capital program by providing an alternative source of supply of such equipment, and ensuring project are planned with realistic and tangible inputs.

- **Process**: For critical network protectors and network protection accessories, Demand and Acquisition Services negotiated a proposed price increase, driven by material increases in raw material costs, that was approximately 43 percent lower than the supplier's originally requested increase. This outcome successfully reduced the risk of equipment shortage for planned capital and reactive work while limiting cost increases to a reasonable degree, and thus contributed to Toronto Hydro's system reliability outcomes.

3.1.5 Procurement Consulting Services

In 2023, Demand and Acquisition Service engaged a procurement consulting service provider to conduct an analysis of Toronto Hydro's Procurement Policy and to establish an ongoing supply chain market intelligence and analytical reports for the continuous improvement of the utility's procurement practices. The consultant will be responsible to:

- Assess policy performance in relation to industry peers (including public utilities) and in relation to the latest best practices within the North American utility industry;
- Develop gap analysis and provide specific recommendations on how to improve the Procurement Policy to meet or exceed industry best practices;
- Review current supply chain environment within Toronto Hydro;
- Provide recommendations on the most appropriate areas for monitoring; and
- Develop and provide on an ongoing basis a standardized report with respect to the above elements.

The resulting policy analysis and market intelligence reports will provide insights to emerging opportunities and potential threats to the business to allow for better strategic decision making and improved sourcing strategies, in conjunction with the approaches outlined in Section 3.1.4, Response to Global Supply Chain Disruptions. These macro level insights will enable Toronto Hydro to reduce and mitigate risks related to macroeconomic factors such as inflation and price indices, supply chain constraints, and global trade policies such as tariffs, duties, and sanctions. In turn, the utility's risk mitigation measures will allow it to better manage supply risks of critical materials and equipment and work more efficiently with suppliers to identify and adopt innovative delivery practices.

3.2 Warehouse and Logistics

3.2.1 Inventory Management

The Warehousing and Logistics function receives, stocks, and supplies all inventory materials in accordance with Toronto Hydro's capital and operational program requirements. Field crews receive the requisite equipment and materials from any of the five warehouses which are strategically situated across the City.

The typical activities of the Warehousing and Logistics function includes:

- Unloading, visually inspecting, receiving, and storing materials and supplies from vendor vehicles to issue to crews;
- Selecting, staging, and loading distribution equipment and materials onto fleet vehicles to facilitate a quick exit from work centres at the beginning of each workday;
- Delivering and distributing requisite materials to and from job sites and between warehouses to facilitate faster and more efficient materials distribution;
- Issuing miscellaneous (over-the-counter) items such as tools, clothing and safety equipment to ensure that field crews have the mandatory safety equipment and necessary tools to perform work;
- Handling excess materials returned from the field upon work completion, such as partial cable reels which can be re-entered into inventory and issued to other jobs;
- Arranging for field equipment set aside for repairs or replacement to be returned to vendors and suppliers;
- Establishing and maintaining appropriate minimum and maximum inventory levels at each warehouse to ensure that the appropriate product mix is available to support the work performed by the crews of each work centre; and

- Performing daily inventory cycle count activities to ensure the accuracy of Toronto Hydro's financial reporting and recordkeeping, and reconcile physical inventory on the shelf with records.

3.2.2 Third-Party Logistics Provider

Since 2013, Toronto Hydro has been using a Third-Party Logistics ("3PL") warehousing services provider to support the scale of its capital program in a flexible and sustainable manner. The 3PL provider uses Toronto Hydro's Warehouse Management System ("WMS") software and provides services at competitive market rates. This service is competitively sourced. Utilizing a 3PL provider gives the utility the flexibility (across and within rate periods) to quickly adjust to fluctuating inventory demands; such as those that were experienced throughout the pandemic. In 3PL's absence, Toronto Hydro would have the responsibility and would need to assume the risk of investing in additional warehouse space, equipment and resources to support a growing capital program.

The 3PL provider owns and operates two warehouses located just north of Toronto as an addition to the three existing Toronto Hydro warehouses. While the 3PL provider has assumed a significant portion of Toronto Hydro's warehousing duties, the internal work centres continue to play a key operational role by facilitating prompt materials issuance to the crews departing from the three work centres, and facilitating timely response to emergency response needs. Toronto Hydro crews are able to reach job sites faster by being able to pick up materials from the warehouses across the City. This creates greater efficiency and execution of planned work and faster power restoration during reactive assignments.

3.3 On-Cost

The cost of Warehouse and Logistics function and a portion of the Demand and Acquisition Services function are recovered internally through the materials on-cost rate, which is applied to the value of the goods issued to crews for specific projects, and ultimately reflected in the projects' overall capital costs.[2]

On-cost rates shown in Table 3 below reflect the historical rates over the previous 3-year actual period (2020-2022), bridge period (2023-2024) and forecast period (2025-2029). The increase in the on-cost rate is driven by increased throughput to support the growth in the capital project program in the forecast period, and the need for additional staff to support the material issuances.

Table 3: On-cost rates for 2023-2029

Year	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
On-Cost Rate	12.0%	10.5%	10.0%	13.1%	13.3%	13.2%	13.6%	13.8%	14.5%	14.9%

4. PROGRAM COSTS

Toronto Hydro is requesting an average of $24.5 million per year over the 2025-2029 rate period to efficiently execute the Program functions described above.

Table 4, below, provides the Actual (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for the Program.

[2] Toronto Hydro calculates the annual rate by dividing the applicable Program costs over the anticipated cost of materials supplying that year's capital and maintenance work program. The resulting rate (%) is then added to the materials charged to the capital and maintenance projects.

Table 4: Supply Chain Services Program Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Supply Chain Services	15.8	12.9	13.8	16.7	18.8	21.5	23.5	24.9	25.5	27.1
Total	**15.8**	**12.9**	**13.8**	**16.7**	**18.8**	**21.5**	**23.5**	**24.9**	**25.5**	**27.1**

4.1 Cost Drivers

The cost increases in this program are primarily a result of:

- **Increase in requests for materials:** To meet the volume of materials and equipment required to fulfill Toronto Hydro's capital program for the 2025-2029 rate period, the Program anticipates a commensurate rise in costs. Program costs have a direct relationship with the amount of material movements required by the utility, which are tied to its capital investments. The Program will additionally require an increase in headcount in order to process material movements, and competitively bid for strategic projects.
- **Challenging procurement environment:** With increased volume in capital projects and a disrupted procurement environment requiring a greater degree of advanced planning, more resources are needed to process purchase orders, conduct efficient competitive sourcing at the most favourable acquisition cost, collaborate with business units, and mitigate material supply risks to support grid modernization and electrification initiatives.
- **Increase in payroll and labour costs**: Internal labour, responsible for monitoring, controlling, governance, and continuous improvement initiatives, will supplement the operational work executed by external labour. Warehouse and Logistics will increase its hiring in 2024 to support the growth in the capital program.
- **Engagement of procurement consulting services:** Toronto Hydro engaged a procurement consulting service provider to provide consulting services and

conduct a thorough review of Toronto Hydro's Procurement Policy and establish the delivery of ongoing supply chain market intelligence reports. The costs of the service in 2023 include the initial analysis and development of the market intelligence models, which will form the gap analysis and recommendation development framework. Subsequent market intelligence reports in 2024-2026 will provide Toronto Hydro with recommendations on risk management strategies to reduce risks related to macroeconomic factors, supply chain constraints, and global policies. In the future, as Demand and Acquisition Services implements risk and mitigation measures from the market intelligence reports, Toronto Hydro expects cost savings through improved sourcing strategies.

4.2 Cost Control and Productivity Measures

In 2018, Toronto Hydro implemented SAP Ariba, a cloud-based procurement software, which connects prospective suppliers with buyers on a single platform. SAP Ariba, which is part of the SAP suite of applications, synchronizes seamlessly with Toronto Hydro's Enterprise Resource Planning ("ERP") software.

In 2022, all of Demand and Acquisition Services' sourcing activities are conducted through SAP Ariba and have provided the following benefits to Toronto Hydro:

- **Collaboration and digital transformation**: SAP Ariba enhances Toronto Hydro's competitive bid process by bringing together prospective suppliers, buyers, and internal business unit collaborators on a single platform. With a cloud-based solution, SAP Ariba can be accessed from different locations. Toronto Hydro leverages Ariba's ability to share documents digitally and securely in the cloud, which mitigates the need for physical movement and storage of documentation, and allows for more efficient record keeping. Toronto Hydro's investment in the

Ariba software has helped the company reduce the environmental impact of its internal operations and create a collaborative digital environment for productivity and growth.

- **Operational efficiency and compliance:** SAP Ariba compliments and enhances Toronto Hydro's Contract Management Framework, which is a set of guiding principles, documents, and procedures designed to govern the end-to-end sourcing process. SAP Ariba improves Toronto Hydro's operational efficiency and compliance through consolidation of data and documents, and increases visibility on current engagements. SAP Ariba provides notifications to Demand and Acquisition Services when contracts are within the defined notification period to exercise option to renew. As a result, Toronto Hydro's risk of engaging with a supplier with an expired contract is greatly reduced.

Where materials and equipment at the end of their useful lives are replaced with alternatives built to newer technical standards, Toronto Hydro ensures that the existing stock of the obsolete parts are used up first to minimize any residual inventory. In certain cases, Toronto Hydro may also return remaining quantities of the obsolete equipment to the supplier, or sell them for parts. This approach ensures that warehouse storage space is used efficiently and without impeding the adoption of new technologies or types of equipment.

In order to further reduce Toronto Hydro's carbon footprint and overall costs, major assets such as transformers that were used for temporary connections or capital upgrades go through Toronto Hydro's Major Asset Equipment Reuse Program when they are returned from the field. Engineers from the Quality and Compliance team inspect each unit carefully, and if the unit is deemed fit for reuse, it is returned to stock and issued out to the next capital project. If the unit can be repaired, it is sent back to the manufacturer if it is under warranty, or sent to a third-party repair and recertification supplier for a small fee. By reusing and recertifying the major assets, Toronto Hydro is able to reduce the amount of waste generated and reduce the lead time and costs associated with purchasing a new unit. To ensure sufficient capacity to inspect and certify transformers for reuse, Toronto Hydro engaged an additional contractor in 2022 to execute this work and proactively manage the eligibility criteria for assets' inclusion in this program. This approach further mitigates supply risks.

Toronto Hydro will continue to manage costs in this Program by leveraging the 3PP provider to:

- Diversify and balance workload between internal and outsourced resources to increase flexibility and resiliency in the workforce; and
- Streamline operations through the 3PP provider, and reduce costs through the vendor managed inventory initiative. Under this initiative, suppliers are responsible for maintaining an appropriate level of inventory to ensure material is always ready for pick up. Once an order is placed, inventory is transferred from the vendor managed portion of the warehouse into the main warehouse. This reduces lead time and provides cost savings by engaging suppliers directly instead of distributors.

Toronto Hydro will continue to manage costs in this Program by leveraging the procurement consulting services provider for assessing its policies, identifying best practices and developing market intelligence monitoring, including macroeconomic trends and category-specific trend analysis. The trend analysis will specifically:

- Compare Toronto Hydro's Procurement Policy with similar organizations in the utilities sector, and identify leading practices and areas of improvement;
- Identify components and subcomponents for key spending categories and risks that can affect supply; and
- Create a template for market intelligence monitoring containing macroeconomic trends and category-specific trend analysis.

Toronto Hydro will also continue to manage costs in this Program by leveraging the 3PL provider to:

- The WMS software and hardware solutions utilize barcode technology and provide real-time visibility into inventory, increasing the efficiency of the receiving and picking functions. Warehouse transactions are centrally prioritized and assigned to warehouse employees by queuing tasks to the employees' hand-held barcode guns. Tasks such as receiving, picking, and cycle counting are carried out by scanning the product bar code affixed to all incoming materials. This technology significantly speeds up the previously manual tasks of keying in the entries for every incoming packing slip, outgoing picking slip, or cycle count entry. The use of this technology allows the warehouse to provide efficient service to Toronto Hydro crews.
- In 2023, the Warehouse and Logistics function is going to upgrade its WMS to the SAP Warehouse Management Module, which allows full integration with the Toronto Hydro's ERP system by SAP. This outcome will reduce the likelihood of data errors and inefficiencies that may result from the use of separate WMS and ERP systems, facilitate reporting and recordkeeping, and consequently reduce operational costs.

As shown in Figure 2 below, despite challenges presenting themselves in the last three years, the Warehouse and Logistics function successfully fulfilled material requirements On Time and in Full ("OTIF") at an average rate of 95 percent since Jan 2020. This is consistent with our fulfilment performance in the previous rate period.

Figure 2: Warehouse OTIF Rate

4.3 Supply Chain Services Program Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

The Program experienced a $2.8 million decrease from 2020 to 2021. This decline was due to the following factors:

- a $1.9 million decrease in labour related expenses due to retirement in the workforce;
- a $2.0 million decrease in inventory and direct purchases due to a variance of $1.4 million in inventory written off in 2021 versus 2020 resulting from revised

standards and obsolete materials, and $0.6 million in on-cost true-down caused by a lower on-cost recovery rate in 2021;

- a $0.1 million reduction of office supply purchases due to a remote environment driven by COVID;
- a $0.8 million increase driven by 3PL and 3PP costs as a result of increased material throughput; and
- a $0.4 million increase in other support costs driven real inventory write offs in 2021 resulting from obsolete materials.

2021 – 2022 Variance Explanation

The Program experienced a $0.9 million increase from 2021 to 2022. This increase was due to the following factors:

- a $1.9 million increase driven by 3PL and 3PP costs as a result of increased material throughput;
- a $1.6 million decrease in inventory and direct purchases
- a $0.4 million in inventory written off in 2022 versus 2021 resulting from revised standards and obsolete materials, and $1.1 million on-cost variance true up caused by a higher on-cost recovery rate in 2022 versus 2021
- a $0.4 million increase in labour related expenses due to compensation and salary inflationary increases;
- a $0.1 million increase of purchases related to office supplies due a hybrid return-to-office environment; and
- a $0.1 million credit related to volume purchasing rebates in 2022 for pole line hardware.

2022 – 2025 Variance Explanation

The Program is expected to experience a $7.7 million increase from 2022 to 2025. This increase is due to the following factors:

- a $2.7 million increase in labour related expenses due to additional resources required to support material demand planning and strategic sourcing initiatives, and compensation and salary inflationary increases;
- a $0.6 million increase in inventory direct purchases due to materials written off resulting from revised standards and obsolete materials;
- a $4.6 million increase driven external contract costs of due to a $3.8 million increase in 3PL and 3PP costs as a result of an increase in projected material throughput and expected costs from new contract setting process, and a $0.8 million increase driven by procurement consulting services to conduct a review of Toronto Hydro's Procurement Policy and establish the delivery of ongoing supply chain market intelligence reports;
- a $0.1 million increase of purchases related to office supplies due a hybrid return-to-office environment; and
- a $0.2 million decrease in other support costs due to a variance caused by material volume rebates not yet materializing in the latter periods.

2025 – 2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $5.6 million, or an average of $1.4 million per year Without the requested level of funding over the upcoming rate period, Toronto Hydro could be exposed to a number of risks, including:

- Delayed or inefficient procurement of goods, which could affect the timely completion of planned and reactive capital work as well as operations, leading to worse reliability outcomes for customers and delays in the achievement of other outcomes;

- Delayed or inefficient procurement of services, which could affect the cost of third-party resources and increase overall operating costs; and
- Errors in inventory management, such as equipment and materials being misplaced, issued incorrectly, or damaged, increasing overall operating costs and delaying the execution of capital programs and customer connections.

CUSTOMER CARE

1. OVERVIEW

Table 1: Customer Care Program Summary

Customer Care Program									
Outcomes: Customer Focus, Public Policy Responsiveness, and Financial Performance									
Segments: • Billing, Remittance, and Meter Data Management • Collections • Customer Relationship Management									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
55.7	39.3	39.3	44.9	48.4	48.6	51.6	52.5	54.4	56.1

The Customer Care program (the "Program") addresses the direct interactions between Toronto Hydro and its approximately 791,000 customers, through customer relationship management, billing, metering, and collections functions. Providing high-quality customer service is a core priority for Toronto Hydro, and the utility is constantly seeking new ways to foster meaningful two-way communication, expand the range of service offerings to meet customers' evolving needs, improve service convenience and experience, and integrate new technological advancements to drive improvement and productivity.

The Program is comprised of the following three segments: (i) Billing, Remittance, and Meter Data Management, which handles the reading of customer meters, upkeep associated with infrastructure and metering data management, preparation of customer bills, and payment processing; (ii) Collections, which handles all activities associated with unpaid accounts; and (iii) Customer Relationship Management, which involves activities related to customer interactions.

The Program and its constituent segments are a continuation of the activities described in the Customer Care program in Toronto Hydro's 2020-2024 Rate Application.[1] Adequate funding for the Program is essential to the utility's ability to provide timely, effective, and efficient customer services, remain financially viable, and contribute to the billing and settlement of pass-through rates and charges that relate to other stakeholders in the electricity industry. Over the 2025-2029 rate period, Toronto Hydro also expects that it will need to continuously evolve its business practices and service offerings to adapt to broad societal developments and industry trends affecting its business and customers' needs and preferences, such as new public policies, electrification, and increased adoption of electric vehicles ("EVs") and distributed energy resources ("DERs"). These transformations will likely lead to numerous changes in customer expectations, including, demands for greater information on and control over electricity usage and expenditures, greater choice to purchase renewable power or self-generate for sale back to the grid, and the incorporation of environmental, social, and governance ("ESG") goals in energy use.

Although it remains to be seen how and to what extent these industry trends, public policy changes, and changes in customers' preferences and behaviours will impact the Program's operational areas and key performance metrics such as call volumes, average service times, metering, billing, and remittance, Toronto Hydro needs to be well-poised to adapt to these uncertain circumstances. The 2025-2029 rate period will be crucial for the utility to lay the foundation for such adaptation by continuously monitoring trends,

[1] EB-2018-0165, Exhibit 4A, Tab 2, Schedule 14.

modifying its business processes, achieving productivity gains through initiatives such as automation, upskilling its workforce, and acquiring additional specialized resources. Investing in these measures will allow the Program to remain agile and effectively meet customers' needs under any scenario that may occur.

Toronto Hydro's proposed investments in the Program over the 2025-2029 rate period include the following to enable the utility's effective response to the related new demands and challenges:

- Contact Centre services designed to respond to new types and complexities of technical, metering, and billing enquiries associated with EVs and EV charging systems, DERs, and government programs and incentives;
- Enhancements to improve the customer experience and two-way communication through more flexible channels such as online chat, mobile application and digital self-service platforms;[2]
- Metering solutions associated with net metering and remote metering;
- Billing options including provincial pricing plans or utility-specific options;
- Remittance processing including support for new and emerging payment methods, and for public and private EV charging systems;
- Data analytics resources including staff, business processes, and technology to help capture a holistic view of customers' individual needs, preferences, and past interactions to offer personalized service and allow proactive engagements;
- Information and support resources to facilitate eligible customers' access to financial assistance programs, including the improvements discussed under the Charitable Donations and Low-Income Energy Assistance Program;[3]

[2] Exhibit 2B, Section E8.4; and Exhibit 4, Tab 2, Schedule 17.
[3] Exhibit 4, Tab 2, Schedule 19.

- Enhanced collections services and capabilities including increased self-service functionality, multi-channel communications and proactive notifications to support customers with on-time payments; and
- Efficiency improvements through chatbots, virtual assistants, and other automation tools to handle routine inquiries and exception handling, based upon aritfical intelligence-powered tools to analyze customer interactions and identify areas for improvement.[4]

2. OUTCOMES AND MEASURES

Table 2: Customer Care Program Outcomes and Measures Summary

Customer Focus	• Contributes to Toronto Hydro's customer focus outcomes over the 2025-2029 rate period by: ○ Answering telephone calls within 30 seconds at least 65 percent of the time on average, as measured by the OEB's Telephone Accessibility metric; ○ Providing written responses to qualified enquiries within ten business days at least 80 percent of the time on average, as measured by the OEB's Written Response to Enquiries metric; ○ Addressing customers' needs in the first instance they contact Toronto Hydro, as measured by the OEB's First Contact Resolution measure; ○ Achieving a billing accuracy rate of at least 98 percent, as measured by the OEB's Billing Accuracy metric; ○ Increasing the adoption of electronic billing to a total of approximately 488,000 customers, representing cumulative savings of approximately $2.0 million by the end of the 2025-2029 rate period; ○ Meeting or exceeding the OEB's Reconnection Standards of 85 percent; and ○ Ensuring no more than ten percent of calls are abandoned, as measured by the OEB's Telephone Call Abandon Rate.

[4] Exhibit 2B, Section E8.4. and Exhibit 4, Tab 2, Schedule 19.

Public Policy Responsiveness	• Contributes to Toronto Hydro's public policy responsiveness outcomes by implementing legislative and regulatory requirements within mandated timelines over the 2025-2029 rate period.
Financial Performance	• Contributes to Toronto Hydro's financial performance outcomes as measured by the total cost and efficiency metrics by: o Ensuring financial stability and revenue generation capabilities via timely issuance of customers' bills and the collection and processing of customers' payments; and o Investing in process improvements that eliminate manual efforts and promote customer self-service.

3. PROGRAM DESCRIPTION

The Program is composed of three segments covering most of the direct interactions between Toronto Hydro and its customers, and the work required to support these interactions:

- **Billing, Remittance, and Meter Data Management:** Involves the reading of customer meters, upkeep of the associated metering infrastructure, management of meter data, preparation of customers' bills, and the processing of customer payments;
- **Collections**: Involves activities to collect money associated with unpaid customer accounts; and
- **Customer Relationship Management:** Involves activities related to Toronto Hydro's interactions with its customers.[5]

4. PROGRAM COSTS

In 2025 Toronto Hydro requires $48.6 million in rate funding for the Customer Care program, which represents an increase of $7.1 million over the last rebasing in 2020.

[5] This segment excludes interactions with the utility's large customers and key accounts, which are captured under the Key Accounts segment of the Customer Operations program in Exhibit 4, Tab 2, Schedule 8.

When normalized for shared services recoveries outlined in Exhibit 4, Tab 5, Schedule 1, the expected increase in this program is $7.4 million.

Over the 2025-2029 rate period, the utility expects the cost of this program to increase by an annual growth rate of 3.7 percent which is necessary to address the program needs and deliver the customers outcomes enabled by this program.

The proposed level of Program funding is expected to maintain and improve Toronto Hydro's level of customer service, support the implementation of public policy initiatives, be responsive to customers' emerging needs and preferences, and support continuous improvement efforts to help the utility achieve its strategic objectives and outcomes, including the modernization of business processes in response to industry trends such as electrification and for the enhancement of customer experience.

The Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for each segment are summarized in Table 3 below.

Table 3: Customer Care Program Expenditures by Segment ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Billing, Remittance and Meter Data Management	19.4	18.9	19.4	20.9	23.1	23.7	25.0	25.4	26.2	27.0
Collections	24.9	9.0	7.8	9.6	10.2	10.2	10.9	11.0	11.3	11.6
Customer Relationship Management	11.4	11.4	12.1	14.4	15.1	14.7	15.7	16.1	16.9	17.5
Total	**55.7**	**39.3**	**39.3**	**44.9**	**48.4**	**48.6**	**51.6**	**52.5**	**54.4**	**56.1**

4.1 Cost Drivers

The Program's cost increases are primarily a result of:

- Replacing retired and vacant positions to attain operationally effective staffing levels;
- Building temporary backfill teams to support large-scale foundational projects such as Advanced Metering Infrastructure ("AMI") 2.0 and Customer Information System ("CIS") Project, and staff transitioning between these projects and day-to-day operational functions;
- Increasing external vendor costs due to increases in payroll costs and other inflationary pressures;
- Increased costs relating to post-COVID-19 collections activities at higher than pre-COVID-19 volumes and arrears balances until electricity payment arrears are normalized;[6]
- Increasing staff levels to develop and deploy new programs to enhance customer service; and
- Implementing and operationalizing new public policy initiatives that may require additional customer service, collections, and field resources.

As the electricity industry evolves, Toronto Hydro's customer service functions must keep up with broad changes in customer needs and preferences driven by the energy transition and adapt to handle evolving customer behaviour and more complex information. The utility is already observing these trends even with respect to traditional customer interactions. For example, a high bill inquiry now often requires a frontline representative to consider more factors than before, such as the customer's

[6] Since the resumption of disconnections in June 2022, although Toronto Hydro has seen an improvement in the arrears balances of 57 percent (due to reverting to pre-COVID-19 guidelines and severance thresholds during the 2023 disconnection cycle), continued effort is required to return to pre-COVID-19 levels.

choice of available pricing plans (tiered, Time of Use, Ultra-Low Overnight Time of Use) or the customer's usage of electricity-intensive devices such as electric vehicle chargers or heat pumps. These trends are even more pronounced with respect to services that have been historically niche areas, but are gradually becoming more commonplace, such as DERs. For example, the billing of net metered accounts is an order of magnitude more complex than regular load accounts, due to the calculation of generation credits and the treatment of Harmonized Sales Tax.

In this environment, customers' expectations are also continually reshaped by all service providers they interact with, not just utilities. As online services and electronic transactions are gradually becoming the norm for the majority of small and large businesses, customers are coming to expect the same standard of service from their electricity distributor as table stakes.

The Program has been adapting to these trends by increasing the variety of communication channels available to customers, with a focus on self-service. In 2022, the number of such channels increased from seven to nine, with the addition of live chat and Toronto Hydro's mobile application.[7] As a result, customers are currently able to perform a broad variety of online transactions, such as registering for eBills, requesting move-ins or move-outs, downloading consumption information for their rental property to comply with the utility's obligations under the Ontario Regulation 389/10,[8] registering for pre-authorized debit payments, or reporting streetlight outages. While each channel adds to customer convenience, managing interactions through different

[7] Prior to 2022, communication channels included telephone, email, fax, mail, Toronto Hydro's website, interactive voice response ("IVR") through the Contact Centre function, and the online Customer Self-Serve ("CSS") portal.
[8] Ontario Regulation 389/10, under the *Energy Consumer Protection Act, 2010*, SO 2010, c 8.

channels requires different staff skills to operate systems and perform analytics for gaining insights on customer behaviour and each channel's effectiveness and efficiency.

Against these trends, Toronto Hydro plans to transfer a portion of certain Program functions from its external contact centre vendor to internal staff, in order to better build, preserve, and diversify in-house knowledge and expertise of core functions and leverage the same for modernization initiatives and projects or business processes borne out of regulatory compliance requirements. This approach will increase operational and financial flexibility for the Program by reducing dependency on external vendors and mitigating the effects of associated cost increases.

Parallel to the insourcing effort, the Program will hire new staff to replace retiring staff and/or fill vacant positions. The addition of new and the proportion of relatively inexperienced staff will drive the need for more training time and quality assurance ("QA") work, which further contributes to the Program's staffing needs. In order to increase the effectiveness of QA processes, Toronto Hydro plans to increase its reliance on data analytics. For example, the deployment of a speech analytics tool will automatically transcribe and analyze customer interactions to provide objective indicators of customer sentiment and intent, and identify call drivers. The application of this data to automated quality management, powered by artificial intelligence and machine learning technologies, will enable the Program to evaluate customer relations representatives' performance on telephone calls based on robust empirical data and provide much more precise and effective feedback. In order to fully leverage these capabilities, the Program will also hire staff with the necessary data analytics skillsets.

Another area driving resourcing needs will be knowledge management. As the complexity of service offerings and customer interactions grows, either through new legislative and regulatory requirements or evolving customer needs and technologies, it will become more important to keep knowledge management databases current. To address this need, the Program will hire dedicated staff for maintaining consistent and current information and making it accessible to customers and staff across all engagement channels.

In addition to the cost drivers listed above, Toronto Hydro expects that broader industry trends will drive costs under the Program over the 2025-2029 rate in response to the following customer service expectations:

- **Support for EV Users**: As EV ownership and usage increases, the utility anticipates an increase in customer inquiries related to EV's and EV charging on topics such as service upgrades, infrastructure (e.g. questions about installing/troubleshooting charging stations), available pricing plans, and on-street charging and billing. To provide an effective response to these types of inquiries, Toronto Hydro will require additional specialized resources possessing the relevant knowledge for its Contact Centre, under the Customer Relationship Management segment. In addition, the utility will need to develop new business processes or modify existing ones to ensure the seamless management of EV-related inquiries and improve related internal support systems.
- **Support for DER Owners and Operators**: As more customers adopt distributed generation (e.g. solar panels) and energy storage systems, Toronto Hydro anticipates an increase in customer inquiries related to these technologies, such as connections to the distribution system, net metering and associated billing, guidance on optimizing energy use, participation in current and future demand

management programs, or to report issues with DER equipment. In addition, these customers will be looking for additional support in understanding and managing their energy consumption patterns. To support these customers, the utility will need to upskill and allocate additional resources to provide customers with timely and effective service.

4.2 Cost Control and Productivity Measures

Toronto Hydro recognizes that it must remain responsive to all customers' needs and preferences and the utility continues to actively seek out efficiencies and productivity improvements throughout Program operations.

During the 2020-2024 rate period, Toronto Hydro successfully implemented numerous public policy initiatives by achieving a plethora of process and technological improvements, limiting the number of additional staff resources that would have been required in absence of such improvements. For example, the implementation of the Ultra-Low Overnight Time of Use ("ULO") Price Plan in 2023 required additional customer service, meter data and billing resources to ensure appropriate processing of customer-requested price plan changes and exception handling. However, Toronto Hydro was able to implement the ULO Price Plan and other initiative without hiring additional resources by reallocating existing resources efficiently and managing costs through the following strategies:

- Enhancements to the Customer Self-Serve (CSS) portal made it easier for residential customers to register for pre-authorized debit (PAD) online, and added functionality to extend these online services to commercial customers. This resulted in increased PAD adoption by 15 percent between 2020 and 2022 period;

- Development of a customer escalation team to respond effectively to increasingly complex nature of customer complaints and escalations;
- Ongoing oversight, management, and improvements of the metering infrastructure enabled Toronto Hydro to reduce estimated billing and consistently exceed the OEB-prescribed Billing Accuracy target of 98 percent over 2020-2022;
- Automation of the meter exchange program to eliminate manual inputs of meter data into the CIS, saving approximately 5 minutes per meter change or 4,000 person-hours of manual work on average;
- Reduction in paper, printing, and postage costs by converting a total of approximately 381,000 customers to electronic billing since 2013, yielding cumulative savings of $4.4 million as of the end of 2022;
- Redesign of the CSS portal with additional functionalities to reduce the need for customer contact, increasing the proportion of automated moves from 12 percent in 2020 to 22 percent in 2022, the equivalent of 20,000 moves;
- Redesign and promotion of the customer self-service features on Toronto Hydro's website, providing easier 24/7 access to customer information, reducing the need for customer contact;
- Launch of new communication channels to target a broad range of customer interaction preferences, including live chat and a mobile application;
- As a result of the improvements to the accessibility and promotion of self-service features, over the 2020-2022 period, the number of customer self-service transactions have increased more than ten-fold from about 200,000 to almost 3.6 million and resulted:
    - a 16 percent reduction (approx. 67,000) in call volumes; and
    - a 24 percent reduction (approx. 23,000) in email volumes.

- Better workflow management to streamline and automate telephone and email response processes and improve customer response times, which enabled the utility to consistently exceed the OEB-mandated Telephone Accessibility Written Response to Enquiries targets over 2020-2022;
- Introduction of pre-defined tasks to respond to common customer requests and automation of process controls including bots and additional reporting, for areas such as the automation of back-end meter exchanges in the CIS (e.g. filling in new/old badge numbers, meter reads collected from the field, completing the field activity) and the addition of meter inventory to the CIS (serial numbers, nameplate information, etc.);
- Elimination of the manual work required to process and record field activities and updating the CIS by automating the processing of field activities and subsequent updates to the CIS through the implementation of a mobile workforce management system. This system allows field staff to record and update systems through hand-held devices, reducing the risk of billing errors, and enabling the submission of meter reads directly from the field, contributing to timely and accurate billing;
- Streamlining operations to improve access to meters, which reduced the annual number of manually read meters from 885 to 162 over the 2020-2022 period;
- Developing and implementing a standard operating procedure for the cancellation of bills, enabling the Billing, Remittance, and Meter Data Management segment to handle billing errors in a more streamlined manner and contributing to the accurate reporting of Toronto Hydro’s billing accuracy performance;
- Optimizing the process for identifying customers in premises where the service is energized and no account has been opened to more effectively mitigate future risks associated with unbilled electricity and the accumulation of bad debt; and

- Streamlining the customer communications process for rate reclassifications to better aid customer understanding and reduce the volume of administrative tasks and printing costs.

5. BILLING, REMITTANCE, AND METER DATA MANAGEMENT SEGMENT

5.1 Segment Description

The Billing, Remittance, and Meter Data Management segment includes reading electricity meters, the validation and management of meter data, the preparation of customer bills, and the processing of payments and refunds.

The Billing, Remittance, and Meter Data Management segment is at the core of Toronto Hydro's meter-to-cash process that transforms customers' electricity consumption, demand, and other billable activities into bills in accordance with the utility's tariff of rates and charges, OEB rate orders, and other applicable legislative and regulatory requirements, and processes customers' payments and refunds. In performing this work, the utility provides its customers with a variety of billing and payment options in accordance with their needs and preferences. Many of these options involve high levels of automation, enabling faster receipt of payments, more effective customer communications, lower costs, optimal cash flow, and higher customer satisfaction. In addition, the automated nature of the majority of data collection and verification processes facilitate timely and accurate billing practices. Over the 2020-2022 period, Toronto Hydro enhanced its automated meter data collection and verification capabilities, maintained annual billing accuracy results over 99 percent, expanded its offerings of online and self-service tools, and implemented numerous public policy initiatives.

5.1.1 Billing

The Billing function is responsible for the creation and issuance of bills for electricity distribution and other services. Toronto Hydro prepares and issues over nine million bills annually and offers its customers multiple delivery options, including standard paper-based bills and electronic bills ("eBills"). For customers with specific accessibility needs, Toronto Hydro provides additional accommodation options, including bills with increased text size and audio playback.

In addition to issuing electricity bills, Toronto Hydro prepares and issues over 12,300 bills annually for other services, such as customer connections and expansions, including DER connections, service upgrades, customer-requested disconnections and reconnections, and distribution asset relocations.

Annually, the utility conducts a rate classification review for all non-residential customers, per the Distribution System Code ("DSC"), to validate the rate class for these customers. Where changes to a customer's annual consumption or monthly average peak demand justify a reclassification, the utility reassigns the customer to the appropriate rate class. As part of the rate classification review, Toronto Hydro also reviews any pricing plan elections (such as tiered, time of use, or ULO) and self-declarations to verify that the customer's account is billed on the appropriate pricing plan and enrolled in programs/rebates for which the customer is eligible, such as the Ontario Electricity Rebate. This process ensures the timely and accurate reclassification and billing of non-residential customers, and the accurate calculation of revenue.

The utility also administers and executes the Industrial Conservation Initiative ("ICI") program whereby eligible Class A customers pay global adjustment ("GA") charges based on their contribution to Ontario's top five peak hours over the applicable base period. Managing this process requires Billing staff to verify customer demand and eligibility, obtain confirmation of the customer's choice to opt in or out of ICI (where applicable), work with other Toronto Hydro personnel to obtain key information from and submit reporting data to the IESO, and accurately reflect all applicable inputs on customers' bills for the applicable adjustment period.

The utility frequently receives requests from customers for electricity consumption or demand data. Two of the most common types of requests come from 1) owners of commercial, industrial, and multi-unit residential buildings with a gross floor area of 50,000 square feet in order to comply with the requirements of the Large Buildings Energy and Water Consumption Reporting and Benchmarking ("EWRB") program,[9] and 2) residential landlords of suite metered units in residential complexes.[10] To respond to these requests, Billing staff extract data from the CIS and provide the requested information through the customer's preferred channel.

The utility also provides tailored services to its net metered customers, including establishing and renewing net metering agreements, responding to inquiries related to the net metering service, generating bills and issuing credits in accordance with Ontario Regulation 541/05 ("Net Metering Regulation"),[11] including applicable taxation rules for Harmonized Sales Tax ("HST") registrants.[12]

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[9] Ontario Regulation 506/18, under the *Electricity Act, 1998*, SO 1998, c. 15, Schedule. A.
[10] *Supra* note 8.
[11] Ontario Regulation 541/05, under the *Ontario Energy Board Act, 1998*, SO 1998, c. 15, Sched. B and Section 6.7 of the Ontario Energy Baord's *Distribution System Code*.
[12] *Excise Tax Act*, RSC 1985, c. E-15.

To ensure ongoing functionality and compliance with relevant legislative and regulatory requirements of the meter-to-cash process, Toronto Hydro maintains a system of internal controls for all systems and processes, and reviews these on an annual basis. These controls enable the utility to discover any billing errors in a timely manner and promptly take the necessary actions to correct them.

As the industry shifts towards electrification, the utility's billing practices must also evolve to account for the evolution of customers' needs and preferences as the use of EVs and EV charging stations, and DERs become commonplace.

5.1.2 Remittance (Payment) Services

The Remittance function is responsible for the management of customer payments, transfers, refunds and related processes, and the processing of retailer service transaction requests ("STRs").

Toronto Hydro accepts a variety of payment methods including cheques, transfers through a variety of financial institutions, and electronic funds transfers ("EFT"). The utility also accepts credit card payments in limited circumstances where a customer is in the process of disconnection for non-payment.

Remittance staff is also responsible for setting up pre-authorized debit ("PAD") arrangements upon customers' request. The utility promotes PAD to its customers to optimize cash flow and minimize the risk of bad debt due to non-payment. Since October 2021, enhancements to the CSS portal have simplified the registration process for residential customers and enabled commercial customers to register for PAD electronically, which has increased PAD adoption by 15 percent between the 2020 and 2022 period.

In accordance with the OEB's Standard Supply Service Code, Toronto Hydro also offers residential and general service under 50 kW customers on standard supply the option to smooth out their payments through an equal monthly payment plan ("EPP"). Remittance staff work closely with Toronto Hydro's financial institution to process any payment issues and errors such as non-sufficient funds ("NSF"), returned payments, or misapplied payments.

The utility processes approximately 2,800 refunds and credits per month for customers, which include: IESO payments to generation customers (e.g. participants in the Feed-in Tariff program), refunds or security deposits, application of Ontario Electricity Support Program ("OESP") credits, and retailer-initiated adjustments.

Remittance staff also perform other tasks such as payment tracing, transfers of balances, and exception handling in the CIS as needed with respect PAD, EPP, OESP credits, refunds, address errors, payment reversals, etc. These supporting tasks may also include targeted customer communications relating to OESP registration renewals and a variety of other scenarios, which typically generate approximately 1,600 customer letters per month.

As of 2022, 21 retailers were registered and set up on the provincial Electronic Business Transaction ("EBT") System for operation within Toronto Hydro's service territory on distributor-consolidated billing. Remittance staff are responsible for retailer management functions such as settlements with retailers, the issuance of supply change notification letters to low volume customers, the processing of STRs and historical information requests, and responses to relevant retailer and customer inquiries. Remittance staff ensure accurate data flows through the EBT System and timely and accurate settlements with retailers.

Finally, Remittance staff annually issue T5 tax forms to customers accruing interests on their security deposits in accordance with applicable tax legislation and regulations.

In support of the processes described above, Remittance staff maintains several controls to ensure the accuracy of internal and external reporting and record keeping, such as a daily bank reconciliation to match incoming payments through various channels to what is recorded in the bank general ledger, daily refund reconciliations between the CIS and the financial system, and the daily review of aged credit reports to ensure credits are promptly returned to customers.

5.1.3 Meter Data Management

The Meter Data Management ("MDM") function is responsible for the collection and processing of meter data for billing and settlement purposes. As of January 1, 2023, Toronto Hydro had over 803,000 installed meters, of which over 99.9 percent are read remotely on a daily basis. The automated meter data is retrieved by one of Toronto Hydro's three data collection systems. Each data collection system serves different meter types and customer classes, and requires specialized skills to maintain acceptable data quality standards. These data collection systems further pass the data to two separate meter data management systems. The two meter data management systems validate the data for consistency, accuracy, and readiness for billing. If the meter data is not successfully validated, the systems will automatically attempt to estimate the correct reading. If the systems cannot develop an estimate for the missing data the entry is directed to MDM staff to manually assess for billing, for which average volumes of approximately 664 accounts are assessed on a monthly basis.

As of 2022, Toronto Hydro had approximately 160 manually read meters in locations where remote data collection is not possible, such as parking garages with limited cellular signals. The utility is prioritizing the installation of antenna extensions for wireless capable meters experiencing such communication problems, to facilitate remote communication with meters and reduce manual reads. The utility's continuous improvement efforts to expand automated meter data collection have contributed to the utility achieving strong Billing Accuracy results of over 99 percent in 2022, exceeding the OEB-prescribed billing accuracy performance metric.

In addition, Toronto Hydro is working on further improving the efficiency of data collection by modernizing its systems, enhancing communication networks, and improving system processing capabilities to increase the amount of meter data that is retrieved automatically. For example, through the AMI 2.0 initiative, the utility is going to replace the entire population of residential and small commercial smart meters with next generation smart meters and upgrades to supporting metering infrastructure to deliver certain out-of-the-box capabilities beyond AMI 1.0, which was predominantly focused on meter-to-cash efficiencies. These new benefits include improved billing accuracy, faster outage response, improved network range, enhanced security against cyber-threats, increased grid transparency (i.e. system observability), improved data granularity and analytical capabilities, and improved customer experience thanks to greater meter reliability and robust integration with metering data collection and reporting processes.[13] Over the 2025-2029 period, Toronto Hydro is deploying additional gate keepers and antenna extensions for interval meters to improve automatic data collection.

In addition to metered customers, Toronto Hydro serves approximately 17,800 Unmetered Scattered Load ("USL") connections as of 2022, which include service to bus

[13] Exhibit 2B, Section E 5.4.

shelters, cable television boosters, telephone booths, traffic and park lighting, and signs. These unmetered devices typically consume the same amount of electricity each month and therefore, billing determinants are based on the technical consumption parameters of the device. The Billing, Remittance, and Meter Data Management segment is responsible for maintaining an up-to-date list of all service locations and updating usage calculations when customers make changes. To ensure accuracy in billing USL services, the utility annually conducts an average of 500 random field audits and reconciliation exercises with its customers.

5.2 Billing, Remittance, and Meter Data Management Segment Costs

Table 4 below provides the Historical (2020-2022), Bridge (2023-2024), and Forecast Year (2025-2029) expenditures for the Billing, Remittance, and Meter Data Management segment.

Table 4: Billing, Remittance, and Meter Data Management Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Billing, Remittance and Meter Data Management	19.4	18.9	19.4	20.9	23.1	23.7	25.0	25.4	26.2	27.0

The primary drivers of costs in this segment were, or are expected to be, the following:

- Backfilling of vacancies (2021-2023): Backfilling of vacancies due to filling current vacancies primarily attributable to retirements, resignations, promotions and CIS project requirements;
- Support the development and implementation of the CIS upgrade (2021-2022): For the period of 2021 -2022, increase in costs associated with additional temp

staff hired to replace the permanent staff that were moved from the CIS project to support Operations, contributing to increased costs;

- Implementation of public policy initiatives (2020-2023): This cost is attributed to ongoing mandatory legal and regulatory obligations such as changes to OEB and IESO related programs, for example changes to Class A, OER, an introduction of the ULO Price Plan as of May 1, 2023 and the Green Button Initiative by November 1, 2023 which require ongoing administrative costs to implement these initiatives;
- Annual compensation increases; and
- Increases to external vendor costs: As a result of inflationary pressures, increases in vendor payroll due to increases in minimum wage, consumable cost etc.

The proposed level of funding is necessary to mitigate several segment-level risks, including**:**

- Decline in timely and accurate meter reading and the resolution of meter-related issues, as well as delays in the future implementation of initiatives associated with the rollout of AMI 2.0;
- Decrease in timely and accurate billing, resulting in billing errors, lower customer satisfaction, and risks to Toronto Hydro's financial viability;
- Reduced ability to promptly and accurately reclassify non-residential customers, resulting in decreased billing accuracy;
- Inability to process payments, credits, and refunds in a timely and accurate manner, jeopardizing the utility's cash flow and increasing the costs of working capital;
- Failure to attain full revenue collection, resulting in higher levels of bad debt and affecting the financial stability of the Toronto Hydro;

- Changes in existing or new public policy and regulatory changes may not be implemented in accordance with required timelines or in the most cost-effective manner;
- Reduced ability to respond appropriately to future changes in customers' needs and preferences; and
- Reduced ability to automate and continuously improve the efficiency of business processes.

5.3 Billing, Remittance, and Meter Data Management Segment Year-over-Year Variance Analysis

2020 - 2021 Variance Explanation

Costs decreased by $0.5 million primarily due to the following reasons:

- $1.0 million decrease in payroll costs due to filling vacancies and transfer of staff to the CIS program;
- $0.3 million decrease in labour costs due to capitalization of business labour to projects;
- $0.1 million increase in temporary and contracted labour to backfill for vacancies;
- $0.4 million decrease in postage from conversion of customers from paper bills to eBills;
- $0.2 million increase in business processing services due to inflation;
- $0.4 million increase to adjust a bad debt accounting provision (ECL) for non-electricity accounts receivables;
- $0.4 million increase in contracted field services to support reactive metering work, and
- $0.1 million increase in printing costs due to inflation.

2021 - 2022 Variance Explanation

Costs increased $0.5 million primarily due to the following reasons:

- $0.3 million increase in payroll costs due to the filling of vacancies and compensation increases;
- $1.5 million decrease in labour costs due to capitalization of business labour to capital projects (e.g. CIS);
- $1.0 million increase in contracted services for temporary staff to backfill vacancies and staff transferred to capital projects (e.g. CIS);
- $0.4 million increase in contracted business processing services due to backfilling for staff on capital projects (e.g. CIS) and inflationary pressures;
- $0.1 million increase in other support costs, and
- $0.2 million increase in postage costs due to inflation, offset by savings in converting customers to eBills.

2022 – 2025 Variance Explanation

Between 2022 and 2025, costs in this segment are expected to increase by $4.3 million. This is primarily due to the following reasons:

- Increase in labour costs due to compensation increases, filling of vacancies and planned upskilling, fewer business resources capitalized to projects, primarily meter technology projects and the CIS project, higher contract costs for external vendors supplying business processing services and field support to maintain resourcing capacity and increased complexity, and increases in postage and payment processing fees; and
- This was partially offset by a decrease in contracted services for temporary staff replaced by internal staff returning from the CIS project and other technology projects, a reduction in the accounting provision for bad debt for non-electricity

accounts, and actual and forecasted ebill adoption helping to contain postage and printing cost increase impacts.

<u>2025 – 2029 Variance Explanation</u>

Between 2025 and 2029, costs in this segment are expected to increase by $3.3 million, to maintain the resourcing capacity and capabilities required to support the increased volume and complexity of work discussed above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various legal and regulatory compliance risks and drawbacks, in addition to the following:

- A decrease in timely and accurate billing, resulting in billing and settlement errors, lower customer satisfaction, increased customer contacts, and risks to Toronto Hydro's financial viability;
- A decline in timely and accurate meter reading and resolution of meter-related issues, which may result in greater reliance on estimated bills and lower billing accuracy;
- Inability to process payments, credits, and refunds in a timely and accurate manner, jeopardizing the utility's cash flow and increasing the costs of working capital; and
- Reduced ability to prioritize and schedule the AMI 2.0 implementation and attain the associated benefits such as remote disconnection and improved meter communication capabilities. [14]

[14] *Ibid.*

6. COLLECTIONS SEGMENT

6.1 Segment Description

The Collections segment involves work related to tracking and collecting amounts owing on customer accounts and administering financial assistance programs such as the Low-Income Energy Assistance Program ("LEAP"),[15] and the Ontario Electricity Support Program ("OESP"). Toronto Hydro's collections procedures work to minimize the bad debt expenses incurred by the utility, while providing customers flexible options and assistance to pay outstanding accounts. The segment plays a key role to Toronto Hydro's financial viability and settlement process through the collection of distribution revenue and other rates and charges while minimizing bad debt expenditures. In the absence of a robust collections process, the utility's bad debt expenditures would increase and settlement variances would grow, to the detriment of all ratepayers and other sector participants.

To assist with collections-related customer inquiries, dedicated customer relations representatives are available on business days from 8:00 a.m. to 10:00 p.m. from May to November, and from 8:00 a.m. to 8:00 p.m. from December to April. Customers also have 24/7 access to collections information through an interactive voice response ("IVR") system, Toronto Hydro's mobile application and the CSS portal. These options assist customers by providing access to key information such as current and historical account balances, consumption and demand information, payment options, and bill amount predictions.

To facilitate stable and predictable cash flows and manage emerging arrears, Toronto Hydro proactively issues approximately 592,000 account overdue notices and places 842,000 account overdue reminder phone calls to its customers each year. To manage

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[15] *Supra* note 3.

the costs of these high-volume activities while maintaining the efficiency and timeliness of reminders, the utility deploys automated systems for both types of notifications.

As of the end of 2022, Toronto Hydro had over 97,000 smart meters capable of remote disconnection, reconnection, and intermittent disconnection. By enabling remote disconnection, this technology reduces on the need for conducting costly field visits and lowers the risk of accumulating bad debt. These meters also allow for remote reconnections, which helps the utility meet the OEB-prescribed reconnection performance standard of reconnecting customers within 2 business days of receiving payment, allowing Collections staff to restore power almost immediately upon receipt of payment without the need to schedule a site visit for reconnection, also positively impacting the customer experience. As Toronto Hydro upgrades more of its smart meters to remotely controlled models, remote disconnections and reconnections will become more frequent.

To give effect to the OEB's winter disconnection moratorium in accordance with the Distribution System Code, Collections staff have processes in place to rapidly identify and contact residential customers previously disconnected for non-payment, process reconnections, and provide information on financial assistance programs.

To encourage timely payments, proactively identify at-risk accounts, and otherwise facilitate the collection of arrears, Collections staff also undertake the following activities:

- Managing and monitoring approximately 12,000 commercial accounts with security deposits and overseeing the annual process of security deposit reassessments;

- Preparing and sending approximately 14,000 accounts per year to external collection agencies for collection;
- Establishing arrears payment agreements ("APAs"), equal payment plans, and other custom payment plans to assist customers with paying off their arrears; and
- Educating customers on and overseeing the administration of financial assistance programs such as LEAP and OESP.

On March 17, 2020, the Government of Ontario declared a state of emergency pursuant to the *Emergency Management and Civil Protection Act* in response to the World Health Organization declaring the COVID-19 outbreak as a global pandemic. [16] This resulted in immediate and material disruptions to businesses and the economy, as the Government of Ontario and City of Toronto imposed various restrictions and closures on public health grounds that lasted at varying degrees until the last restrictions were lifted in 2022.

More specifically in the utilities sector, on March 19, 2020, the OEB extended the winter disconnection moratorium for all low-volume customers until July 31, 2020.[17] As a result, electricity distributors were prohibited from issuing disconnection notices for non-payment to these customers until August 1, 2020. During this time, in addition to complying with the requirements mandated by the OEB and different levels of government, Toronto Hydro implemented several temporary changes to its customer service rules and procedures to provide greater relief to its customers, consistent with the approach taken by other utilities. Toronto Hydro:

- reduced its late payment charge by 75 percent;

[16] RSO 1990, c. E.9. [*"Emergency Management and Civil Protection Act*"].
[17] The OEB provided further relief through successive licence amendments in 2021 by prohibiting electricity distributors from issuing disconnection notices to residential customers from April 13, 2021 until June 2, 2021. For more information, refer to OEB decisions and orders in EB-2020-0109 and EB-2021-0137.

- waived the Returned Cheque charge, normally collected for payments returned as NSF by banks due to customer account having insufficient funds to cover the payment;
- sent targeted arrears communications to provide its customers with greater flexibility in payment terms, offer APAs, and promote financial assistance programs such as LEAP, OESP, the COVID-19 Energy Assistance Program ("CEAP") and COVID-19 Energy Assistance Program for Small Business ("CEAP-SB"), and the Canada Emergency Response Benefit ("CERB"); and
- voluntarily extended its moratorium on disconnecting residential and low volume customers.

Collectively, these measures remained in effect from March 2020 until July 2022, with the exception of Toronto Hydro's extended disconnection moratorium which ended in June 2022.

In 2020, Toronto Hydro recorded an incremental $17.2 million in bad debt expenses as a result of the COVID-19 emergency and related financial pressures. Consequently, the utility adjusted its expected credit loss ("ECL") provision based on trends for customer collections, and current and forecasted economic conditions at the time to account for higher levels of expected customer defaults than pre-pandemic levels. Between 2020 and 2022, Toronto Hydro continued to actively monitor its exposure to credit risk, including the potential impacts of the pandemic, and made subsequent adjustments to the ECL provision as needed.[18]

[18] There is some uncertainty of the pandemic's impacts, the utility could not provision for all possible outcomes.

As of the summer of 2022, Toronto Hydro resumed its disconnection activities for non-payment by applying a segmented approach, focusing first on customers with larger balances or higher collections risk, particularly those with pre-pandemic arrears. The utility also continued providing greater flexibility in payment terms, such as longer payment periods and reduced down payment options. Overall, Toronto Hydro expects that the measures it took in response to the COVID-19 pandemic has saved its customers from undue hardship and has better positioned the utility to deal with the bad debt impacts going forward.

6.2 Collections Segment Costs

Table 5 below provides the Historical (2020-2022), Bridge (2023-2024), and Forecast Year (2025-2029) expenditures relating to the Collections segment:

Table 5: Collections Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Collections	24.9	9.0	7.8	9.6	10.2	10.2	10.9	11.0	11.3	11.6

The costs for 2020 are a significant outlier due to the accumulated bad debt expense recorded in that year due to the COVID-19 pandemic.

The utility’s costs in this segment are expected to increase over the 2025-2029 period primarily due to payroll compensation increases during the term and inflationary pressures impacting vendor costs to support collections activities.

Generally, the volume of collections-related work and the success of collecting accounts in arrears is heavily influenced by the number of customer interactions, the number of low income customers and the available assistance programs, the availability of collection tools to encourage payment (such as the ability to disconnect for non-payment), the number of customers who move out and receive a final bill in any given year, macroeconomic conditions, industry disruptions causing bankruptcies, and regulatory changes impacting customer behaviour and collections tools. Toronto Hydro monitors trends and implements strategies to minimize the cost of bad debt to ratepayers. During the 2020-2024 rate period, the implementation of OEB mandated customer service rule changes (such as extension of the minimum payment period from 16 to 20 calendar days), the effects of the winter disconnection moratorium, and Toronto Hydro's voluntary extension of the disconnection moratorium for the duration of the COVID-19 pandemic contributed to the utility attaining higher unpaid balances over longer collection cycles.

The proposed level of segment funding is expected to support efforts to manage the accounts receivable balances, maximize the collection of distribution revenue and other rates and charges while minimizing bad debt, and continue to offer flexible and meaningful payment options. On a broader scale, the requested funding will support the implementation of public policy initiatives, the utility's responsiveness to customers' emerging needs and preferences, and continuous improvement through business process enhancements and technological solutions. The proposed level of funding is necessary to mitigate several segment-level risks, including**:**

- Increased volumes and amounts of arrears associated with unpaid accounts, causing upward pressure on rates for all customers;
- Limited capacity to offer customers flexible and personalized arrears payment options;
- Reduced ability to innovate service offerings, such as self-service payment arrangements;

- Reduced ability to effectively develop, deliver, and communicate financial assistance programs, leading to increased financial difficulties for customers and greater likelihood of disconnections for non-payment, resulting in lower customer satisfaction;
- Limited ability to modify collection tools or practices in response to changes in customers' evolving needs and preferences; and
- Reduced cash flow for the utility, increasing the cost of working capital to the detriment of ratepayers.

6.3 Collections Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

Between 2020 and 2021, costs in this segment decreased by $15.9 million due to the following:

- $0.2 million increase due to compensation increases,
- $0.2 million decrease in contracted field services as a result of continuing the utility's customer support strategy during COVID-19; and
- $15.9 million decrease in bad debt as a result of the significant increase in 2020 for the accounting provision for bad debt (i.e. ECL) due to the COVID-19 pandemic.

2021 – 2022 Variance Explanation

Between 2021 and 2022, costs in this segment decreased by $1.2 million due to the following:

- $0.1 million increase in collection agency fees reflecting higher average arrears balances due to COVID-19;

- $0.3 million decrease in labour costs due to capitalization of business labour to projects, partially offset by increase in payroll costs due to compensation increases;
- $0.2 million increase in contracted clerical labour to backfill for staff working on capital projects (e.g. CIS);
- $0.4 million increase in contracted field resources reflecting the additional collection activity volumes post COVID-19, and
- $1.6 million decrease in bad debt that reflects a downward risk adjustment in the accounting provision for bad debt (i.e.ECL) as COVID-19 related customer arrears balances decline.

2022 – 2025 Variance Explanation

Between 2022 and 2025, costs in this segment are expected to increase by $2.4 million due to the following:

- Increases in labour cost as staff return from capital projects (e.g. CIS), partially offset by a reduction in temporary labour no longer needed to backfill for staff on the CIS Project;
- Increases in collection agency fees reflecting the higher volume of accounts, post COVID-19, being assigned to third party collection agencies;
- Increases in contracted field collection activities to reflect higher than historical customer payment arrears volumes and balances, post-COVID-19;
- Increases in payroll costs due to filling vacancies and compensation increases; and
- Increases in the accounting provision for bad debt (i.e. ECL) to account for the inflationary pressure on rates and subsequently on the receivables balance.

2025 – 2029 Variance Explanation

Between 2025 and 2029, costs in this segment are expected to increase by $1.4 million, to manage increases in payroll costs due to compensation increases, inflationary pressure on the accounting provision for bad debt (i.e. ECL), and inflationary pressure on several contracted business process, field service providers, and other collections related vendors, as discussed above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various regulatory and legal compliance risks and drawbacks, including:

- Failure to attain full revenue collection, resulting in higher levels of bad debt and affecting Toronto Hydro's financial viability; and
- Limited ability to modify collection tools or practices in response to changes in customers' evolving needs and preferences.

7. CUSTOMER RELATIONSHIP MANAGEMENT SEGMENT

7.1 Segment Description

The Customer Relationship Management ("CRM") segment involves Toronto Hydro's communications with its customers[19] to provide information relating to customer service and the utility's operations, build trust, and maintain transparency. Toronto Hydro aims to build trusted relationships by engaging customers at the right time, with the right information, and through the right channel to meet their preferences. This approach delivers customer value by providing efficient and timely responses to all enquiries, building awareness of available service choices (such as billing format or pricing plan options) and financial assistance programs, and educating customers on how to better manage their electricity usage.

[19] *Supra* note 5.

The segment includes the following functional areas: the Contact Centre, Escalations and Special Investigations, Customer Experience, and Quality Assurance. These functions are designed to provide high-quality customer service and improve operational efficiencies identified through the tracking and analysis of inbound customer inquiries, transactional surveys, and other means of soliciting customer feedback.

In addition to the functional areas noted above, the CRM segment is also responsible for designing and overseeing technology projects for continuous monitoring, business process analysis, and performance measurement activities, which drive customer experience and efficiency improvements. To provide an optimal customer experience, Toronto Hydro will need to adapt its services to each customer's unique needs and preferences, especially as these needs and preferences evolve in conjunction with broader trends. The utility expects that the CRM segment's workforce, business processes, and tools will benefit from enhancements on multiple fronts to provide this level of personalized service.

The CRM segment remains responsive to customer, public policy, and industry demands by monitoring trends and adapting business processes, employing technology and process improvements to help contain costs, developing more effective ways to address customer enquiries at first contact, and supporting staff with training and upskilling.

7.1.1 Contact Centre

Toronto Hydro's Contact Centre is the primary functional area of the CRM segment. In 2022, the Contact Centre received and addressed approximately 70,000 written (paper mail, fax, and email) enquiries and over 343,000 telephone calls. Customers engage with the Contact Centre to inquire about the utility's business practices, available programs and service choices (such as pricing plan options), government incentives and rebates, payment options, electricity consumption and demand, moves, collections, financial assistance programs, and a variety of other topics. During significant outage events, the Contact Centre also provides 24/7 support to the Emergency Response program,[20] and customers who want to report an outage or obtain current outage information.

As part of this function, Toronto Hydro tracks and processes customer move-ins and move-outs to obtain correct meter data, identify account holders, and correctly address and promptly issue first and final bills. In 2022, the utility processed over 183,000 customer moves, of which 24 percent were partially automated moves and 22 percent were fully automated self-service moves. Over 2020-2022, customers' use of the CSS portal for moves has increased by 92 percent.

The Contact Centre will need to adapt its business processes over the 2025-2029 rate period to respond to the evolution of customers' needs and preferences. As broader societal and industry trends point towards decarbonization and greater electrification (e.g. the adoption of EVs and DERs by residents and businesses in greater numbers), the potential for increased electricity prices, and new pricing and service options, customers' needs, the information they require, and their expectations of service from Toronto Hydro are all dramatically changing. Meanwhile, emerging technologies such as artificial intelligence, machine learning, and process automation are enabling new channels and opportunities for customer-utility interactions, while ensuring appropriate handling of customers' personal information through policies and processes. In the context of these developments, the Contact Centre will need to upskill its workforce and enhance its

[20] Exhibit 4, Tab 2, Schedule 5.

business processes and tools in response to customers' changing expectations and the concomitantly increasing complexity and variety of enquiries.

The Contact Centre closely monitors the quality and efficiency of its customer contact activities using a combination of OEB-mandated, common industry and internally developed measures. Toronto Hydro performs well against the OEB's performance targets in the areas of telephone accessibility, telephone call abandon rate, and written response, consistently exceeding the mandatory service standards, whilst balancing costs and meeting customer expectations. In 2022, the Contact Centre answered 79 percent of calls within 30 seconds, and responded to over 99 percent of written enquiries within ten days. To support Toronto Hydro's customer service objectives, the Contact Centre operates from 8:00 a.m. to 8:00 p.m.

Customers increasingly use email to interact with Toronto Hydro and expect shorter response times due to the electronic medium; therefore, the utility has put significant effort into improving its performance in responding to written inquiries. In 2022, Toronto Hydro responded to over 90 percent of emails within one business day. The utility achieved this result by implementing a number of training and process improvements, including enhancements to internal email routing algorithms, to quickly identify and contact the most appropriate resource that can assess the customer inquiry and respond to the email. Toronto Hydro has found that responding more quickly to customers has reduced the total volume of emails annually by 25 percent (approximately 23,000 emails) from 2020 to 2022, and resulted in a 15 percent increase in customer satisfaction in this area. The utility also continues to change and evolve its business processes to redirect customers with more complex questions, such as service upgrades for EV charging, to the most appropriate communication channel or subject matter experts.

Through the introduction of various self-service tools such as the CSS portal and mobile application, targeted process improvements, and upskilling, Toronto Hydro's customer response model is becoming more efficient at understanding and adapting to customer inquiries faster and improving the overall customer service experience.

7.1.2 Escalations and Special Investigations

The Escalations and Special Investigations function resolves specific customer concerns that require complex or detailed analysis. The most frequently occurring issues relate to energy and bill management, including high bill issues, energy management, payment challenges, and power quality requests pertaining to power interruptions and other technical issues. With customers increasingly working from home since 2020, any interruption in power, including momentary and short duration outages, has become more impactful to customers. The Escalations and Special Investigations function intakes escalated matters through a variety of channels. For example, in 2022, this function processed approximately 1,900 escalations received through the Contact Centre, 112 through the Office of the President function under the Public, Legal and Regulatory Affairs program,[21] and 38 from the OEB. The Escalations and Special Investigations function is also responsible for Toronto Hydro's consumer complaint response process and the resolution of customer escalations forwarded through the OEB's E-Portal. The function deploys field resources as necessary to investigate power quality, billing, or other issues. In 2022, Escalations and Special Investigations resolved 99 percent of escalated customer inquiries within ten business days or less.

In recent years, the issues handled by the Escalations and Special Investigations function have become progressively more complex. The investigation and resolution of these

[21] Exhibit 4, Tab 2, Schedule 18.

issues typically involve greater collaboration with internal stakeholders from multiple capital and OM&A programs, such as Customer Operations,[22] Work Program Execution,[23] or Public, Legal and Regulatory Affairs, and sometimes external stakeholders such as provincial and municipal transit operators, various departments of the City of Toronto, or social assistance agencies. Toronto Hydro expects the complexity of issues addressed by this function to increase as more customers adopt DERs and EVs and as those resources are integrated into distribution operations.

7.1.3 Customer Experience

The Customer Experience function works to achieve consistency across all customer interactions through the expanded use of technology. Technological solutions allow for the more efficient capture of customer interactions, more effective routing and streamlined processing of work, the provision of structured options, and consistent customer engagement. These enhancements in turn support the provision of high-quality services and communications that align with customer needs and expectations, while identifying ongoing trends and opportunities for the improvement of current programs and the development of new programs.

The growth and evolution of the Customer Experience function over the 2025-2029 rate period will lay the foundation for future customer interactions, which Toronto Hydro expects to be highly influenced by the shift towards electrification. Federal, provincial, and municipal energy policies are establishing plans, guidelines, and requirements that support customers' need and ability to make informed decisions about their energy usage and influence their bills through consumption behaviours and technology investments. Customers will look to Toronto Hydro to provide the tools and information

[22] *Supra* note 5.
[23] Exhibit 4, Tab 2, Schedule 12.

to enable them to make informed choices that best suit their lifestyles and budgets, including public policy initiatives such as Green Button to comply with Ontario Regulation 633/21.[24] This requires the utility to modernize its business processes, invest in the appropriate tools that allow customers to effectively manage their energy usage in emerging contexts (e.g. with respect to EV charging or load displacement via DERs) and upskill resources to respond to the changes in customers' needs and expectations. Much of the relevant investments in technology, additional resourcing, and process modifications need to occur in advance of these industry shifts to ensure that Toronto Hydro is prepared to respond to customers' needs in time for the energy transition.

Customer engagement plays a significant role in Toronto Hydro's decision making and helps inform and guide overall business planning processes. Beyond survey-based research, Toronto Hydro considers direct customer feedback and the advice of a Customer Advisory Panel ("CAP"), discussed in greater detail in the Public, Legal and Regulatory Affairs segment.[25]

One increasingly popular method of engagement continues to be Toronto Hydro's redesigned CSS portal, which is available to both residential and commercial customers. The portal offers live chat with a Toronto Hydro representative, automated move-in and move-out capability, eBill and pre-authorized debit registration, and the ability to view bill and payment histories. Eligible customers can also opt into outage notifications via email and text message. In addition, the utility redesigned its website to increase traffic and increase customers' ease of access to commonly requested information when they visit the site. This redesign consisted of expanding the "My Usage" page on the CSS portal to provide customers the ability to track and compare their electricity usage and costs on

[24] Ontario Regulation 633/21 under the *Electricity Act, 1998*, SO 1998, c. 15, Sched. A.
[25] *Supra* note 21.

an hourly, daily, monthly, and yearly basis. Furthermore, customers are able to access a price comparison tool to help make an informed decision when selecting between tiered, standard time of use, and the new ULO time of use electricity pricing plans.

In 2022, Toronto Hydro launched a mobile application to offer another channel for customers to receive customized service based on their preferences. The mobile application supports core customer inquiries such as viewing their bills and payment history, addition to supporting transactions such as moves, eBill registration, and changes in pricing plans. The utility promotes the adoption of this channel through marketing campaigns and the Contact Centre as a means to increase customer convenience and operational efficiency. Enabling customers to self-serve reduces the volume of interactions with live agents and manually initiated processes, which increases operational efficiency.

The Customer Experience function's increased focus on improving customer service and meeting customers' expectations through the adoption of modern technology will support the identification and implementation of additional services that align with the changes in customers' needs and expectations. For example, current items under consideration include offering enhanced bill prediction tools and alerts, online payment options, proactive notifications, and expanding existing capabilities to support customers in making an informed decision when choosing between different pricing options.

7.1.4 Quality Assurance

The Quality Assurance function manages knowledge and service quality, the analysis and evaluation of staff performance, and the analysis of escalation trends and post-call customer survey results. The function develops and distributes training materials for internal and external resources, and focuses on exceeding the OEB-mandated service quality requirements by identifying training gaps, and process and technology improvement opportunities. The function is also responsible for maintaining knowledge base tools to support staff with information on current policies, procedures, and changes to legislative and regulatory requirements. This helps staff to better serve customers and develop effective change management strategies to support the launch of new initiatives and technologies.

The criticality of this team will grow throughout the 2025-2029 rate period, as its role expands in two areas: 1) the upskilling of staff to support the enhancement of business processes in response to the evolution of customer needs and preferences and industry trends, and 2) the expansion of quality assurance beyond staff and into the fine-tuning of systems and technology.

As mentioned earlier, customers engage in a broad variety of decarbonization and electrification activities such as the adoption of EVs, elimination of natural gas and other fossil fuels for heating and other needs, the installation of distributed generation and energy storage equipment, the demands on Toronto Hydro staff will greatly increase and the engagements with customers will become materially more complex and diverse. The Quality Assurance function will need to design, build, and maintain knowledge programs to prepare staff on how to respond effectively to these types of inquiries.

Second, Toronto Hydro expects the role of the Quality Assurance function to evolve as new technologies and tools such as artificial intelligence, machine learning, and process automation are introduced to the organization. In addition to coaching staff to provide high-quality responses to emerging needs and demands of customers, the team will also need to "train" systems to perform in a similar fashion by completing necessary upgrades or adopting new technology.

Customer Relationship Management Segment Costs

Table 6 below presents Toronto Hydro's Historical (2020-2022), Bridge (2023, 2024), and Forecast Year (2025-2029) costs relating to the Customer Relationship Management Segment:

Table 6: Customer Relationship Management Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Customer Relationship Management	11.4	11.4	12.1	14.4	15.1	14.7	15.7	16.1	16.9	17.5

The proposed level of segment funding is required to support the development of human resources, implement process enhancements, and utilize technologies to meet increasingly more complex customer needs in an evolving electricity sector. Building knowledge systems to support frontline customer service representatives and streamlining internal knowledge networks will be essential to responding effectively to enquiries related to emerging topics such as EVs, DERs, and associated public policy initiatives. Automating customer contact points to provide efficient and consistent customer support will require support from self-service portals, artificial intelligence, and machine learning systems as they are integrated into the customer experience. The proposed level of funding is necessary to mitigate several segment-level risks, including the potential for**:**

- Backlogs of customer account updates resulting in delays in issuing bills and additional work to correct billing errors, increasing risk of non-compliance with the OEB -prescribed billing accuracy metric;

- Extended wait times to resolve calls and written inquiries, potentially leading to the erosion of service level standards and lower customer satisfaction as well as increasing risk of non-compliance with OEB-prescribed call response and written response metrics;
- Compromised ability to enroll customers in, and educate them on, existing and new energy and public policy programs, leading to lower engagement and program success;
- Reduced ability to invest in modern technologies, staff capacity, and time to provide customers with meaningful insights, tools, and services in an environment of evolving customer expectations; and
- Limited support as customers navigate an increasingly complex energy environment, leading to less customer control over their energy usage than would otherwise be achieved.

7.3 Customer Relationship Management Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

Costs remained flat with increases in contracted services for business process services, IT consulting for CIS project support, and temporary staff, offset by decreases in payroll and labour costs due to vacancies.

2021 – 2022 Variance Explanation

Costs increased by $0.7 million due to the following reasons:

- $0.4 million increase in payroll to fill vacant positions and annual increases in compensation ;
- $0.8 million decrease in labour costs associated with the transfer of staff to the CIS upgrade project;

- $0.3 million increase in contracted services costs for temporary staff to backfill staff on the CIS upgrade project;
- $0.2 million increase in consulting costs to support the CIS upgrade project, and
- $0.6 million increase in cost for contracted business process services, including the impacts of the minimum wage increase.

2022 – 2025 Variance Explanation

Between 2022 and 2025, costs in this segment are expected to increase by $2.6 million due to the following reasons:

- increase in payroll costs to fill vacant positions and compensation increases,
- increase in labour costs as staff return from the CIS upgrade project to support operations, and
- decrease in contracted services costs and software and consulting fees due to the efficiency gains expected from the CIS upgrade project.

2025 – 2029 Variance Explanation

Between 2025 and 2029, costs in this segment are expected to increase by $2.8 million, to maintain the resourcing capacity and capabilities required to support the increased volume and complexity of work discussed above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various legal compliance risks and drawbacks, including:

- Insufficient or inadequate level of resources to provide timely and effective responses to customer inquiries;
- Reduced ability to implement public policy initiatives and legislative and regulatory requirements in accordance with mandated timelines or in a cost-effective manner;

- Inadequate ability to research, analyze, and respond to future changes in customers' preferences; and
- Inability to support customers' preferences and provide personalized service through large scale technology projects such as omnichannel communication, AMI 2.0, and customer relationship management.

HUMAN RESOURCES, ENVIRONMENT AND SAFETY

1. OVERVIEW

Table 1: Human Resources, Environment and Safety Program Summary

Fleet and Equipment Program Summary									
Outcomes: Public Policy Responsiveness, Environment, Operational Effectiveness - Safety, Financial Performance									
Segments: • Environment, Health & Safety • Human Resources Services & Systems, Organizational Effectiveness & Employee Labour Relations • Talent Management, Change Leadership & Sustainability									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
15.5	17.6	16.7	18.9	21.3	22.6	23.2	24.2	25.3	26.3

The Human Resources ("HR"), Environment and Safety program (the "Program") provides broad human resource management services to Toronto Hydro. The Program's activities manage the employee lifecycle through the processes of employee recruitment, compensation and benefits, onboarding, performance management, training and leadership development, labour relations, employee communications and engagement, and human resources technology management. All of these activities are carried out within a culture of ensuring employees' health and safety and environmental sustainability. The delivery of these activities is tailored to the utility's complex capital program and operating environment, labour dynamics and workforce demographics.

To achieve these outcomes, adequate funding and staffing for the Program will be crucial to the utility's success.

2. OUTCOMES AND MEASURES

Table 2: Human Resources, Environment and Safety Program Outcomes and Measures

Summary

Public Policy Responsiveness	• Contributes to Toronto Hydro's public policy responsiveness objectives by ensuring regulatory and legislative requirements are met in relation to employee training, collective bargaining and the development of utility-wide policies.
Environment	• Contributes to Toronto Hydro's environmental objectives and Net Zero 2040 commitment by: o Integrating environmental, social and economic issues into planning; o Measuring greenhouse gas ("GHG") emissions, waste reduction, and promoting recycling and a culture of conservation; o Ensuring compliance with legislative and regulatory requirements such as the *Environmental Protection Act, 1990*[1].
Operational Effectiveness – Safety	• Contributes to Toronto Hydro's health and safety objectives, measured through metrics like Total Recordable Injury Frequency ("TRIF") by: o Implementing controls to reduce the risks associated with exposure to hazards and ensure employees are working safely; o Providing training on workplace safety to employees; o Closing gaps associated with audit and inspection findings; and • Ensuring compliance with legislative requirements.

[1] RSO 1990, c E.19. ["*Environmental Protection Act*"].

Financial Performance	• Contributes to Toronto Hydro's total cost and efficiency measures through the development and delivery of virtual training and internal training facilitation to reduce reliance on external services. • Focuses Toronto Hydro's workforce on work aligned with organizational objectives by utilizing a rigorous performance management system, thereby decreasing costly wasted productive time. • Promotes processes that decrease Workplace Safety & Insurance Board premiums and other costs.

3. PROGRAM DESCRIPTION

The Program provides broad human resource management services to Toronto Hydro. The Program's activities enable the utility to maintain a robust and effective work environment, the health and wellness of its employees, and its safety management system. The Program also supports the utility's sustainability activities and the promotion of good working conditions to increase employees' job satisfaction, facilitate productivity and promote innovation.

The Program's activities support key operational goals by deploying technology solutions, applying risk-based management system standards, and supporting effective training, diligent inspections, and appropriate investigations into incidents and near misses. Toronto Hydro's business operations and dense urban environment create a number of distinct challenges for the Program, including:

- A complex and rapidly evolving distribution system that includes an asset-intensive downtown distribution network;
- Mature and diverse grid infrastructure featuring legacy assets that require specialized asset management skills (e.g. box construction and paper insulated lead covered cable);

- An increasingly complex mix of load consumers and distributed energy resources of varying sizes, driving the need for a broad range of advanced customer service, data analysis, strategic planning, and technological know-how skills; and
- Unique safety challenges for executing work.

These challenges drive Toronto Hydro to maintain a high standard of health and safety requirements and provide comprehensive training and apprenticeship programs for employees. These challenges also make it important for Toronto Hydro to prepare talent to fill future key roles so that leaders can continue to be responsive to the utility's operating conditions.

The Program includes three segments, each described in detail below:

- Environment, Health & Safety;
- Human Resource Services & Systems, Organizational Effectiveness & Employee Labour Relations; and
- Talent Management, Change Leadership & Sustainability.

The objective of the Environment, Health & Safety ("EHS") segment is to ensure that Toronto Hydro operates in a safe, environmentally responsible, and sustainable manner. Toronto Hydro achieves these operational objectives by implementing programs, procedures, safe work practices, and engineering and administrative controls as required. This segment also ensures that Toronto Hydro complies with applicable legislative requirements pertaining to health and safety, environmental protection and sustainability.

The objective of the Human Resource Services & Systems, Organizational Effectiveness & Employee Labour Relations segment is to effectively manage labour relations with the utility's employees, compensate employees appropriately and provide benefits to support employee health and well-being. Activities within this segment include interpreting, administering and negotiating collective agreement provisions, case management, performance management, productivity measurement, designing and administering the utility's compensation and benefits program, and administering technology systems to support human resources, environment and safety data.

This segment also includes a program to foster innovation and another program to track the benefits of initiatives undertaken by the utility. In addition, this segment supports the organization to ensure workplace issues are addressed promptly and in compliance with applicable legislation, policies, and collective agreements. This segment oversees all employee engagement events, including Toronto Hydro's annual United Way campaign. It also manages all internal communications to employees, including the semi-annual publication of the utility's company magazine, Spectrum.

The objective of the Talent Management, Change Leadership & Sustainability segment is to develop and execute the utility's workforce staffing and development plans and conduct organization design and job design activities, to support the organization's talent development and succession planning processes and programs. Teams in this segment are responsible for internal and external staffing selection. They also create and implement a variety of training, development, and change management initiatives to ensure Toronto Hydro employees are qualified and have the necessary skills, resources, and tools to successfully execute their role.

4. PROGRAM COSTS

In 2025 Toronto Hydro requires $22.6 million in rate funding for Human Resources and Safety program, which represents an increase of $7.1 million over the last Custom Incentive Risk application in 2020. When normalized for shared services recoveries outlined in Exhibit 4, Tab 5, Schedule 1, the expected increase in this program is $6.1 million.

Over the 2025-2029 rate period, the utility expects the cost of this program to increase by annual growth rate of 3.9 percent which is necessary to address the program needs and deliver the customers outcomes enabled by this program. The Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for each segment are summarized in Table 3 below.

Table 3: Human Resource and Safety Program Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Environment, Health & Safety	2.4	2.3	2.4	3.0	3.1	3.3	3.4	3.6	3.8	3.9
Human Resource Services & Systems, Organizational Effectiveness & Employee Labour Relations	5.9	6.3	5.9	8.0	9.4	10.0	10.4	10.8	11.3	11.8
Talent Management, Change Leadership & Sustainability	7.2	9.0	8.4	7.9	8.8	9.3	9.4	9.8	10.2	10.6
Total	**15.5**	**17.6**	**16.7**	**18.9**	**21.3**	**22.6**	**23.2**	**24.2**	**25.3**	**26.3**

4.1 Cost Drivers

The cost increases are primarily a result of:

- **Increasing Capacity to Support Investment Plan*:*** Staffing changes to support projects and to fill vacancies have created yearly variances in actual and budgeted segment costs. These are outlined in the sections below. Payroll costs are expected to increase by approximately $2.1 million in 2024 and $1.3 million in 2025. These variances are driven by headcount increases to attract, recruit and train talent, to support grid and technology modernization efforts, capital and operating programs and environment, social and governance and compliance activities; and

- **Legal and arbitration related expenses:** Legal expenses associated with grievance arbitrations, and other employment related legal matters have trended upwards in the Program. These expenses vary based on the matter's complexity, the number of internal and external witnesses, and the degree of preparation and legal research required. An increase in headcount in bargaining unit positions is expected to increase the volume of arbitration and grievance matters. Both PWU and Society IT collective agreements will be renegotiated during the next rate application which will drive additional legal costs.

4.2 Cost Control and Productivity Measures

4.2.1 Cost Management

Toronto Hydro has implemented or is in the process of executing the following initiatives to realize cost savings:

- Using services, including specialized software, to collect and report data on incidents, inspections, audits, and facilitate contractor prequalification screening;
- Optimizing training by leveraging digital tools to facilitate sessions, clustering training in concentrated blocks of one to two weeks to minimize operational disruption; engaging internal resources, familiar with Toronto Hydro systems, processes and equipment, to complete program development, testing, audits and completion of applications;

- Toronto Hydro has completed a proof of concept for virtual reality training. This training would offer employees a safe environment to learn and develop skills prior to executing them in a physical environment. A request for proposal is currently underway to select a vendor for this solution. This technology will decrease the time required for employees to travel to training, and the time required to deliver training; and
- Using existing internal resources instead of hiring specialized external service providers to develop and distribute EHS related communications materials including posters, Toronto Hydro TV and safety meeting materials; This results in a cost savings associated with not having to hire external service providers to complete this work.

The utility has negotiated a five-year collective agreement with the Power Workers' Union ("PWU") (2022-2027) and a four-year agreement with the Society of United Professionals ("Society") (IT) (2021-2025). These agreements will provide labour stability and predictability around compensation and benefits costs.

4.2.2 Productivity

The Program has enabled the utility to achieve significant and sustained productivity outcomes. For example, from 2018 to 2022, the utility achieved improvements relating to:

- Occupational safety, including a 43 percent improvement in total recordable injury frequency;
- A 94 percent improvement in lost time severity; and
- The corporate attendance number remained stable, with an improvement of 1.9 percent.

The above was achieved despite the effects of the COVID-19 pandemic. Toronto Hydro's absenteeism rate remains much lower than historic rates, both within the organization and broader industry. Toronto Hydro has been able to effectively manage employee absenteeism and ensure the workforce is productive and engaged.

Toronto Hydro's implementation of the cloud-based Success Factors program has supported the business processes and innovation. The foundational design integrates between modules and facilitates automation of workflows. The integrated solution supports the employee life cycle starting with the foundation of 'Employee Central', which houses core employee information from job to organizational data. The core employee data is integrated with other modules within Success Factors such as recruitment, on-boarding, performance management, learning, benefits and compensation. The integration has expanded the capture of master data, increased data accurancy and operational efficiences. The system has enabled employees to self-serve, allowing employees access to manage their own personal data such as home address, phone number and emergency contact, increasing overall data accurancy. The technology also supports other systems in the organization through integration, feeding real-time employee master information such as job and organizational data. The cloud solution has annual releases of new features to expand system functionalities and optimize business processes.

- Toronto Hydro has upgraded the video and audio-conferencing applications of its work centres, making remote and hybrid work more effective and reducing the facilitation costs of virtual learning and training programs.
- Electronic tailboards are used by crews to complete a risk assessment digitally prior to their work as part of developing a safe job plan have increased productivity. This electronic tool allows leaders to access job planning details

without having to be on site. Moving from what was previously a paper process to an electronic process has resulted in improved data analytics and auditing capabilities and increased job planning quality, which has contributed to a decrease in injuries. Recordable injury performance has improved by 16 percent in the year following the introduction of the electronic tailboard and the utility has not had any critical or fatal injury since the electronic tailboard was launched.

- A new Employee and Labour Relations solution was implemented in 2022 to streamline the administration and tracking of grievances, arbitrations and to facilitate contract negotiations through system integration and automation. Leveraging the SuccessFactors foundation, an integration was built to pull real-time employee data such as job and organizational data to effectively manage a centralized employee labour relations system. Some of the features included automation of the Collective Agreement, ease of updating clauses and consistent policy interpretation.

5. ENVIRONMENT, HEALTH & SAFETY SEGMENT

5.1 Segment Description

The Environment, Health & Safety ("EHS") segment ensures that Toronto Hydro operates in an environmentally conscious manner and implements programs, procedures, safe work practices, and engineering and administrative controls to provide a healthy and safe working environment for employees.

The activities performed as part of this segment are instrumental to ensuring that the utility complies with legislative and regulatory requirements. The EHS segment executes operational activities, prepares the planning and delivery of targeted initiatives and executes applicable internal and external reporting requirements. The work performed within this segment is carried out 24 hours a day, 7 days a week in line with Toronto Hydro's service obligations. Functions within this segment include Health Services and Environment, Health and Safety.

5.1.1 Health Services

Toronto Hydro's health services function effectively processes and monitors occupational and non-occupational health and injury claims. Health services supports injured employees receiving appropriate treatment and recovery measures, and encourages their participation in the workplace within their prescribed restrictions until they can safely return to their pre-injury role. Health services also manages short and long-term disability cases. As a result of these efforts, Toronto Hydro achieved a 94 percent improvement in its lost time severity from 2018 to 2022.

During the pandemic Health Services played a significant role in supporting the utility's successful response to COVID-19 through the implementation of the infectious disease plan. This included the development and implementation of protocols for reporting illness, returning to work, contact tracing, health screening as well as organizing vaccination clinics for employees. This contributed to the company maintaining a healthy and safe environment for employees, including no substantiated cases of workplace transmission since the onset of the pandemic.

5.1.2 Environment, Health and Safety

Environment, Health and Safety ("EHS") activities include the following:

- **Environment, Health & Safety Management Systems ("EHSMS"):** The EHSMS improves the efficiency of activities within this segment. The EHSMS system also facilitates Toronto Hydro's compliance with applicable legislative and regulatory requirements such as the *Utility Work Protection Code*[2], *Electrical Utility Safety Rules*[3], *and Occupational Health & Safety Act, 1990* and Regulations.[4] In addition, the EHSMS provides a mechanism for mitigating risk and achieving corporate objectives relating to health, safety, and environmental performance. The EHSMS established the frameworks (such as contact tracing) to successfully manage the COVID-19 Pandemic;

- **EHS Framework:** Toronto Hydro coordinates all EHS activities in accordance with internationally recognized ISO standards. Toronto Hydro is certified in conformance with ISO 14001:2015 and ISO 45001:2018, both of which are internationally recognized EHS standards requiring third-party audits. In line with these certifications, Toronto Hydro has implemented a framework that incorporates effective risk management and continual improvement to support occupational health and safety performance and prevent employee illness and injuries;
- **Occupational Health and Safety Activities:** Toronto Hydro implements robust occupational health and safety training programs. These programs maintain the long-term health, safety and wellness of the utility's workforce. The utility continually improves these programs by developing action plans to address identified gaps from investigation and audit activities. Our recordable injury performance has improved by 19% since 2020 and we have not had any critical or fatal incidents since that time; and /C
- **Environmental, Social and Governance ("ESG"):** The internationally recognized guidance document ISO 26000:2010 informs Toronto Hydro's approach to social responsibility. In line with this document, Toronto Hydro has integrated the

[2] Ontario Infrastructure Health and Safety Association, Utility Work Protection Code.
[3] Ontario Infrastructure Health and Safety Association, Electrical Utility Safety Rules.
[4]R.S.O. 1990, c. O.1. [*"Occupational Health and Safety Act"]*

promotion of social responsibility into its core values, processes, and operations.[5] Toronto Hydro has leveraged this guidance document together with elements of the EHS management system to develop and implement a consolidated ESG strategy. The utility's ESG activities and performance have been recognized with 10 ESG-related awards since 2018.[6]

EHS complies with applicable environmental legislation and regulations such as the *Environmental Protection Act, 1990*[7] and the utility's environmental policy by delivering a number of environmental protection and compliance programs, such as:

- Environmental spill response, cleanup, investigation and reporting;
- Delivery of prescribed environmental training (e.g. Transportation of Dangerous Goods);
- Maintenance of environmental permits for equipment that discharges contaminants into the atmosphere;
- Registering Hazardous waste streams and reporting waste management activities with the Ontario Ministry of the Environment, Conservation and Parks; and
- Internal and External Reporting, including internal and external reporting on EHS performance; external reporting including mandatory reports and notifications to the City of Toronto, the Ministry of Labour, Immigration, Training and Skills Development, the Work Safety and Insurance Board, the Ontario Ministry of the Environment, Conservation and Parks, and Environment and Climate Change Canada and Electricity Canada.

[5] Adherence to this ISO 26000 standard is required for the utility's continued maintenance of its Sustainable Electricity Company designation from Electricity Canada.
[6] Toronto Hydro has been recognized by Corporate Knights, Electricity Canada, Centre of Excellence and Canadian Occupational Safety Magazine.
[7] *Supra* note 2.

5.2 Environment, Health & Safety Segment Costs

Table 4, below, provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for the EHS segment.

Table 4: Environment, Health & Safety Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Environment, Health & Safety	2.4	2.3	2.4	3.0	3.1	3.3	3.4	3.6	3.8	3.9

The cost increases are primarily attributable to filling employee positions in order to support the safe execution of the utility's capital work program and inflationary pressures.

5.3 Environment, Health & Safety Segment Year-over-Year Variance Analysis

2020-2021 Variance Explanation

From 2020 to 2021, costs decreased by $0.1 million due to delays in hiring as a result the COVID-19 pandemic.

2021-2022 Variance Explanation

From 2021 to 2022, costs increased by $0.1 million, due to an increase in hiring that had been previously postponed due to the COVID-19 pandemic.

2022-2025 Variance Explanation

From the 2022 actual to 2025, costs are expected to increase by $0.9 million. This increase is required to increase capacity and capabilities to perform the hiring necessary to facilitate the safe execution of the utility's 2025-2029 investment plan.

2025-2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $0.6 million, or an average of $0.2 million per year. If the utility does not receive the funding it requires to execute this segment as described, Toronto Hydro could be exposed to a number of risks, including:

- Injuries, illnesses or fatalities to employees due to occupational health and safety hazards;
- Stop work orders, which would halt the execution of the utility's capital work program.
- An increased likelihood of safety-related incidents, including critical injuries or fatalities to Toronto Hydro employees;
- An increased likelihood of incidents with a negative environmental impact or worsening environmental performance;
- Legislative or regulatory non-compliance because of inadequate training and resources to provide advice, consultation, and research on matters relating to employment and labour relations, safety, and the environment.

6. HUMAN RESOURCES SERVICES & SYSTEMS, ORGANIZATIONAL EFFECTIVENESS & EMPLOYEE LABOUR RELATIONS SEGMENT

6.1 Segment Description

This segment delivers Human Resources services and leverages technology solutions to support the utility's employment life cycle. Its activities also drive effective performance management through ensuring market competitive compensation and benefits and overseeing employee and union relations.

Functions within this segment include:

- Employee and Labour Relations;

- Employee Engagement and Communications;
- Compensation and Benefits;
- Performance Management and Productivity;
- Innovation, and
- HR Systems and Data Governance.

6.1.1 Employee and Labour Relations

The Employee Labour Relations ("ELR") function manages issues relating to employee and labour relations and employee compliance with legislative and regulatory requirements, corporate policies and collective agreement provisions. ELR also supports Toronto Hydro's unionized and non-unionized work groups by ensuring that the utility follows all applicable labour and employment related legislation, policies, and collective agreement requirements.

This work requires labour relations and legal professionals to provide advice, guidance, and support on how to address challenges, and where necessary, assist in preparing for dispute resolution. This dispute resolution can include grievance arbitration, civil employment claims, Ontario Labour Relations Board matters, and human rights claims.

Toronto Hydro has a diverse workforce that includes both unionized and non-unionized employees. Over half of Toronto Hydro's employees belong to a union. There are two unions at Toronto Hydro – the Power Workers' Union (PWU) and the Society of United Professionals. Unionized employees are organized into four bargaining units. Inside workers and outside workers are represented by the PWU, and information and technology employees and professional engineers are represented by the Society of United Professionals.

6.1.2 Employee Engagement and Communications

The Employee Engagement and Communications function provides employees with awareness of important and key messages through multiple channels such as, company intranet, mass communications, pulse surveys, posters, employee magazine, and in-person gatherings. This function also oversees all employee events including the annual United Way campaign.

6.1.3 Compensation and Benefits

This function oversees and administers Toronto Hydro's workforce compensation strategy and practices. This function is critical to maintaining a workforce that is skilled, adaptable, committed, and performance-driven within a tight labour market. Toronto Hydro strives to achieve these key outcomes in a financially responsible manner by providing employees with a competitive total reward offering. This function compensates employees for contribution to individual, divisional, and corporate performance goals. For more information on Toronto Hydro's compensation and benefits program.[8]

6.1.4 Performance Management and Productivity

Toronto Hydro utilizes a Management Control and Reporting System ("MCRS") which sets forth a disciplined methodology to forecast, plan, control and report on its processes in order to keep focused on organizational objectives and continually improve.

Every year, Toronto Hydro reviews its corporate objectives in light of organizational priorities and updates its balanced scorecard to ensure appropriate targets are set. The same is done at the divisional and department level to result on a fresh slate of objectives at the beginning of each year, where progress is then reported out on a monthly basis.

[8] Exhibit 4, Tab 4, Schedule 4.

The performance management process also provides employees and managers with multiple opportunities to set individual goals throughout the year that are aligned with corporate objectives and outcomes. This ensures that employees understand their job expectations and how their roles support the utility's strategic objectives.[9] There is ongoing feedback to ensure project deadlines and goals are achieved. All employees are coached on aligning individual and organizational outcomes.

This rigourous performance system has become instrumental to Toronto Hydro's success in the face of challenges to the utility such as COVID-19 and extreme weather. Looking forward, this performance system will help the organization adopt new technologies and support new ways of operating (e.g. distributed energy resources) through setting evidence based goals, tracking progress and having past results inform future goals.
This function also includes various productivity initiatives such as LEAN and 5S (a subset of LEAN pertaining to workspace organization) which have allowed for the elimination of waste from printing rooms to warehouse environments.

6.1.5 Innovation

Further to the performance systems, Toronto Hydro also has an "Innovation @ Toronto Hydro" program which sets aside an annual budget to incubate and bring employee innovation to life. Projects with a completed proof of concept to-date include virtual reality training and implementation of project management software.

6.1.6 HR Systems and Data Governance

The HR Systems and Data Governance function supports the organization's technology needs with respect to employee data. The team oversees all HR related technology

[9] Exhibit 1B, Tab 2, Schedule 1.

solutions and develops the utility's long term system plan. This function conducts a regular review of systems to identify opportunities to optimize functionality and maximize benefits. SuccessFactors has enabled the utility to integrate and automate management of the employee life cycle from hire to retire.

6.2 Human Resources Services & Systems, Organizational Effectiveness & Employee Labour Relations Segment Costs

Table 5, below, provides the Historical (2020-2022), Bridge (2023-2024), and Forecast Year (2025-2029) expenditures for the Human Resource Services and Employee Relations segment.

Table 5: Human Resources Services & Systems, Organizational Effectiveness & Employee Labour Relations Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Human Resource Services & Systems, Organizational Effectiveness & Employee Labour Relations	5.9	6.3	5.9	8.0	9.4	10.0	10.4	10.8	11.3	11.8

6.3 Human Resources Services & Systems, Organizational Effectiveness & Employee Labour Relations Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

Costs increased by $0.4 million from 2020 to 2021 due to inflationary pressures.

2021 – 2022 Variance Explanation

Costs decreased by $0.4 million from 2021 to 2022 due to hiring plan adjustments.

2022 – 2025 Variance Explanation

From 2022 to 2025, costs are expected to increase by approximately $4.1 million due to reorganization within the HR, Environmental & Safety division to align leadership and support delivery on current and upcoming organizational operational strategies and strategic projects. This reorganization will support the following outcomes:

- Support for the SAP S4 HANA upgrade as outlined in Exhibit 2B, section E8.4, specifically for the component associated with human resources data, including timekeeping and employee master data systems;
- Increased headcount due to the delay in hiring from the pandemic;
- Support succession planning and development within the division; and
- Support the Human Resources, Environment and Safety division in the rate application.

2025 – 2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $1.8 million, or an average of $0.5 million per year. If the utility does not receive the funding it requires to execute this segment as described, Toronto Hydro could be exposed to a number of risks, including:

- Insufficient resources to monitor, advise, and enforce compliance with the utility's legislative and regulatory obligations;
- Insufficient resources to investigate and remedy employment issues such as attendance management, lowering workforce productivity;
- A lack of competitive and informed total rewards compensation offerings contributing to an inability to attract talent in a tight labour market in a large urban city, as well as losing talent to other utilities, resulting in an insufficient

workforce to execute the utility's capital program and growth and modernization programs;

- An inability for the utility to defend itself against civil employment claims, Ontario Labour Relations Board matters, and human rights claims;
- A lack of resources to improve the utility's innovation capabilities and a lack of productivity support to run lean programs that decrease organizational waste (e.g. time, materials, etc); and
- A lack of modern technology solutions requiring employees to focus more on manual and tedious data work rather than focusing on higher-level value-added work;

7. TALENT MANAGEMENT, CHANGE LEADERSHIP & SUSTAINABILITY SEGMENT

7.1 Segment Description

The Talent Management, Change Leadership & Sustainability segment governs the development and execution of the utility's workforce staffing plan, career succession, and employee development strategies and programs. The primary objective of this segment is to align workforce and culture change strategies to organizational strategies and key competencies for current and future workforce requirements. This enables the advancement of the organization as an employer of choice, builds workforce competence to drive technology, process change and innovation, and enhances leadership skills and competence. Functions within this segment include:

- Short and long-term workforce staffing and planning;
- Talent attraction and retention;
- Succession planning and career development;
- Organization and job and design;
- Diversity, equity and inclusion; and

- Change management systems; training and development.

7.1.1 Talent Management

The Talent Management function plans and executes the utility's short and long-term workforce strategy,[10] which includes: (i) mapping the resources that the utility needs to execute its capital plans and operational programs; (ii) analyzing the availability of talent within the utility and in the external labour market; and (iii) understanding the utility's actual and projected turnover rates. This information forms the basis of the utility's workforce strategy. This segment is also responsible for administering collaborations with colleges and universities and its talent attraction strategies.

The utility has evolved its talent management processes to build a more diverse workforce. Specific plans to support these objectives include creating engagement, communication and educational opportunities to build employees' understanding of unconscious bias and the importance of inclusive leadership. For example, as of June 1, 2023, 241 leaders (91 percent) have completed unconscious bias training.

The utility's Talent Management processes supports a bias and barrier-free recruiting experience. Toronto Hydro is committed to attracting, retaining and promoting qualified individuals to meet its resourcing requirements. Toronto Hydro uses a competency-based selection approach to align candidates to behavioural corporate competencies and technical job specific requirements. This process mitigates operational and safety risks for the organization due to poor hiring decisions.

[10] Exhibit 4, Tab 4, Schedule 3.

Toronto Hydro collaborated with George Brown College to develop curriculum for the Electromechanical Engineering Technology – Power and Control Program. Graduates of this program will meet minimum entry qualifications to Power Line Technician, Engineering Technologist, Distribution System Technology, Power System Controller and Certified Meter Mechanic Tester roles. All of these are key certified and skilled trades and designated technical professional roles that support the safe, productive, design and operation of the distribution system. This program was launched in 2021 and demonstrates the utility's commitment to investing in future talent by giving back to the diverse community it serves. The first graduates of this program will reach the labour market in the spring of 2024.

Team members from this segment work directly with educational institutions, including George Brown College, to lead the establishment of collaboration outcomes. These include annual goal setting in the areas of curriculum development, training support, recruitment and marketing for current and prospective students, scholarships and awards and work integrated learning program support, and lab equipment upgrades. Expected outcomes for the utility include a ready talent pool versed in relevant knowledge to fill short and long-term workforce needs over the 2025-2029 period.

7.1.2 Organization Design

Toronto Hydro's organization design function collects information on business departments' functional responsibilities and processes for the purpose of optimizing business functionalities, identifying strategies that enhance existing processes, seeking options to increase workforce flexibility, achieving operational efficiencies and cost savings, and improving overall organizational performance. This function ensures that job roles are clearly defined. This function also assesses the utility's management systems and operational processes to identify short and long-term talent needs and opportunities and support succession plans at all levels. This organizational design process flows into creating tailored short-term and long-term workforce and leadership requirements to meet the utility's objectives.

7.1.3 Change Leadership

The change leadership function enables Toronto Hydro's journey to transform the workforce through key business processes alignment, continual improvement and innovation. In addition, this team supports the people side of change with upskilling, development and engagement and communication as applicable.

This function also supports the utility's culture change goals with its hybrid work arrangement and its focus on ESG and diversity, equity and inclusion goals. This function further executes strategies to maintain employee engagement and productivity throughout the planning, delivery and sustainment of these projects.

One example of organizational change at Toronto Hydro has been the development of the "Enterpriser" community across the organization. Enterprisers are a network of approximately 80 employees who are involved as change agents in the business. This cross divisional network has been maintained for five years following the implementation of SAP, and has supported system enhancements, adherence to standards and processes and the learning of employees who are onboarded or transition to new roles.

7.1.4 Training and Development

Toronto Hydro provides training and development programs to sustain a qualified and competent workforce. These include an onboarding program to support employees' transitions to new roles, apprenticeship training, leadership, technical, legislative, and Toronto Hydro-specific compliance programs. For example, in 2022, the Sustainability and Training team organized and delivered 655 scheduled classes across 86 distinct training programs. Toronto Hydro primarily develops these programs in-house. This in-house development has accelerated training program development time, increased the quality of training materials, and improved training material maintenance for a lower overall cost. External designers are only used for complex legislative compliance matters or complex technologies such as virtual reality.

Effective leadership and succession planning are essential to the utility's success. They provide value to Toronto Hydro's customers by driving productivity and efficiency and by protecting the continuity of the utility's operations. Leadership responsibilities include: championing environmental, social and governance programs, training, performance management, employee engagement, coaching and mentoring, and employee development.

The Sustainability and Training team facilitates these objectives, in conjunction with the performance management program, which allows employees to identify career development goals, specific interests, and any skill or knowledge gaps that they would like to fill. This information is critical to recognizing and developing potential leaders and successors from within the utility and to delivering Toronto Hydro's staffing strategy.[11] Through well-developed processes for identifying and developing leadership potential, Toronto Hydro has successfully improved leadership bench strength, creating a pool to fill this critical function. Leadership training is provided to employees at all levels of the organization.

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[11] *Ibid.*

Toronto Hydro's technical training and development programs are an essential resource for meeting all legislative, compliance and utility specific training requirements. Comprehensive training is not only a legislative requirement under the *Occupational Health Safety Act, 1990*[12] and other key statutes and codes that govern Toronto Hydro, but it also contributes to higher employee productivity, efficiency and safer operations.

Toronto Hydro administers four certified apprenticeship training programs :

- Power Line Technician ("PLT");
- Distribution System Technologists ("DST");
- Power System Controllers ("PSC"); and
- Certified Meter Mechanics ("CMM").

Toronto Hydro also administers two technical training programs: (i) Engineering Technologists; and (ii) Engineers.

Together, these programs play a key role in facilitating the development and transfer of core knowledge about the complexities of Toronto Hydro's distribution system and in maintaining the specialized work skills which are critical to the utility's capital program and operations (e.g. network switching, positive identification of underground cable and lead cable splicing in the underground system). Informal mentorship also occurs, providing experienced employees with an opportunity to share best practices along with greater understanding of the complexities of the utility's assets.

Toronto Hydro was granted Training Delivery Agent status by the Provincial training authority to provide training to the utility's Powerline Technicians. Its other three

[12] *Supra* note 4.

apprenticeship programs are structured and designed in a similar fashion with the objective of developing and maintaining the specialized skills and knowledge that certified and skilled trades and designated and technical professionals require to work on Toronto Hydro's distribution system safely and efficiently.

7.2 Talent Management, Change Leadership & Sustainability Segment Costs

Table 6, below, provides the Historical (2020-2022), Bridge (2023-2024), and Forecast Years (2025-2029) expenditures associated with the Talent Management, Change Leadership & Sustainability segment.

Table 6: Talent Management, Change Leadership & Sustainability Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Talent Management, Change Leadership & Sustainability	7.2	9.0	8.4	7.9	8.8	9.3	9.4	9.8	10.2	10.6

7.3 Talent Management, Change Leadership & Sustainability Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

From 2020 to 2021, costs increased by $1.8 million due to:

- The introduction of additional headcount as additional trainers for the apprenticeship program in Sustainability & Training;
- The re-initiation of training programs that were paused in 2020 due to the COVID-19 pandemic; and
- Headcount to support programs such as leadership development and corporate engagement and communication.

<u>2021 – 2022 Variance Explanation</u>

From 2021 to 2022, costs decreased by $0.6 million due to hiring plan adjustments.

<u>2022-2025 Variance Explanation</u>

From 2022-2025, costs are expected to increase by $0.9 million due to:

- Investments in headcount to support leadership development, diversity equity and inclusion programs and resources to attract and train the talent required to support capital and operational work programs

<u>2025-2029 Variance Explanation</u>

Between 2025 and 2029 costs in this segment are expected to increase by $1.3 million, or an average of $0.3 million per year. If Toronto Hydro does not receive the requested level of funding to perform the functions and satisfy the responsibilities identified in this segment, the utility could be exposed to a number of risks, including, a reduced ability to successfully recruit, advance the inclusive culture and develop the skilled and specialized resources that Toronto Hydro requires in the next five years.

FINANCE

1. OVERVIEW

Table 1: Finance Program Summary

Finance Program									
Outcomes: Public Policy Responsiveness, Financial Performance									
Segments: • Controllership • Financial Services • External Reporting									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
16.4	17.9	18.4	20.9	22.9	24.4	26.2	27.6	29.4	31.1

The Finance Program (the "Program") supports Toronto Hydro's operations through financial planning, management reporting, capital planning and reporting, payroll and disbursements, corporate tax, treasury, insurance and internal audit as well as external reporting and financial regulatory and revenue management.

The Program provides value to customers through the oversight of financial planning activities that support the utility's ability to execute long-term and short-term strategic plans, the appropriate governance of key performance measures such as operating expenses, regulated capital, in-service assets, net income, investor and stakeholder engagements, and compliance with applicable statutory and regulatory financial requirements.

The Program includes the following three segments:

- **Controllership**: Encompasses oversight and governance of Toronto Hydro's financial activities. This includes financial planning, management reporting, capital planning and reporting, and payroll and disbursements.
- **Financial Services:** Governs the activities permitting Toronto Hydro to meet its financial obligations. This includes treasury, insurance, corporate tax, and internal audit. These functions are integral to contributing to financial compliance and solvency.
- **External Reporting:** Oversees preparation and compilation of financial reporting materials for external parties, including, but not limited to, the Ontario Energy Board ("OEB"), and the Ontario Securities Commission ("OSC").

The Program and its constituent segments are a continuation of the activities described in the Finance program in Toronto Hydro's 2020-2024 Rate Application.[1]

Functionally, these segments work to support Toronto Hydro's operations through diligent financial planning, management reporting, capital activities, payroll and disbursements, corporate tax, treasury, insurance, and compliance with internal and external auditing standards.

[1] EB-2018-0165, Exhibit 4A, Tab 2, Schedule 16.

2. OUTCOMES AND MEASURES

Table 2: Finance Program Outcomes and Measures Summary

Public Policy Responsiveness	• Contributes to Toronto Hydro's public policy responsiveness objectives by: ○ Providing accurate and timely reporting pursuant to the OEB's Electricity Record Keeping Requirements (the "RRR") and compliance with the Accounting Procedures Handbook ("APH") by maintaining the necessary processes and controls; and ○ Preparing and issuing quarterly and audited annual financial statements, including the Management Discussion & Analysis ("MD&A") and Annual Information Form ("AIF") as required by the OSC and the Canada Revenue Agency ("CRA").
Financial Performance	• Contributes to Toronto Hydro's financial performance objectives by: ○ Leading the governance of the DSP Implementation Progress Metric and Financial Ratios as annually reported via the OEB Distributor Scorecard; ○ Meeting the financial obligations and maintenance of compliance requirements imposed by the relevant regulatory bodies and debt holders; ○ Raising capital and providing financial services that enable the uninterrupted continuation of the utility's capital investments and distribution activities.

3. PROGRAM DESCRIPTION

The Program provides financial support to every aspect of Toronto Hydro's operation through business planning activities, management reporting, capital planning, payroll services, accounts payable, internal audits, and other issue-specific functions. It also enables compliance with statutory and regulatory requirements and reporting obligations. These requirements primarily relate to the preparation and issuance of securities-related continuous disclosure information that is completed on a consolidated basis. Regulatory financial reporting required by the OEB includes quarterly and annual reporting under the RRR and compliance with the APH.

The Program also delivers traditional finance functions such as payroll and disbursement services, treasury, corporate tax, and internal audit that allow Toronto Hydro to meet its short and long-term financial, legal, and legislative obligations to its employees, external suppliers, service providers, debt holders, government agencies, board of directors, and its external auditors. In addition, the Program oversees a number of operational processes (i.e. management reporting and analysis and capital planning and reporting) that monitor the utility's financial performance and support management's ability to make informed, strategic decisions.

The Program also provides oversight and governance of the utility's business planning activities through the financial planning function. This function is responsible for the assessment and recommendation of short and long-term strategic plans and integration of operational, financial and regulatory plans. The Program also manages the co-ordination and consolidation of the annual budget.

The activities described above are accomplished via the following three segments:

- **Controllership**: includes functions such as financial planning, management reporting and analysis, capital planning and reporting, and payroll and disbursements;
- **Financial Services**: includes functions such as corporate tax, treasury, insurance, and internal audit; and
- **External Reporting**: includes statutory and regulatory reporting functions such as external reporting and regulatory financial reporting and revenue management.

4. PROGRAM COSTS

In 2025 Toronto Hydro requires $24.4 million in rate funding for the Finance program, which represents an increase of $8 million over the last Custom Incentive Rate Application in 2020. When normalized for shared services recoveries outlined in Exhibit 4, Tab 5, Schedule 1, the expected increase in this program is $7.5 million.

Over the 2025-2029 rate period, the utility expects the cost of this program to increase by an annual growth rate of 6.1 percent which is necessary to address the program needs and deliver the customers outcomes enabled by this program

Table 3, below, provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for each of the Program's segments:

Table 3: Finance Program Expenditures by Segment ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Controllership	6.5	6.9	6.9	7.7	8.8	9.4	10.1	10.5	11.0	11.4
Financial Services	6.7	7.7	8.4	9.3	9.7	10.5	11.4	12.2	13.3	14.4
External Reporting	3.2	3.3	3.1	3.9	4.4	4.5	4.7	4.9	5.1	5.3
Total	**16.4**	**17.9**	**18.4**	**20.9**	**22.9**	**24.4**	**26.2**	**27.6**	**29.4**	**31.1**

4.1 Cost Drivers

The primary driver of cost increases in the program is compensation cost increases due to an increase in staffing levels and general compensation increases of existing employees. As the volume and complexity of Toronto Hydro's capital investments and operations increase in the 2025-2029 period, the Program will require a highly skilled and dedicated workforce to perform all of the Program functions in a timely and effective manner.

Secondly, the Program costs are expected to increase due to higher insurance premiums, reflecting expected cost increases for general and cyber security insurance. The upward trend in insurance costs is attributable to higher premiums on the existing insurance programs of property, liability and cyber insurance policies. In particular, cyber security insurance premiums are increasing in correlation with growing and more acute cyber security threats that affect large organizations such as Toronto Hydro each year.[2] Additionally, Toronto Hydro's rate base is expected to increase from $5.2 billion in 2022 to $7.6 billion in 2029 which has a direct impact on the future property and liability insurance premiums.

4.2 Cost Control and Productivity Measures

The Program has undertaken cost control measures over the 2020-2024 plan period to control costs and offset cost increases identified above in Section 4.1. Some of these measures are expected to result in cost savings through the 2025-2029 forecast period. The Program continuously engages in the assessment and review of its processes to explore opportunities to streamline functions and make process improvements.

Within the controllership segment, some of the examples of these departmental efficiencies include:

- Process improvement and automation of the payroll processing and disbursement functions resulting in sustained annual savings of $0.2 million starting in 2021; and
- Annual cost avoidance of $0.4 million through the elimination of manual processes and use of technology to automate repetitive tasks starting in 2022.

[2] Exhibit 4, Tab 2, Schedule 17.

These savings of $0.6 million are forecasted to be sustained for through the bridge years (2023-2024) and forecast years (2025-2029). These forecasted efficiencies enable the segment to maintain the same staffing levels as 2025 through the 2026-2029 forecast years despite the increase in the volume and complexity of the capital and operating work programs.

5. CONTROLLERSHIP SEGMENT

5.1 Segment Description

The controllership segment provides oversight and governance of Toronto Hydro's financial planning activities, timely and accurate financial information and support to Toronto Hydro's senior management and operational business units. This segment also allows the utility's financial reports to meet both statutory and regulatory financial reporting requirements. The controllership segment leverages knowledge of operational processes to produce accurate and relevant financial information, and provides appropriate financial context for decision making by the operational business units and senior management. This segment is crucial to enabling senior management to make informed decisions, and for monitoring and analyzing the utility's financial performance against short-term goals, long-term plans and regulatory filings. The activities comprising this segment encompass the following functions: (i) financial planning; (ii) management reporting and analysis; (iii) capital planning and reporting; and (iv) payroll and disbursements. Further details about these activities are below.

5.1.1 Financial Planning

The financial planning function provides centralized oversight and governance of the utility's financial planning activities including the assessment and recommendation of long-term strategic plans and the integration of operational, financial, and regulatory plans. This function coordinates the development and execution of the utility's annual budget, long-term financial projections, and support for electricity distribution rate applications. The group leverages the analysis provided through the management reporting and analysis function described below to identify issues that may impact Toronto Hydro's ability to achieve its financial objectives. Financial planning allows the utility to make effective decisions that enable the achievement of the company's strategic goals and objectives and outcomes to the benefit of ratepayers while ensuring governance and oversight of all financial planning activities. Without this function, Toronto Hydro's business planning and budgeting processes would be decentralized, which would introduce a variety of governance risks to the utility.

5.1.2 Management Reporting and Analysis

The management reporting function oversees internal management reporting and supports operational groups through month-end activities and financial analysis for decision making and achievement of strategic objectives. Responsibilities of this function include: managing financial systems and processes to effectively deliver timely reports and outlooks; reviewing, consolidating and preparing analyses for management reports to enable timely decision making; providing support for external reporting and disclosure; performing core month-end accounting functions such as month-end close entries, account reconciliation, and analysis to ensure compliance with OSC, OEB and audit requirements; and reviewing and consolidating monthly financial outlooks. By providing regular reports and analysis of the utility's operational expenditures, this function enables Toronto Hydro to track and monitor its performance relating to execution of the operational work plan. In addition, the team collaborates with operational groups to develop, implement and optimize internal controls and processes to maintain the integrity of financial data and improve efficiency. These services are essential to Toronto

Hydro's ability to comply with regulatory and statutory accounting standards, to produce accurate financial statements, and to successfully deliver the utility's operating work plans.

5.1.3 Capital Planning and Reporting

The capital planning function oversees the development of the utility's annual capital expenditure budget and long-term capital expenditure projections. The Capital Reporting function records capital projects in the fixed asset register, and maintains tangible, intangible, regulatory and statutory assets, and financial data under both Modified IFRS and IFRS. The team provides fixed assets, capital expenditure ("Capex"), depreciation expense, construction work in process ("CWIP") and ISA continuities, reconciliations, reports and analysis to ensure compliance with OSC, OEB and audit requirements. By providing regular reports and analysis of the capital work plan, this function enables Toronto Hydro to track and monitor its performance relating to execution of the plan. In addition, the team collaborates with operational groups to develop, implement and optimize internal controls and processes to maintain the integrity of financial data and improve efficiency. These services are essential to Toronto Hydro's ability to comply with regulatory standards, to produce accurate financial statements, and to successfully deliver the utility's capital work plans.

5.1.4 Payroll and Disbursements

The payroll function ensures that Toronto Hydro employees are compensated for their services in a timely and accurate manner, consistent with relevant time-keeping and other records. The function also ensures that all relevant legislative requirements and statutory deductions are appropriately applied to employee payments and that payroll withholdings amounts are remitted on a timely basis. In addition, the function maintains accurate OMERS pension fund records for participating employees.

The disbursements function facilitates timely and accurate payment of valid vendor invoices. It also processes payments for eligible customer refunds initiated by Toronto Hydro's Customer Care Program. In performing these tasks, the disbursements function utilizes financial software to validate and, if necessary, correct the amounts and timing of payment of supplier invoices. In addition, it reviews software generated payment files and approves the resulting bank transfer files or cheque runs.

5.2 Controllership Segment Costs

Table 4, below, provides the Historical (2020-2022), Bridge (2023-2024), and Test Year (2025-2029) expenditures for the controllership segment.

Table 4: Controllership Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Controllership	6.5	6.9	6.9	7.7	8.8	9.4	10.1	10.5	11.0	11.4

5.3 Controllership Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

An increase of $0.4 million was primarily due to:

- Sustained increase in headcount in 2021 to support the increased size and complexity of the 2020-2024 capital program approved in the last OEB decision and general compensation increases of existing employees. These increases were net of sustained cost savings of $0.2 million annually from 2021 and beyond as a result of the payroll and disbursement process automation.

2021 – 2022 Variance Explanation

There was no sustained variance. General compensation increases in 2022 of existing employees were offset by lower headcount in 2022. The 2022 headcount was lower than expected due to unplanned employee turnover; these roles are expected to be filled in 2023. Additionally, through continued adoption of technology and automation of business processes, costs reduction and avoidance of $0.4 million was achieved annually from 2022 and beyond.

2022 – 2025 Variance Explanation

A forecasted increase of $2.5 million due to:

- Increase in payroll costs as a result of backfilling of open positions that were left vacant in 2022, general compensation increases of existing employees, and recruitment of additional resources to support the increased size and complexity of the capital program and to support the 2025-2029 rate application.

2025 – 2029 Variance Explanation

Between 2025 and 2029, costs in this segment are expected to increase by $2.0 million, or an average of $0.5 million per year. Without the requested funding, Toronto Hydro faces the following risks:

- Reduced governance and oversight of financial planning activities that can limit the organization’s ability to execute its long-term and short-term strategic vision and plans and deliver outcomes to the benefit of ratepayers;
- Reduced governance of key performance measures such as operating expenses, regulated capital investments, in-service assets, and net income;
- Increased risk of de-centralization of financial planning activities resulting in lack of integration of operational, financial, and regulatory plans;

- Compromised month-end and financial analyses for management reports to enable timely decision making related to operational expenditures and capital investment;
- Reduced management of fixed assets and oversight of capital program spending and ISAs that can impact approved commitments in prior OEB decisions and compromise the achievement of strategic and financial objectives;
- Increased risk of delays and compromised accuracy of payroll remittances to employees for their services, remittances of payroll withholding amounts and payments of valid vendor invoices, which could result in non-compliance with employment standards and an increase in litigation involving employees and vendors; and
- Compromise on the quality of record keeping of OMERS pension fund for participating employees.

6. FINANCIAL SERVICES SEGMENT

6.1 Segment Description

The financial services segment encompasses the functions that enable Toronto Hydro to meet its regular and long-term financial obligations to its external suppliers, service providers, and debt holders, and the government. It also allows the utility to plan for, secure, and provide timely payments for market-competitive debt instruments that it needs to finance its capital work program.

The financial services segment provides Toronto Hydro with a means to objectively evaluate its core functions in order to ensure compliance to internal and external policies and facilitate transparency in all corporate activities. The scope of activities comprising this segment includes the following functions: (i) Corporate Tax; (ii) Treasury; (iii) Insurance; and (iv) Internal Audit.

6.1.1 Corporate Tax

The corporate tax function facilitates the utility's compliance with all relevant tax laws and regulations. In addition, it ensures that taxes are appropriately recorded and reflected in accounting records and external financial statements. This function is responsible for preparing and submitting timely tax filings and applicable payments that include corporate income taxes, the harmonized sales tax, and the non-resident withholding tax. The group executes tax-related financial planning activities, performs tax-related monitoring and reporting work, and supports both internal and external tax compliance audit activities as required by applicable legislation and internal policies. Corporate tax is also responsible for regulatory tax reporting and compliance, such as the Payment in Lieu of Taxes ("PILs") calculations for the purposes of rate filings.[3]

6.1.2 Treasury

The treasury function oversees Toronto Hydro's cash management, debt management, and investor relations activities. Cash management activities include: (i) borrowing to provide the utility with adequate funds to meet its financial obligations, or investing any excess funds on hand; (ii) managing and implementing risk controls, including segregation of duties and independent verification and approval of borrowing activities; and (iii) daily reporting and reconciliation of Toronto Hydro's cash position and general ledger and sub-ledger accounts. Debt management activities include the issuance of both long-term and short-term debt instruments to fund the capital programs and for general corporate purposes. Investor relations activities include developing and managing relationships

[3] Exhibit 6, Tab 2.

with bank lenders, bond investors, independent financial and credit analysts, and the credit rating agencies in order to optimize the cost of funding. The activities performed by this function help facilitate access to the debt capital markets from which Toronto Hydro accesses funds to carry out its operations and fund its long-term capital program.

6.1.3 Insurance

The insurance function oversees the utility's comprehensive insurance requirements, the purpose of which are to provide Toronto Hydro protection for asset exposure, corporate liability and other activities which may expose the utility to a financial loss. Current insurance policies administered by this group provide coverage for a variety of losses and expenses, including comprehensive general liability, all risk property and boiler and machinery insurance, liabilities of directors and officers, automobile liability, professional liability, and crime and cyber security insurance.

6.1.4 Internal Audit

Internal audit provides independent and objective reporting to Toronto Hydro Corporation's Audit Committee and management through operational, compliance, and performance audits. Internal audit focuses on assessing the adequacy and effectiveness of the utility's risk management, governance, and system of internal controls, and provides consultation and advisory services on the design, implementation, and maintenance of internal controls and reporting systems, governance activities, fraud detection procedures, and other matters requested by senior management or the Audit Committee.

6.2 Financial Services Segment Costs

Table 5, below, provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for the financial services segment:

Table 5: Financial Services Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Financial Services	6.7	7.7	8.4	9.3	9.7	10.5	11.4	12.2	13.3	14.4

The expected increase in costs are primarily due to higher premiums on the existing insurance programs for property, liability and cyber insurance policies. These programs are in place to cover all material risks to Toronto Hydro. Toronto Hydro's rate base is expected to increase from $5.2 billion in 2022 to $7.6 billion in 2029 which has a direct impact on the future property and liability insurance premiums. The cyber insurance premium increase is being driven by global geopolitical tensions, privacy regulations, ransomware evolution and the capacity constraints of insurers. For the 2023 to 2024 bridge years and 2025 to 2029 forecast years all policy and self-insured deductible limits are expected to be at 2023 levels.

6.3 Financial Services Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

An increase of $1.0 million was primarily due to:

- The utility having sustained increased property and cyber security insurance costs of $0.8 million, and
- General compensation increases for existing employees of $0.2 million.

2021 – 2022 Variance Explanation

An increase of $0.7 million was primarily due to:

- The utility having sustained increased property, general and cyber security insurance costs of $0.5 million, and
- General compensation increases for existing employees of $0.2 million.

2022 – 2025 Variance Explanation

A forecasted increase of $2.1 million is primarily due to:

- An increase in costs for general and cyber security insurance of $1.2 million
- General compensation increases for existing employees of $0.7 million, and
- Increased support costs for tax audits of $0.2 million.

2025 – 2029 Variance Explanation

Between 2025 and 2029, costs in this segment are expected to increase by $3.9 million, or an average of $1.0 million per year. Without the requested funding, Toronto Hydro faces the following risks:

- Compromised ability to secure funding to finance the capital programs and risk of violation of the covenants contained in existing debt issuances;
- Increased difficulty maintaining compliance with relevant tax laws, rules, regulations and appropriate tax reporting and disclosure requirements, which could cause an increase in tax risks and related costs;
- Reduced ability to ensure operational compliance and performance due to lack of design, implementation, and maintenance of internal controls and reporting systems, governance activities, and fraud detection procedures; and
- Inability to effectively protect the utility against a variety of potential insurance risks and losses outside of normal business operations.

7. EXTERNAL REPORTING SEGMENT

7.1 Segment Description

The external reporting segment oversees the preparation and compilation of external financial reporting materials, such as those required by the OSC and the OEB. Among other things, this function requires the preparation of publicly filed annual and interim financial statements and disclosures and reporting to the Board Audit Committee. The segment is also responsible for assessing, reviewing, documenting and communicating all changes in accounting standards to relevant stakeholders, and assessing the accounting treatment for new or complex transactions.

The specific activities and internal controls underlying Toronto Hydro's external reporting processes are subject to regular reviews by independent internal and external auditors.

To enable timely and accurate execution of its core functions, the segment undertakes two sets of primary activities. First, the segment performs central accounting functions such as consolidation entries, intercompany settlements and eliminations, accounting for post-employment benefits, and other account reconciliation and management activities. Second, it uses information in the company's accounting systems to prepare all required financial filings. These filings include the audited annual financial statements and notes (consolidated and for each legal entity separately), the MD&A, the AIF and other reporting requirements from time to time. With the exception of the AIF, the above documents are filed quarterly.

In addition, the external reporting segment is responsible for the regulatory reporting and revenue management function which oversees financial activities associated with the OEB and is responsible for the accounting in relation to Toronto Hydro's transactions with the IESO and other suppliers for cost of power expenses and other related regulatory settlements. Other responsibilities include budgeting, forecasting, financial analysis and related preparation of information for reporting under the RRR and for the purpose of rate applications. This function also supports OEB audits, enables compliance with the OEB-mandated financial and regulatory accounting requirements outlined in the APH, and supports the external reporting, management reporting, analysis, and financial planning in relation to regulatory assets and liabilities.

7.2 External Reporting Segment Costs

Toronto Hydro requires approximately $4.9 million per year over the 2025-2029 plan period to execute the functions in the external reporting segment, as described above.

Table 6, below, provides the Historical (2020-22), Bridge (2023-2024), and Forecast (2025-2029) expenditures for the external reporting segment:

Table 6: External Reporting Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
External Reporting	3.2	3.3	3.1	3.9	4.4	4.5	4.7	4.9	5.1	5.3

7.3 External Reporting Segment Year-over-Year Variance Analysis

2020 – 2021 Variance Explanation

An increase of $0.1 million was due to:

- Inflationary impacts on non-payroll costs.

2021 – 2022 Variance Explanation

A decrease of $0.2 million was due to:

- Lower payroll costs as a result of lower headcount in 2022. The 2022 headcount was lower than expected due to unplanned employee turnover; these roles are expected to be filled in 2023; and
- The lower payroll costs were partially offset by general compensation increases of existing employees and inflationary impacts on non-payroll costs.

2022 – 2025 Variance Explanation

A forecasted increase of $1.4 million is due to:

- Increases in payroll costs due to hiring of open positions that were left vacant in 2022,
- General compensation increases of existing employees,
- The recruitment of additional resources to support the rate application, partially offset by staff reduction upon winding down of rate application support, and
- Inflationary increases on non-payroll costs.

2025 – 2029 Variance Explanation

Between 2025 and 2029, costs in this segment are expected to increase by $0.8 million, or an average of $0.2 million per year. Without the requested funding, Toronto Hydro faces the following risks:

- Increased risk of reporting errors and material misstatements for financial disclosures;
- Compromised ability to accurately prepare and compile external financial reporting materials, such as those required by the OSC;
- Compromised quality of financial activities associated with the OEB, accounting in relation to Toronto Hydro's settlements and transactions with the IESO, and other related regulatory settlements;

- Lack of appropriate governance to support the Board of Directors' responsibilities with respect to financial and audit matters; and
- Lack of regulatory and revenue management leading to increased risk of material misstatements and inability to comply with the OEB's financial and regulatory accounting requirements.

INFORMATION TECHNOLOGY

1. OVERVIEW

Table 1: Program Summary

Information Technology Program									
Outcomes: Customer Focus, Operational Effectiveness - Reliability, Public Policy Responsiveness, Operational Effectiveness - Safety, and Financial Performance									
Segments: • Security & Enterprise Architecture • IT Operations • Project Execution • IT Governance									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
48.0	50.6	53.5	57.5	61.1	63.3	65.8	68.7	71.7	75.1

The Information Technology ("IT") program (the "Program") supports all aspects of Toronto Hydro's business. The IT infrastructure, cybersecurity controls, business applications and services supported and delivered by this Program enable efficient operations of the utility and play a critical role in achieving Toronto Hydro's objective to provide safe, secure and reliable electricity.

The Program deploys, operates and supports all information systems and controls, including:

- **IT Hardware Support**: includes the core back-end infrastructure assets (e.g. servers, storage, backup, networks and data centres), cybersecurity components and endpoint assets (e.g. desktop computers, laptops, printers, smart phones, and tablets) that support Toronto Hydro's day-to-day operations and core systems;

- **IT Software Support:** includes software applications such as cybersecurity, databases, middleware and business-facing applications; and
- **Communication Support:** includes assets that enable the monitoring and control of distribution communication infrastructure, including fibre-optic assets and wireless Supervisory Control and Data Acquisition ("SCADA") infrastructure, as well as communication cost provided by third-party vendors.

Toronto Hydro performs this work under clearly defined IT architectural standards and governance frameworks, defined in the IT Investment Strategy ("the Strategy").[1]
The Program consists of the following four segments:

- **Security and Enterprise Architecture**: Defines and implements a utility-wide IT strategy, develops and oversees corporate IT policies and standards, assesses and evaluates the suitability of new technologies to support the growth and modernization of IT business processes and systems. This segment also performs security operations, and manages enterprise IT risks including cybersecurity, restore & recover, and disaster recovery.
- **IT Operations**: Supports and maintains the day-to-day operation of Toronto Hydro's IT assets, including core back-end infrastructure (e.g. servers, local area networks and data storage/centres), security appliances and endpoint assets (e.g. desktop computers, laptops, printers, smart phones, and tablets and end-user applications).
- **Project Execution:** This segment is responsible for the implementation of new IT solutions (programs, projects, and applications), that are required to achieve Toronto Hydro's strategic objectives in accordance with the IT expenditure plan. This segment also includes the implementation costs for cloud solutions.

[1] Exhibit 2B, Section D8.

- **IT Governance:** Provides support to the IT investment planning process by ensuring documentation and justification are developed to align with the Strategy. This includes developing program and project level artifacts, and establishing program goals and benefits. This segment provides financial and data governance in accordance with the Strategy and the Enterprise Technology Portfolio ("ETP") Framework.[1] This segment also oversees IT administrative and procurement activities and processes, as well as records management, reporting on IT Key Performance Indicators ("KPIs") and program planning.

The Program and its constituent segments are a continuation of the activities described in the Information Technology program (OM&A) in Toronto Hydro's 2020-2024 Rate Application.[2]

2. OUTCOMES AND MEASURES

Table 2: Information Technology Program Outcomes and Measures Summary

Customer Focus	• Contributes to Toronto Hydro's customer focus objectives by: o Ensuring that IT assets which support Toronto Hydro's customer-service and communication tools and systems (e.g. email and telephony systems and the Customer Information System) are available and in reliable working condition. o Maintaining the integrity and availability of key external customer facing applications such as the Customer Self-Serve Web Portal, Toronto Hydro website and the interactive Outage Map (i.e. a map of Toronto Hydro's service area displaying outage zones and estimated restoration times).

[2] EB-2018-0165, Exhibit 4A, Tab 2, Schedule 1.

Operational Effectiveness - Reliability	• Contributes to Toronto Hydro's system reliability objectives (e.g. SAIDI, SAIFI, FESI-7) by:
	  ○ Supporting and maintaining the availability of modern, reliable and secure enterprise-wide IT/OT systems that monitor and control the performance of distribution. assets (e.g. SCADA), and by providing system operators timely and accurate information about these assets.
	  ○ Supporting the outage restoration efforts by ensuring that system operators have the necessary IT/OT System tools to promptly identify incidents, develop effective resolution plans and communicate them to operational teams.
	  ○ Supporting the creation and maintenance of cybersecurity controls to mitigate against potential vulnerabilities and threats that may jeopardize the safe and proper functioning of IT/OT assets.
	  ○ Investing in innovative solutions including cloud solutions to ensure alignment of IT/OT systems with industry best practices and trends and support the growth and modernization of business operations.

Public Policy Responsiveness	• Contributes to Toronto Hydro's public policy responsiveness objectives by:
	  ○ Enabling the efficient implementation of new policy initiatives and compliance with regulatory requirements.
	  ○ Providing the technological infrastructure required by the utility to continuously improve and adapt its IT business processes to changing customers' needs and preferences as a result of future industry challenges such as electrification.

Operational Effectiveness - Safety	• Contributes to Toronto Hydro's safety objectives, measured through metrics like the Total Recordable Injury Frequency ("TRIF") by: ○ Enabling more substation and field assets to be constantly monitored. ○ Ensuring underlying IT/OT Systems such as SCADA are functioning properly and are consistently available; and ○ Driving safety performance using: ▪ On-premises software systems such as SCADA, Network Management System (NMS) including Utility Work Protection Code (UWPC), and Radio Panic Button. ▪ Cloud Solutions systems such as: Automated Vehicle Location (AVL) for House of Services Regulation O.Reg.555/06, Electronic Tailboard (eTailboard), Intelex, Learning Management System (LMS).
Financial Performance	• Contributes to Toronto Hydro's financial performance objectives by ensuring that core systems are operational with high reliability and availability supporting all areas of Toronto Hydro's business, including operations, customer service, and regulatory, management, and internal and external financial reporting.

3. PROGRAM DESCRIPTION

The Program provides reliable technology solutions to Toronto Hydro and its customers in a secure, timely, and cost-effective manner by implementing products that meet the utility's evolving operational needs. Timely technical maintenance and support under this Program ensures the ongoing reliability, availability, security and operability of key business applications and underlying IT infrastructure. The Program also continues to ensure preventative and detective system controls are aligned with industry best practices including the Ontario Energy Board's ("OEB") Cybersecurity Framework.[3] Ultimately, Toronto Hydro relies on the Program to satisfy its obligations to customers, maintain system reliability, availability and safety, and to comply with existing and

[3] Ontario Energy Board, *Ontario Cybersecurity Framework* (December 6, 2017).

emerging requirements of the various regulatory bodies that govern the utility's operations.

IT infrastructure, cybersecurity controls, and software applications must be periodically refreshed and enhanced to maintain the reliability and availability of systems to support core operations, mitigate against potential cybersecurity vulnerabilities and threats, and minimize the risks of system failure. Accompanying this infrastructure, software applications, and communications capital expenditures is the associated support in the form of asset maintenance, licensing, and subscriptions, as well as the internal resources required to support and maintain these assets. IT infrastructure, cybersecurity controls and software applications must be kept current to mitigate the risks of cyber-attacks that can disrupt day-to-day operations, compromise or exfiltrate sensitive data as well as to prevent obsolescence and reduce interruptions to the distribution system.

The Program supports the automation of core processes and functions, such as customer billing and outage management. It also enables the utility to evolve its existing business processes to meet new business objectives and requirements in response to changes in customers' needs and preferences due to industry changes. For example, the shift towards electrification will require the need for additional energy data storage and processing capabilities, and these IT systems will enable the connection of Distributed Energy Resources ("DER") by streamlining the evaluation and technical assessment of the connection. The IT systems will also provide the capability to remotely monitor and control assets (e.g. DERs, switches, breakers, etc.).

All of these activities are provided through IT's program four segments: (i) Security and Enterprise Architecture; (ii) IT Operations; (iii) Project Execution; and (iv) IT Governance.

4. PROGRAM COSTS

In 2025, Toronto Hydro requires $63.3 million in rate funding for the Information Technology (IT) Program, which represents an increase of $15.3 million over the last rebasing in 2020. When normalized for shared services recoveries outlined in Exhibit 4, Tab 5, Schedule 1, the expected increase in this Program is $14.9 million.

Over the 2025-2029 period, the utility expects the cost of this Program to increase by a compounded annual growth rate of 4.4 percent which is necessary to ensure the efficient execution of the functions in this Program.

The Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for each segment are summarized in Table 3 below.

Table 3: Information Technology Program Expenditures by Segment ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Security & Enterprise Architecture	3.7	4.5	6.1	6.6	7.3	7.6	7.9	8.4	8.8	9.3
IT Operations	36.9	38.4	39.9	43.0	44.8	46.0	47.5	49.1	50.8	52.2
Project Execution	4.7	4.9	5.0	5.6	6.7	7.4	8.0	8.8	9.7	11.1
IT Governance	2.7	2.8	2.5	2.3	2.3	2.3	2.4	2.4	2.4	2.5
Total	**48.0**	**50.6**	**53.5**	**57.5**	**61.1**	**63.3**	**65.8**	**68.7**	**71.7**	**75.1**

4.1 Cost Drivers

Maintenance and subscription costs account for 47 percent of the increase from 2020 to 2024 and 52 percent of the increase from 2025 to 2029. Software applications and hardware systems require ongoing maintenance and subscription contracts ranging from regular upgrades, to simple patches and updates, to targeted problem resolution (e.g. defect fixes). The maintenance and subscription fees associated with software and hardware are required to ensure systems receive support from vendors, align with industry best practices, remain integrated with other relevant software systems, and are protected against future cybersecurity threats. These contracts allow Toronto Hydro to maintain the integrity, reliability, availability, and security of its IT systems.

Factors driving the expected increase in maintenance and subscription costs include:

- Implementation of new applications such as Oracle Field Services Cloud ("OFSC"), an upgrade to the mobile workforce management system for Grid Emergency Management which replaced the legacy on-premises in-house developed solution. OFSC is a tool that allows Dispatchers and Grid Response crews to collaboratively manage outage events that include: assembling crews, managing priorities, and communicating across different groups to respond to an unplanned outage event in a timely and effective manner.
- Modernization to the external Customer Self-Serve ("CSS") Web portal and mobile application to provide additional channels and functionalities to customers. Functionalities include proactive outage notifications, automated move-in and move-out processes, and the ability to view consumption in real time.
- E-Tailboard application allows field staff to conduct electronic worksite risk assessments. This solution provides an efficient, comprehensive and transparent digital platform which highlights the safety aspects, precautions, and risk levels while ensuring all safety procedures & protocols are in place at the job sites before crews carry out their duties.
- Increases in cybersecurity maintenance and subscription fees as a result of new continued investments into cloud based, AI-enabled prevention, detection, and response solutions in addition to cybersecurity hardware and software to adequately protect current systems, applications, and endpoints against the

evolving cybersecurity threat landscape and to fulfill regulatory compliance obligations. This ensures that cybersecurity processes and controls are capable of adequately responding to the evolving threat. Cybersecurity requirements need to adapt to changes in the environment, such as hybrid work model, evolving cybersecurity landscape, geo-politically driven Advanced Persistent Threats (ATP), supply chain attacks and zero-day vulnerabilities. Toronto Hydro plans to meets its security requirements arising from such scenarios by continuing to invest in its robust infrastructure using layered Defence-in-Depth model to ensure the protection of both IT and OT assets, in response to future industry challenges such as electrification. Additional investments will be required to take a more proactive approach to cybersecurity, including threat hunting, Extended Detection & Response (XDR), attack surface management and Red/Purple Team simulations. Additionally, a growing number of cybersecurity solutions are moving to subscription licensing models, driving further increases in maintenance costs.

- Increases in subscription fees due to greater investments in cloud solutions, as deemed appropriate in alignment with the Strategy. This shift to subscription from the traditional perpetual licensing model is expected to grow as more IT vendors move towards a subscription model for both cloud-based and on-premises systems. Many vendors are adopting "cloud only" solutions that rely solely on cloud technologies instead of providing an option to host a solution on-premises.
- On aggregate, all maintenance costs have been increasing as a result of inflationary contract escalation increases and the relative depreciation of the Canadian dollar against the U.S. dollar.

Other labour, including internal and external resources, account for 51 percent of cost increases from 2020 to 2024 and 48 percent of the cost increases from 2025 to 2029.

Adequate resourcing for this program will be critical to supporting all of Toronto Hydro's business units and enabling the execution of the business plan over the 2025-2029 rate period. As examples, Toronto Hydro has observed the following workload trends driving the program's resourcing needs:

- From 2020-2024 to 2025-2029, an increase of 18% in the number of complex systems operated and maintained by the program;
- From 2020 to 2023, an increase of 22% in IT service requests handled by the program;
- From 2020-2024 to 2025-2029, an increase of 9% in cyber security systems and controls overseen by the program; and
- From 2020-2024 to 2025-2029, an increase of 6% in the number of endpoint devices supported by the program.

The external labour includes consulting costs primarily related to cloud implementation, temporary staff that were engaged in cloud project work or backfill for permanent staff, and managed services for security services and for Toronto Hydro's Enterprise Resource Planning ("ERP") system. Filling vacancies due to retirements and resignations and the need for additional headcount are the contributing factors for internal and external labour rate increases. Additional headcounts with specialized skillsets are also forecasted to support the increased investments in IT systems both on-premises and cloud (such as Asset Investment Planning ("AIP"), OFSC, CSS portal etc.), and the ongoing sustainment and support of new and existing IT systems. The expected increase in headcount will ensure Toronto Hydro has the appropriate level of resources to achieve the objectives of the Program.

4.2 Cost Control and Productivity Measures

Toronto Hydro's IT and Operational Technology Systems Program aims to modernize business processes sustainably to support customer and business-facing services in response to future industry shifts towards electrification.[4] The IT team continuously explores and implements opportunities to improve productivity by supporting the modernization and automation of IT business processes, while meeting the program objectives. Some examples of productivity improvements are outlined below.

For example, IT Service Management ("ITSM") automated processes in the areas of Service Request Management, Help Desk Support, and the Application Deployment Management. High-volume service requests such as system and folder access, onboarding, offboarding and unlocking user accounts are now fully automated. Reducing time spent on repetitive calls frees helpdesk teams to focus on more complex issues. Although IT Service requests increased by 79 percent between 2020 – 2022, all service level targets were achieved without requiring additional headcount. In addition, automation in the ITSM processes resulted in a cost savings of $0.5 million over the two years.

In managing software subscription and maintenance costs, Toronto Hydro developed an IT maintenance and subscription dashboard to support its application rationalization process. The dashboard allows teams to identify opportunities to keep, replace, retire, or consolidate business applications. Toronto Hydro examines various factors prior to renewing a maintenance and subscription contract to determine if there are any efficiencies or cost-savings to be leveraged before renewal. This allows IT to consolidate and rationalize applications, optimize license usage, resulting in anticipated operational

[4] Exhibit 2B, Section 8.4.

savings of approximately $1 million between 2022-2025. Toronto Hydro was able to effectively negotiate multi-year contracts to mitigate inflationary risk and take advantage of volume discounts, where appropriate.

The IT team evaluates global technology trends to identify improvement opportunities for Toronto Hydro's IT hardware environment. This includes identifying more efficient hardware options and life-cycle hardware for different environments, thus optimizing investments and limiting costs. This strategy allows Toronto Hydro to align its IT system investments with the industry best practices and be equipped to meet customers' needs and preferences in the face of future industry challenges such as electrification.

The Project Execution team continues to refine and enhance the project management framework by studying and implementing the lessons learned from prior projects and adopting industry best practices and standards. This approach reduces the risk of cost overrun and helps to avoid redundant IT investments that do not align with Toronto Hydro's Information Technology Asset Management Strategy and Investment Planning procedures or the organization's modernization strategic objective.[5] This team delivers value to the business quickly while maintaining the timely completion of high-quality deliverables. In the period from 2020 to 2022, this team generated cost savings of $0.8 million.

[5] *Supra* note 5.

5. SECURITY AND ENTERPRISE ARCHITECTURE SEGMENT

5.1 Segment Description

The Security and Enterprise Architecture segment manages Toronto Hydro's cybersecurity function, oversees the corporate Information Technology portfolio, implements utility-wide IT strategy, and develops and oversees corporate IT polices.

This segment addresses cybersecurity at Toronto Hydro by implementing preventative and detective controls aligned with industry best practices, including the OEB's Cybersecurity Framework.[6] IT is becoming increasingly important as a key business enabler, which also carries the increased risk of cybersecurity exposure. The global cybersecurity threat landscape is constantly evolving, with attacks ranging from social engineering to destructive ransomware attacks to nation-state backed Advanced Persistent Threats (APT). A recent Statistics Canada survey of more than 12,000 companies revealed that the number of cybersecurity incidents and the costs associated to detect and prevent these incidents increased in 2021 from 2019.[7] Recent ransomware attacks include a 2020 attack on Colonial pipeline (a major fuel pipeline in United States that carries gasoline, diesel and jet fuel from refiners),[8] a 2021 attack on the Toronto Transit Commission (TTC),[9] a 2022 attack on Toronto's Hospital for Sick Children on December 18, 2022,[10] and a January 2023 cybersecurity incident at the Liquor Control Board of Ontario highlight the ongoing need to prevent security breaches before they

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[6] *Supra* note 3.
[7] Statistics Canada, *Impact of cybercrime on Canadian businesses*, 2021, (October 18, 2022) online: < https://www150.statcan.gc.ca/n1/daily-quotidien/221018/dq221018b-eng.htm>.
[8] Colonial Pipeline, *Media Statement Update: Colonia Pipeline System Disruption* (May 17, 2021);
[9] Toronto Transit Commission, *TTC provides update on cyber security incident*, (November 8, 2021) online: <https://www.ttc.ca/news/2021/November/TTC-provides-update-on-cyber-security-incident#:~:text=Today%2C%20the%20TTC%20is%20providing,TTC%20promptly%20began%20an%20investigation.>.
[10] Sick Kids, *SickKids Lifts Code Grey with 80 percent of priority systems restored* (January 5, 2023) online:< https://www.sickkids.ca/en/news/archive/2023/sickkids-lifts-code-grey-with-80-per-cent-of-priority-systems-restored/#:~:text=Summary%3A,a%20ransomware%20attack%20on%20Dec.>.

happen in order to protect the privacy of Toronto Hydro's customers and employees and maintain the integrity of the grid.[11]

The OEB's Cybersecurity Framework acknowledges the criticality of these emerging threats to utility operations, and prescribes regulatory requirements to address the associated risks.[12] The Security function's efforts work towards ensuring the confidentiality, integrity, and availability of the utility's information assets, including the protection of customer information. This segment also deals with an increasing volume of threats to the energy sector including but not limited to sophisticated phishing, impersonation and social engineering campaigns, ransomware that includes data exfiltration functions, targeted industrial control systems attacks, and the malicious use of Artificial Intelligence ("AI") to automate malware creation and distribution. The evolving cybersecurity threat landscape drives the need to continuously improve cybersecurity posture and associated preventative and reactive controls.

The Enterprise Architecture function develops architecture practices and standards, and identifies and manages key enterprise IT risks, such as cybersecurity, disaster recoverability and IT restore & recover.

The IT Disaster Recovery ("DR") program enables Toronto Hydro to maintain the delivery of its technical services when operationally impacted by major events such as a data center failure. These could be the result of weather-related incidents, widespread power outages, large scale application/system failures, or cybersecurity events. An IT DR

[11] Liquor Control Board of Ontario, *LCBO Statement Regarding Cybersecurity Incident and Response*, (January 12, 2023) online: < https://www.lcbo.com/content/lcbo/en/corporate-pages/about/media-centre/news/2023-01-12.html>.
[12] *Supra* note 5.

program that is continuously maintained, validated and improved upon helps Toronto Hydro mitigate technical, operational, and financial risks to ensure business continuity.

The IT Restore & Recover ("R&R") program enables Toronto Hydro to safely practice the recovery of its critical applications from backup, validating the recovery plans for each application using both on-line and offline/offsite backups. This enables IT teams to rehearse data recovery in a segregated environment without impacts to production systems, confirming data recoverability in the event of a ransomware attack or a major system failure. The R&R program focuses on different applications each year in order to cover all critical applications. This program allows Toronto Hydro to mitigate technical, operation and financial risks by ensuring adequate tools and processes are in place and practiced ahead of the actual need.

The function fulfills several key responsibilities:

- Establishes and maintains corporate IT standards, policies, and enterprise architecture principles and standards based on best practices;
- Establishes and maintains IT disaster recovery program/framework and ensure readiness to respond to an event;
- Ensures Toronto Hydro's readiness to recover and restore data from back up environments;
- Evaluates new technologies through Proof of Concepts ("PoC") to identify opportunities to modernize existing IT processes and systems. This includes trialing an IT solution for a period to learn and understand its capabilities, benefits, and assess alignment with the organization's technical landscape and business needs. PoC also enables the Enterprise Architecture team to update the IT standards, policies, and frameworks, accordingly;

- Manages compliance and ensures programs adheres to the above policies, architecture principles and standards;
- Manages the enterprise information security posture and risk profile; and
- Drives operational cost efficiencies and business process streamlining.

5.2 Security and Enterprise Architecture Segment Costs

Table 4, below, provides the Historical (2020-2022), Bridge (2023-2024), and Forecast Year (2025-2029) expenditures for the Security and Enterprise Architecture segment.

Table 4: Security and Enterprise Architecture Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Security & Enterprise Architecture	3.7	4.5	6.1	6.6	7.3	7.6	7.9	8.4	8.8	9.3

Without this level of funding for this segment, Toronto Hydro could be exposed to a number of risks, including**:**

- Increased risk of a successful cyber attack that could disrupt grid operations, impact system safety, compromise the confidentiality and availability of customer, employee, and corporate data, and ultimately, undermine the integrity of the entire distribution system;
- Cybersecurity asset and control obsolescence resulting in cybersecurity posture and lack of vendor support, may lead to frequent system outages and increased vulnerability of critical systems to cyber security threats;
- Shortages in technical subject matter experts and Managed Services resources leading to the inability to adequately maintain and support the cybersecurity ecosystem, further eroding the cybersecurity defenses, leaving critical systems vulnerable to attacks;

- Undue pressure on infrastructure reliability and capacity as requirements may not align with the long-term IT growth plan;
- Inability to evaluate new and emerging technologies (e.g. PoCs) to ensure alignment with industry best practices and support organization's modernization objectives, in response to future industry challenges such as electrification;
- Reduced or lack of technical capacity to lead IT and business teams in accordance with IT standards;
- Increased risk of greater service outages due to a lack of IT architecture and governance oversight;
- Inefficient design or configuration of ongoing and planned IT capital programs due to a lack of IT architecture and security oversight;
- Lack of corporate IT standards/policies and enterprise architecture principles increases tech sprawl which will result in increased operational costs due to higher licensing, maintenance and support costs;
- Inability to support the successful implementation of IT programs and projects in accordance with corporate IT standards and policies; and
- Lower customer experience due to inadequate or lack of integration in IT system as a result of using various technologies that are incompatible or obsolete or due to greater service disruptions as a result of weaker cybersecurity posture.

5.3 Security and Enterprise Architecture Segment Year-over-Year Variance Analysis

2020-2021 Variance Explanation

Between 2020 and 2021 costs in this segment increased by $0.8 million due to:

- An increase of $0.6 million in maintenance and subscription costs consisting of:
    - $0.1 million increase was due to inflationary pressures on existing contracts; and

  - $0.5 million for net new contracts and full year subscription costs (e.g. detection and prevention of cybersecurity attacks);
- An increase of $0.2 million in consulting services to keep up with the evolving cybersecurity threat landscape.

2021-2022 Variance Explanation

Between 2021 and 2022, costs in this segment increased by $1.6 million due to:

- An Increase of $0.8 million due to consultant services to keep up with the evolving cybersecurity threat landscape. The Security Information and Event Management system was reviewed to determine if the service met its business needs without having to incur large up-front investment associated with implementing the system. In addition, the failover capabilities and disaster recovery preparedness for Toronto Hydro's data centre network infrastructure between its two main data centre locations was reviewed and updated. This work contributed to the zero-downtime goal of critical IT infrastructure services;
- An increase of $0.4 million for labour costs for filling of vacancies due to resignations; and
- An increase of $0.5 million in maintenance and subscription fees consisting of $0.3 million for net new contracts (e.g. detection and prevention of cybersecurity attacks) and $0.2 million due to inflationary pressures on existing contracts.

2022-2025 Variance Explanation

Between 2022 to 2025, costs in this segment are expected to increase by $1.5 million, due to:

- Compensation increases;

- Net new additions to the cybersecurity software and hardware capital program to respond to evolving cybersecurity threat landscape consisting of higher volumes and greater complexity of cybersecurity attacks;
- An increase in consulting costs for a cybersecurity audit to be completed in 2024 and other consulting such as POCs; and
- An increase in maintenance and subscription costs due to inflationary pressures on existing contract and net new contracts (e.g. detection and prevention of cybersecurity attacks).

These increases were partially offset by decreases in temporary staff costs due to reduced need for temporary staff to back fill for vacancies due to all full-time vacancies filled by the end of 2022 and decrease in temporary staff required for security services as more services are moving to the cloud.

2025-2029 Variance Explanation

Between 2025 to 2029, costs are expected to increase by $1.7 million, or an average of $0.4 million per year, to support the new additions to the cybersecurity software and hardware capital program to protect against increased volume and complexity of emerging cybersecurity threats, as described above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face legal compliance risks and drawbacks including:

- Failure to maintain compliance with all applicable laws;
- An inability to effectively administer controls for the protection of customer privacy;
- An inability to effectively administer legal and transactional controls for the protection of utility information data in the cybersecurity landscape;

- Increased exposure to cybersecurity risk which could compromise customers' and employees' personal information and operational data and jeopardize the safe and proper functioning of IT/OT assets;
- Inability to ensure IT systems can meet changing customers' expectations in response to future industry changes such as electrification and alignment with the Strategy.

6. IT OPERATIONS SEGMENT

6.1 Segment Description

The IT Operations segment is responsible for day-to-day operation and support of all IT systems at Toronto Hydro and also includes ITSM, IT Deskside and Helpdesk support. This includes maintaining the integrity and availability of all corporate data, ensuring adequate end user devices and backend infrastructure are available to support real-time data processing of applications and databases, proactive capacity and performance planning, routine systems maintenance, and continuous monitoring of all critical business systems including radio and telephony.

The IT Operations segment consists of three core functions: (I) Hardware; (ii) Software; and (iii) ITSM.

The Hardware function is responsible for the deployment and management of the following asset components and services:

- Data and voice networks, fibre optic and radio infrastructure, telephony and communication infrastructure;
- Advanced Metering Infrastructure and grid management networks;
- Servers, virtualization and operating system infrastructure;

- Data storage and backup environments; and
- Physical data centre infrastructure (cabling and racking).

The Software support function is responsible for the introduction and continuous operation of the following asset components and services:

- Customer-facing software assets;
- Integrations between IT systems and applications;
- Database and middleware software assets such as Messaging Systems, Integration Platforms, Application Servers, Web Servers, Oracle and Microsoft SQL Databases;
- End user devices, including desktops, laptops, phones, printers, as well as services such as the deployment of operating system and software applications; and
- End user application development and reporting software assets and services.

The ITSM function is responsible for maintaining the reliability, availability and security of all hardware, software and communication assets. To facilitate the continued operation of these and other systems, Toronto Hydro follows the Information Technology Infrastructure Library (ITIL) framework for effectively managing IT services throughout the entire service lifecycle. This includes a 24/7 IT Helpdesk response structure that is vital to ensuring timely resolution of incidents and problems to quickly respond to major system outages. The Toronto Hydro ITSM has a three-level support path to effectively manage and resolve issues and incidents. The path uses hierarchical structure to triage, i.e. assign issues to the relevant technical specialists, thus facilitating effective troubleshooting and resolution. This segment is responsible for incident, problem and change management functions to ensure business continuity by restoring critical operations in a timely and efficient manner during unplanned outages or a change (modification, addition or removal) of an IT service or system. The problem management process investigates the root causes of an incident and develops a corrective action plan to prevent its recurrence.

The IT Operations segment includes maintenance and subscription contracts, which provide vendor support for technology, performance and security fixes (e.g. patches), and new features and functionality. The IT operations segment also installs patches to the utility's technology assets, when they are released by vendors, thereby mitigating cybersecurity and system performance risks. Prior to installing a patch, this segment is responsible for conducting extensive testing to ensure the patch does not impede existing functionality, and does not introduce reliability risk across different testing environments.

6.2 IT Operations Segment Costs

Table 5, below, provides the Historical (2020-2022), Bridge (2023-2024), and Test Year (2025) expenditures for the IT Operations Segment.

Table 5: IT Operations Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
IT Operations	36.9	38.4	39.9	43.0	44.8	46.0	47.5	49.1	50.8	52.2

Without this level of funding for this segment, Toronto Hydro could be exposed to a number of risks, including**:**

- Increase in frequency and duration of IT service outages and reduced availability of critical IT systems;
- Inability to adequately maintain and support critical systems, processes and functions such as security systems, metering, stations and SCADA

communications, radio, telephony and business and customer applications services;

- Inability to install patches for utility's technology assets, resulting in inadequate protection of critical business operations against expected increases in security threats as a result of industry shift towards electrification;
- Inefficient or delayed execution of ongoing and planned IT capital programs and risk of applications running out of vendor support, including initiatives related to safety, reliability, regulatory compliance and customer service;
- Increase in resolution time of incidents and problems to prevent outages to critical systems; and
- Inability to support end-users with day-to-day technical issues and remotely deploy applications and install patch updates to hundreds of devices.

6.3 IT Operations Segment Year-over-Year Variance Analysis

2020-2021 Variance Explanation

Between 2020 and 2021, costs in this segment increased by $1.5 million due to the following:

- An increase of $1.7 million in maintenance contracts and subscription fees consisting of $0.5 million due to inflationary pressures of existing contracts and $1.2 million for net new contracts,
- Increases of $0.9 million in consultant services such as vendor support during warranty periods of deployed software solutions and PoC;
- A decrease of $0.9 million for retirements at the end of 2020 which were not filled until 2021; and

- A decrease of $0.2 million in labour costs due to the implementation of productivity improvements through the automation of IT Service Management ("ITSM") processes.

2021-2022 Variance Explanation

Between 2021 and 2022, costs in this segment increased by $1.5 million due to the following:

- Increases of $1.0 million due to inflationary pressures on maintenance and subscription costs; a $0.6 million increase for existing contracts and the remaining $0.4 million for net new contracts;
- Increases of $0.4 million in payroll costs due to compensation increases and the transferred headcount from the Governance segment to the Service Management segment;
- An increase of $0.2 million in payroll costs due to compensation increases;
- An increase of $0.2 million due to inflationary pressures on telecom costs; and
- A decrease of $0.3 million in labour costs due to implementation of productivity improvements through the automation of IT processes.

2022-2025 Variance Explanation

Between 2022 and 2025, costs in this segment are expected to increase by $6.1 million, due to:

- Increases in maintenance and subscription costs for existing, some of which were subject to US Dollar exchange rate fluctuations and inflationary pressures and net new contracts. This increase was mitigated by implementing application consolidation and rationalization initiatives;

- Compensation increases and increases in labour costs to fill vacancies between 2022-2023 in order to support new systems (e.g. patching) and ensure availability of these systems;
- Increases in consultant services for post project go-live vendor support for the CIS Project;
- Increases in employee related expenses incurred to support a hybrid work environment such as computer peripherals; and
- Increases in telecom costs due to inflationary pressures.

2025-2029 Variance Explanation

Between 2025 and 2029, costs in this segment are expected to increase by $6.2 million, or an average of $1.6 million per year to support the continued growth of the capital program, including increases in maintenance and subscription costs for existing and net new contracts and increases in consulting costs, as described above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various legal compliance risks and drawbacks, including:

- Limited ability to monitor and control assets if critical systems (e.g., SCADA, NMS, Energy Centre) are not adequately maintained;
- Inability to remotely monitor and control assets that include DERs, switches, breakers, etc. due to system unavailability;
- Risk of increased outage durations if critical systems (e.g. SCADA, NMS, OFSC, tailboard, Radio Communication, Telephony, Metering, and Customer Care applications) are not adequately maintained;
- An increase in field crew idle time as the critical safety systems are not available for crews to carry out their duties such as responding to outages (e.g. SCADA,

NMS, OFSC, eTailboard, Radio Communication, Telephony, Metering, and Customer Care applications);

- Unavailability of the Customer-Self-Serve Web Portal, Toronto Hydro website, and Outage Map resulting in customers' inability to monitor their energy consumption usage, view or receive outage notifications and restoration timelines, leading to an increase in customer call volumes and lower satisfaction; and
- Delay or failure to provide the required support and maintenance for IT capital programs including initiatives related to safety, regulatory compliance, reliability and customer service.[13]

7. PROJECT EXECUTION SEGMENT

7.1 Segment Description

The Project Execution segment is responsible for the execution of Toronto Hydro's IT software programs both on-premises and in the cloud. This segment is also responsible for the implementation of new IT cloud solutions (e.g. projects, programs and applications).

Toronto Hydro's IT project execution practices are consistent with industry best practices for project management frameworks. Toronto Hydro governs each project using a hybrid project management framework that combines waterfall and agile methodologies. The implementation approach for each project is based on the project complexity, use cases, and timeline. For example, Toronto Hydro used Agile methodology to deliver Web-based projects that require more frequent releases, whereas Waterfall methodology is best suited for large, multi-year, Tier 1 system upgrade complex, high-risk projects. Toronto

[13] *Supra* note 4.

Hydro's hybrid project execution approach strives to modernize the organization's project management and execution processes and supports the growth in investment plans. The combination of these two different methodologies enables the Project Management Office to become adaptive, flexible, innovative, and efficient in delivering different types of projects. Toronto Hydro governs each project using the Modern Project Management methods, and produces a mature scorecard which demonstrates the overall health of the project.

In addition, the segment is responsible for continuous improvement of various project processes and procedure and ensures projects are implemented on-time, on-budget and meets project/program objectives. This segment monitors project performance through short-interval control by ensuring the Project Status Reports (PSRs) are completed on a monthly basis and associated project risks are identified and addressed through Management Control & Reporting System ("MCRS") process on an ongoing basis.
Greater investment in cloud solutions was required in the 2020-2022 period and is expected to grow in the 2024-2025 period and 2025-2029 period to keep up with industry trends. Where deemed appropriate and feasible as per the Strategy, cloud solutions will equip the utility with the tools needed to support the modernization of business processes. As the industry trend moves towards offering more cloud-based solutions, these costs are expected to grow. Costs to implement the cloud-based solutions include project initiation, planning, execution (e.g. configuration, development, testing, customization, etc.), monitoring & control and deployment. Existing accounting rules under International Financial Reporting Standards ("IFRS") require these costs to be expensed.

The successful execution of ongoing and planned IT software programs allows IT to support the organization's modernization strategic objective.

7.2 Project Execution Segment Costs

Table 6, below, provides the Historical (2020-2022), Bridge (2023-2024) and Forecast Years (2025-2029) expenditures for this segment.

Table 6: Project Execution Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Project Execution	4.7	4.9	5.0	5.6	6.7	7.4	8.0	8.8	9.7	11.1

7.3 Project Execution Segment Year-over-Year Variance Analysis

The IT industry is currently trending towards more cloud offerings, and with this shift to the cloud, the forecast anticipates cloud implementations and subscriptions will be required to replace or enhance the current on-premises solutions.

2020-2021 Variance Explanation

Between 2020 and 2021, costs in this segment increased by $0.2 million due to the following:

- An increase of $0.8 million in external costs (e.g. consultant services) for the implementation of a full year of cloud-based solution such as Non-conformance Management System, Crew Management Systems and Electronic Tailboard solutions; and
- A decrease of $0.6 million in labour costs due to the introduction of a modernized project management framework to streamline processes.

2021-2022 Variance Explanation

Between 2021 and 2022 costs in this segment increased by $0.1 million due to the following:

- Increases of $0.5 million in external costs, including consulting costs and additional headcount to implement cloud computing solutions with the implementation of new cloud projects such as Customer Connection Portal, and OFSC; and
- A decrease of $0.4 million in labour costs due to redeployment of internal staff to focus on capital work.

2022-2025 Variance Explanation

Between 2022 and 2025 costs in this segment increased by $2.4 million, due to:

- An increase in external costs consisting of consulting services and additional headcount to implement cloud-based solutions such as Customer Connection Portal and OFSC;
- Compensation increases; and
- Headcount increases between 2023-2024 to support CIS cloud-based solutions.

2025-2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $3.7 million, or an average of $0.9 million per year, to support the implementation of cloud-based solutions including increases in external costs, as discussed above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility’s capital investments could be at risk of falling behind industry best practices which can result in financial risk to the organization, including:

- Limiting the utility's flexibility to adopt cloud solutions, where necessary, in alignment with industry best practices to continue to modernize and innovate;
- The inability to identify and execute IT projects that best support the utility's operations. Reductions in this area could place implementation of the planned IT capital programs at risk, including initiatives related to safety, regulatory compliance and customer service;
- The inability to execute IT projects to support the modernization of business processes in response to industry shift towards electrification; and
- A reduced or limited ability to implement cloud solutions, which may be better positioned to efficiently handle the growing technology requirements in storage and computing and often required by investments technologies such as smart grid and DER integrations.

8. IT GOVERNANCE SEGMENT

8.1 Segment Description

The IT Governance segment supports the IT investment planning process by ensuring appropriate documentation (e.g. scope of work, change requests, purchase requisitions) and justification are in place to support the IT programs. This includes developing program and project-level artifacts and establishing program goals. This segment is further responsible for providing budget control and oversight to track and report on IT program expenditures and their alignment with the overall budget. This enables Toronto Hydro to record IT expenditures correctly in accordance with OEB's and IFRS reporting requirements. The IT financial governance process includes conducting cost variance analysis and determining program forecasts, as per the Enterprise Technology Portfolio or in accordance with Toronto Hydro's Information Technology Asset Management

Strategy and Investment Planning procedures.[14] Administratively, it oversees the administration of external IT vendors maintenance and subscription contracts and third party contractors.

This segment supports the enterprise-wide tracking and reporting requirements needed to comply with Toronto Hydro's Records Management Policy and Record Management Framework, as well as applicable regulatory requirements, such as the OEB's Electricity Reporting and Recordkeeping Requirements.[15]

8.2 IT Governance Segment Costs

Table 7, below, provides the Historical (2020-2022), Bridge (2023-2024), and Forecast Years (2025-2029) expenditures for the IT Governance segment.

Table 7: IT Governance Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
IT Governance	2.7	2.8	2.5	2.3	2.3	2.3	2.4	2.4	2.4	2.5

Without this level of funding for this segment, Toronto Hydro could be exposed to a number of risks, including**:**

- Financial risk due to lack of oversight on capital planning, operational budgets, contract and vendor management and compliance tracking of IT projects/programs;
- Inability to continuously monitor changes in industry best practices and customer needs to prioritize new IT capital investments accordingly, leading to delayed

[14] *Supra* note 5.
[15] Ontario Energy Board, Electricity Reporting & Record Keeping Requirements (March 8, 2023).

execution of ongoing and planned IT capital programs including initiatives related to safety, reliability, regulatory compliance, or customer service;

- Failure to meet regulatory and legal obligations with respect to records management and data governance; and
- Failure to comply with privacy legislation and regulations governing the retention of personal information.

8.3 IT Governance Segment Year-over-Year Variance Analysis

2020–2021 Variance Explanation

Between 2020 and 2021 the costs in this segment increased by $0.1 million due to compensation increases.

2021-2022 Variance Explanation

Between 2021 and 2022 the costs in this segment decreased by $0.3 million due to labour costs decreased as the function of Service Management is redeployed to Operations Segment.

2022-2025 Variance Explanation

Between 2022 and 2025 the costs in this segment decreased by $0.2 million, due to:

- Mitigating compensation increases by assigning staff to capital planning work and streamlining governance activities to redeploy staff to other functions; and
- Decrease in consulting costs for a one-time a Disaster Recovery assessment incurred in 2022.

2025-2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $0.2 million, or an average of $0.1 million per year, to maintain the resourcing capacity and capabilities required to support the anticipated increases in volume and complexity of work for a growing capital program. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various legal compliance risks and drawbacks, including:

- Increased financial risk due to inadequate IT governance procedures and oversight of capital planning, operational budgets, and contract and vendor management and compliance tracking of IT projects/programs; and
- Reduced ability to meet the utility's regulatory and legal obligations, including0020records management and data governance.

PUBLIC, LEGAL AND REGULATORY AFFAIRS

1. OVERVIEW

Table 1: Public, Legal and Regulatory Affairs Program Summary

Public, Legal & Regulatory Program									
Outcomes: Customer Focus, Public Policy Responsiveness, and Financial Performance									
Segments: • Legal Services • Regulatory Affairs • Communications and Public Affairs									
Program Costs ($ Millions)									
2020A	**2021A**	**2022A**	**2023B**	**2024B**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**
18.5	19.0	19.2	24.7	28.0	29.9	30.9	32.0	33.2	34.2

As the electricity distributor providing an essential service to the residents and businesses of City of Toronto, the utility is responsible for cultivating and maintaining open channels of communications with its diverse stakeholders, including customers, media, the general public, the Ontario Energy Board (“OEB”), the Independent Electricity System Operator (“IESO”), industry associations, municipal councillors and provincial and federal government officials. Through effective and timely communication and engagement, Toronto Hydro aims to build trust and maintain its strong brand and reputation. These duties are fulfilled by the highly-trained professional teams operating in this Program.

The Public, Legal and Regulatory Affairs program (“Program”) provides specialized legal, regulatory and public relations professional services to the utility and its affiliates. The Program addresses Toronto Hydro’s extensive legal, regulatory and communication needs; being one of the largest electricity distributors in the province of Ontario and serving Canada’s largest city. The objective of this Program is to sustain and improve utility performance and compliance with external requirements through expert management of the ongoing and evolving external demands and expectations of the legal, regulatory, and public policy environment within which Toronto Hydro operates each day.

Under the umbrella of this Program, Toronto Hydro manages its corporate governance, securities and disclosure, commercial law matters, construction, real property, litigation, claims, privacy, regulatory reporting and compliance, energy policy and stakeholder relations, rate application, regulatory law and compliance matters, load forecasting, wholesale settlement, and rate-making processes. It also manages communication channels with the public, outage notifications, strategic communications, ongoing customer engagement, digital communications, media relations, issues management, municipal stakeholder engagement, customer escalations and community relations.

Reflecting both the breadth and depth of the issues and matters that must be addressed in the electricity sector, resources responsible for executing this Program have academic backgrounds, experience and professional designations and skills in areas as such as law, public policy, engineering, economics, communications, business management and accounting. The resources conduct a large workload year-round, consisting of a variety of high-volume processes and activities, such as preparing customer connection agreements (including offers to connect and customer contribution agreements), negotiating complex relocation agreements to facilitate large transit projects, drafting and reviewing legal agreements with service providers and suppliers, processing legal claims, performing IESO wholesale market settlements, assisting with escalated customer inquires, filing annual and major rate applications, and complying with regulatory obligations. Personnel in this program also provide strategic advisory services, such as working with utility operations to support business and investment planning, manage organizational risks and enable decision-making in accordance with legal and regulatory requirements and expectations.

The Program costs include the fees remitted to the OEB, the amortized costs of major rate applications, as well as the cost of shared services to affiliates and supporting non-rate regulated business activities, which are recovered through allocations and recoveries detailed in Exhibit 4, Tab 2, Schedule 21 and Exhibit 4, Tab 5, Schedule 2.

2. OUTCOMES AND MEASURES

Table 2: Public, Legal and Regulatory Affairs Program Outcomes

Public Policy Responsiveness	• Analyze and respond to OEB policy proceedings on behalf of Toronto Hydro, either individually or through an industry organization; • Facilitate Toronto Hydro's participation in OEB policy working groups; • Respond in a timely manner to Electricity Reporting & Recordkeeping Requirements ("RRR") and other required regulatory submissions in accordance with OEB requirements; • Advise on legal and regulatory compliance requirements, including service quality, consumer protection, and customer privacy requirements; and • Respond to freedom of information requests in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*.[1]
Operational Effectiveness - Reliability	• Drafting and reviewing various documents (e.g. procurement documents, purchase agreements, master contractual arrangements) that support the execution of Toronto Hydro's capital programs; • Preparing various construction contracts, relocation agreements, and other bespoke contracts that protects the property, assets, design and construction of Toronto Hydro infrastructure. • Prepare and defend distribution rate applications to secure funding for Toronto Hydro's capital and operations work programs.

[1] R.S.O. 1990, c. M.56, ["*Municipal Freedom of Information and Protection of Privacy Act*"].

Operational Effectiveness - Safety	• Contributes to Toronto Hydro's public and employee safety objectives (as measured via metrics like Total Recordable Injury Frequency) by communicating timely information to customers and the public concerning capital work and outages (planned and unplanned).
Financial Performance	• Prepare distribution rate applications in accordance with OEB requirements; • Support business and investment planning processes in conjunction with major rate applications; • Minimize legal liability, recouping damages, and providing strong defenses against claims; and, • Ensure consistent and complete IESO wholesale market settlements
Customer Focus	• Support the execution of customer connections offer to connect processes; • Address easement inquiries and other real property matters; • Resolve claims and legal disputes; • Manage customer and stakeholder-facing issues governed by various legislation, regulations and codes.

3. PROGRAM DESCRIPTION

The Public, Legal and Regulatory Affairs program consists of three segments:

1) Legal Services,
2) Regulatory Affairs, and
3) Communications and Public Affairs.

Legal Services provides timely, accessible, and specialized legal advice and support to all divisions within Toronto Hydro. In alignment with the utility's corporate and operational strategy, Legal Services ensures Toronto Hydro is able to meet legal requirements and operate in an efficient and compliant manner. Legal Services provides dispute resolution services and general guidance and compliance advice with respect to legal interests, rights, and responsibilities of the utility, including, but not limited to, any requests or compliance metrics relating to customer privacy. Legal Services facilitates the drafting, negotiation, and execution of a variety of contractual instruments (including commercial documents, construction documents, procurement documents, and customer offers to connect) as well as real property transactions with necessary protections and legal due diligence, and structures corporate governance processes to meet legal standards and best practices.

Regulatory Affairs enables the utility to meet its obligations to the Government of Ontario, OEB, IESO, and other regulatory and public policy stakeholders. The main services provided by the segment include the development and execution of rate applications and other matters before the OEB, regulatory legal and advisory services, energy policy stakeholder relations, advocacy and implementation, regulatory compliance monitoring, regulatory reporting, load forecasting, wholesale market settlement, and rate design. Quarterly fees remitted to the OEB are included in this segment. Costs pertaining to this rate rebasing application are also included, but presented separately, with the full amount of these costs proposed to be recovered on an amortized basis from 2025-2029.

Communications and Public Affairs maintains open channels of communications between Toronto Hydro and its various stakeholders. The main services provided by this segment include managing a number of different channels including owned media channels (such as Toronto Hydro’s website and social media) and conducting customer engagement surveys. This segment also manages communication with the media and the public on a variety of matters including planned and unplanned outages, engagement with municipal stakeholders, customer escalations and community engagement and relationship management concerning planned capital work.

4. PROGRAM COSTS

In 2025 Toronto Hydro requires $29.9 million in rate funding for Public, Legal and Regulatory Affairs program, which represents an increase of $11.4 million over the last rebasing in 2020. When normalized for shared services recoveries outlined in Exhibit 4, Tab 5, Schedule 1, the expected increase in this program is $10.4 million.

Over the 2025-2029 rate period, the utility expects the cost of this program to increase by annual growth rate of 3.4%. This increase is necessary in order to maintain the resourcing capacity to address the extensive legal, regulatory and public communication needs enabled by this program.

Table 3 provides the Historical (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for each of the Program's segments.

Table 3: Legal Services and Regulatory Affairs Program Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Legal Services	6.1	5.7	5.8	7.9	9.2	9.8	10.3	10.7	11.2	11.6
Regulatory Affairs	3.8	4.4	4.1	5.6	6.4	7.0	7.1	7.5	7.9	8.1
OEB Fees	3.4	3.2	3.6	4.0	4.4	4.5	4.6	4.6	4.7	4.8
Regulatory Applications (Custom IR)	1.6	1.6	1.6	1.6	1.6	2.0	2.0	2.0	2.0	2.0
Communications & Public Affairs	3.6	4.1	4.1	5.5	6.4	6.6	6.9	7.1	7.3	7.6
Total	**18.5**	**19.0**	**19.2**	**24.7**	**28.0**	**29.9**	**30.9**	**32.0**	**33.2**	**34.2**

4.1 Cost Drivers

There are a number of distinct and interrelated cost drivers in this Program.

4.1.1 Volume and Complexity of the Capital Program

Toronto continues to be one of the fastest growing cities in North America. As outlined in Exhibit 2B, Section E5.1 (Customer and Generation Connections), serving this growing city, Toronto Hydro receives a high volume of requests for connections and service upgrades for residential and commercial development each year. From 2017 to 2022, the City's development pipeline included 2,413 projects in various stages of approval and completion,[2] setting a record of 717,327 residential units and 14,484,961 square metres of non-residential gross floor area. This was the highest development volumes for any five-year period the City has reported on to date. This rate of development drives a high volume of work requiring legal and regulatory support, including offers to connect, arrangements with developers, suite metering agreements, easements, operating agreements, and third-party damage incidents.

In addition, the complexity of the utility's work program, particularly in areas of System Access, System Service and Information Technology (IT) investments, is increasing as Toronto Hydro makes investments to lay the foundation for the energy transition by expanding and modernizing the grid to enable customer choice to connect new technologies such as solar panels, heat pumps and electric vehicles.[3] To support Toronto Hydro and its customers in this electrification journey, the Program must keep up with public, legal and regulatory advisory work that is increasing in both volume and complexity. These needs are most cost-effectively addressed by internal resources with the necessary skills and experience to provide the required services. Toronto Hydro must have sufficient funding in this Program to attract and retain such talent in a competitive

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[2] Including projects that are pending approval, approved, awaiting or holding building permits, or under construction - The 2413 pipeline projects breakdown is 622 built, 879 active and 912 under review. Toronto City Planning, Profile TO *Development Pipeline 2022 Q2*, (February 2023), online: <https://www.toronto.ca/wp-content/uploads/2023/02/92b5-CityPlanning-Development-Pipeline-2022-Q2.pdf>.
[3] Exhibit 2B Section E5.1

labour market. That is a tall order particularly for legal and regulatory professionals with transferrable skills who can often obtain higher paying jobs at other firms and organizations. For example, over the 2020 to end of 2022, the Legal Services segment of this Program experience a turnover rate of 156%.

4.1.2 Supporting Major Infrastructure Projects

As the city continues to grow, so does its need for expanded services and infrastructure such as transit, public works, roads and highways. This need requires additional work to be done by Toronto Hydro to rebuild and relocate infrastructure to support the expansion and modernization of other services such as City water work, major transit expansion projects by Metrolinx or the Toronto Transit Commission ("TTC"), developments, and third-party communication upgrades.[4]

In addition, a number of large transit projects are currently planned or under construction, including the Metrolinx Eglinton Crosstown, Metrolinx Finch West LRT, Ontario Line Subway, Scarborough Subway Extension, and Yonge North Subway extension. Third party-initiated projects require large scale relocation of Toronto Hydro's existing distribution assets and the energization of new assets. Timely and effective planning and execution of these multi-year projects necessitates negotiation of complex relocation agreements, the preparation of offers to connect and customer contribution agreements, and thorough regulatory analysis to ensure alignment with the Distribution System Code and applicable cost recovery rules. Expanded development also entails a greater risk of third-party damage incidents, requiring appropriate construction and litigation support. The need to maximize efficiency of transit development, as envisioned by the *Building Transit Faster Act, 2020* ("BTFA") which requires utilities to act swiftly to

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[4] Exhibit 2B, Section E5.2.

remove and relocate distribution infrastructure which in turn depends on having expert legal advisors and consultants to support the negotiation of relocation and real property related agreements.[5]

4.1.3 Evolving Legal, Regulatory and Policy Requirements

There is a major transformation taking place in the energy sector as municipal, provincial and federal governments take steps to decarbonize key sectors of the economy. Various government and OEB policy documents make it clear that local distribution companies like Toronto Hydro play a crucial role in enabling this transformation. For example:

- The Ministry of Energy's *Powering Ontario's Growth* report recognizes that Distributed Energy Resources ("DERs") are transforming the way residents and businesses meet their energy needs and that much of this innovation is happening at the distribution level.[6] In addition to recent legislative changes, the government is considering additional changes to encourage innovation;
- The Minister's 2022 *Letter of Direction* to the OEB notes the critical role of the distribution sector as the pace of electrification increases and extreme weather impacts communities – and the pressure on local distribution companies ("LDCs") to continue providing high levels of reliability and resiliency to their customers while also being responsive to changing customer expectations and new government mandates;[7] and,
- The OEB's 2023-2026 Business Plan emphasizes the scale and magnitude of the energy sector transformation, the necessary reforms to energy regulation to

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[5] SO 2020, c 12. [*"Building Transit Faster Act"].*
[6] Ministry of Energy, *Powering Ontario's Growth: Ontario's Plan for a Clean Energy Future* (July 10, 2023), online: <https://www.ontario.ca/page/powering-ontarios-growth>.
[7] Ministry of Energy*, Letter of Direction from the Minister of Energy to the Chair* (October 21, 2022), online: <https://www.oeb.ca/about-oeb/corporate-governance-and-reports/letters-direction-formerly-mandate-letters>.

enable electrification as well as the necessary collaboration from industry stakeholders. [8]

Changes in the energy sector driven by public policy, technological advancement and customer-driven evolutions require both expanded levels and novel types of support services from the Public, Legal and Regulatory Affairs program. Toronto Hydro must adapt its legal and regulatory posture in an agile manner to meet the expectations of customer and stakeholders and give effect to policy objectives while keeping the risk to the utility, its ratepayers, and the public to a minimum. This places higher demands on the full range of functions executed within this Program, including energy policy advocacy and implementation, commercial law advice and transaction support, legal and regulatory advice, reporting and compliance. For example, in 2018 Toronto Hydro made 17 policy submissions to the OEB, MOE, IESO and NRCan, rising to 29 submissions in 2022. In addition, Toronto Hydro participated in 85 external engagements in 2022.[9] Toronto Hydro also implemented 15 new or modified regulatory requirements. This volume of work is expected to continue and further increase as the pace of the energy transition intensifies.

4.2 Cost Control and Productivity Measures

4.2.1 Cost Management

Toronto Hydro's past and ongoing efforts to minimize the cost of this Program and offset, in part, the external factors driving increases in this program yield significant benefits for customers. Cost management efforts in this Program focus on building a strong model of internal resources with the necessary expertise, reducing reliance on external resources (which are generally more expensive than internal resources on a per hour basis), or

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[8] Ontario Energy Board, *OEB Business Plan 2023- 2026*

[9] These include working groups, committee meetings, webinar participation, direct meetings – and are inclusive of Coalition of Large Distributors and Ontario Energy Association submissions.

finding alternative, lower-cost means of accomplishing the work such as alternative-fee arrangements and secondments from third party-service providers. Specific cost control measures employed include:

- Reducing and freezing external law firm hourly rates through a request for proposal ("RFP") process. The RFP also resulted in additional benefits at no incremental cost, such as access to legal research database and resources, temporary staff lawyer backfilling and articling student secondments, which further reduce the need to rely on external legal services;
- Negotiating alternative fee arrangement to cap costs on certain types of files;
- Negotiating additional contractual indemnities and insurance to reduce legal costs and payable claims in order to protect the utility and its ratepayers;
- Working within industry consortiums and associations to collaborate on common interest files, allowing Toronto Hydro to dedicate fewer resources to those files while maintaining high quality engagements in energy policy development; and
- Proactively working with stakeholders on energy policy design and implementation, reporting and compliance activities to build awareness of more efficient and effective solutions and mitigate risks and future costs, including those associated with potential non-compliance.

4.2.2 Productivity

Productivity enhancements enabled by this program include:

- Developing and delivering internal training and education sessions that improve adherence to legal and regulatory requirements, thus reducing the costs of substandard performance and non-compliance;

- Developing legal and regulatory knowledge management databases, including document precedents, samples, clauses, research, and training materials, to prevent duplication of effort and improve work efficiency;
- Attending continuing professional development sessions offered by external law firms, educational institutions, consultant firms, and legal organizations, to expand the scope of internal legal and regulatory expertise relating to issues that can be addressed without engaging external resources;
- Development of teams with specialized legal expertise. The recent introduction of new leadership positions in the Legal Services Segment has allowed for more focused training of junior lawyers allowing for more efficient transfer of knowledge;
- Standardizing processes to minimize the personnel time required to process third party requests such as claims and freedom of information requests;
- In-housing legal work for customer connections, claims and major rate applications and making process improvements to allow the utility to meet necessary timelines and reduce overall external legal costs; and
- Subscribing to technology solutions for regulatory research services enhancing internal regulatory acumen and expertise, and avoiding costs associated with staff gathering and analyzing this information through manual efforts.

5. LEGAL SERVICES SEGMENT

5.1 Segment Description

The Legal Services segment covers a wide-range of activities including: day-to-day legal advice to internal clients; the review, negotiation, and drafting of commercial agreements; and completion of corporate, financial, and commercial transactions. This segment also includes the corporate governance functions which supports corporate filings and external reporting and disclosure activities, and the corporate secretariat function, which supports governance matters, compliance with corporate statutes and related rules and best practice guidelines. A key objective of these services is to ensure the utility functions within the existing legislative and regulatory landscape and to work with the other teams within the organization to ensure new policy and legal requirements are properly implemented.

Legal advice on commercial matters includes execution of a variety of commercial instruments, including the review and evaluation of procurement documents for the purchase of goods and services by external vendors. Legal Services assists with review, negotiation, and drafting of commercial contracts, including purchase agreements, agreements for professional services, master contractual arrangements for long-term vendors, and other bespoke agreements as may be required to give effect to the utility's intentions in the applicable commercial transaction. Legal Services further supports the administration of each commercial contract through any disputes with the applicable vendors, as well as variance of those contracts to ensure the utility's interests are protected, that the utility gleans the benefit intended from the contract, and that such benefits are ultimately leveraged for the benefit of the utility's ratepayers.

Legal advice on construction matters includes reviewing, negotiating and drafting various forms of construction contracts, relocation agreements, and other bespoke contracts that facilitate third-party initiated projects (such as large-scale transit projects) while protecting the property, assets, and design and construction of Toronto Hydro infrastructure. The legal staff supporting construction ensure that Toronto Hydro's capital projects, operations, and collaboration projects with third party entities run smoothly, at an acceptable cost and without delay. In addition, the construction legal staff also ensure that disputes regarding scheduling, defects, and/or other contractual terms are appropriately and timely resolved to protect Toronto Hydro's interests in construction projects. This work ensures that planned construction projects, or such other projects where Toronto Hydro has an interest at stake, are completed in an efficient and timely manner, and without protracted disputes impacting the projects and parties involved.

Legal advice on real estate matters includes reviewing, negotiating and drafting legal documents relating to real property, such as customer connection agreements, easements, as well as real property dispositions and acquisitions and leasing and licensing arrangements. The legal staff supporting the real property function work closely with the construction, asset management, stations and facilities operational units in their activities to help ensure compliance with the requirements of the utility and its counterparties related to property access, occupancy and equipment maintenance and repair. New access and occupancy rights are obtained where necessary, in particular for new infrastructure builds or connections. This allows capital projects and relocation projects to move forward efficiently, and enables Toronto Hydro to avoid penalties and damages relating to non-compliance with legislative restrictions or contractual obligations. For instance, the BTFA grants Metrolinx the authority to prescribe specific timelines for the completion of utility relocation work in relation to priority transit projects. Where a utility is unable to comply with a prescribed timeline, Metrolinx is entitled to seek compensation for losses or expense incurred because of the utility’s non-compliance. The utility’s risk and liability exposure under the BTFA is unlimited.

As growth in the city drives increased volumes of capital work, there is a corresponding increase in the volume of work on commercial, construction and real property matters.

Figure 1 below demonstrates that over the 2018-2022 period, Toronto Hydro has experienced a steady increase in the number of contracts negotiated with suppliers.

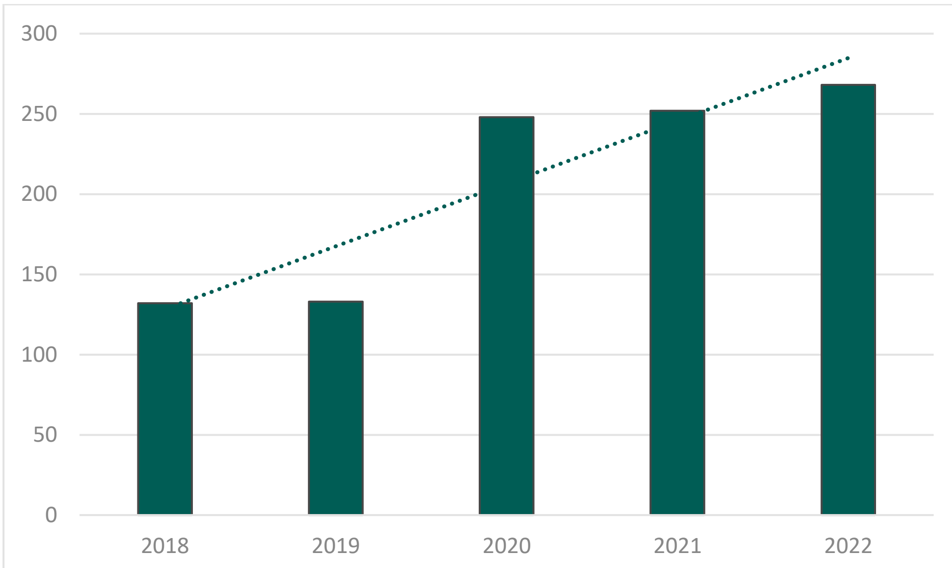

Figure 1: Contract Negotiated (initiated by Supply Chain)

Similarly, Figure 2 shows that over the past five years the number of Offers to Connect requiring expansion has increased driving both volume and complexity in this aspect of the Legal Services segments.[10]

[10] *Supra* note 3

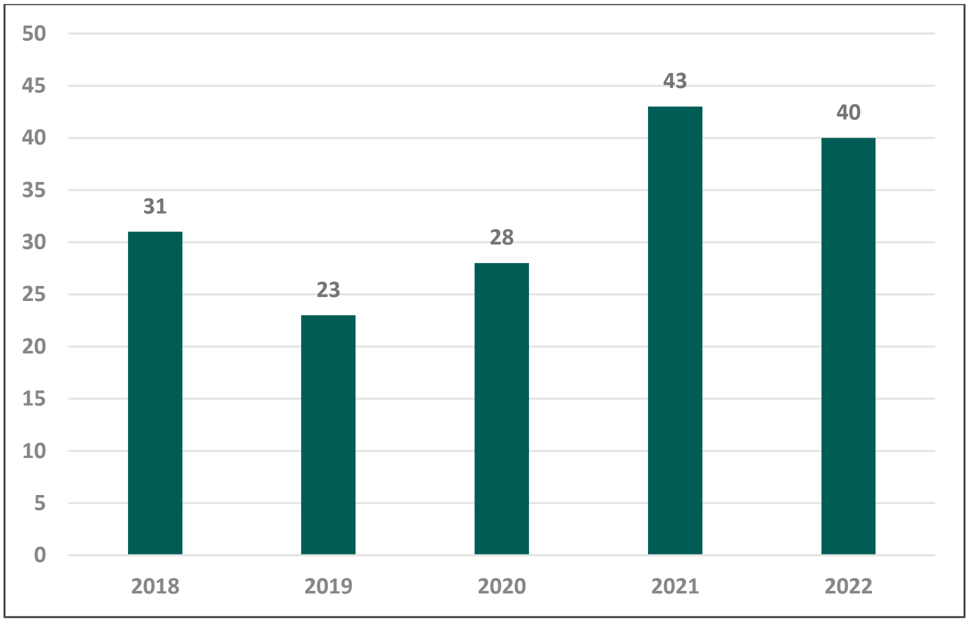

Figure 2: Offers to Connect Requiring Expansion

Toronto Hydro expects that the volume of commercial, construction and real property work will continue to grow as Toronto Hydro's capital program increases by approximately 42% over the 2025-2029 period.

In addition, Toronto Hydro's information technology groups are continuing to modernise functions across the distribution entity as a whole, including the purchase and implementation of a variety of cloud computing software and services to automate or streamline existing functions. The complexity and volume of such commercial deals, often comprised of multiple contracts for one purchase, will require an increase in commercial efforts.

Claims professionals provide pre-litigation defense and response to claims made against Toronto Hydro through the investigation of incidents, engagement with customers and insurers, and supervision of external adjustment service providers. This part of the segment's function manages and settles matters prior to them proceeding to litigation. In addition to resolving claims brought against the utility, claims professionals also support the recovery of invoiced claims when the utility's plant is damaged (e.g. poles hit by cars). By pursuing demands and legal actions, Legal Services recovers damages suffered by Toronto Hydro which otherwise would be unrecovered losses. Responding to claims and inquiries by customers, while still advocating the legal rights of the utility, is essential to positive customer service.

Litigation staff in Legal Services both respond to legal proceedings brought against Toronto Hydro and advance legal proceedings to assert the utility's legal rights. This involves the preparation and filing of statements of claim, statements of defence and related documentation. It also involves undertaking or working with external counsel on the defence and prosecution of personal injury and property damage matters and commercial disputes as they proceed to formal litigation. For some matters covered by the organization's insurance policies, Legal Services oversees external counsel approved by Toronto Hydro's insurers.

Legal Services also manages issues relating to privacy compliance and protection of personal information. This includes legal support in response to access to information requests, customer privacy complaints, or internal privacy inquiries. Toronto Hydro takes a pro-active approach to compliance with privacy best practices and emphasizes providing optimal, proactive customer service. For example, the Legal Service team routinely provides training workshops and proactive resources to its counterparts in operations to ensure that privacy expectations are well understood and that privacy risks are appropriately identified and managed.

5.2 Legal Services Segment Costs

Table 4 provides the Actual (2020-2022), Bridge (2023-2024), and Forecast (2025-2029) expenditures for the Legal Services segment.

Table 4: Legal Services Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Legal Services	6.1	5.7	5.8	7.9	9.2	9.8	10.3	10.7	11.2	11.6

Legal Services Segment Year-over-Year Variance Analysis

2020-2021 Variance Explanation

Between 2020 and 2021 costs in this segment decreased by $0.4 million. This is attributed to lower than expected claim payouts.

2021-2022 Variance Explanation

Between 2021 and 2022 costs in this segment increased by $0.1 million attributed to normal course compensation increases

2022-2025 Variance Explanation

Between 2022 and 2025, costs in this segment are expected to increase by $4 million, or an average of $1.3 million per year due to:

- inflationary cost pressures, including compensation increases consistent with the evidence outlined in Exhibit 4, Tab 4, Schedule 4; and
- incremental resourcing requirements to address: (i) increased volumes of customer connections activity to support growth and electrification in the City of Toronto, (ii) higher procurement activity to support the execution of the 2025-2029 Distribution System Plan, including a ramp up in IT Software

investments (including cloud computing), and (iii) enhanced scope and complexity in planning and coordination with third parties due to Priority Transit, Building Broadband and City Development.

2025-2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $1.8 million, or an average of $0.5 million per year to maintain the resourcing capacity and capabilities required to support the increased volume and complexity of work discussed above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various legal compliance risks and drawbacks, including:

- Failure to maintain compliance with all applicable laws;
- Vendor non-compliance with Toronto Hydro policies and procedures, undermining financial and operational controls;
- An inability to effectively administer controls for the protection of customer privacy;
- An inability to effectively administer legal and transactional controls for the protection of utility information data in the cybersecurity landscape;
- Ineffective or unfavourable negotiation of contract terms, resulting in substandard performance by contracted parties or foregone recourse to appropriate remedies, reducing the value to ratepayers;
- An inability to effectively recover amounts owing to the company from damages caused by third parties, or defend against third party claims or litigation;
- Dissatisfied customers and other stakeholders, due to delays in completing planned and externally-driven capital work (e.g. not achieving customer connection timelines);

- Reduced risk-management which would lead to greater exposure to litigation claims;
- Delays to externally-initiated relocation projects resulting in delays to development and transit projects;
- Failure to obtain or protect adequate real property access rights for infrastructure, leading to additional costs and project delays for planned and externally-driven capital work; and
- An erosion in the utility's corporate governance performance and adherence to securities law and principles, reducing the utility's access to capital markets and raising the cost of capital.

6. REGULATORY AFFAIRS SEGMENT

6.1 Segment Description

Regulatory Affairs works with external stakeholders and internal subject matter experts to support the advancement of public policy objectives and priorities outlined by the Government, the OEB, and IESO in key documents such as the Minister's *Letter of Direction* to OEB,[11] the OEB's Business Plan,[12] the IESO's *Pathways to Decarbonization* report,[13] and the Ministry of Energy's *Powering Ontario's Growth* report.[14] All of these documents underscore the central role that energy policy plays in supporting economic growth, decarbonization and the ongoing transformation of Ontario's electricity system.

As Toronto Hydro prepares for electrification and the energy transition, there will be increasing demands on the Regulatory Affairs team to ensure it can continue providing

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[11] *Supra* note 7.
[12] *Supra* note 8.
[13] Independent Electricity System Operator, *Pathways to Decarbonization Report* (December 15, 2022) online:<https://www.ieso.ca/en/Learn/The-Evolving-Grid/Pathways-to-Decarbonization>.
[14] *Supra* note 6.

thoughtful engagement with external and internal stakeholders. Externally, the objective is to fully inform policy-makers with respect to the effects of prospective legislation, regulations, codes, and other rules and guidelines. Thoughtful engagement also includes providing the distribution company perspective to big policy questions brought on by the energy transition. Toronto Hydro provides written submissions and formally participates in working groups at the provincial level. Internally, the objective is to ready the utility for potential energy policy changes and work with the affected parts of the utility to ensure new requirements are well-understood and properly implemented. Continually evolving regulatory requirements (e.g. Ultra-Low Overnight and Dynamic Class B Pilot price plans, Green Button initiative, updated OEB codes) require significant effort across the utility. Regulatory Affairs professionals coordinate these efforts, providing guidance and advice to facilitate timely, efficient and sound implementation.

Regulatory Affairs and Government Relations staff work to build relationships with stakeholders, like Metrolinx, to ensure that major projects (including priority transit projects) can proceed without obstructions and that Toronto Hydro's relationships and reputational interests are protected. As part of a mutually agreed upon issues management and project update process, regular meetings are held with priority transit partners to have a forum for open communication and issue resolution.

The Regulatory Affairs segments addresses the utility's financial requirements through multi-year and annual rate-setting processes, as well as monthly wholesale settlement, retail settlement and related transactions and reporting requirements to the government, IESO, and OEB. The nature of these activities and associated governing rules continue to evolve as a result of significant changes in government policy (e.g. feed-in-tariffs, net metering, bill rebate/reduction programs). As these activities affect the accuracy of not only Toronto Hydro's financials, but also the financials of the IESO and customers, Toronto Hydro must be able to continue to attract and retain skilled and experienced staff who can perform these highly-specialized rate-making and settlement tasks.

Regulatory Affairs prepares Toronto Hydro's applications to the OEB for rates and other regulatory approvals. The most significant of these are rebasing applications, which have most recently been large, complex custom applications. Over the span of a 5-year rate cycle, regulatory professionals in this segment help the utility prepare and prosecute thousand of pages of evidence and canvass hundreds of issues and claims raised by parties who intervene in major rate applications. The cost of preparing and prosecuting distribution rate rebasing applications is driven by the volume and complexity of the application evidence, the utility's business plans, evolving business circumstances, and responsiveness to regulatory and policy requirements and expectations.

The team responsible for major rate applications also plays a central role in the implementation of the OEB Decisions and Rate Orders. This includes responding to directives and undertakings, such as the Depreciation Study filed at Exhibit 2A, Tab 2, Schedule 1, Appendix D and aligning utility planning with the parameters and guidance of the OEB Decision. This end-to-end regulatory oversight approach for five-year custom incentive rate periods is necessary in order to ensure that the utility has adequate time to incorporate lessons from the OEB's prior rebasing decision, adapt to emerging evolutions in the regulatory policy framework and evolving business circumstances, and obtain and incorporate customer feedback in business planning.

In addition to the preparation, defence and implementation of rate applications, Regulatory Affairs performs other rates-related functions, including: developing annual forecasts of the utility's load and customers, processing annual distribution rate changes, semi-annual commodity rate changes and other regulated rate updates (e.g. Rural or Remote Electricity Rate Protection (RRRP), Wholesale Market Service Charge (WMSC), and Retail Transmission Service Rates (RTSRs)), and updating and testing in Toronto Hydro's billing system to ensure that the correct tariff rates are charged. Regulatory professionals in this segment also gather and report information to the OEB through annual RRR and other filings (e.g. winter disconnections, major outage events, cyber security).

This segment also monitors other utility applications, conducts jurisdictional research, prepares internal educational materials to advance regulatory acumen throughout the organization, and advises internal stakeholders on a wide-range of regulatory law and compliance matters including the implementation of new or modified regulatory requirements such as Distribution System Code amendments. All of these proactive activities enable Toronto Hydro to operate in accordance with its regulatory obligations, bring forward thoughtful submissions and proposals to the OEB and other energy sector stakeholders, and contribute to the advancement of public policy objectives.

6.1.1 Distribution Rate Rebasing Applications

As discussed above, Regulatory Affairs is responsible for preparing and prosecuting Toronto Hydro's distribution rate applications, which include large and complex issues that must be put forward in a very thorough way:

> *Toronto Hydro is larger and has more complex issues than most if not all distributors in Ontario, and the Application involves billions of dollars of*

> *spending. The RRFE requires distributors to prepare and support their applications, particularly Custom IRs, in a very thorough way.*[15]

In preparing this rebasing application, Toronto Hydro conducted extensive research and background work to develop key elements of the performance-based rate framework outlined in Exhibit 1B, Tab 3, Schedule 3. Carrying out this work Toronto Hydro was mindful that this being among the first custom rate application to address imperatives of the energy transition, the utility has an added responsibility to bring forward a thoughtful and thorough proposal. Since 2021, the regulatory professionals in this segment worked diligently to ensure that the record in this application is clear, cogent and responsive to customers needs and stakeholder expectations as the utility takes active steps towards preparing the grid and its operations for an unprecedented energy transition. Once the application is filed, these staff will assist with the intensive requirements of prosecuting the application and thereafter with the implementation of the Decision and Rate Order and the execution of the 2025-2029 plan.

The costs of the major rate applications are included in this segment on an amortized basis consistent with the Chapter 2 Filing Requirements and past OEB decisions. As with the 2020-2024 Custom IR application, the costs of the 2025-2029 Custom IR filing are expected to be approximately 0.2 percent of the total applied for revenue requirement found at Exhibit 6, Tab 1.

OEB Exhibit 4, Tab 2, Section 18, Appendix 2-M provides a detailed breakdown of the budget for this rate application.

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[15] EB-2014-0116 Decision and Order (December 29, 2015), pp. 12-13.

6.1.2 OEB Fees

OEB costs invoiced to Toronto Hydro are a condition of its distribution licence. Pursuant to the OEB Business Plan for 2023-2026,[16] and the OEB's Annual Reports for prior years, the OEB's General Cost Recovery compound annual growth rate is forecast to be 7.07% percent between 2022 actuals and 2026 budget. For the same period, Toronto Hydro's projected Fees to the OEB have a compound annual growth rate that is slightly lower at 6.7%.

Over the 2020-2024 period, Toronto Hydro projects that it will pay a total of $18 million to the OEB or approximately $3.6 million per year. Over the 2025-2029 period, Toronto Hydro projects it will pay a total of $22.4 million or $4.5 million per year. Toronto Hydro's projected OEB Fees are approximately 8% of the OEB's s. 26 Financial Plan, which is consistent with Toronto Hydro's historical percentage share.

6.2 Regulatory Affairs Segment Costs

Table 5 provides the Historical (2020-2022), Bridge (2023-2024), and Forecast Years (2025-2029) expenditures for this segment.

Table 5: Regulatory Affairs Segment and CIR Program Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Regulatory Affairs	3.8	4.4	4.1	5.6	6.4	7.0	7.1	7.5	7.9	8.1
OEB Fees	3.4	3.2	3.6	4.0	4.4	4.5	4.6	4.6	4.7	4.8
Regulatory Applications (Custom IR)	1.6	1.6	1.6	1.6	1.6	2.0	2.0	2.0	2.0	2.0

[16] *Supra* note 8.

2020-2021 Variance Explanation

Between 2020 and 2021 the costs in this segment increased by $0.4 million. A slight increase in payroll was offset by a decrease in administrative costs and OEB fees.

2021-2022 Variance Explanation

Between 2021 and 2022 the costs in this segment decreased by $0.1 million. An increase in OEB fees and payroll costs was offset by a reduction in external services costs reflecting the decision to in-source more regulatory work. The payroll increase was also offset by labour recoveries for resources being allocated to support the blueprinting phase of the Customer Information System project.[17]

2022-2025 Variance Explanation

Between 2022 and 2025 the costs in this segment are expected to increase by $4.2 million, or an average of $1.4 million per year. Of this increase, $0.9 million is attributable to OEB Fees, and $0.4 million is related to the costs of this application which are being amortized starting in 2025. The remaining $2.9 million increase over this three-year period represents an average of $1 million per year, and is due to:

- incremental internal and resources to support: (i) higher volumes of work and complexity related to the preparation, prosecution and implementation of the 2025-2029 rate application and Decision and Order, and (ii) increased volume and complexity of activity already occurring and further expected in respect of regulatory policy, law and compliance matters consistent with the priorities highlighted in the 2023-2026 OEB Business Plan and the Ministry of Energy's *Powering Ontario's Growth* report which outlines actions to support economic

[17]Customer Information System is a Tier 1 application described in Exhibit 2B, Section E8.4.

growth, decarbonization and the ongoing transformation of Ontario's electricity system.

- inflationary cost pressures, including compensation increases consistent with the evidence outlined in Exhibit 4, Tab 4, Schedule 4.

2025-2029 Variance Explanation

Between 2025 and 2029 costs in this program are expected to increase by $1.5 million, or an average of $0.4 million per year, to maintain the resourcing capacity and capabilities required to support the increased volume and complexity of work in this segment discussed above. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various regulatory compliance risks and drawbacks, including:

- Incorrect wholesale settlement filings, which would adversely affect the cash flow of the utility or the IESO and disrupt the settlement and reimbursement of a broad range of charges;
- Errors in the Tariff of Rates and Charges that would result in billing inaccuracies, increased volumes of customer complaints and customer dissatisfaction;
- Non-compliance or incorrect implementation of new requirements, policies or programs resulting in increased customer complaints, and potentially compromising the advancement of public policy objectives;
- Costlier and less effective energy policies due to Toronto Hydro not being sufficiently engaged in public policy development processes;
- Unmet OEB evidentiary requirements or expectations as part of the rate-setting processes and other regulatory applications;

- Inadequate strategic business support on regulation or policy driven matters, hampering the utility's ability to effectively respond to emerging needs and evolving industry circumstances; and
- Failure to meet important regulatory reporting requirements on time, such as the OEB Scorecard or RRR filings.

7. COMMUNICATIONS AND PUBLIC AFFAIRS SEGMENT

7.1 Segment Description

The Communications and Public Affairs segment maintains open channels of communications between Toronto Hydro and its customers, stakeholders, media, general public and other interested parties. Through effective and timely communication and engagement, the utility aims to build trust and customer satisfaction to maintain Toronto Hydro's strong brand and reputation.

Toronto Hydro engages in these activities through the following functional areas: Media and Public Relations, Municipal Relations/Office of the President and Community Relations. Working together, these three groups deliver high-quality, practical and timely proactive and reactive information about Toronto Hydro's operations and programs.

To perform the activities in this segment, Toronto Hydro uses a number of different channels,[18] including:

- Owned media channels (content that is published on channels that Toronto Hydro creates or controls). e.g. website, social media, print newsletters, email newsletters/blasts, bill inserts, customer bill, mobile app, media events, community events, Interactive Voice Response);

[18] These channels are regularly reviewed and updated to reflect customer feedback and preferences.

- Paid media channels (third-party channels that require payment from Toronto Hydro). e.g. newspaper advertising, radio advertising, direct mail;
- Earned media channels (content about Toronto Hydro that comes voluntarily from others) such as media outlets;
- Customer engagement surveys about general customer satisfaction and brand trust and focus groups on individual topics and business decisions;
- Contact with local business improvement organizations, community groups and ratepayer associations;
- Proactive outreach to City Councillors, the Mayor's office and City staff;
- Community events; and
- Capital program and planned outage communications through the Community Relations Office.

Effective and timely communication within each work function is critical for customers and other stakeholders as it increases awareness about matters of interest such as planned and unplanned power outages, information about where capital projects are being conducted, and services and programs offered by Toronto Hydro.

Increasingly, Toronto Hydro is seeing more diverse and higher volumes of communications. There are several factors driving this increase, including changes in how customers communicate and increasing focus on the energy transition. Since 2020, there have been more than 45,000 online mentions of Toronto Hydro, and the utility has resolved 5,226 customer issues via social media.

As technology changes, customers increasingly expect Toronto Hydro to provide frequent and near real-time updates about outages via numerous digital channels. According to industry research, effective communications during outages is a key driver of customer satisfaction.[19] During major events, it is not uncommon for Toronto Hydro to receive hundreds of social media mentions in a short period of time, as well as dozens of inquiries from media and through the Office of the President. This growing volume of requests increases the need for more frequent communications, and additional resources to help manage this need. By communicating key information proactively, stakeholders and customers may also have fewer reasons to contact Toronto Hydro reactively.

In addition, as the city of Toronto shifts towards electrification, the Communications and Public Affairs teams are dealing with a more diverse customer base and more complexity in terms of the number of topics and issues that this team needs to be prepared to address. For example, increased volume and complexity in how customers connect to the grid can result in more varied communication as customers have varying needs and relationships with Toronto Hydro.

Collectively, all of these trends contribute to the segment's resourcing needs, as the increased complexity and evolving nature of customer needs and communications require Communications and Public Affairs staff to possess a diverse array of media-aware and technology-oriented skillsets.

7.1.1 Media and Public Relations

As the customer landscape changes, Media and Public Relations is faced with managing an increasing number of communications channels, a broader range of customers and has a wider range of topics to communicate about. In addition, increased customer engagement is required to understand these evolving needs to help ensure that

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[19] Chartwell Inc., *2022 Residential Consumer Survey,* online: <https://chartwellinc.com/>.

communications are being executed effectively, and in-line with customer expectations. In order to effectively manage this expanding work, the function is continuing to increase and expand its skillset through training and additional resources to effectively meet the changes in customers' needs and expectations.

The Media and Public Relations function is responsible for external communications at Toronto Hydro, which includes several core functions:

- Strategic customer and stakeholder communications (development of communications strategies and materials);
- Customer engagement (facilitation of primary and secondary research studies that enable Toronto Hydro to gather critical information to help inform business decisions);
- Digital communications (management of digital communications channels, such as website and social media, as well as supporting the development of digital tools, like Toronto Hydro's mobile app);
- Media relations, and
- Issues management to help the organization detect and respond appropriately to emerging issues and trends, as well as changes in its operating environment.

Toronto Hydro also considers direct customer feedback and the advice of a Customer Advisory Panel ("CAP"). The CAP includes six sub-panels selected through a multi-step process to ensure representation from a diverse cross-section of customers. The utility engages the CAP to obtain ongoing feedback on a variety of topics through a mix of focus groups, surveys, and workshop sessions for both residential and business customers.

Toronto Hydro's customer base is becoming larger, more diverse, and more sophisticated. As the city of Toronto continues to grow, more customers are turning to electricity to power their homes, businesses, and transportation, and some are also installing distributed energy resources such as battery storage and solar panels.

Toronto Hydro will need to ensure it has updated information to assist customers in connecting these new technologies to Toronto Hydro's distribution system and the appropriate channels to effectively communicate such information. This communications effort will require the Media and Public Relations team to understand the increasingly diverse needs of customers – including through customer engagement – to ensure communications are tailored appropriately as the energy transition takes hold.

To prepare the grid for the energy transition, there will also be an increasing amount of work taking place in various neighbourhoods across the city. This, in turn, increases the demand on the Media and Public Relations team to educate and inform customers about the purpose of the work being completed. The Media and Public Relations team will have a significant role to play in educating the public about the investments Toronto Hydro is making to adapt and prepare for the energy transition and the changes in the way customers use electricity.

Along with the development of strategic communications and facilitation of collecting customer feedback, media relations, digital communications and issues management are also of critical importance when it comes to managing Toronto Hydro's brand and reputation.

The media serves as an important conduit between Toronto Hydro and its customers and other stakeholders. The segment's media relations function proactively and reactively communicates accurate and timely information about Toronto Hydro's programs, services and operations, including power outages, electrical safety, rates, and investments in the distribution system.

Media relations and the digital team have a significant role to play during emergency outage situations. Throughout the duration of these outages, communications staff often remain in contact with media outlets until services are restored. Media representatives receive up-to-date information on suspected outage causes, likely duration, and if necessary, appropriate measures to be taken for the protection of the public and Toronto Hydro's and customer-owned equipment. These efforts help disseminate key information to customers at a time when they are most likely to be looking for it.

Dedicated media relations personnel engage reporters directly on all matters, which allows the dispatched crews and other employees to proceed with their work safely and without interruption.

Increasingly, digital channels, including social media and online tools, such as Toronto Hydro's mobile application, SMS notifications, and live online chat, are becoming the preferred source of information for customers experiencing an outage. The digital team focuses on engaging the public through these channels and actively messages those who engage Toronto Hydro via X (formerly known as Twitter) during outages. As of July 2023, Toronto Hydro has over 121,400 followers on X (formerly known as Twitter), approximately 40%-60% more followers than the other three large distributors in the province. Media also rely on digital channels to collect information, increasing its importance and creating an opportunity for Toronto Hydro to use this channel as an additional communications tool with media.

In terms of public safety, as part of its daily operations, the team also responds to safety questions reported through social media and shares these reports with the appropriate operational teams, seven days a week.

For both media relations and social media, Toronto Hydro has after-hours standby for evenings and weekends, and 24/7 support during significant outages.

The Media and Public Relations function also leads an internal issues management process to help the organization proactively detect and respond to emerging issues and trends, such as customer escalations and developing media stories, as well as changes in the external environment such as changing attitudes towards government, and the cost-of-living crisis. Issues management is a cross-functional process that allows many functions within the organization to work together to help address customer and stakeholder requirements in a timely and effective manner, and help manage Toronto Hydro's reputation in the industry and the community.

7.1.2 Municipal Government Relations/Office of the President

Managing relationships with key City stakeholders contributes to improved utility performance and customer outcomes. These relationships allow Toronto Hydro to monitor for emerging risks to utility work, resolve points of conflict, and provide timely information to the City, particularly during extended or highly impactful outages. Like other organizations that construct and maintain infrastructure in Toronto, establishing and enhancing relationships with municipal stakeholders is critical to Toronto Hydro's ability to serve its customers and stakeholders efficiently. City policy and infrastructure is increasing in its volume and complexity and is expected to continue. The elevated levels of work expected to be undertaken by the City of Toronto in the coming years is clear from the City's 2023 10-year capital plan which has increased to $49.3 billion, up from $26 billion five years ago.[20] City climate policy – specifically TransformTO and its Net Zero Strategy – is animating climate action across the City and at City-owned buildings, requiring greater and improved coordination with Toronto Hydro.

Toronto Hydro routinely meets with City staff on a range of ongoing and emerging issues, oversees a robust councillor engagement process, and actively participates in City-led committees and working groups to advance the utility's interests. Municipal Government Relations also maintains a process to monitor City Council items for potential consequences for Toronto Hydro and its ratepayers and provide the company with strategic advice on any relevant bylaw changes. For example, in 2020 at the outset of COVID, the City developed the CafeTO program to allow bars and restaurants to construct temporary patios in curb lane of certain streets. Action by Toronto Hydro resulted in electrical safety and reliability considerations being incorporated into the original program guidelines and subsequent revisions, allowing capital work and outage restoration activities to proceed more efficiently and proactively maintaining safe distances from electrical equipment.

Customer escalations for complex cases are managed through a multi-stage dispute resolution process. The Office of the President handles approximately 1,000 issues per

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[20] City of Toronto. *2023 City of Toronto Budget Summary*, online: <https://www.toronto.ca/wp-content/uploads/2023/05/95f8-2023-City-of-Toronto-Budget-Summary.pdf>

year, with approximately two-thirds directed to it from councillors and other elected and public officials. The remaining third is comprised of the second level in the customer dispute resolution process if customers are not satisfied with the outcome of their initial contact with frontline customer facing teams. The Customer Advocate is the final step within Toronto Hydro's complaint process and reviews cases for customers unsatisfied with responses provided by Toronto Hydro. The Customer Advocate reviews assess whether:

- Toronto Hydro's internal processes and policies were applied fairly;
- All facts and evidence were incorporated in reaching a decision;
- Complaints were addressed promptly; and
- Comprehensive reasons were provided to support Toronto Hydro's decision.

Of the approximately 1,000 issues managed through the Office of the President in 2022, over 98% were successfully resolved without a formal Customer Advocate review.

7.1.3 Community Relations

As the industry evolves, so does Toronto Hydro's commitment to customer service and the community. Toronto Hydro has comprehensive processes and protocols for communicating information to customers concerning planned capital work and planned outages, in order to provide a better understanding of the capital program and to help prepare customers for work at or near their property.

Toronto Hydro issues proactive communications to notify customers of planned work, and also has a customer inquiry line and escalation process for customers. Community Relations staff are dispatched on-site, when needed, to liaise with customers. This process is critical for building brand trust and reputation management.

Toronto Hydro maintains productive relationships with public interest groups and agencies involved in commerce, environmental protection, and education. Stakeholder outreach commonly takes the form of one-on-one contact with customers, community town hall meetings, special information sessions, and a variety of online content. Using a variety of communication channels allows Toronto Hydro to engage customers with varying needs, concerns, and preferences, with the goal of giving appropriate attention to all customer segments.

Toronto Hydro continues to make investments in sustaining the grid, but is also planning for new investments and projects to build capacity and enable growth and electrification. As the city continues to grow, so does its infrastructure. These changes require additional work to be done by Toronto Hydro to support the expansion and modernization of other services. This means Toronto Hydro is rebuilding or relocating infrastructure to support City water work, Metrolinx, TTC expansion, development and third-party communication upgrades.[21] Over the course of the 2025-2029 period, the capital program associated with system access, renewal and service is increasing by 47 percent relative to the 2020-2024 period. All of this work means that communications supporting capital projects will continue to grow in importance and frequency.

In preparation for this increasing volume and complexity of projects, Community Relations is reviewing its existing processes to help identify opportunities for modernizing that will allow Toronto Hydro to better communicate with customers and stakeholders.

In particular, planned improvements to Toronto Hydro’s website will allow for an enhanced construction and outage map to more accurately identify project areas. The

[21] *Supra* note 4.

content on the website will also be expanded to include more detailed information about the utility's work, including photos, equipment and construction descriptions and project status updates and general information.

In addition, potential expansion of the channels through which planned outages are communicated will also be critical for maintaining Toronto Hydro's commitment to Customers and the community. Social media, text message/SMS and email communications are all being considered as additional communications channels.

To maintain expected service levels, the need for additional software, technology and resources to support this increasing volume and complexity of projects will need to be evaluated. Resources to provide dedicated support to these large-scale projects for enhanced community engagement may also need to be considered.

7.2 Communications and Public Affairs Segment Costs

Table 7 presents Toronto Hydro's Historical (2020-2022), Bridge (2023-2024), and Forecast Years (2025-2029) costs relating to the Communications and Public Affairs segment.

Table 7: Communications and Public Affairs Segment Expenditures ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Communications & Public Affairs	3.6	4.1	4.1	5.5	6.4	6.6	6.9	7.1	7.3	7.6

2020 – 2021 Variance Explanation

Between 2020 and 2021 costs in this segment increased by $0.5 million. This is primarily attributed to:

- increases in payroll costs due to inflationary increases, and
- increase in marketing costs associated with a gradual return to pre-pandemic levels of communication following COVID-19.

2021 – 2022 Variance Explanation

There is no variance in this segment between 2021 and 2022.

2022 – 2025 Variance Explanation

Between 2022 and 2025 costs in this segment are expected to increase $2.5 million or an average of $0.8 million per year primarily due to the following:

- increase due to inflationary cost pressures, including compensation increases consistent with the evidence outlined in Exhibit 4, Tab 4, Schedule 4;
- incremental resources to support an additional focus on digital communications channels and increasing customer expectations, and
- increase in advertising, event, and market research costs associated with meeting increasing customer expectations, including an increasing number of communications channels and the need for more timely and frequent communications.

2025-2029 Variance Explanation

Between 2025 and 2029 costs in this segment are expected to increase by $1 million, or an average of $0.3 million per year to maintain the resourcing capacity and capabilities that are required to support the increased volume and complexity of work in this segment. If Toronto Hydro were forced to deliver this segment with a reduced level of funding over the 2025-2029 rate period, the utility could face various customer-related and stakeholder-facing risks, including:

- Increased frequency of inaccurate or delayed information resulting in customer confusion and dissatisfaction;
- Inability to meet Toronto Hydro's strategic priorities such as modernizing business processes and adopting new tools to meet the changes in customer's needs and expectations in response to electrification;
- Reduced ability to announce the timing, scope and customer impact of Toronto Hydro's capital projects, resulting in resident confusion and dissatisfaction;
- Increased number of issue escalations, with overall diminished customer and stakeholder satisfaction;
- Weakened relationship with members of the media due to lack of communication, resulting in increased potential for the dissemination of misinformation or negative information;
- Decreased understanding of customer perceptions and preferences, resulting in misalignment with customer expectations;
- Reduced uptake in key corporate programs and services such as the Low-Income Energy Assistance Program ("LEAP") due to lack of awareness/marketing, [22] and
- An increased potential for brand and reputation decline, resulting in loss of customer trust and faith in Toronto Hydro and diminished customer satisfaction.

[22] Exhibit 4, Tab 2, Schedule 19.

CHARITABLE DONATIONS AND LOW-INCOME ENERGY ASSISTANCE PROGRAM ("LEAP")

1. CHARITABLE DONATIONS

Toronto Hydro is an important corporate contributor in the city of Toronto and supports outreach events that engage the community, advance energy related issues of public importance (such as safety and sustainable energy), and promote programs and services that help customers, particularly those that are most vulnerable.

Table 1, below, provides Toronto Hydro's Historical (2020-2022), Bridge (2023-2024), and Forecast Year (2025-2029) charitable contributions.

Table 1: Charitable Contributions Summary ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Rate Recoverable	1.0	1.0	1.0	1.3	1.4	1.5	1.6	1.7	1.8	1.9
Non-Rate Recoverable	0.1	0.1	0.1	-	-	-	-	-	-	-

Toronto Hydro's sole rate recoverable charitable contributions for the 2025-2029 rate period are its payments towards the OEB's Low-Income Energy Assistance Program ("LEAP"). As discussed in greater detail in section 3 below, the utility is requesting the OEB's permission to increase its LEAP funding allocation for the 2025-2029 rate period and targeted exemptions from the Ontario Electricity Support Program ("OESP") & LEAP Program Manual (the "Manual") to more effectively promote and operate LEAP for the benefit of its low-income customers. [1]

[1] *OESP and LEAP Program Manual* (October 2015).

Toronto Hydro's non-rate recoverable charitable contributions are comprised of multiple minor sponsorships of community not-for-profits, industry associations, City of Toronto entities, and events of strategic alignment. The following are examples of causes the utility has made contributions to:

- Not-for-profit entities (e.g. Tree Canada, which supports planting and nurturing trees in rural and urban environments and Pembina Institute, which performs research on energy policy matters);
- Industry associations (e.g. Ontario Energy Association and Ontario Energy Network, which provide a voice to the energy industry, an opportunity to network and share best practices, and the furthering of industry issues publicly and at various levels of government); and
- City entities or events of strategic alignment (e.g. Toronto Region Board of Trade, Cycle Toronto, and Cavalcade of Lights, which provide opportunities to engage with communities regarding issues that align with Toronto Hydro's Corporate Social Responsibility Strategy and promote programs and services).

Sponsorships can be used to align with business development strategies to further Toronto Hydro's network and presence in areas of interest to the public (e.g. electric vehicles). Each sponsorship is reviewed according to an established process and matrix to gauge appropriateness and optimal level of support.

2. POLITICAL CONTRIBUTIONS

Toronto Hydro does not make political contributions of any kind.

3. LOW-INCOME ENERGY ASSISTANCE PROGRAM ("LEAP")

Toronto Hydro proposes to increase its LEAP funding allocation for the 2025-2029 rate period from the default 0.12 percent of its total (service) distribution revenue requirement to 0.15 percent, which would amount to approximately $8.5 million. Furthermore, the utility plans to top up rates funding with its surplus LEAP funds and requests targeted exemptions from the Manual for itself and its lead and intake agencies to implement several operational changes to enhance the administration of LEAP in Toronto Hydro's service territory, as discussed below.

Table 2: Toronto Hydro's 2025-2029 LEAP Funding Plan ($ Millions)[2]

	Rates Funding – 0.15% of Revenue Requirement (A) ($ M)	LEAP Funds Carried Over from Previous Years (B) ($ M)	Total Annual Funding (A + B) ($ M)	15% Agency Admin Fees ($ M)	Total Funds Available for LEAP Disbursements ($ M)	Estimated Customers Assisted / Year (approx.)
2025	$1.5	$0.5	$2.1	$0.3	$1.8	1,800
2026	$1.6	$0.5	$2.1	$0.3	$1.8	1,800
2027	$1.7	$0.5	$2.2	$0.3	$1.9	1,900
2028	$1.8	$0.5	$2.3	$0.4	$2.0	2,000
2029	$1.9	$0.5	$2.4	$0.4	$2.1	2,000
TOTAL	$8.5	$2.6	$11.2	$1.7	$9.5	9,500

3.1 Proposed Enhancements to LEAP

As part of its business planning for the 2025-2029 rate period, through a variety of channels Toronto Hydro obtained customers' feedback on their experience with accessing financial assistance under LEAP. In general, customers expressed that 1) the application

[2] Variances due to rounding may exist. Column "B" shows the cumulative LEAP funds carried over from the 2020-2024 rate period spread out over the 5 years of the 2025-2029 rate period.

process for LEAP is difficult and should be simplified to facilitate access to grants, and 2) the utility can do more to promote LEAP to eligible customers.

Meanwhile, several macroeconomic factors that materialized during the 2020-2024 period, such as the effects of the COVID-19 pandemic, higher than average inflation and interest rates, and rising costs of living, have significantly affected vulnerable customers' ability to pay their electricity bills. As an illustration, the number of Toronto Hydro's eligible low-income customers ("ELIC") in arrears increased by approximately 14% from 2020 to 2021 and by approximately 34% from 2021 to 2022. Similarly, the total dollar amount of arrears on ELIC accounts increased by approximately 19% from 2020 to 2021 and by approximately 40% from 2021 to 2022. From 2022 to 2023, Toronto Hydro estimates that the number of ELIC in arrears will continue to increase by 16%, while the total dollar amount of arrears on ELIC accounts will decrease by approximately 20%. Therefore, the total number of ELIC in arrears and the total dollar amount of arrears on ELIC accounts are still 20% and 129% greater than pre-pandemic levels in 2019, respectively.

In recent years, 1,000 Toronto Hydro customers on average received LEAP assistance per year (See Figure 1). In the utility's assessment, the 2020 and 2021 years are not representative of typical volumes of assistance due to the distortionary effects of the COVID-19 pandemic, the extended disconnection moratoriums and Toronto Hydro's customer-forward collections policies (as discussed in the Customer Care program),[3] and other financial assistance programs "competing" with LEAP.

[3] Exhibit 4, Tab 2, Schedule 14.

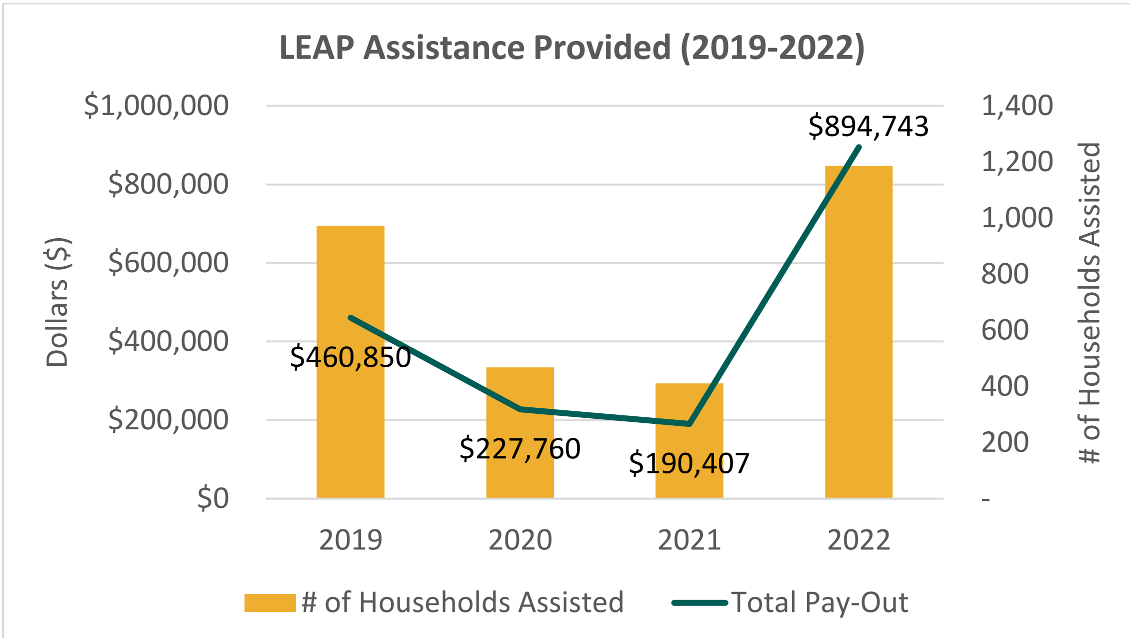

Figure 1: LEAP Assistance Provided (2019-2022)

Based on the trending shown above, in Figure 1, Toronto Hydro expects that many of its customers will likely continue to face financial difficulties well into the 2025-2029 rate period. In addition to the bill impacts from the rates Toronto Hydro is requesting through this application, other charges on electricity bills may also continue increasing throughout 2025-2029, as other stakeholders in the industry adjust their rates and levies, and energy transition policies take effect.

The demographics of Toronto Hydro's service territory also shed light on the need to provide vulnerable customers robust assistance through the energy transition. For example, the City of Toronto's analysis of the 2021 Census shows that the proportion of low-income households in Toronto is higher compared to all other regions in the Greater Toronto and Hamilton Area and both Ontario and national averages (See Figure 2 below).

As of 2021, there were 363,955 persons, or 13.2% of the population in Toronto, with an income below Statistics Canada's Low-Income Measure After Tax ("LIM-AT").[4]

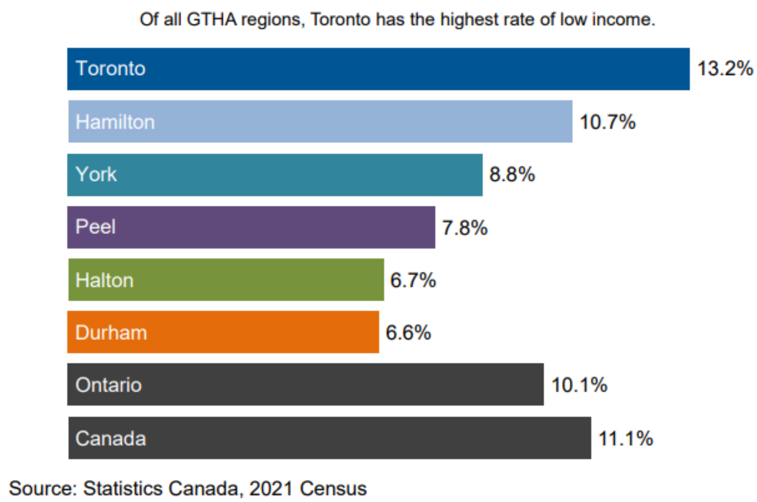

Figure 2: Prevalence of Low-Income After-Tax Households ("LIM-AT") for the Greater Toronto and Hamilton Area, Ontario and Canada, 2021[5]

Against this backdrop, Toronto Hydro recognizes that it has a role to play in providing effective support to its low-income customers throughout the 2025-2029 rate period and proposes to implement various enhancements to its administration of LEAP to increase the annual average number of customers assisted to approximately 1,900 per year or over 9,000 over the five-year period.

To enable this outcome, Toronto Hydro is requesting the OEB's permission on the following matters for the duration of the 2025-2029 rate period.

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[4] City of Toronto Backgrounder, *2021 Census: Families, households, Marital Status and Income* (July 19, 2022), online: <https://www.toronto.ca/wp-content/uploads/2022/07/9877-City-Planning-2021-Census-Backgrounder-Families-Hhlds-Marital-Status-Income.pdf>.
[5] *Ibid.*

1. *<u>Continue the flexibility for LEAP eligibility criteria permitted by the OEB in its letter dated February 27, 2023.</u>*

On February 27, 2023, the OEB issued a letter to licensed electricity distributors, LEAP lead agencies, and other industry participants to extend the flexibility of two specific program requirements through 2023.[6] These requirements are:

- To be eligible for LEAP emergency financial assistance, an applicant needs to be in arrears but does not need to be in threat of disconnection or have been disconnected; and
- Applicants can receive LEAP emergency financial assistance more than once per year subject to the maximum annual household grant amount.[7]

Toronto Hydro submits that the continuation of these measures into the 2025-2029 rate period is warranted, as it expects the conditions that informed the OEB's decision to increase flexibility for emergency financial assistance recipients under LEAP and the economic circumstances discussed above to persist in Toronto Hydro's service area.

2. *<u>Increase the maximum grant amounts per household per year from $500 to $1,000 (from $600 to $1,200 for electrically heated households).</u>*

Similar to the previous request, Toronto Hydro submits that increasing the maximum grant amounts for the 2025-2029 rate period is warranted as it expects the circumstances that informed the OEB's decision to double grant amounts in 2022 and the economic circumstances discussed above to persist in Toronto Hydro's service area. [8] The OEB's rationale at that time was to increase the flexibility and effectiveness of LEAP emergency

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[6] OEB Letter, *Providing Flexibility to Consumers through the Low-income Energy Assistance Program – Emergency Financial Assistance*, (February 27, 2023).
[7] Currently, the maximum allowable grant is set at $500 ($600 for electrically heated households). *Supra* note 6.
[8] OEB Letter, *Providing Flexibility to Assist Consumers through the Low-income Energy Assistance Program – Emergency Financial Assistance* (January 10, 2022).

financial assistance when customers were facing higher than normal arrears and many utilities had large balances of unused funding carried over from previous years. As previously discussed, Toronto Hydro's empirical data suggests that higher than normal arrears for the utility's customers may very likely persist into the 2025-2029 rate period.

Increasing the maximum grant amounts per household as requested, in combination with the LEAP funds expected to carry over from the 2020-2024 rate period, would increase the effectiveness and expand the reach of the program in the 2025-2029 rate period.

3. *Increase the annual rate funding allocation for LEAP from 0.12% to 0.15% of Toronto Hydro's revenue requirement.*

Toronto Hydro submits that a modest increase in its LEAP funding allocation would support the utility's ability to provide assistance to more customers over the 2025-2029 rate period, without any material impacts to any other funding requirements. This increase, in combination with the other measures proposed herein, would enable an increase of approximately 50% in the number of LEAP recipients, as discussed below.

Table 3: Rates-Funded LEAP Allocation of 0.15% of the Revenue Requirement ($ Millions)

	2025	2026	2027	2028	2029	Total
0.15% Allocation	1.5	1.6	1.7	1.8	1.9	**8.5**

4. *Exempt Toronto Hydro and its lead and intake agencies from steps 1 through 7 of section 3.3 of the OESP & LEAP Manual to increase the flexibility of the customer application process.*

As previously discussed, the feedback that Toronto Hydro collected from its customers indicates that applicants find the LEAP application process to be time-consuming and difficult to navigate. Certain procedural requirements embedded in the Manual and currently used by lead and intake agencies, such as pre-screening by phone, in-person interviews, lead agency reviews (if applicable), or the separate verification and communication with the utility, add to the average time for processing applications and sometimes discourage customers from carrying through their application to completion, or from re-applying in the future. To address these challenges, Toronto Hydro proposes to work with its lead and intake agencies to make small, incremental changes to existing procedures and modernize the process in favour of customers, while still retaining robust controls for the application of eligibility requirements, the protection of customer privacy, and good governance of assistance funds.

Examples of procedural improvements that the utility may explore with its lead and intake agencies include:

- Having agencies conduct interviews virtually over Zoom or similar technologies;
- Allowing the submission of applicant documents and other communications via email and/or other electronic means;
- Having agencies refer to previously obtained and current applicant information for re-applications within the same calendar year; and
- Providing easily accessible information resources for applicants.

In order to implement measures such as the above, Toronto Hydro requests the OEB to exempt the utility and its lead and intake agencies from steps 1 through 7 of the Manual.

Toronto Hydro submits that the four proposals discussed above would enable the utility and its agencies to deliver financial assistance in the most effective and targeted manner to the customers that need it the most. The utility further submits that the experience it will gain in modernizing its administration of LEAP as proposed may yield valuable insights, which Toronto Hydro is willing to share with the OEB and the industry through the Financial Assistance Working Group or by other means as the OEB may direct.

3.2 LEAP Expenditure Summary

To determine the optimal level of funding for the 2025-2029 rate period, Toronto Hydro completed a detailed analysis of historical LEAP data pertaining to the number of grants and disbursement amounts.

Although the number of households receiving LEAP has remained relatively flat since 2019 (except for 2020 and 2021, which the utility deems to be outlier years due to the effects of the COVID-19 pandemic), the amount of unused LEAP funds carrying over from previous years has been growing during the current rate period, as shown in Table 4 below.

Table 4: LEAP Contributions and Disbursements for the 2020-2024 rate period ($000s)

	2020 Actual	2021 Actual	2022 Actual	2023 Bridge	2024 Bridge
Annual Contribution	958	958	958	958	958
Carryover from Prior Years	737	1,468	2,349	TBD	TBD
One-Time Contribution	-	113[9]	-	-	-
Total Available[10]	**1,694**	**2,539**	3,307	TBD	TBD
Total Disbursed (including agency administration fees) [11]	227	190	893	TBD	TBD
Total Unused	1,468	2,349	2,414	TBD	TBD

Toronto Hydro's plan to increase the accessibility and reach of LEAP and the permissions it requests from the OEB for the 2025-2029 rate period is outlined in section 3.1 above. In implementing this plan, the utility is going to deploy:

1) $8.5 million in rates funding allocation for LEAP, equivalent to 0.15% of the revenue requirement, and
2) the estimated $2.6 million in surplus LEAP funds carried over from the 2020-2024 rate period.

This amounts to a total allocation of approximately $11.2 million for 2025-2029. Net of the 15% annual agency administration and program delivery fees, the utility will have approximately $9.5 million available for LEAP disbursements. Table 5 below shows the estimated number of assisted households/customers, if Toronto Hydro's four proposals discussed in section 3.1 are granted.

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[9] Represents a one-time contribution in 2021 is attributable to the credit amount that the OEB applied to Toronto Hydro's 2021-2022 costs assessment invoice from the OEB's administrative monetary penalty funds to supplement utilities' LEAP budgets for 2021. OEB Letter, *July 2021 Cost Assessment Invoice and Temporary Changes to the Screening Guidelines for the Low-income Energy Assistance Program – Emergency Financial Assistance*, (July 14, 2021).
[10] The indicated amounts exclude funding and grants from the Pichette settlement funds, which are administered by United Way of Greater Toronto (see section 3.3 below).
[11] *Ibid.*

Table 5: Toronto Hydro's 2025-2029 LEAP Funding Plan ($ Millions)[12]

	Rates Funding – 0.15% of Revenue Requirement (A)	LEAP Funds Carried Over from Previous Years (B)	Total Annual Funding (A + B)	15% Agency Admin Fees	Total Funds Available for LEAP Disburse-ments	Estimated Customers Assisted Per Year
2025	$1.5	$0.5	$2.1	$0.3	$1.8	1,800
2026	$1.6	$0.5	$2.1	$0.3	$1.8	1,800
2027	$1.7	$0.5	$2.2	$0.3	$1.9	1,900
2028	$1.8	$0.5	$2.3	$0.4	$2.0	2,000
2029	$1.9	$0.5	$2.4	$0.4	$2.1	2,000
TOTAL	**$8.5**	**$2.6**	**$11.2**	**$1.7**	**$9.5**	**9,500**

[12] Variances due to rounding may exist. Column "B" shows the cumulative LEAP funds carried over from the 2020-2024 rate period spread out over the 5 years of the 2025-2029 rate period.

COMMON COSTS AND ADJUSTMENTS

1. OVERVIEW

This schedule describes Toronto Hydro's costs that are not attributable to a specific program or would be administratively difficult or immaterial to allocate. The total expenditures associated with this schedule are comprised of ongoing or recurring costs and adjustments.

Table 1: Common Costs and Adjustments ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Ongoing or Recurring	(0.2)	(0.3)	(1.0)	(1.1)	(0.9)	(0.9)	(0.9)	(0.8)	(0.8)	(0.8)
Total	**(0.2)**	**(0.3)**	**(1.0)**	**(1.1)**	**(0.9)**	**(0.9)**	**(0.9)**	**(0.8)**	**(0.8)**	**(0.8)**

2. ONGOING OR RECURRING COSTS AND ADJUSTMENTS[1]

Ongoing or recurring costs and adjustments are comprised of the following expenditures described in further detail in the sections below.

2.1 Difference in Forecast and Actual Employee Benefits Costs

Toronto Hydro provides current employees with benefits that include medical, dental, and life insurance benefits, and includes a provision for employees' future benefits. Benefit costs are allocated through the payroll process using budgeted rates. The actual costs for benefits are based on employee consumption. The difference between budgeted and the actual benefit costs incurred by the utility are reflected in this Schedule.

[1] The utility has not included any one-time costs for recovery.

2.2 Investment Tax Credits ("ITC")

The Historical (2020-2022), Bridge (2023-2024), and Forecast Year (2025-2029) costs reflect both refundable and non-refundable ITCs in compliance with International Financial Reporting Standards ("IFRS").[2]

2.3 Financing Costs

Financing costs are made up of standby fees, the amortization of the upfront and arrangement fees for Toronto Hydro's revolving credit facility, and letters of credit fees.

2.4 Common Costs and Adjustments Year-over-Year Variance Analysis

2020-2021 Variance Explanation

The decrease of $0.1 million is primarily due to difference in forecasted and actual employee benefits costs in 2021.

2021-2022 Variance Explanation

The decrease of $0.7 million is primarily due to higher ITC credit received in 2022 and difference in forecasted and actual employee benefits costs in 2022.

2022-2025 Variance Explanation

Between 2022 and 2025, Toronto Hyro forecasts immaterial increase of $0.1 million due to higher financing costs.

[2] Exhibit 6, Tab 2.

2025-2029 Variance Explanation

Toronto Hydro forecasts immaterial variances in common costs and adjustments over the 2025-2029 rate period, except for a forecasted increase of $0.1 million from 2026 to 2027 due to higher financing costs.

ALLOCATIONS AND RECOVERIES

1. OVERVIEW

This schedule discusses the allocations and recoveries of Toronto Hydro's total Operations, Maintenance, and Administration ("OM&A") costs to reflect the recovery of certain expenditures such as warehousing, facilities, fleet and equipment, and Information Technology ("IT") services obtained by internal user departments through other OM&A and/or capital programs and shared services.

2. DESCRIPTION

Table 1 below provides a breakdown of the historical (2020-2022), bridge (2023-2024), and forecast year (2025-2029) allocations to and recoveries from Toronto Hydro's OM&A expenditures. The manner of allocation for each individual component is discussed in detail below.

Table 1: Allocations and Recoveries Adjustments to OM&A ($ Millions)

Segment	Actual			Bridge		Forecast				
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
On-cost recovery	(13.2)	(12.9)	(14.2)	(16.9)	(19.1)	(21.7)	(23.7)	(25.1)	(25.7)	(27.3)
Fleet Recovery Offset	(9.6)	(9.8)	(9.4)	(10.3)	(10.7)	(11.0)	(11.3)	(11.5)	(11.8)	(12.2)
IT and Occupancy Charges	(0.8)	(0.8)	(0.6)	(0.8)	(0.8)	(0.9)	(0.9)	(0.9)	(0.9)	(0.9)
Shared Services	(1.0)	(2.3)	(1.5)	(3.0)	(2.9)	(3.4)	(3.0)	(3.2)	(3.4)	(3.8)
Other Allocated Costs	(0.9)	(0.8)	(0.8)	(0.4)	(0.4)	(0.5)	(0.5)	(0.5)	(0.5)	(0.6)
Total	**(25.5)**	**(26.6)**	**(26.5)**	**(31.4)**	**(33.9)**	**(37.5)**	**(39.4)**	**(41.2)**	**(42.3)**	**(44.8)**

3. ON-COST RECOVERY

On-cost recovery is a material handling surcharge applied to all inventory issuances from the warehouse by the Supply Chain OM&A program to both capital and operational projects.[1] If the items issued from the warehouse are associated with capital projects, the on-cost charge is capitalized, whereas if the items issued are associated with operational projects, the on-cost charge is expensed in the period in which it is incurred.

The costs included in the on-cost recovery are mainly comprised of:

- Supply Chain OM&A program compensation costs;
- Directly attributable support costs; and
- Other warehouse costs (e.g. warehouse maintenance costs).

4. FLEET RECOVERY

The allocation of fleet costs is based on the number and type of vehicles used in projects and contributes to Toronto Hydro's efficient utilization of vehicles in the Fleet and Equipment Services program.[2] In the case of maintenance projects, the allocation provides for a transfer of operating costs from the Fleet and Equipment Services program to other programs using vehicles and equipment. In the case of capital projects, the allocation provides for a transfer of operating costs to capital projects. The allocation to capital is based on the nature of the work performed and follows Toronto Hydro's labour costing methodology.

The costs included in the fleet allocation are mainly comprised of:

- Fleet and Equipment OM&A program compensation costs;
- Parts and materials;
- Vehicle insurance, licensing, and registration; and
- Other fleet costs.

[1] Exhibit 4, Tab 2, Schedule 13.
[2] Exhibit 4, Tab 2, Schedule 11.

The Fleet and Equipment Services program employs a vehicle "lease-rate" cost recovery model, whereby vehicle expenses are recovered using a monthly user charge at the vehicle class level (e.g. "Compact Car", "Passenger Minivan up to 2,500 kilograms"). The lease-rate is calculated on an annual basis to ensure that operating cost changes at the vehicle class level are accurately reflected in user lease rates of the following year.

5. IT AND OCCUPANCY CHARGES

The allocation of IT charges to Toronto Hydro's affiliates and non-rate regulated business is based on support by the IT OM&A program to end users of IT assets and systems, including directly attributable labour and support costs, and contributes to Toronto Hydro's efficient use of technology assets.[3]

The costs included in the IT allocation are comprised mainly of:

- IT OM&A program compensation costs; and
- Directly attributable support costs.

The allocation of occupancy charges and Facilities Management OM&A program costs is based on square-footage and type of space used and contributes to the efficient use of space within Toronto Hydro's facilities.[4]

The costs included in the occupancy and facilities allocation primarily consist of:

- Facilities Management OM&A program compensation costs;
- Maintenance costs;
- Facilities costs;

[3] Exhibit 4, Tab 2, Schedule 17.
[4] Exhibit 4, Tab 2, Schedule 12.

- Utilities costs;
- Property taxes; and
- Property leases.

6. SHARED SERVICES

Toronto Hydro allocates shared services costs included in OM&A programs to its affiliate corporations and the non-rate regulated business of the utility. For more information about Toronto Hydro's shared services model and a description of Toronto Hydro's corporate structure and governance, please respectively refer to Exhibit 4, Tab 5 and Exhibit 1C, Tab 2, Schedule 1.

7. OTHER ALLOCATED COSTS

Other allocated costs represent costs which are not specifically attributed to an OM&A program.

PURCHASES OF NON-AFFILIATE SERVICES

Toronto Hydro's Procurement Policy (the "Policy") establishes processes and protocols for obtaining services, equipment, and materials that satisfy the operational needs of the utility in a manner that appropriately balances cost and value. Toronto Hydro relies on a comprehensive governance framework for its procurement activities. The Policy is set out at Appendix A to this Schedule.

Procurement exceeding $25,000 in value is sourced in accordance with Toronto Hydro's competitive procurement procedure, which outlines the general competitive bid process and sets out various rules with respect to communications, negotiations, bid reviews, and conflicts of interest. This formalized competitive bidding process helps ensure that the procurement process remains fair, transparent, efficient, and consistent.

1. SOLE SOURCING

Where procurement is related to, amongst other things, unforeseeable circumstances or where there is only one vendor uniquely qualified to deliver goods or services, Toronto Hydro may use sole source procedures as described in the Policy.[1] When exercising the option to perform sole source procurement, Toronto Hydro is often able to reduce the cost of goods or services or improve the value proposition in other ways.

Before executing sole source procurements, Toronto Hydro conducts due diligence reviews of the sole source purchase request. The reviews determine if the sole source purchase is warranted, and include a review of the proposed contract's specifications, scope, definition, commercial terms, liabilities, and insurance requirements.

[1] See Appendix A to the Procurement Policy (Exception 4).

Proposed sole source procurements that pass the review process are finalized through contract negotiations with the vendor. At that point, a purchase order is issued.

2. PRE-QUALIFICATIONS FOR CONSTRUCTION CONTRACTS

When Toronto Hydro contemplates a civil or electrical construction project, potential contractors are pre-qualified in accordance with Toronto Hydro's pre-qualification procedure. A contractor's pre-qualification signifies that the contractor has met the minimum requirements established by Toronto Hydro for the purposes of a project. The factors used for evaluating contractors at this stage include, but are not limited to, technical skill and competence, experience, financial viability, health and safety record, reputation, work load, and any previous relationship with Toronto Hydro.

All contracts are authorized and executed in accordance with Toronto Hydro's Signing Policy. Toronto Hydro's signing authorization levels are approved by the Board of Directors and delegated to individual members of the executive and senior management of the utility to facilitate the day-to-day running of the business. Contracts must be signed by an authorized person who is directly responsible for the budget related to the subject area of the contract. Toronto Hydro's signing authorization levels for procurement contracts are shown in Table 1, below.

Table 1: Toronto Hydro's Signing Authorization Levels for Procurement Contracts

Category	President and CEO	CFO	Responsible Officer	Controller	General Manager	Director	Manager that is a direct report of an Officer
Procurement Signing Limit	Up to $30M	Up to $5M	Up to $5M	Up to $1M	Up to $500,000	Up to $250,000	Up to $150,000

3. COMPLIANCE CONFIRMATION

Toronto Hydro confirms that its non-affiliate purchases are in compliance with the utility's Policy. Appendix B identifies non-affiliate services that were procured in 2020, 2021, 2022, and 2023 under the exceptions to the general procurement rules contemplated within the Policy. These engagements did not originate from a competitive procurement process and surpass the utility's materiality threshold of $1 million.

POLICY

PROCUREMENT	**Policy Owner:** **Executive Vice-President Planning & Chief Engineering & Modernization Officer (THESL)**
	Policy Approver: **Policy Administration Steering Committee**
	Version Approval Date: **V8.0 2022-04-12**
	Last Reviewed by PASC: **V8.0 2022-04-12**
The most recent version of this policy can be obtained from the Toronto Hydro intranet Plugged In at: http://pluggedin.torontohydro.com/policy/Pages/DistributionGridManagementPolicies.aspx	
The distribution of this policy is not restricted.	

Anthony Haines
President and CEO, Toronto Hydro Corporation

May 6, 2022

Date

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1 DOCUMENT REVIEW & REVISION HISTORY

This policy is reviewed annually.

Version Number	Date of Review	Reviewed By	Brief Description of Change
V1.0	2007-07-01	PASC	V1.0 approved by PASC.
V2.0	2009-10-23	PASC	V2.0 Approved outside of regular scheduled PASC meeting
V3.0	2013-04-25	PASC	V3.0 approved by PASC members
V.3.1	2013-12-09	PASC	V3.1 approved by PASC
V4.0	2015-06-09	PASC	Administrative Changes V4.0 approved by PASC
V5.0	2017-10-16	PASC	Administrative Changes. Additional changes to align with new THESL Signing Policy. Added standards section regarding conflicts with other corporate policies and tracking policy compliance.
V6.0	2018-10-22	PASC	Administrative Changes. Added clause to address procurement affecting real property. Additional changes to align with the THESL Signing Policy
V7.0	2020-05-26	PASC	Added new clause for Supplier References, added new exception for Contract term as it relates to real property, added new exception for Crisis and Emergency management. General clarifications.
V8.0	2022-04-12	PASC	-Added new clause for Procurement between THESL and Affiliates -Modified clause 7.4, Administrative Changes.

2 DISTRIBUTION HISTORY

Version Number	Date of Issue	Recipients
V1.0	2007-07-01	Toronto Hydro @ Home Employee Extranet
V2.0	2009-10-26	Toronto Hydro @ Home Employee Extranet
V3.0	2013-05-10	Toronto Hydro Intranet Plugged In at: http://pluggedin.torontohydro.com/policy/Pages/
V3.1	2013-12-09	Toronto Hydro Intranet Plugged In at: http://pluggedin.torontohydro.com/policy/Pages/
V4.0	2015-06-09	Toronto Hydro Intranet Plugged In at: http://pluggedin.torontohydro.com/policy/Pages/
V5.0	2017-10-16	Toronto Hydro Intranet Plugged In at: http://pluggedin.torontohydro.com/policy/Pages/
V6.0	2018-10-22	Toronto Hydro Intranet Plugged In at: http://pluggedin.torontohydro.com/policy/Pages/
V7.0	2020-05-26	Toronto Hydro Intranet Plugged In at: https://pluggedin.torontohydro.com/policy/Pages/allpolicies.aspx
V8.0	2022-04-12	Toronto Hydro Intranet Plugged In at: https://pluggedin.torontohydro.com/policy/Pages/allpolicies.aspx

3 POLICY OVERVIEW

This policy outlines the process that is to be followed for the procurement of any good or service by any of Toronto Hydro's corporate entities. The goals of this policy are to ensure Toronto Hydro business objectives are achieved and to facilitate compliance with applicable internal standards and requirements as well as regulatory, statutory and other legal requirements.

4 DEFINITIONS AND ABBREVIATIONS

TERM or ACRONYM	DESCRIPTION
Affiliate	An affiliate has the same meaning as in the Business Corporations Act (Ontario). THESL's affiliates are Toronto Hydro Corporation (THC), Toronto Hydro Energy Services Inc. (THESI), any other Subsidiary, the City of Toronto, and other City-owned entities (agencies, boards, commissions and corporations).
Authorization Level Document	The most recent version of the Authorization Level Document setting out expenditure levels for authorized persons.
Board	The Board of Directors of Toronto Hydro Corporation or of any Subsidiary as may be applicable.
Business Unit	The Toronto Hydro Corporation or Subsidiary department requesting a Procurement.
CEO	President and Chief Executive Officer of Toronto Hydro.
CIO	Customer Care & Chief Information Officer of THESL.

TERM or ACRONYM	**DESCRIPTION**
Contract	Contract means: (i) an agreement for the payment of monies, delivery of goods/services, or transfer, sale or lease of property, material or equipment; (ii) an agreement that relates to financing activities, capital management initiatives, the granting of liens or other secured arrangements; (iii) an easement or right-of-way; (iv) a release or settlement of claim; or (v) any other agreement or document that imposes binding obligations on the Corporation.
Confidential Information	All information and data of any nature relating to the business and operations of Toronto Hydro or any of its affiliates (as that term is defined in the Business Corporations Act (Ontario)), including without limitation, information or data that relates to prices, or forms of contracts, or is financial, technical, business, operational or marketing in nature, or relates to research, development, marketing plans, generating facilities, machinery, equipment configurations, generation, costs, customers, suppliers, formulae or terms of sale, whether factual or interpretive, in all cases whether in written, oral, visual, photographic, electronic, magnetic or other form, and whether or not identified verbally, visually or in writing as confidential.
Contract Amount	The total amount of expenditures required under any Contract, excluding HST and any other value added tax, and shall be determined by calculating the total amount of all possible expenditures over the term of the Contract, including all years of a multi-year term and all years of all possible Contract renewals, and shall include the potential maximum amount of all conditional, contingent and variable payments. Procurements shall not be artificially divided so as to constitute a Contract Amount below applicable threshold values. For Contracts to be signed by the CEO, the Contract Amount shall exclude the value of any optional Contract renewal years where this option is exercised at the Corporation's discretion.
Enterprise Connect	Toronto Hydro enterprise resourcing planning system.
Executives	The Executive Vice Presidents of Toronto Hydro or of any Subsidiary as may be applicable.

TERM or ACRONYM	**DESCRIPTION**
Personal Information	Information about an identifiable individual that is in the possession of or under the control of Toronto Hydro, including: (a) information relating to race, national or ethnic origin, colour, religion, age, sex, sexual orientation, marital status, education, medical and employment history; (b) any identifying number, symbol, or other particular assigned to him or her; (c) his or her address or telephone number; (d) his or her name if it appears with other information about the individual or would reveal his or her Personal Information; and (e) his or her personal opinions or views except if they relate to another individual. Personal Information does not include an individual's business contact information or work product, nor does it include information that has been aggregated or de-identified, such that an individual's information cannot be identified. Personal Information does not include information that is maintained for the purpose of creating a record that is available to the general public.
Procurement	A purchase, agreement to purchase, licence, lease or rental of any good or service, including an agreement to purchase construction services. Includes any extension or renewal of any procurement or construction Contract made prior to the date of this policy.
Procurement Policy	This Procurement Policy together with all forms and procedures referenced herein.
Senior Management	The Manager, Director, or General Manager of any Business Unit with responsibility for an approved budget for the Procurement in question.
Senior Management, IT	The Senior Management that is responsible for the operation of the Information Technology department.
Senior Management, Supply Chain Services	The Senior Management that is responsible for the operation of the Supply Chain Services.
Signing Policies	The most recent versions of the signing policies of Toronto Hydro as approved by the relevant Board of Directors.
Subsidiary	Toronto Hydro-Electric System Limited, Toronto Hydro Energy Services Inc. and any other direct or indirect subsidiary of Toronto Hydro Corporation, from time to time.
Supply Chain Services	The department responsible for all the Procurements within Toronto Hydro.
THESL	Toronto Hydro-Electric System Limited.
Toronto Hydro	Toronto Hydro Corporation and its Subsidiaries.

5 SCOPE

This policy applies to all Procurements made by Toronto Hydro except as otherwise authorized in writing by the Board or the CEO.

5.1 This policy is designed to augment other corporate policies and is not intended to replace or preclude them. Should an overlap arise between the application of this policy and any other policy, the policy most specific to the situation will apply.

6 OBJECTIVES

6.1 This policy is intended to assist in achieving Toronto Hydro's business objectives such as:

- Ensuring efficient Procurement at most favourable acquisition cost
- Promoting the use of competition in selecting suppliers and contractors
- Providing for the fair and equitable treatment of all suppliers and contractors
- Providing safeguards for maintaining a Procurement system of quality and integrity
- Ensuring suppliers meet or exceed Toronto Hydro's quality, safety and environmental requirements
- Ensuring that all Procurement is made in compliance with all regulatory requirements and applicable laws

7 GENERAL PROCUREMENT RULES APPLICABLE TO ALL BUSINESS UNITS

Unless otherwise authorized in writing by the Board or the CEO:

7.1 All Procurement shall be administered by the Supply Chain Services. All Procurement shall be reviewed and approved by Senior Management, Supply Chain Services unless it meets conditions outlined in section 2 of the *Appendix A - Exceptions to General Procurement Rules.*

7.2 Other than the exceptions in *Appendix A - Exceptions to General Procurement Rules*, all Procurements shall be sourced via the *Procedure for Competitive Procurement*.

7.3 All approved Procurement shall be processed and documented in accordance with the *Procedure to Document Approved Procurement*.

7.4 All Procurement of information technology related goods or services (including computer equipment, software or related services) with a Contract Amount greater than $25,000 USD or CAD must also be approved by the CIO or Senior Management, IT in writing**.** For all other Procurement of information technology related goods or services (including computer equipment, software or related services) Business Unit must consult with IT before Procurement.

7.5 The initial term for any Contract shall not exceed five (5) years, and any renewal term(s) shall not exceed a total of five (5) years unless it meets conditions outlined in section 8 of the *Appendix A - Exceptions to General Procurement Rules.*

7.6 The Senior Management, Supply Chain Services may at any time request that a particular Procurement be made through the *Procedure for Competitive Procurement*.

7.7 No current employee of Toronto Hydro shall communicate with a third party about a former or current supplier for purposes of providing reference/recommendation where such reference recommendation could be in any way construed as a reference/recommendation made on behalf of Toronto Hydro or that directly relates to work performed by the supplier unless authorized in writing by Senior Management, Supply Chain Services.

8 PROCUREMENT BETWEEN THESL AND AFFILIATES

8.1 Any and all Procurement involving the provision or receipt of services, resources, products, or use of an asset between THESL and one or more Affiliates must comply with the Ontario Energy Board's Affiliate Relationships Code for Electricity Distributors and Transmitters. For greater clarity, this includes transactions subject to Appendix A - Exceptions to General Procurement Rules.

8.2 Supply Chain Services and/or Business Units shall be responsible for obtaining the appropriate regulatory and legal advice from the Director, Regulatory Applications & Business Support and Director, Business Law Services or their respective delegates.

9 OWNERSHIP, APPROVAL AND RESPONSIBILITIES

Policy Owner

9.1 This policy is owned by the Executive Vice-President Planning & Chief Engineering & Modernization Officer (THESL).

9.2 The Executive Vice-President Planning & Chief Engineering & Modernization Officer is responsible for:

- Ensuring that this policy is comprehensive, clear and current
- Ensuring that this policy is implemented and communicated to the departments and staff that are impacted
- Ensuring ongoing compliance with this policy
- Reviewing this Policy annually and recommending any amendments for approval by the Administration Steering Committee

Policy Approver

9.3 This policy is approved by the Policy Administration Steering Committee.

9.4 The Policy Administration Steering Committee is responsible for:

- Considering the impact of the proposed policy to the identified risk
- Reviewing and approving any proposed amendments or content extensions to this policy
- Reviewing and approving this policy annually

Designated Responsible Person (DRP)

9.5 This policy is managed by the Senior Management, Supply Chain Services.

9.6 The Senior Management, Supply Chain Services is responsible for:

- Immediately communicating any exceptions or violations of this policy to the Executive Vice-President Planning & Chief Engineering & Modernization Officer.
- Reviewing this policy annually and communicating any proposed amendments to the Executive Vice-President Planning & Chief Engineering & Modernization Officer.
- Conducting quarterly reviews to ensure compliance with this policy

Staff

9.7 All Toronto Hydro employees, officers and directors are required to comply with this policy.

10 POLICY COMMUNICATION

10.1 Table below outlines how this policy changes will be communicated to Toronto Hydro

TYPE OF COMMUNICATION	COMMUNICATION TRIGGER	PARTY RESPONSIBLE FOR POLICY COMMUNICATION	AUDIENCE	ACKNOWLEDGEMENT?
E-mail	Minor policy Revision as per discretion of Executive Vice-President Planning & Chief Engineering & Modernization Officer.	Senior Management, Supply Chain Services	All Business Unit employees involved in any Procurement	No
Plugged In	Minor policy Revision as per discretion of Executive Vice-President Planning & Chief Engineering & Modernization Officer	Senior Management, Supply Chain Services	All Business Unit employees involved in any Procurement	No
Presentation	Significant policy Revision as per discretion of Executive Vice-President Planning & Chief Engineering & Modernization Officer	Senior Management, Supply Chain Services	All Business Unit employees involved in any Procurement	Quiz and Attestation

11 POLICY COMPLIANCE AND VIOLATIONS

11.1 Any employee who fails to comply with this policy is subject to disciplinary action up to and including dismissal.

11.2 Failure to comply with this policy will pose significant financial, operational, legal and regulatory risks to Toronto Hydro.

Compliance Monitoring

11.3 Senior Management, Supply Chain Services is responsible for tracking and collecting applicable data, measuring compliance and reporting in such format as may be required.

12 RELATED LAWS, REGULATIONS AND DOCUMENTATION

This policy shall be read and applied in conjunction with the Signing Policies, the Authorization Level Document, as well as the following documents and regulatory authorities:

- *Appendix A - Exceptions to General Procurement Rules*
- *Procedure for Competitive Procurement*
- *Competitive Procurement Request Form*
- *Competitive Procurement Evaluation Recommendation Form*
- *Sole Source Justification Form*
- *Extending Existing Contract Justification Form*
- *Procedure to Document Approved Procurement*
- *Non-Discretionary Providers List*
- *Contractor Pre-Qualification Application*
- *Ontario Energy Board Affiliate Relationships Code for Electricity Distributors and Transmitters*

1	**Petty Cash or Procurement Credit Card Purchases**	Procurement Policy does not apply to the following items:	
		1.1	Procurement that is processed in accordance with the most recent version of the Petty Cash Policy.
		1.2	Procurement that is processed in accordance with the most recent version of the Procurement Card Policy.
2	**Purchases Below $25,000**	Procurement that meets all of the following conditions may be sourced using procedures outlined in this section instead of the competitive procedures described in section 7.2 of the Procurement Policy or the sole source procedures described in section 4 of this document.	
		Conditions	
		2.1	Annual cumulative Contract Amount of the Procurement from a particular vendor is below $25,000.00 USD or CAD.
		2.2	Procurement is not artificially divided so as to constitute a Contract Amount below $25,000.00 USD or CAD.
		Procedures	
		2.3	If all of the above conditions have been met, an authorized person under the Authorization Level Document may approve such Procurement.
		2.4	It is strongly recommended to solicit at least 3 quotes from different suppliers to ensure competitive pricing.
		2.5	The Business Unit shall retain all documentation, including award justification, related to such Procurement for a review by the Supply Chain Services or Toronto Hydro's Internal Audit department or as otherwise directed by the Supply Chain Services on annual or as needed basis.
		2.6	Documentation shall be retained for no less than six years from the time of the Procurement and in accordance with Toronto Hydro's Records Management Policy.
3	**Contract Value Adjustments**	Procurement that meets all of the following conditions may be sourced using procedures outlined in this section instead of the competitive procedures described in section 7.2 of the Procurement Policy or the sole source procedures described in Section 4 of this document.	
		Conditions	
		3.1	Procurement represents an amendment to the original Contract Amount of an active, unexpired Contract.
		3.2	Cumulative value of all amendments is less than or equal to 10% of the original Contract Amount or is less than or equal to $250,000.00, whichever is smaller.
		Procedures	
		3.3	If all of the above conditions have been met, Senior Management may in writing, at his/her discretion and in accordance with the Signing Policy, authorize such Procurement.
		3.4	The Business Unit shall retain all documentation related to such Procurement for a review by the Supply Chain Services

			Department or the Internal Audit Department or the Legal Services department or as otherwise directed by the Supply Chain Services Department on as needed basis.
		3.5	Documentation shall be retained for no less than six years from the time of the Procurement and in accordance with Toronto Hydro’s Document Retention Policy.
4	**Sole Source Procurement**	Procurement that meets any of the following conditions may be sourced using procedures outlined in this section instead of the competitive procedures described in section 7.2 of the Procurement Policy.	
		Conditions	
		4.1	Procurement cannot be processed in accordance with section 7.2 of the Procurement Policy due to time contraints imposed by an unforseeable situation or an emergency.
		4.2	Only one vendor is uniquely capable of providing goods or services.
		4.3	Procurement represents an amendment to the original Contract Amount above the threshold outlined in section 3.2 (of this document) or original term of an active, unexpired Contract.
		4.4	Procurement is related to a government or municipal agency that is not included in the *Non-Discretionary Providers List.*
		4.5	Competitive sourcing is currently in progress and goods or services are required for business continuation.
		4.6	Procurement is related to membership or donations.
		4.7	Goods or services required to support existing infrastructure, equipment, or system/applications and are either proprietary or are unavailable from any source except original supplier.
		4.8	Toronto Hydro is performing work on a property that can only be done by the lessor, owner, or their approved suppliers.
		4.9	Lease agreements.
		4.10	Procurement of goods or services for which Toronto Hydro will be fully reimbursed.
		Procedures	
		4.11	Business Unit shall submit a sole source purchase requisition in the Enterprise Connect (SAP) for the entire Contract Amount.
		4.12	Business Unit Executive shall review and authorize all sole source requisitions.
		4.13	Business Unit must complete and submit a *Sole Source Justification Form* to the Supply Chain Services.
		4.14	Upon receiving a completed *Sole Source Justification Form*, the Supply Chain Services will conduct a due diligence review in connection with the sole source purchase request. The review will also determine if the sole source purchase is in the best interests of Toronto Hydro, and include a review of the proposed contract's specifications, scope, definition, commercial terms, liabilities, and insurance requirements.
		4.15	Senior Management, Supply Chain Services shall review and authorize all sole source requisitions.

5	**Procurements From Non-Discretionary Providers**	Procurement that meets all of the following conditions may be sourced using procedures outlined in this section instead of the competitive procedures described in section 7.2 of the Procurement Policy or the sole source procedures described in Section 4 of this document.	
		Conditions	
		5.1	Supplier is listed on the *Non-Discretionary Providers List.*
		Procedures	
		5.2	An authorized person under the Authorization Level Document may approve such Procurement.
		5.3	This procurement may be paid via the non-order invoice.
6	**Extension of Existing Contracts**	Procurement that meets any of the following conditions may be sourced using procedures outlined in this section instead of the competitive procedures described in section 7.2 of the Procurement Policy.	
		Conditions	
		6.1	Business Unit wishes to exercise its contractual right to extend an existing Procurement as set out in an existing contract.
		6.2	Contract has provisions for extensions.
		6.3	Contract Amount is not depleted.
		Procedures	
		6.4	Business Unit shall complete *Extending Existing Contract Justification Form* and submit it to Supply Chain Services.
		6.5	Upon receiving a completed *Extending Existing Contract Justification Form*, the Supply Chain Services in consultation with Legal Services department will conduct a due diligence review of the extension request to determine if the current contract permits such an extension and whether such extension is in the best interests of Toronto Hydro, including a review of the proposed contract's specifications, scope, commercial terms, liabilities, and insurance requirements. Supply Chain Services will then process the request.
7	**Crisis / Emergency Management**	Procurement that meets all of the following conditions may be sourced using procedures outlined in this section instead of the competitive procedures described in section 7.2 of the Procurement Policy or the sole source procedures described in Section 4 of this document.	
		Conditions	
		7.1	Declaration of crisis / emergency by the Grid Emergency Management, Executives, or CEO.
		Procedures	
		7.2	If all of the above conditions have been met, Senior Management, Supply Chain Services may in writing, at his/her discretion and in accordance with the Authorization Level Document, authorize such Procurement.

		7.3	Supply Chain Services shall retain all documentation, including award justification, related to such Procurement for a review by the Toronto Hydro’s Internal Audit department on annual or as needed basis.
		7.4	Documentation shall be retained for no less than six years from the time of the Procurement and in accordance with Toronto Hydro’s Records Management Policy.
8	**Contract Term exemption**	Procurement that meets all of the following conditions may have a longer Contract term than described in section 7.5 of the Procurement Policy.	
		Conditions	
		8.1	Procurement is related to Real Estate leasing agreement.
		Procedures	
		8.2	If all of the above conditions have been met, The Executive Vice President, Chief Customer Care, Electric Operations & Procurement Officer may in writing, at his/her discretion authorize such procurement.

Appendix B
Engagements Not Originating from a Competitive Procurement Process

Year	Supplier Name	Cost ($M)	Summary of Nature of Transaction	Methodology used for Selection
2020	Anixter Power Solutions Canada	$4,500,000	Purchase of submersible and vault transformers for business continuity and contingency management.	Sole Source
2020	Oracle Canada ULC	$2,000,000	Purchase of proprietary license subscriptions and maintenance.	Sole Source
2020	SAP Canada Inc.	$1,600,000	Purchase of SAP licence products for system capability expansion.	Sole Source
2020	Bentley Canada Inc.	$1,300,000	Purchase of support and maintenance services for Bentley MicroStation application.	Sole Source
2020	Dynatrace Corporation of Canada	$1,245,000	Purchase of support services for suite of Dynatrace application monitoring products.	Sole Source
2021	Motorola Solutions Canada Inc.	$1,802,000	Purchase of radio-based communication equipment upgrades.	Sole Source
2021	IBM Canada Ltd.	$1,800,000	Purchase of support services for IBM software and maintenance products.	Sole Source
2022	SAP Canada Inc.	$3,851,088	Purchase of maintenance and support for SAP software applications.	Sole Source
2022	Nokia Canada Inc.	$1,200,000	Purchase of proprietary software used for capacity augmentation and maintenance.	Sole Source
2023	Trans Canada Forest Products	$2,000,000	Purchase of treated wood poles for business continuity and contingency management.	Sole Source
2023	Dell Canada Inc.	$4,600,000	Purchase of licences for a suite of Dell application storage products.	Sole Source

WORKFORCE STAFFING AND COMPENSATION OVERVIEW

Investments in human capital are a key component of the 2025-2029 investment plan, as Toronto Hydro relies on having a highly-skilled and dedicated workforce to deliver the 38 capital and operations work programs in Exhibit 2B and Exhibit 4, Tab 2, respectively. Without a sufficiently skilled and capable workforce, Toronto Hydro would face significant risks in executing its plan and achieving performance outcomes that customers need and value.[1] To prevent these consequences, the utility needs to increase its workforce capacity by approximately 214 resources starting in 2024 through 2029.[2] On a Full Time Employee ("FTE") basis as outlined in Appendix 2-K, this increase amounts to roughly 25 percent of the overall FTE complement.

In addition to the accelerated pace of investment that is required to sustain, modernize and expand the grid for an electrified future, changes in technology, policy and customer expectations are putting pressure on the workforce to be future-ready and capable with enhanced skills to perform work in an increasingly fast-paced, complex and data-intensive operating environment. Toronto Hydro's workforce plan includes critical investments in building advanced skills and capabilities needed to rise up to the challenge.

The evidence in this Exhibit 4, Tab 4 presents Toronto Hydro's workforce needs, plans and its compensation strategies and costs for the 2025-2029 rate period as follows:

- Schedule 1 – Overview
- Schedule 2 – OEB Appendix 2-K (Employee Cost)
- Schedule 3 – Staffing Strategy

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[1] Please see Exhibit 1B, Tab 3, Schedule 2 for an overview of Toronto Hydro's historical performance.
[2] The staffing plan is based on headcount needs and requirements over the filed period. Appendix 2-K presents the translation of the staffing plan to budgeted full time equivalents (FTEs).

- Schedule 4 – Compensation
- Schedule 5 – Mercer Benchmarking Report

1. STAFFING PLAN AND CHALLENGES

Toronto Hydro has a robust and engaged workforce that delivers valuable outcomes to the company and its customers. The key tenets of Toronto Hydro's workforce philosophy are:

a) Talent Acquisition & Development: Attract and recruit talent for the organization to fill critical roles and achieve business objectives. Provide training and development opportunities to help employees grow and acquire new skills, create career paths and implement succession plans.

b) Workforce Culture, Diversity and Inclusion: Create a diverse and inclusive workplace where everyone feels valued, supported and respected. Foster a growth mindset and positive culture that promotes employee engagement, wellness and work-life balance to maintain an engaged, innovative and high-performing workforce.

c) Performance and Productivity: Achieve objectives by setting clear expectations, providing regular feedback, and recognizing and rewarding employees who meet or exceed expectations. Embrace new technology and invest in tools and systems that can improve efficiency, automate repetitive tasks, enhance the quality of work, and promote collaboration across teams.

d) Agility & Innovation: Adapt to evolving business needs, emerging technologies, and changing market conditions by leveraging data and analytics to monitor market trends, measure performance, and make data-driven decisions.

1.1 Needs and Challenges

Over the last decade and throughout the current rate period, Toronto Hydro focused on rebuilding and replenishing its workforce in the face of both familiar challenges (i.e.

retirements and attracting and retaining talent) and emerging challenges brought on COVID-19 and other external factors affecting Toronto Hydro's business. During the pandemic, Toronto Hydro's workforce numbers reached a historic low in 2021. Retirements that were expected to be paced fairly evenly over the 2020-2025 rate period were instead concentrated in years 2020 and 2021. At the same time, the pandemic temporarily suspended talent acquisition, training, and development for critical areas and skill sets established during the previous rate period. As a result, Toronto Hydro's plans to increase its staffing levels over the 2020-2024 period were delayed.

Toronto Hydro proved its aptitude in addressing these challenges, with notable achievements including:

- Over 100 trades and technical positions filled as of 2022;
- Average age of employees in 2022 was 40 – a 14% decrease over the last decade;
- 76% talent retention rate;
- 25% of roles filled by new graduates from colleges and universities;
- Continued focus on job harmonization with the Power Line Technician trade, augmenting total harmonization from 51 non-management unionized jobs to 12; and
- 40% of roles filled from within to support career development, talent retention and succession planning.
- Total recordable injury frequency improved by 43% from 2018 to 2022 leading to a safer and more productive workforce;
- Consistently ranked as one of the Best Corporate Citizens in Canada by Corporate Knights since 2018 (in 2022 placing 2nd overall and 1st in the category of Electricity Transmission and Distribution) in recognition of responsible investments to achieve social and environmental benefits for the customers of Toronto Hydro; and

- Received multiple awards, including: (i) recognition by Electricity Canada for Leadership in External Collaboration and Partnerships, and the President's Award of Excellence for Employee Safety – Distribution, (ii) sustainability leader by Canada's 2024 Clean50, in addition to earning a spot on Canada's Clean16 list as a top contributor in the category of Traditional Energy and (iii) Most Effective Recovery Award from the Business Continuity Institute Americas recognizing Toronto Hydro's response to COVID-19 and its efforts to mobilize immediately to protect its workforce and the public, while continuing to provide safe and reliable delivery of electricity throughout the city of Toronto.

In addition to these achievements, the utility also expects to successfully implement its resource plan over the current rate period by catching-up to the overall levels that were forecasted in the 2020-2024 rate application.[3] Yet fundamental shifts have taken place since the last application that have material implications, and require responsive action over the 2025-2029 rate period. Customers, governments, and markets have started coalescing around a need to accelerate the energy transition to mitigate the existential and economic impacts of climate change. As customers electrify previously non-electric energy uses (e.g. transportation and heating) and increase participation in clean energy production and management, these actions will have fundamental long-term implications for Toronto Hydro and its system. Because the external environment has changed, Toronto Hydro's resource catch-up efforts are also a foundational step towards a future-ready plan that includes investments in resourcing capacity (headcount) and capabilities (enhanced skills) that are necessary to meet the challenge ahead.

[3] EB-2018-0165.

Toronto Hydro needs to expand its workforce by approximately 214 resources starting in 2024 through 2029 to meet the imperatives and objectives of its 2025-2029 investment plan. These investments are necessary to both ensure adequate resourcing to support the safe and efficient execution of planned work programs, and develop advanced capabilities to advance outcomes that matter to customers and stakeholders, including a building a more resilient and efficient grid for the future and enabling the city's economic growth and electrification.[4] Technological advancements and evolving customer expectations require Toronto Hydro to accelerate digital transformation to keep up with the pace of change. Attracting and developing employees with the skills and competencies to meet the technical challenges and achieve the objectives of modernizing and expanding the grid is a critical component of the utility's workforce strategy.

1.2 Talent Development Strategy

A strong talent attraction and engagement strategy is critical to: (i) continue to position Toronto Hydro as an employer of choice; (ii) build staff competence to address requirements, deliver plans, and integrate more technology and innovation into their work; and (iii) advance leadership skills and competence to support diversity, equity and inclusion, lead in a hybrid work environment and role model culture change.

Toronto Hydro takes a comprehensive, forward-looking approach to maximizing the value of its existing employee resources by providing timely upskilling and training opportunities, applying productivity strategies, supporting innovation, promoting from within the organization, and using management tools to maximize employee performance. Toronto Hydro relies on a combination of all these approaches to achieve organizational success and meet its human resource requirements.

[4] See Exhibits 2B, Section E and Exhibit 4, Tab 2.

While Toronto Hydro maximizes the value of its existing workforce, the utility is unable to meet the needs and drivers of its staffing plan exclusively from hiring internally. To meet its staffing needs through external recruits, Toronto Hydro employs a combination approach that includes acquiring additional talent from the market, hiring new graduates, leveraging its relationships with colleges and universities, and outsourcing work to third-party service providers where appropriate.

2. COMPENSATION STRATEGY

Toronto Hydro's workforce is the means by which the utility delivers service and value to its customers, carries out its objectives, and complies with its mandatory obligations. The utility strives to secure and maintain a workforce that is highly skilled, agile, innovative, productive and engaged. To achieve these key outcomes in a cost-effective manner, Toronto Hydro's compensation strategy is to: (i) provide wages and benefits that are competitive in the markets where Toronto Hydro competes for talent, and (ii) use a pay-for-performance model to align the workforce with the utility's core objectives, set and manage high performance expectations, foster productivity, and reward employees for their contributions to the utility's performance. The effect of external pressures and shifting preferences of candidates in a large and diverse urban city requires a strong market-competitive compensation program to attract, retain and engage employees.

According to Mercer's Compensation Benchmarking study (the "Mercer Study") which can be found at Exhibit 4, Tab 4, Schedule 5, Toronto Hydro's total compensation is positioned within a market competitive range relative to the 50th percentile of the energy market. With respect to the general industry peer group, total compensation is slightly above market due to pensions and benefits, while the total cash component of compensation is within market range. The Mercer Study affirms that Toronto Hydro's compensation strategy continues to yield good value for the utility and its customers.

The forecasted total compensation cost for 2029 is $375.5 million, which represents a compound annual growth rate of 6.6 percent over the total compensation costs of $211.1 million in 2020. For total cash compensation costs (i.e. base salary wages, overtime and incentive payments) the average cost per full-time employee ("FTE") is increasing by a compound annual growth rate of 3.7 percent from 2020 to 2029.[5] In preparing 2024 to 2029 total cash compensation forecasts and the various components of them, Toronto Hydro considered, and the forecasts reflect, the following inputs: (i) Toronto Hydro's obligations under collective agreements, (ii) relevant labour market data (where available),[6] and (iii) the utility's projections of outcomes of future rounds of collective bargaining that will take place throughout the forecast period. More specifically, in the absence of objective market indicators to forecast compensation increases over the 2025-2029 forecast period, the utility (in consultation with its compensation expert Mercer Canada and based on experience) relied on a using a historical rolling-average (in addition to the factors noted above) as the best information available to predict reasonable future compensation levels.

2.1 Compensation Philosophy for Non-Union Employees

Toronto Hydro provides non-unionized employees with a total cash compensation package comprised of two elements: base salary and variable performance pay. Base salary compensates an employee for meeting the expectations related to their responsibilities, accountabilities, and technical skills. Variable performance pay rewards employees for their

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[5] The average cost per employee is mathematically derived from the data in OEB Appendix 2-K; namely total compensation divided by total FTEs per year.

[6] For example, the results of Mercer Canada's August 2023 QuickPulse™ Canada Compensation Planning Survey show total salary increases of 3.7 percent: https://www.imercer.com/ca/ARTICLEDETAIL/annual-increase-budget-canada

contribution to achieving goals and objectives tied to the utility's strategic pillars, in combination with their successful demonstration of corporate competencies.

Each non-union position at Toronto Hydro has a salary grade with a corresponding salary range. To maintain alignment with the competitive labour market, the utility adjusts salary ranges based on annual market reviews.

Because Toronto Hydro operates in niche areas of expertise, both as part of the electricity system and as a regulated entity, the utility hires capable workers but at a less experienced level, and trains and develops them on the job. From 2019 to 2023 year-to-date, newly hired employees were brought into their roles at an average of 87 percent of the salary grade. To keep the workers that Toronto Hydro invests in training and developing on the job, the utility progresses them through the salary ranges more quickly to reflect their upskilling and acquired experience levels.

2.2 Compensation Philosophy for Bargaining Unit Employees

Over half of Toronto Hydro's employees belong to collective bargaining units represented by the Power Workers' Union ("PWU"), the Society of United Professionals - Engineers ("Society Engineers"), or the Society of United Professionals - IT ("Society IT"). Toronto Hydro's compensation costs with respect to these employees are negotiated through periodic collective bargaining in accordance with the legal duty to bargain in good faith. The utility has both contractual and statutory obligations to honour the terms of its collective bargaining agreements. [7]

[7] *Ontario Labour Relations Act,* 1995, S.O. 1995, c. 1, Sched. A, section 56.

The current collective agreement with PWU was effective as of February 1, 2022 and is valid until January 31, 2027. The utility's current collective agreement with the Society Engineers came into effect January 1, 2020 and is valid until December 31, 2023. The utility's current collective agreement with Society IT came into effect January 1, 2021 and is valid until December 31, 2025.

2.3 Benefits and Pensions

In order to remain competitive for talent, full-time employees are entitled to medical and dental benefits, short- and long-term disability income protection, life insurance, and accidental death and dismemberment insurance. Employees are also eligible to participate in the Ontario Municipal Employees Retirement System pension plan and receive post-retirement benefits. The cost of employee benefits is expected to increase from $74.5 million in 2025 to $104.6 million in 2029.

To manage benefits costs, Toronto Hydro regularly negotiates with benefit providers and conducts comprehensive vendor market reviews on a periodic basis. In 2021 Toronto Hydro conducted a vendor market review for the Employee and Family Assistance Program which resulted in the utility securing a new provider for employee mental health and overall wellness at a reduced per member rate of approximately 30 percent.

WORKFORCE STAFFING PLAN AND STRATEGY

The 2025-2029 investment plan includes necessary investments in 38 distinct work programs to address existing and emerging challenges that the utility faces in serving its customers safely, reliably and efficiently in this decade and beyond as the city of Toronto continues to grow amidst an energy transition that is creating an expanded role for electricity across key sectors of the economy.

Toronto Hydro needs a robust, engaged and highly-skilled workforce to support execution of planned capital and operations work programs outlined in Exhibits 2B and 4, Tab 2, respectively. This schedule outlines Toronto Hydro's workforce philosophy and plans to secure the resources and skill sets that the utility needs to: (i) deliver its work programs safely, reliably and efficiently, and (ii) achieve the performance outcomes that customers need and stakeholders value as outlined in Exhibit 1B, Tab 3, Schedules 1 and 2.

The evidence is organized as follows:

- Workforce Philosophy
- Workforce Drivers and Needs
- Workforce Breakdown by Segment
- Talent Development Strategy

1. WORKFORCE PHILOSOPHY

Demographic and post-pandemic societal shifts are reshaping the labour market in Canada, at the same time that technology and digital innovation are redefining the skill sets and strategies needed to ensure an agile, engaged and productive workforce. Toronto Hydro's workforce philosophy is mindful and responsive to key changes in the labour market and employee preferences. To maintain its competitive advantage in the evolving labour market and remain an employer of choice, Toronto Hydro must invest in its greatest asset – its people. These investments entail increases in the capacity of the workforce to maintain employee wellness and avoid employee burnout through work-life balance (the right to disconnect from work). Similarly, Toronto Hydro must invest in advanced skills and capabilities to empower its workforce to excel in the face of rapid technological advancement, and changing policy requirements and evolving customer expectations.

To build and maintain a robust, diverse, engaged and productive workforce, Toronto Hydro relies on the following key tenets of its workforce philosophy:

a) **Talent Acquisition & Development**: Attract and recruit talent for the organization to fill critical roles and achieve business objectives. Provide training and development opportunities to help employees grow and acquire new skills, create career paths and implement succession plans.
a) **Workforce Culture, Diversity and Inclusion**: Create a diverse and inclusive workplace where everyone feels valued, supported and respected. Foster a growth mindset and positive culture that promotes employee engagement, wellness and work-life balance to maintain an engaged, innovative and high-performing workforce.
b) **Performance and Productivity**: Achieve objectives by setting clear expectations, providing regular feedback, and recognizing and rewarding employees who meet or exceed expectations. Embrace new technology and invest in tools and systems that can improve efficiency, automate repetitive tasks, enhance the quality of work, and promote collaboration across teams.
c) **Agility & Innovation**: Adapt to evolving business needs, emerging technologies, and changing market conditions by leveraging data and analytics to monitor market trends, measure performance, and make data-driven decisions.

2. WORKFORCE DRIVERS AND NEEDS

2.1. Challenges

Over the last decade and throughout the current rate period, Toronto Hydro focused on rebuilding and replenishing its workforce in the face of both familiar and emerging challenges. Familiar challenges for Toronto Hydro include renewing its workforce due to retirements, attracting and retaining talent, and developing new entrants to its workforce through partnerships with colleges and universities. For the last ten years, Toronto Hydro has managed the workforce renewal challenge brought by the wave of baby-boomer retirements.[1] After each retirement, the organization must deal with not only a loss of knowledge and experience, but also a need to train and develop the individuals promoted or newly hired. In addition to demographic-related challenges, Toronto Hydro employees are often sought after by other organizations that may offer similar roles in neighbouring geographic regions. A competitive labour market challenges the utility to maintain market competitiveness of its compensation and benefits programs to attract and retain employees to work in Toronto.

Although employment in the utilities sector has remained relatively stable, labour market changes, including demographic shifts, increasing competition and strong demand for workers with digital skills have led to shortages of workers trained in science, technology, engineering and mathematics (STEM), as well as in digital skills.[2] Toronto is the largest city in Canada and one of the fastest growing urban centers in North America and the demand for qualified and knowledgeable STEM resources is strong, not only with the utilities sector but among multiple sectors outside of the industry.

[1] The term “baby boomers” refers to those individuals that were born between 1947 and 1965.
[2] Mahboubi, Parisa. 2022. The Knowledge Gap: Canada Faces a Shortage in Digital and STEM Skills. Commentary 626. Toronto: C.D. Howe Institute: https://www.cdhowe.org/sites/default/files/2022-08/Commentary_626_0.pdf

Toronto Hydro also faced unprecedented challenges posed by the COVID-19 pandemic and consequent impacts. During the pandemic, Toronto Hydro's workforce numbers reached a historic low in 2021. Retirements that were expected to be paced fairly evenly over the 2020-2025 rate period were instead concentrated in years 2020 and 2021. At the same time, the pandemic temporarily suspended talent acquisition, training, and development for critical areas and skill sets established during the previous rate period. As a result, Toronto Hydro's plans to increase its staffing levels over the 2020-2024 period were delayed, particularly as it relates to the Power Line Technician trade hiring plan. The rapidly changing business environment and social distancing requirements impacting hiring for positions requiring in-person training contributed to this unavoidable hiring delay.

Toronto Hydro successfully weathered the challenges of remote work and of addressing increased safety risks, with a comprehensive infectious disease response plan. At the outset of the COVID-19 pandemic, Toronto Hydro mobilized immediately to protect its workforce and the public while continuing to provide safe and reliable delivery of power throughout the city of Toronto. The plan established protocols required to manage an infectious communicable disease outbreak to maintain the health and safety of employees and mitigate the spread of infectious disease through the workforce. Toronto Hydro did not experience any workplace transmission of COVID-19 through 2022. In recognition of its response to COVID-19, Toronto Hydro received the Most Effective Recovery Award from the Business Continuity Institute (BCI) Americas. The BCI, a global organization of business continuity and resilience professionals representing more than 100 countries worldwide, gives this award to an organization that was significantly impacted by an incident or crisis, but managed to recover and demonstrate resilience.

The COVID-19 pandemic significantly impacted traditional talent management approaches and introduced a new level of complexity in recruiting talent. Changing attitudes towards commuting to the workplace and the overall concern of extended commute times in the City of Toronto added a new layer of challenge and complexity to the utility's attraction and retention efforts.[3] The utility addressed this through flexible work policies that are responsive to changing preferences. Specifically, in 2022, Toronto Hydro transitioned to a hybrid work arrangement that enables employees who can perform their work from home with the flexibility to attend their assigned work center a minimum number of days a week and work remotely the other days. Reintegrating the workforce into the office and building a hybrid work culture where employees feel engaged was a notable challenge that Toronto Hydro worked hard to overcome over the last two years. It succeeded by adopting work policies and practices that were informed by employee feedback, and implemented incrementally with a focus on the unique needs of each operational area. This was complemented by a gradual increase in in-person employee engagement, which helped ensure the successful adoption of the new hybrid work model throughout the organization.

Once the acute challenges of the pandemic began to subside, customers, governments, and markets started coalescing around a need to accelerate the energy transition to mitigate the existential and economic impacts of climate change. As customers electrify previously non-electric energy uses (e.g. transportation, heating) and increase participation in clean energy production and management, these actions will have fundamental long-term implications

[3] In 2022, Mercer conducted the Flexible Working Policies and Practices Survey across Canada, polling employers and employees on offerings and preferences for onsite, hybrid and fully remote working arrangements. The survey indicated that 53% of employers offered and 53% of employees wanted hybrid working arrangements. https://www.imercer.com/ca/products/flexible-working policies-practices-survey-ca

for Toronto Hydro and its system, including—but not limited to—being ready to serve a future demand for electricity that is expected to roughly double over the next two decades.[4]

Given its fundamental obligation to connect customers who want to access the distribution grid, Toronto Hydro cannot enter this period of significant change unprepared to handle increased demand and consumption, bi-directional power flows, increased societal reliance on electricity, and enhanced customer expectations that naturally flow from these evolutions. As with investments in Toronto Hydro's grid, human capital investments require a long lead-time to develop and safely train. Depending on the trade, for example, it takes anywhere from four and half to six and a half years to train a new certified and skilled trades person, plus a minimum additional one to two years to develop a new front-line leader post apprenticeship. Due to the long lead time required for investment in both grid and human capital, to meet these needs Toronto Hydro must begin work today to be prepared for an accelerated energy transition in the next decade.

2.2. Capacity

As the operating conditions affected by COVID-19 pandemic stabilized in 2022, Toronto Hydro started increasing the pace of its recruitment to 'catch-up' to its projected staffing levels by the end of 2023. Yet, because the external environment has changed, these catch-up efforts are also a foundational step towards a future-ready plan that includes investments in resourcing capacity (headcount) and capabilities (enhanced skills) that are necessary to meet the challenge ahead.

Toronto Hydro needs to expand its workforce by approximately 214 resources starting in 2024 through 2029 to meet the imperatives and objectives of its 2025-2029 investment

[4] As shown in Future Energy Scenarios report filed as Exhibit 2B, Section D4, Appendices A and B.

plan.[5] These investments are necessary to: (i) ensure adequate resourcing to support the safe and efficient execution of planned work programs outlined in Exhibits 2B, Section E and Exhibit 4, Tab 2, and (ii) develop advanced capabilities to advance outcomes that matter to customers and stakeholders, including a building a more resilient and efficient grid for the future and enabling the city's economic growth and electrification.

Toronto Hydro's workforce requirements have been optimized by a decade and half journey of productivity. This includes harmonizing jobs to create a more efficient and agile workforce, outsourcing certain functions and aspect of work to focus on critical competencies and skills, and automating repetitive manual processes to provide more efficient service. These efforts produced a demonstrably lean workforce, enabling Toronto Hydro to tackle the staffing needs and challenges ahead from a position of strength.[6]

After more than a decade of realizing sustained efficiencies while managing complex operations with a flat headcount, it is no longer possible nor prudent for Toronto Hydro to meet its obligations without additional resources. As the utility takes "least regrets" actions to expand and modernize the grid to be ready and equipped for a once-in-a century transformation of the energy system, it similarly needs to invest in an expanded resource pool with new and enhanced skill sets to get the work done safely and cost-effectively.

Section 3 below provides an overview of the different segments of Toronto Hydro workforce and explains the capacity investments that Toronto Hydro intends to make over the coming years to meet the challenges ahead. The Designated and Technical Professionals segment will see the largest number of resources added with the addition of approximately 250

[5] The staffing plan is based on headcount needs and requirements over the filed period. Appendix 2-K presents the translation of the staffing plan to budgeted full time equivalents (FTEs).
[6] Please see Exhibit 4, Tab 1, Schedule 1 at section 2.

resources over the 2023-2029 period. Workers in this segment will support not only a growing capital program, but will also provide new needed capabilities related to technology, advanced data analytics and other digital skills.

2.3. Capabilities

Technological advancements and evolving customer expectations require Toronto Hydro to accelerate digital transformation to keep up with the pace of change. With increasing technology on the grid (e.g. Advanced Distribution Management System (ADMS), Advanced Metering Infrastructure (AMI), sensors and other field monitoring technologies) comes a significant increase in the volume of data generated in the field. To effectively leverage this data and gain valuable insights that can be used for improved planning and optimized decision-making, Toronto Hydro needs to hire and develop resources with expertise in advanced data analytics, statistical modelling, data science and machine learning techniques.

Toronto Hydro must prepare to respond by attracting and developing employees with the skills and competencies to meet the technical challenges and achieve the objectives of modernizing and expanding the grid. For example, the Control Centre requires the support of a team of technical staff whose duties include work scheduling, design review, system analysis, energy management, reporting, and maintenance/development of core operating technology platforms and tools (e.g. SCADA, Energy Centre, Network Management System, etc.) Over the next several years, Toronto Hydro expects a significant increase in workload associated with these functions to support increased distribution system automation, the development and sustainment of energy management functions, distribution system growth (load and connection volumes), and the expansion of the SCADA system to enable more remote and autonomous operational capabilities. See Exhibit 4, Tab 2, Schedule 7 – Control Centre Operations.

By employing and cultivating resources with advanced digital skills and capabilities, the utility can gain a much more comprehensive understanding of grid performance, identify anomalies, and optimize various aspects of grid operations. Data analysts empowered with the right technology tools can develop models and algorithms that enable predictive maintenance, load forecasting and demand response optimization. They can also uncover hidden relationships between variables to improve grid stability, enhance asset management strategies, and enhance outage management processes. The ability to extract actionable insights from vast amounts of grid data can enable Toronto Hydro to make better decisions and deliver enhanced value to customers. For example, with the implementation of AMI2.0 Toronto Hydro can perform advanced analytics on meter-level outage data to better understand reliability performance at the customer level, and optimize investments to enable a more resilient and efficient grid for the future.

Building advanced capabilities to leverage technology and advanced data analytics to improve existing systems and processes is a critical component of the utility's workforce strategy. To upskill its existing workforce, Toronto Hydro is taking the following actions:

- **Providing Opportunities for Skills Development:** The utility proactively identifies resourcing requirements and provides internal resources with opportunities for skills development. Multiple methods have been used to achieve successful outcomes including: (1) continuing education at post secondary institutions and certification programs, (2) experiential learning opportunities through secondments, stretch assignments and involvement on project teams, and (3) formal job-specific training on technical and soft skills. The organization's performance management system encourages leaders to have regular meetings with employees to understand individual learning goals and structured development plans with milestones and objectives.

- **Developing and Delivering Training Programs:** As new and future skill requirements are identified, the utility develops and aligns training programs with specific learning goals and outcomes and delivers them to its workforce. Training develops transferable skills and increases the employee's capacity to learn. Training is supported with confirmation of learning and skills transfer in the field and inspections conducted by front line leaders. This ensures that the workforce knowledge has increased sufficiently to safely and efficiently apply the new skill in practice. Upskilling equips employees with the skills needed now and for the future, supports career progression and is a strategy that supports retention.
- **Maintaining Safe Ratios of Supervision and Mentorship:** Toronto Hydro conducts sophisticated long-term workforce staffing planning within its Certified and Skilled Trades and Designated and Technical Professional positions to maintain the workforce's competencies. This ensures that the learning and development opportunities afforded to apprentices remain safe as a result of Toronto Hydro established ratios of supervision and mentorship.

Toronto Hydro must invest in building a workforce with expanded skills in data analytics, data science and big data who can leverage technology solutions such as artificial intelligence (AI) software and other tools to manage and analyze large datasets towards the following types of objectives.

1. Respond to risks posed by potentially disrupting technologies to the distribution system. Grid modernization involves the integration of numerous digital technologies. Ensuring robust cybersecurity measures is of paramount importance.

To address this evolving threat landscape, there is a need to prioritize and augment capabilities and implement comprehensive strategies, such as conducting regular security audits, and deploying advanced monitoring systems. The utility must assess the security posture of grid components, such as smart meters, ADMS systems, and communication networks. Specialized knowledge is required to recommend appropriate security controls and measures. The addition of resources to support cybersecurity risk and threat management ensures the resilience and reliability of the grid system as it undergoes modernization efforts.

2. Design, operate and manage an automated and bi-directional grid that is capable of connecting and integrating higher volume of distributed energy resources (DERs). DER integration professionals collaborate with stakeholders including regulators, DER providers, and customers to develop standardized interconnection processes, address technical challenges, and streamline grid operations. With employees knowledgeable in DER integration, it is easier to unlock the full potential of DERs, maximize grid efficiency, and accelerate the transition to a clean and decentralized energy future. The utility must also invest in training activities to enhance the knowledge and capabilities of its Certified and Skilled Trades segment to safely plan and operate within an automated and bi-directional grid. This will enable Toronto Hydro to effectively manage grid variability, enhance resiliency, and optimize asset utilization.
3. Building the utility's capacity and capability to provide proactive information and service to drive improvements to customer experience, outcomes and interaction with the grid. Toronto Hydro is working to meet customers' evolving expectations of the utility. For example, as EV ownership increases and as more customers adopt DERs, Toronto Hydro anticipates an increase in customer inquiries related to these technologies, including topics such as service upgrades, connections, pricing plans

for EV charging and net metering and associated billing for DERs. The utility is looking to enhance the capabilities of its customer service representatives to ensure that Toronto Hydro is prepared to respond to customer needs in time for the energy transition.[7]

4. Building the utility's capacity and capability to respond effectively to fast-evolving regulatory policy developments, challenges and opportunities in the current business environment. The utility has extensive legal, regulatory and communication needs served by highly-trained legal, regulatory and communications professionals. This team's capacity and capabilities need to be enhanced in order to keep up with the volume and complexity of work necessary to support the utility's work program which is shaped by electrification, the energy transition, new technologies and evolving customer choice. Drivers of this increase include an increase in contract volumes, claims volumes, agreements associated with large transit projects, and legal, compliance and policy work responsive to changes in the energy sector.

Table 1 below provides a summary of the skills sets and sample jobs where the utility is investing to build the workforce of the future.

Table 1: Skill Sets and Job Types for the Future Workforce

Skill Sets	Job Types	Approximate Proportion of Staffing Plan
"Big Data" Analytics – Consolidation & Presentation of data to support Decision Making	Analysts – cross functional	23%

[7] Cross-references to 4A Customer Care program

Skill Sets	Job Types	Approximate Proportion of Staffing Plan	
Design, operational and management of distribution grid	Power Line Technician, Engineering Technologist, Power System Controller, Meter Mechanic, Meter Data Technologist, Distribution System Technologist, Dispatcher	18%	/C
Front-line Leadership	Day-to-day operations and people management	20%	/C
Financial management, regulatory affairs management, legal management, supply chain management, operations support, human resources management	Professional & supporting skills – cross functional	12%	/C
Distribution system design and engineering to support existing and new technologies (e.g. bi-directional grid, distributed energy resources)	Engineers	11%	
Customer Experience, Key Account Management, Customer Relations Management	Large Customer & Key Account Consultant Customer Relations Representative	10%	
New technical and cyber security skills to support technology advancements and innovation	IT Technical Consultant Cyber Security Specialist	7%	
TOTAL		**100%**	

3. WORKFORCE BREAKDOWN BY SEGMENT

Toronto Hydro has a robust workforce of highly-skilled employees across diverse areas of expertise. Figure 1 shows the current and future composition of the projected workforce, by segment, out the end of the decade. The skills of employees and type of work executed within each segment is discussed in detail below.

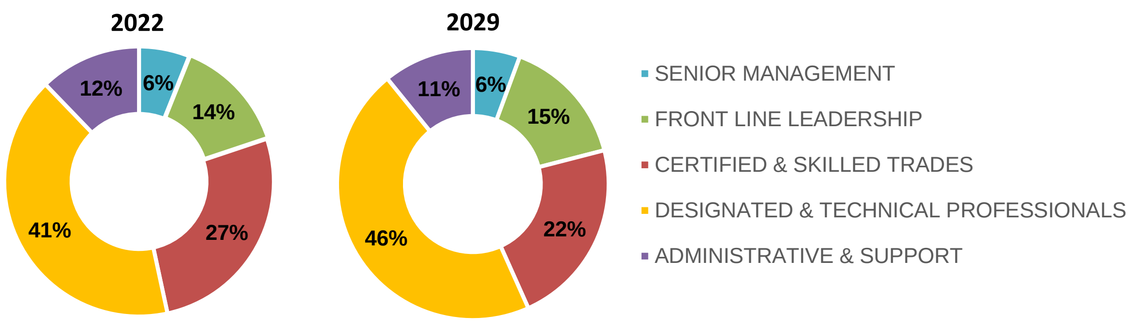


Figure 1: Projected Toronto Hydro Workforce Segments (2022 & 2029)

3.1. Certified and Skilled Trades Segment

Certified and Skilled Trades are responsible for executing the work required to construct and maintain the distribution system infrastructure, and for responding to trouble calls and emergency situations to restore power or address asset deficiencies or other circumstances that pose safety, environmental or reliability risks. Certified and Skilled Trades comprised approximately 27 percent of Toronto Hydro's workforce as of the end of 2022. Although this segment is anticipated to decrease slightly as a percent of the total population of employees because of practical limitations of safely absorbing new certified and skilled trades into the organization (i.e. maintaining the appropriate apprentice to qualified journeyperson ratios), Certified and Skilled Trades are expected to grow by approximately 40 resources by 2029 to replenish the workforce in this segment.

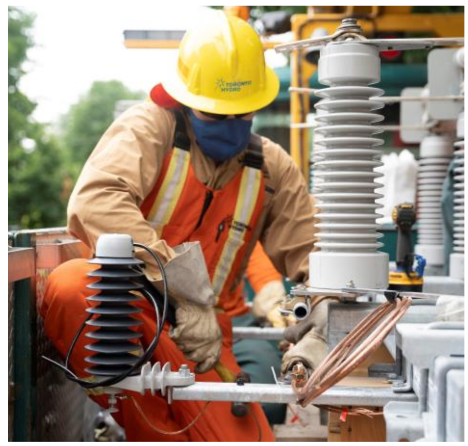
Below is a detailed list of the positions and associated responsibilities within this segment.

- **Certified Meter Mechanic/Tester ("CMMT"):** Installs, changes, removes, repairs, inspects, tests and calibrates of all types of meters and metering equipment for correct wiring and accuracy of metering, operation of meter test equipment according to documented procedures and to troubleshoot faults in meters.

- **Distribution System Technologist ("DST"):** In 2009, job harmonization merged six classifications into the new classification of Distribution System Technologist (DST). The DST operates, installs, commissions, constructs, repairs, maintains, and decommissions all types of substation equipment, protective relay and control systems, station metering, distribution automation equipment, and SCADA systems, including completion of all associated work orders, specifications, engineering drawings, reports, and work procedures**.**
- **Power Line Technician ("PLT")**: Constructs, operates, maintains and repairs overhead and underground electrical and distribution systems. Erects and maintains steel, wood, fiberglass, laminate and concrete poles, structures, and other related hardware. The PLT installs, maintains and repairs overhead and underground apparatus, and other associated equipment, such as insulators, cable, conductors, lightening arrestors, switches, metering systems, transformers and lighting and control systems. Splices and terminates cable and conductors to connect power distribution and transmission networks. Previously, this work had been performed by two distinct trades groups, the Certified Power Cable Person ("CPCP") and Certified Power Line Person ("CPLP"). Similar to the approach used in prior years as part of the collective bargaining process, in 2022, these two roles were harmonized into the Toronto Hydro Power Line Technician role. Graduates of the PLT Apprenticeship program will be competent to work safely on any aspect of the overhead or underground distribution system for both capital construction as well as reactive or emergency scenarios. This will provide Toronto Hydro with significantly greater flexibility in crew assignments and execution of work.
- **Power System Controller ("PSC")**: Operates the electrical distribution system to provide safe, reliable, and cost-effective delivery of electrical power on a rotating

24/7, 365 days/year shift schedule. Develops, directs, and dispatches system switching, work protection, and trouble response for planned and emergency events.

PLT - Underground Plant



PLT - Overhead Plant

Figure 2: PLT Employees at Work

3.2. Designated and Technical Professionals

Designated and Technical Professionals are responsible for planning, designing and executing work programs and for ensuring the utility's compliance with legal, regulatory, financial, and environmental requirements, applicable standards and best practices.[8] This segment comprised approximately 41 percent of Toronto Hydro's workforce as of the end of 2022, and is anticipated to grow to 46 percent with the addition of approximately 250 resources over the 2023-2029 period. The increase is driven by a multitude of factors including: (i) responding to more complex legal and regulatory requirements such as related to integration of Distribute Energy Resources ("DER"), (ii) operating in a more data-intensive

[8] For example, Toronto Hydro must ensure compliance with environment, health and safety requirements including the Utility Work Protection Code, Electrical Utility Safety Rules, *Occupational Health & Safety Act* and Regulations, ISO 14001:2015 and ISO 45001:2018 standards, and the *Environmental Protection Act*. See Exhibit 4, Tab 2, Schedule 17 – Human Resources, Environment and Safety for further details.

environment driven by technology and modernization, and (iii) supporting an increase volume of capital and operating programs over the period. All of these factors, and many others that are detailed throughout the programmatic evidence in Exhibit 4, Tab 2 translate to a corresponding increase in talent for the following positions and associated responsibilities within this segment:

- **Engineers**: Participates in short- and long-range strategic asset planning to ensure technical soundness, reliability, cost effectiveness, and safety for the utility; prepares engineering reports and studies; performs engineering analysis and evaluations; provides timely technical support/consultation, project management, and testing; develops proposals and plans; and prepares and/or reviews methods, procedures (process re-engineering), and designs. Engineers are accountable, and legally responsible, for personal engineering work product (e.g. drawings, calculations, documents, and the work of others which the engineer has signed).
- **Engineering Technologists:** Supports the formulation of electric system plans and co-ordinates system operation services with the control centre; develops distribution plans by calculating load forecasts; prepares conceptual and detailed designs and cost estimates for projects related to system expansion, rehabilitation, and maintenance of the electrical and civil infrastructure; conducts studies, prepares reports, makes recommendations relating to station and system distribution load forecasts, engineering studies, technical standards, utility materials, tools, and construction practices; and prepares, reviews, and maintains project schedules.
- **Analysts**: Enable the utility to make data driven decisions, provide valuable insights and satisfy a variety of external obligations and internal responsibilities. As systems evolve and are added and more data is produced, roles are required to analyze and integrate various data sets. Analysts in both corporate and operational areas require critical thinking, creativity, and problem-solving techniques to define needs and

recommend solutions that deliver value to stakeholders. Analysts employ a variety of tools, including: predictive analysis to elevate the customer experience; numerical skills to measure and statistically analyze large data sets; technical skills to understand business problems, organize and present data.

Without the required staffing levels of Designated and Technical professionals, Toronto Hydro would not have the necessary resources to plan and design a safe, secure and reliable distribution system in compliance with legislative and regulatory requirements, applicable standards and best practices. As shown in Figure 3 below, the capacity of this segment tracks closely with the overall size of the capital investment plan as measured by expenditures.

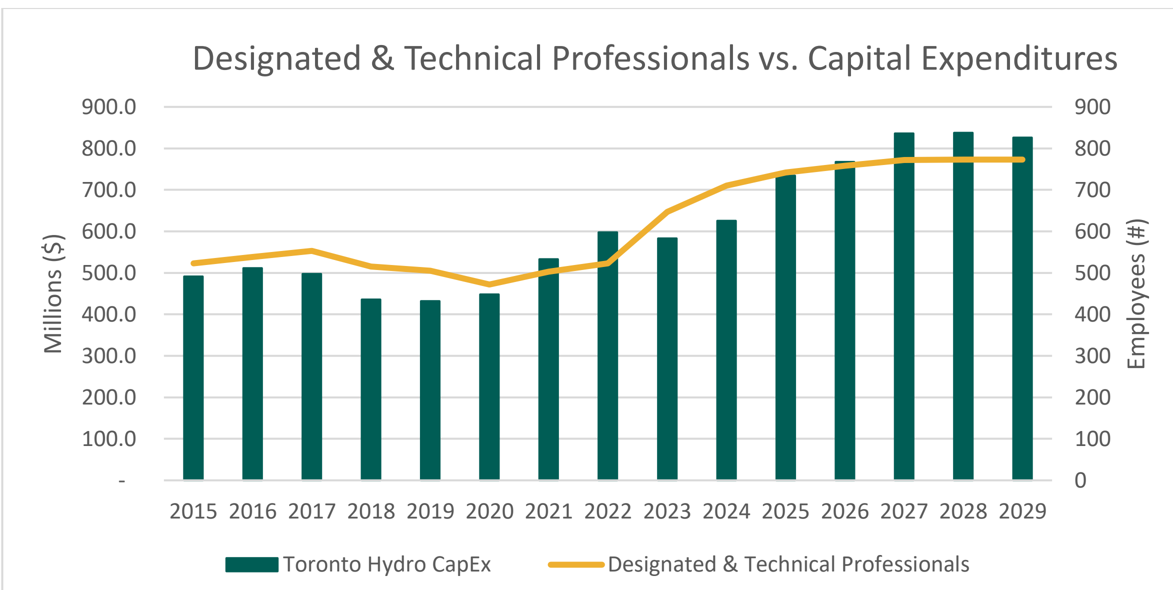


Figure 3: Designated & Technical Professionals Compared to Capital Expenditures

In addition to keeping up with increasing work volumes, the employees in this segment are tasked with designing and planning for changes to how customers use electricity and how the utility operates the grid brought by technological advancements and necessitated by customer demands in an electrified future. This includes grid automation technologies to enhance system observability and controllability and to enable the gradual transition to a two-way power flow grid that provides customer greater choice over their electricity consumption, and the opportunity to participate in the system by selling electricity back to the grid.

Last but not least, the resources in this segment are an important source of internal talent for front line and senior management leadership roles. Investments in this segment produce proprietary industry knowledge and expertise that Toronto Hydro relies on to fulfill leadership roles efficiently and effectively through internal recruitments. In 2022, 46 percent of internally filled leadership roles (front line and senior management) were from the Designated and Technical professionals' segment.

3.3. Front Line Leadership

Front Line Leadership positions are responsible for managing and overseeing the complex design and execution of the utility's capital and operations work plans. The responsibilities associated with these positions include safety training, inspections, audits, investigations, risk management, problem-solving, staff training and development, performance management, employee engagement, coaching and mentoring.

Front Line Leadership employees are primarily trained, developed and promoted from within the organization to leverage their in-depth experience and track-record of high-performance at the utility. At the end of 2022, this segment comprised approximately 14 percent of Toronto Hydro's workforce. Over the 2025-2029 rate period, this segment must remain stable in order to oversee the delivery of the utility's work programs and ensure that internal and external resources work in a safe, productive and environmentally responsible manner. To maintain its proportion to the overall compliment, the segment is expected to grow by approximately 80 resources from 2023-2029. Without sufficient resources in Front-Line Leadership positions, Toronto Hydro's track-record of productivity and performance would be compromised.[9]

3.4. Operational Support & Administration

Operational Support & Administration staff enable the efficient execution of work within operations, customer care and corporate functions. This segment provides administrative support to function specific management and technology systems, creates and maintains professionally formatted business documentation and makes recommendations to streamline and improve the administration, coordination and delivery of processes within the assigned business unit. Employees within this work segment are continuously reskilling and upskilling to take on higher-value work such as reporting, research and analysis tasks.

At the end of 2022, this segment comprised approximately 12 percent of Toronto Hydro's workforce. Efforts throughout the 2017 to 2022 period to streamline processes resulted in an 18 percent decrease in the number of employees in this segment. Furthermore, as a result of investments in upskilling these employees, operational support and administration staff have become a valuable pipeline for development and career progression in the organization. From 2020 to 2022, 25 percent of internal professional and certified and skilled trades recruitment was filled by employees from this segment.

This segment needs to remain stable through 2029 to support the efficient execution of work, to attract new labour market entrants to the organization, and provide a pipeline for

[9] See Exhibit 1B, Tab 3, Schedules 2 and 3 for more information about the utility's performance and productivity track-record.

other workforce segments. Without appropriate staffing levels in these positions, Toronto Hydro would not only risk a reduction in productivity as a result of higher cost resources having to perform process-focused administrative work, but would also lose the opportunity to develop a critical source of internal talent. The number of resources is expected to increase by approximately 30 over the 2023-2029 period.

3.5. Senior Management

Senior Management positions provide the leadership and strategic guidance necessary to achieve Toronto Hydro's objectives in a complex, highly-specialized and regulated environment. Senior Management leaders hold extensive portfolios of accountabilities that are responsive to dynamic systems, processes and technologies. These accountabilities are evolving as result of changes in the external environment including changing customer expectations with respect to reliability and resilience, technological advancement and emerging public policy imperatives to modernize and prepare Toronto Hydro's grid and operations for electrification.

Through well-developed processes for identifying and developing leadership potential, Toronto Hydro has successfully improved leadership bench strength and created a pool of qualified and talented employees to fill critical Senior Management positions. From 2020-2022, 93 percent of senior management roles were filled internally, with limited reliance on the external market to fill increasingly senior leadership roles. On average over the period, these roles filled approximately 60 percent faster than externally filled positions, positively impacting operational efficiency and productivity.

As of the end of 2022, this segment comprised approximately 6 percent of the workforce. Over the next rate period, Toronto Hydro needs to maintain the proportion of resources in this segment stable in order to manage and lead the organization to achieve its core objective and rise up to the challenge of serving higher customer demand and expectations for safe, reliable and cost-effective power in an electrified future. The segment is expected to increase by approximately 20 resource over 2023-2029.

4. TALENT DEVELOPMENT STRATEGY

A strong talent attraction and engagement strategy is critical to: (i) continue to position Toronto Hydro as an employer of choice; (ii) build staff competence to address requirements, deliver plans, and integrate more technology and innovation into their work; and (iii) advance leadership skills and competence to support diversity, equity and inclusion, lead in a hybrid work environment and role model culture change. This section will outline how the utility will develop existing resources and execute an effective internal and external hiring strategy.

4.1. Existing Resources

Toronto Hydro takes a comprehensive, forward-looking approach to maximizing the value of its existing employee resources by providing timely upskilling and training opportunities, applying productivity strategies, supporting innovation, promoting from within the organization, and using management tools to maximize employee performance. Each of these approaches is discussed in detail below. Toronto Hydro relies on a combination of all these approaches to achieve organizational success and meet its human resource requirements.

4.1.1. Upskilling and Training Opportunities

Toronto Hydro provides employees with extensive training and upskilling opportunities. These opportunities serve several purposes. They ensure that employees within each workforce segment have the requisite knowledge and skills required to perform their jobs competently, safely and in compliance with the relevant rules, codes and authorities. They also serve to enhance awareness of equity, diversity and inclusion issues in the organization, equip employees with the capabilities to meet emerging technology challenges, and prepare the right talent for promotion from within.

Toronto Hydro delivered nearly 550 training and development programs from 2020 to 2022. These programs are tailored to the work requirements of different positions across the organization. For example, within the Certified and Skilled Trades segment, Toronto Hydro is focused on providing training through a trade school that maintains safe apprentice-journeyperson ratios and equips workers with the competence to execute work efficiently and safely on electrified assets within Toronto Hydro's dense urban service territory. Toronto Hydro periodically updates the content and form of this training to reflect current best practices and deliver it in an effective manner.

Over the current rate period, Toronto Hydro transitioned 29 of its training programs from being led by instructors in-person to being delivered virtually. This conversion will eliminate the need for employees to travel to a training location, reducing vehicle emissions and increasing the number of trainees who can attend a given class session.

Toronto Hydro also delivers upskilling opportunities to its employees across all segments to enhance their technical and professional abilities and improve operational capabilities to address emerging business needs and challenges posed by technological advancement. For example, after the implementation of the new SAP system in 2018, Toronto Hydro created a group of highly-trained and skilled employees, called Enterprisers, to enable and assist SAP users through the company to unlock the full functionality of the new system.

Over the 2025-2029 rate period, Toronto Hydro intends to develop and enhance data analytics capabilities as a critical skill given increased data generated from new technologies (e.g. AMI 2.0). Toronto Hydro is continuing to develop in-house training that focuses on building employees’ future-ready skills including fluency with data analysis programs such as Tableau to perform sophisticated research using modern software tools. These investments in upskilling the workforce are critical to developing advanced operational capabilities to intelligently manage a more complex and highly-utilized energy system.

Toronto Hydro is also incorporating emerging technologies in its upskilling. A Virtual Reality (VR) training module was introduced in 2022 for crew members that focuses on Pad-Mounted Switchgear operations and repair. The VR training is designed to provide crews with a realistic, interactive simulation that covers everything from inspecting the job site for hazards to safely repairing and operating the switchgear being exposed to the many hazards associated with performing this task in the field. VR training also facilitates real-time assessments and data collection.

Finally, Toronto Hydro provides education opportunities focused on building the competence of all employees on the value of diversity, equity and inclusion, the identification and understanding of unconscious bias, and the importance of inclusive leadership. 91 percent of leaders in the organization completed unconscious bias training in 2022.

Table 2: Training and Development Programs (2020-2022)

Area	2020 Courses	2021 Courses	2022 Courses
Compliance (e.g. Environmental and Safety legislative training, EUSA and ESA Rules, Confined Space, Work Protection Code, Network Switching)	52	49	51
Legislative (e.g. WHMIS, Defensive Driving, Forklift Training)	48	48	51
Apprentice (e.g. Distribution Systems Technologist, Power Systems Controllers, Certified Power Cable Persons, Certified Power Line Persons, Meter Mechanics)	20	20	27
Leadership (e.g. Safety Leadership, Performance Management, Management Control & Reporting System, Project Management, Policy Administration)	5	4	15
Technical & Customer Service (e.g. Engineering Technicians, Electrical Awareness, Project Execution, Customer Education Training)	54	51	53
Total	**179**	**172**	**197**

Investments in the development and upskilling of talent offers many benefits for the utility, including creating a valuable pipeline for fulfilling vacancies internally and leveraging career progression as a retention strategy. Front line operational support and administrative staff are a prime example of this strategy at work. From 2020 to 2022, approximately 25 percent of internal professional and certified and skilled trades recruitment was filled by employees from this segment.

4.1.2. Promotion from Within

Promotion from within the organization is a key tenet of Toronto Hydro's talent management strategy. The utility has built an internal pipeline to develop employees' skills, experience and abilities. Developing new leaders and upskilling current employees with the potential to grow is crucial to future success. Establishing a pipeline allows Toronto Hydro to identify, develop and place the right talent in critical roles throughout the organization. Internal candidates have a strong knowledge of Toronto Hydro's culture and management systems. This knowledge is a strategic asset that the utility capitalizes on through its succession planning. Effective succession planning is an important tool for engaging, developing, and retaining employees.

Toronto Hydro successfully executes this strategy to fill positions in its Designated and Technical Professional, Certified and Skilled Trades, Front Line Leadership and Senior Management segments. Between 2020 and 2022, approximately 40 percent of vacancies were filled internally, 28 percent of which were internal promotions to more senior roles. Leadership roles are predominately developed and promoted from within the organization to realize the full benefits of investments made in employee upskilling and development, and retain their in-depth experience and track-record of high-performance at the utility. From 2020-2022, approximately 93 percent of senior management roles were filled internally.

4.1.3. Employee Performance

Toronto Hydro uses a performance-based management and compensation system to set expectations for employees, provide feedback, and recognize employees who meet and exceed expectations. The individual component of the performance management system is administered through annual performance contracts and biannual performance reviews. The utility often sees over 90 percent compliance with its performance management system, showcasing the timely utilization of setting goals and evaluating employees based on their achievements. For management employees, performance pay is directly related to the achievement of both individual and organizational objectives.

4.2. External Hiring

While Toronto Hydro maximizes the value of its existing workforce, the utility is unable to meet the needs and drivers of its staffing plan exclusively from hiring internally. To meet its staffing needs through external recruits, Toronto Hydro employs a combination approach that includes acquiring additional talent from the market, hiring new graduates, leveraging its relationships with colleges and universities, and outsourcing work to third-party service providers where appropriate. Each of these strategies is discussed in detail below.

4.2.1. Acquiring Additional Talent from the Market

Toronto Hydro strategically recruits talent from the external market in the Greater Toronto Area from both the general and energy industries and monitors market trends such as cost of living pressures on an ongoing basis to adapt to changing conditions. The utility's external recruitment process allows it to draw from a larger supply of diverse candidates and hire specific skills that are not readily available within the organization. In addition, external recruitment is key to expanding the workforce's capacity to execute Toronto Hydro's 2025-2029 investment plan.

4.2.2. Hiring New Graduates

The complexity of Toronto Hydro's distribution system and dynamic operating conditions mean that it is optimal for the utility to supplement its hiring of skilled external resources in the market with hiring new graduates, particularly for its Certified and Skilled Trades positions where skills are not readily available in the marketplace. This hiring pipeline relies on the utility's training and apprenticeship programs to instill the specialized skills and knowledge that are required to operate the distribution system reliably and safely. In addition, this hiring strategy allows Toronto Hydro to develop and maintain a dependable workforce that is capable of servicing the utility's operational needs well into the future. The volume of hiring through this hiring pipeline is driven by safety requirements for training on electrical apparatus that limit the number of apprentices who can be trained by a given volume of field crews.

Depending on the trade, it takes anywhere from four and half to six and a half years to train a new certified and skilled trades person, plus a minimum additional one to two years to develop a new front-line leader post apprenticeship. The development period for certified and skilled trades considers both operational and legislative requirements. Operational requirements include relevant rules, policies, procedures, construction standards and equipment to build knowledge, skills and expertise to safely operate the distribution system. Legislative requirements incorporate standard knowledge and skills set out by governing bodies such as the Ministry of Labour, Immigration, Training and Skills, the Ministries of Environment and Transportation, the Technical Safety Standards Authority and the Electrical Safety Authority. Toronto Hydro's apprenticeship program is comprehensive in that incorporates technical trades training, best practices for the design and delivery of hands-on operational and compliance training and rigorous testing at each phase of the apprenticeship to confirm milestones are met.

Over a decade ago, Toronto Hydro adopted minimum qualifications for post-secondary education in an electrical field of study for all entry level certified and skilled trades and designated technical professional roles. The organization continues to evolve minimum entry level qualifications across operational and corporate business areas and requires that new hires have a university or college diploma in a related field of study. Toronto Hydro has elected to prescribe this requirement as post secondary students enrolled in formal learning programs are well-prepared for the workforce with future ready knowledge, skills and abilities - namely, enhanced problem-solving skills, increased ability to analyze and think critically, communication and comprehension aptitudes, and heightened initiative and resourcefulness. This strategy has proven successful for Toronto Hydro and the quality of instruction and work integrated learning programs provided through post secondary education allows for both a ready talent pool for the organization and an accelerated transition to the organization.

4.2.3. Colleges and Universities

Toronto Hydro continues to collaborate with colleges and universities to develop new curricula and explore interdisciplinary learning opportunities that enable the availability of short- and long-term workforce requirements. The utility offers valuable work experience to post secondary students across Canada through well established work integrated learning (WIL) opportunities that enable postsecondary students to apply the academic knowledge gained through studies to a practical work environment.

Investments in experiential learning have resulted in 20 percent of former co-op students finding employment at Toronto Hydro after graduation. To develop a pipeline of talent situated within the utility's geographic service territory and to mitigate risks of talent loss to neighbouring comparators, in 2020, Toronto Hydro partnered with George Brown College to influence curriculum on a new three-year Electromechanical Engineering Technology – Power and Control Diploma Program. Collaborations with institutions such as George Brown College, Georgian College and Toronto Metropolitan University support academic programs aligned to entry level qualifications for Certified and Skilled Trades and Designated and

Technical professionals and advance skill sets prior to entry for incoming talent. Such collaborations are valuable because they allow Toronto Hydro to:

- influence and shape the programs and curricula, including diversity, equity and inclusion to better match the utility's strategic goals and long-term needs;
- spread awareness about the utility's career prospects and human resource requirements;
- build recruitment relationships with future graduates; and
- help bridge the gap and remove barriers to the labour market for newcomers to the labour market.

Toronto Hydro's commitment to hiring apprentices requires careful planning and coordination to enable efficient and effective execution. Apprenticeships can be as long as six and a half years where apprentices spend time in class as well as embedded with crews to practice and refine skills in real world conditions. Hiring and training needs to be done proactively so that apprentices have sufficient time to complete their programs, with journeyperson oversight and mentoring, before becoming fully qualified to augment resourcing levels and productively contribute to program outcomes. To minimize the total cost of the apprenticeship process, recruits are typically hired in cohorts of between four and eight resources at a time. From a talent attraction perspective, aligning recruitment activities with post-secondary graduation cycles ensures the utility access to the broadest range of qualified applicants to fill available opportunities.

4.2.4. Outsourcing

Toronto Hydro relies on third-party service providers to enable the utility to resource in times of peak demand, maintain flexibility in operations, and gain access to specialized expertise and knowledge. Outsourcing decisions are continually reviewed to determine if operational requirements and other business drivers have changed the demand for outsourced services. Outsourced services may be reintegrated to internal utility operations to improve outcomes and retain critical and complex knowledge. This is evidenced during the current rate period in that a complement of additional resources in the areas of customer care, supply chain, and fleet operations were brought in house to augment internal capabilities and maintain effective business operations. [10,11,12]

[10] Exhibit 4, Tab 2, Section 16.
[11] Exhibit 4, Tab 2, Section 15.
[12] Exhibit 4, Tab 2, Section 13.

COMPENSATION STRATEGY AND WORKFORCE GOVERNANCE

This schedule discusses Toronto Hydro's compensation strategy and workforce governance practices. Further to the information outlined in OEB Appendix 2-K (Employee Costs/Compensation Table) at Exhibit 4, Tab 4, Schedule 2, this schedule provides an overview of: 1) Compensation Costs Overview; 2) Compensation Strategy and Workforce Governance; 3) Compensation Practices for Non-Union Employees; 4) Compensation Practices for Bargaining Unit Employees; and 5) Benefits and Pensions.

1. COMPENSATION COSTS OVERVIEW

Tables 1 and 2 below summarize Toronto Hydro's total compensation costs for the current 2020-2024 and the future 2025-2029 rate periods, respectively.

Table 1: 2020-2024 Total Compensation ($ Millions)

	2020 Actual	2021 Actual	2022 Actual	2023 Bridge	2024 Bridge
Management (including executive)	22.0	21.5	22.5	27.0	31.1
Non-Management (union and non-union)	189.1	177.8	184.9	205.9	238.1
Total Compensation	**211.1**	**199.3**	**207.5**	**232.8**	**269.2**

Please note the numbers may not sum due to rounding.

Table 2: 2025-2029 Total Compensation ($ Millions)

Year	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast	2029 Forecast
Management (including executive)	32.2	33.7	35.7	37.7	39.4
Non-Management (union and non-union)	261.1	281.3	299.2	317.7	336.2
Total Compensation	**293.3**	**314.9**	**334.9**	**355.4**	**375.5**

Please note the numbers may not sum due to rounding.

Underpinning the utility's compensation costs is a compensation strategy that balances cost-effectiveness with the need to attract and retain the talent required to provide service in an increasingly complex and dynamic operating environment. According to Mercer's Compensation Benchmarking study (the "Mercer Study") which can be found at Exhibit 4, Tab 4, Schedule 5, Toronto Hydro's total compensation is positioned within a market competitive range relative to the 50th percentile of the energy market. With respect to the general industry peer group, total compensation is slightly above market due to pensions and benefits, while the total cash component of compensation is within market range. The Mercer Study affirms that Toronto Hydro's compensation strategy continues to yield good value for the utility and its customers.

Over the 2024-2029 period, Toronto Hydro expects to increase its workforce capacity by approximately 25 percent compared to 2023 levels in order to address the challenges and requirements of sustaining the grid, modernizing the utility and preparing the system for the unprecedented energy transition that is set to take place in the next decade and beyond. In addition to increasing resourcing capacity to support the execution of its capital and operations work programs, the utility is investing in attracting and upskilling employees. This includes developing advanced capabilities to integrate more technology and data analytics into the grid and operations to drive continuous improvement in system performance and optimize planning and decision-making. Toronto Hydro's ability to recruit, attract and retain talent in key areas of its operations has led to improvements in safety, customer service, reliability, and productivity over the last 10 years as detailed in Exhibit 1B, Tab 3, Schedules 2 and 3.

To implement Toronto Hydro's workforce plan as summarized in Exhibit 4, Tab 1, Schedule 1 and detailed in Exhibit 4, Tab 4, Schedule 3 as well as the programmatic evidence in Exhibit 4, Tab 2, the forecast total compensation cost for 2029 is $375.5 million, which represents a compound annual growth rate of 6.6 percent over the total compensation costs of $211.1 million in 2020. These figures include total cash compensation costs (i.e. base salary wages, overtime and incentive payments) which are increasing by a compound annual growth rate of 3.7 percent from 2020 to 2029 on the basis of average cost per full-time employee ("FTE").[1] In preparing 2024 to 2029 total cash compensation forecasts and the various components of them, Toronto Hydro considered, and the forecasts reflect, the following inputs: (i) Toronto Hydro's obligations under collective agreements, (ii) relevant labour market data (where available),[2] and (iii) the utility's projections of outcomes of future rounds of collective bargaining that will take place throughout the forecast period. More specifically, in the absence of objective market indicators to forecast compensation increases over the 2025-2029 forecast period, the utility (in consultation with its compensation expert Mercer Canada and based on experience) relied on a historical rolling-average (in addition to the factors noted above) as the best information available to predict reasonable future compensation levels.

[1] The average cost per employee is mathematically derived from the data in OEB Appendix 2-K; namely total compensation divided by total FTEs per year.
[2] For example, the results of Mercer Canada's August 2023 QuickPulse™ Canada Compensation Planning Survey show total salary increases of 3.7 percent: <https://www.imercer.com/ca/ARTICLEDETAIL/annual-increase-budget-canada>.

2. COMPENSATION STRATEGY AND WORKFORCE GOVERNACE

Toronto Hydro's workforce is the means by which the utility delivers service and value to its customers, carries out its objectives, and complies with its mandatory obligations. The utility strives to secure and maintain a workforce that is highly skilled, agile, innovative, productive and engaged. To achieve these key outcomes in a cost-effective manner, Toronto Hydro's compensation strategy is to: (i) provide wages and benefits that are competitive in the markets where Toronto Hydro competes for talent and (ii) use a pay-for-performance model to align the workforce with the utility's core objectives, set and manage high performance expectations, foster productivity, and reward employees for their contributions to the utility's performance.

2.1 Market-Competitiveness

The utility must maintain the ability to attract, motivate, and retain employees who have the knowledge, skills, and abilities that are critical to the utility's success in meeting customer expectations and delivering customer outcomes. Toronto Hydro's compensation strategy aims to strike an appropriate balance between controlling costs and providing market-competitive compensation. In doing so, the utility examines the reasonableness and effectiveness of its compensation program in alignment with industry peers and relevant labour markets.

The effect of external pressures and shifting candidate preferences regarding work arrangements (i.e. remote vs. in-office) in a large and diverse urban city requires a strong market-competitive compensation program to attract, retain and engage employees. Toronto is the largest city in Canada and continues to be a competitive labour market. Emerging skill sets are in high demand with low supply across many other industries and utilities.[3] Due to the uniqueness, complexity and dynamic operating conditions of Toronto Hydro's distribution plant, and competition in the labour market, it is challenging for Toronto Hydro to attract and retain skilled employees.

Moreover, the COVID-19 pandemic significantly impacted traditional approaches to talent management. According to the 2022 Canada Flexible Working Policies and Practices Survey conducted by Mercer, 53 percent of employees want hybrid work arrangements and 53 percent of employers offer a hybrid model.[4] To remain market competitive, Toronto Hydro introduced a hybrid work model.

Toronto Hydro reviews the market-competitiveness of its compensation packages for non-union employees as part of its annual business planning and budgeting process. This can include participating in compensation salary surveys offered through independent consulting firms that specialize in the compilation of aggregate compensation data. The data from these surveys gives Toronto Hydro an ability to compare its jobs relative to other comparable jobs in both the energy and general industry in order to calibrate compensation.

In addition to annual reviews in the normal course of business, the utility periodically conducts external benchmarking studies to ensure that the level, form, and mix of compensation offered by Toronto Hydro is competitive with those provided for comparable jobs in the markets where the utility competes for talent. In 2022, Toronto Hydro engaged industry-expert Mercer Canada to undertake a detailed compensation

[3] Mahboubi, Parisa. 2022. The Knowledge Gap: Canada Faces a Shortage in Digital and STEM Skills. Commentary 626. Toronto: C.D. Howe Institute: <https://www.cdhowe.org/sites/default/files/2022-08/Commentary_626_0.pdf>.
[4] Mahboubi, P. (n.d.). (rep.). *Canada Flexible Working Policies and Practices Survey*. Mercer: <https://www.imercer.com/ca/products/flexible-working-policies-practices-survey-ca>.

and benefits benchmarking study which can be found at Exhibit 4, Tab 4, Schedule 5 (the "Mercer Study").

The Mercer Study indicates that Toronto Hydro's total compensation is positioned within a market competitive range relative to the 50th percentile of the energy market. With respect to the general industry peer group, total compensation is slightly above market due to pensions and benefits, while the total cash component of compensation is market-competitive. Mercer defines "market-competitive" as "within 10 percent of the target market positioning on a position-by-position basis."[5]

2.2 Performance-Based Compensation

Toronto Hydro compensates employees based on performance, which is assessed by the competencies demonstrated and outcomes achieved in the course of employment. This performance-based compensation strategy plays a central role in delivering the utility's core objectives under the five corporate pillars described below in Table 3.

Table 3: Toronto Hydro's Corporate Pillars

Corporate Pillar	Core Objectives
 **CUSTOMER**	• Make it easy for customers to interact and transact with us • Provide value added and efficient services through various channels • Proactive and data-driven response to all customer segments • Utilize technology and analytics to meet customer's information needs

[5] Exhibit 4, Tab 4, Schedule 5 – Mercer Benchmarking Report at page 5.

Corporate Pillar	Core Objectives
 PEOPLE	• Ensure a healthy and safe work environment • Enhance diversity, equity and inclusion in the workplace • Optimize processes and invest in employee capabilities • Engage employees through purposeful work
 ENVIRONMENT	• Advance as a Sustainable Electricity Company • Reduce our environmental footprint • Enable our customers as a sustainability partner • Leverage environmental management system to achieve net zero by 2040
 OPERATIONS	• Keep the lights on • Keep our system safe • Build a grid that supports a modern city • Provide value to customers
 FINANCIAL	• Provide a fair return to our Shareholder • Continue to increase Shareholder value • Strive for strong and stable credit rating

As further detailed in Exhibit 1B, Tab 3, Schedules 1 and 2, over the last decade, Toronto Hydro’s pay-for-performance model enabled the utility to achieve improvements in service quality and other performance outcomes such as:

- 60 percent improvement in employee safety record,
- 29 percent improvement in outages due defective equipment,
- 14 percent improvement in first contact resolution performance,
- 9 percent improvement to new services connected on time.

In addition to assessing employee performance based on the workforce competencies outlined in Table 4 below, Toronto Hydro's performance-based compensation strategy includes individual, divisional, and corporate performance expectations that align with the utility's core objectives. Performance expectations are set, assessed and reviewed through Toronto Hydro's performance management system.

Table 4: Toronto Hydro's Workforce Competencies and Descriptors

Workforce Competencies	Descriptors
Drives Results & Accountability	Has a clear sense of corporate direction and expectations, and holds self and others accountable to achieve objectives.
Demonstrates Customer-Focus	Models a customer-focussed approach in all decisions and actions.
Builds Strong Relationships	Builds valuable relationships across the organization and externally to support the future of Toronto Hydro.
Develops People and a Diverse & Inclusive Culture	Recognizes personal development and a strong organizational culture as integral components of an effective organization supporting diversity, equity and inclusion.
Champions Change, Productivity & Innovation	Prioritizes in innovation, continuous improvement, and productivity as essential drivers of long-term sustainability.
Demonstrates Commitment to Environment, Health & Safety	Manages risks to protect the health and safety of employees and the public, and shows a commitment to sustainability.

Toronto Hydro's corporate competencies guide the following aspects of human resources management:

- **Recruitment and Selection**: Toronto Hydro uses its corporate competencies to develop the recruitment process for a particular position and takes the competencies into consideration as part of its selection criteria.
- **Training and Development:** The corporate competencies underpin the utility's training initiatives. For example, if Toronto Hydro uses its performance management process to determine that an individual or team lacks customer

focus competencies, the utility would perform an assessment of training needs. Based on the results, the utility would implement an appropriate customer awareness training program to assist in closing this gap.

- **Performance Management and Compensation**: The corporate competencies are integrated with Toronto Hydro's compensation practices. For non-union employees, this occurs through the assignment of performance ratings, which evaluate employees' performance in relation to the corporate competencies. The performance rating is one of the components that determine base salary increases. For unionized employees, Toronto Hydro uses performance assessments tied to corporate competencies to determine base step increases for employees with a solid performance rating who are not at the top of the defined salary range.
- **Succession Planning and Promotion**: Decisions on succession planning and promotion focus on developing employees who consistently meet the corporate competencies, as indicated by their annual performance ratings.

3. COMPENSATION PRACTICES FOR NON-UNION EMPLOYEES

Toronto Hydro provides non-unionized employees with a total cash compensation package comprised of two elements: base salary and variable performance pay. Base salary compensates an employee for meeting the expectations related to their responsibilities, accountabilities, and technical skills. Variable performance pay rewards employees for their contribution to achieving goals and objectives tied to the utility's strategic pillars, in combination with their successful demonstration of corporate competencies.

Each non-union position at Toronto Hydro has a salary grade with a corresponding salary range. To maintain alignment with the competitive labour market, the utility adjusts salary ranges based on annual market reviews. Because Toronto Hydro operates in niche areas of expertise, both as part of the electricity system and in the general industry, the utility hires capable workers but at a less experienced level, and trains and develops them on the job. From 2019 to 2023 year to date, newly hired non-union employees were brought into their roles at an average of 88 percent of the salary grade. To keep the workers that Toronto Hydro invests in training and developing on the job, the utility progresses them through the salary ranges more quickly to reflect their upskilling and acquired experience levels. This progression is based on merit increases.

The variable performance pay program is an incentive performance-based compensation tool designed to retain, motivate, and reward employees for achieving performance objectives, which are established at the beginning of each calendar year and documented in an annual performance contract. Each employee’s variable performance pay is based on a weighting of performance objectives, which are measured by key metrics and by individual goals set out in the employee’s annual performance contract.

4. COMPENSATION PRACTICES FOR BARGAINING UNIT EMPLOYEES

Over half of Toronto Hydro’s employees belong to collective bargaining units represented by the Power Workers’ Union (“PWU”), the Society of United Professionals - Engineers (“Society Engineers”), or the Society of United Professionals - IT (“Society IT”). Toronto Hydro’s compensation costs with respect to these employees are negotiated through periodic collective bargaining in accordance with the legal duty to bargain in good faith.

The utility has both contractual and statutory obligations to honour the terms of its collective bargaining agreements.[6]

Toronto Hydro's bargaining interests are focused on supporting the organization's ability to safely execute capital and operational programs in an efficient and cost-effective manner while preserving management's rights to manage and direct the workforce. To achieve negotiated settlements that are fair and reasonable for its employees, while continuing to provide efficient service to its customers, the utility monitors and considers external compensation data, bargaining trends and past settlements.

4.1 PWU Collective Agreement

Table 5 below summarizes the year-over-year general wage increases for PWU under the previous and current collective agreement. The current collective agreement with PWU effective as of February 1, 2022 and until January 31, 2027, resulted in a 2.6 percent average general wage increase, in line with the multi-year average general wage increases under similar collective agreements for the peer group of Ontario distributors identified in the benchmarking evidence at Exhibit 4, Tab 1, Schedule 1.[7]

Table 5: PWU General Wage Increases (2020-2026)

2020	2021	2022*	2023	2024	2025	2026
2.3%	2.3%	2.5%	2.5%	2.5%	2.5%	3.0%

New collective agreement effective February 1, 2022 until January 31, 2027.

[6] *Ontario Labour Relations Act,* 1995, S.O. 1995, c. 1, Sched. A, section 56.

[7] The peer group consists of the large and mid-sized Ontario distributors: Hydro One, Hydro Ottawa, Alectra Utilities, Elexicon Energy, London Hydro, EnWin Utilities, and Enova Power. With the exception of Elexicon and Hydro One, these distributors serve the top 10 cities in Ontario (by population size). Hydro One was included in the peer group because it serves approximately 90 percent of the service territory in the province, and Elexicon Energy was included because it is the fourth largest municipality-owned electricity distributor in the province.

In addition to general wage increases, PWU employees not already paid at the top of the wage scale are eligible, based on performance, for step increases as a result of progression on the wage scale from one step to the next.

4.2 Society Engineers Collective Agreement

The utility's current collective agreement with the Society Engineers came into effect January 1, 2020 and is valid until December 31, 2023. Table 6 below summarizes the year-over-year general wage increases for Society Engineers employees.

Table 6: Society Engineers General Wage Increases (2020-2023)

2020	2021	2022	2023
1.20%	1.50%	1.60%	2.00%

In addition to general wage increases, Society Engineers employees are also eligible, based on performance, for: (i) step increases as a result of progression on the wage scale from one step to the next if not already paid at the top of the wage scale, and (ii) variable performance pay based on achievement of the deliverables outlined in annual performance contracts, as well as the achievement of the utility's performance measures.

4.3 Society IT Collective Agreement

The Society of United Professionals was certified as the bargaining agent for applicable Information Technology employees at Toronto Hydro on November 21, 2018. On November 9, 2020, the Society of United Professionals First Collective Agreement with Society IT employees was awarded beginning January 1, 2019 and expiring December 31, 2020. The utility's current collective agreement with Society IT employees came into effect January 1, 2021 and is valid until December 31, 2025. Table 7 below summarizes the year-over-year general wage increases for Society IT employees.

Table 7: Society IT General Wage Increases (2020-2025)

2020	2021	2022	2023	2024	2025
2.30%	1.50%	2.50%	2.50%	2.75%	3.00%

In addition to general wage increases, Society IT employees are also eligible, based on performance, for: (i) step increases as a result of progression on the wage scale from one step to the next if not already paid at the top of the wage scale, and (ii) variable performance pay based on achievement of the deliverables outlined in annual performance contracts, as well as the achievement of the utility's performance measures.

5. BENEFITS AND PENSIONS

Toronto Hydro provides a pension for fulltime employees through its membership in Ontario Municipal Employees Retirement System ("OMERS"), a multi-employer defined benefit pension plan. In addition to OMERS, Toronto Hydro provides other employment benefits to employees, including: medical insurance, including vision care, prescription drugs, and paramedical services; dental insurance, including major dental and orthodontic services; short-term disability ("STD") and long-term disability ("LTD") income protection; and life insurance and accidental death and dismemberment ("AD&D") insurance. Other benefits costs paid by Toronto Hydro include employer contributions for the following:[8]

- Workplace Safety and Insurance Board ("WSIB") premiums;

[8] Aside from pensions, all contributions are required under Canadian law.

- Pension contributions;
- Canadian Pension Plan contributions;
- Employment insurance contributions; and
- Employer health tax contributions.

Tables 8 and 9 below outline the cost of employee benefits for the current 2020-2024 and the future 2025-2029 rate periods, respectively.

Table 8: 2020-2024 Employee Benefit Costs ($ Millions)

	2020 Actual	2021 Actual	2022 Actual	2023 Bridge	2024 Bridge
Employee Benefits Cost	52.4	49.0	50.1	55.9	66.6

Table 9: 2025-2029 Employee Benefit Costs ($ Millions)

	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast	2029 Forecast
Employee Benefits Cost	74.5	81.8	88.9	96.6	104.6

Toronto Hydro periodically reviews the trends and costs associated with its benefit programs to help ensure that the program is aligned with the labour markets within which Toronto Hydro competes for talent.

As part of the study filed at Exhibit 4, Tab 4, Schedule 5, Mercer Canada reviewed Toronto Hydro’s market position for employer paid benefits in respect of two components: active benefits (e.g. life insurance, accidental death & dismemberment insurance, short-term disability, long-term disability, health and dental, health care spending account) and employer pension contributions.

For active benefits, Mercer found that Toronto Hydro provides a top quartile active benefits plan when compared to the energy and general industry peer groups. For pensions, relative to the overall market (which includes both defined benefit and defined contribution plans),[9] Toronto Hydro's pension arrangements through OMERS are above the 50th percentile among both the energy and general industry peer group companies. However, when considering only comparators that provide Defined Benefit pensions to new hires, Toronto Hydro's pension arrangements through OMERS are aligned to the 50th percentile relative to both the energy and general industry peer group companies.

Toronto Hydro conducts regular reviews to support effective program governance and prudent cost management while providing a comprehensive and market-competitive benefits program that supports the utility's ability to attract and retain talent in a highly competitive labour market. For example, in 2022, Toronto Hydro complete a comprehensive dependent eligibility review for all active employees with family coverage.

To manage benefits costs, Toronto Hydro also regularly negotiates with benefit providers and conducts comprehensive vendor market reviews on a periodic basis. In 2021 Toronto Hydro conducted a vendor market review for the Employee and Family Assistance Program which resulted in the utility securing a new provider for employee mental health and overall wellness at a reduced per member rate of approximately 30 percent.

Toronto Hydro offers its employees a number of health and wellness initiatives, including the aforementioned Employee and Family Assistance Program that provides employees and their dependents access to work-life/wellness resources such as support for mental

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[9] Determining the benefit that a pension plan member will receive in retirement depends on the type of plan. In a defined benefit plan, members can expect a predicable monthly income in retirement. In a defined contribution plan, the future benefit can vary because it is impacted by the returns earned by the investment pool. What is defined in this type of plan is the amount of contributions put into the plan.

health and relationship counselling. In 2020, Toronto Hydro introduced a virtual healthcare program that offers 24/7 online access to healthcare professionals. The program was introduced early during the pandemic to help mitigate the risk and spread of COVID-19 by reducing the need for in-person medical walk-in clinic visits while still ensuring employees had access to medical professionals. In 2022, Toronto Hydro enhanced its coverage for mental health services (e.g. psychologists and social workers) in recognition of the rising importance of mental health wellness.

Both participating employers and their employees are required to make contributions to the OMERS pension plan. The required contribution rates are based on the employee's earnings, and are periodically reviewed by the OMERS Sponsors Corporation relative to the assets and obligations of the plan. Participating employees and employers currently contribute to OMERS 9 percent of earnings up to the Yearly Maximum Pensionable Earnings ("YMPE") and 14.6 percent on earnings above the YMPE. The YMPE is the Canada Pension Plan ("CPP") earnings limit (i.e. contributions to the CPP are made on earnings up to this limit). The OMERS contribution rate is lower up to the YMPE because OMERS is designed to work together with CPP to provide combined pension benefits.

Tables 10 and 11 below summarize Toronto Hydro's pension costs, including capitalized and expensed amounts each year, for the current 2020-2024 and the future 2025-2029 rate periods, respectively. Toronto Hydro's pension costs are recovered using a default accrual basis.

Table 10: 2020-2024 Pension Costs ($ Millions)

	2020 Actual	2021 Actual	2022 Actual	2023 Bridge	2024 Bridge
Pension Contributions	17.1	15.8	16.3	20.0	22.8
Less: Amount Capitalized	8.2	7.5	8.3	10.1	11.5
Amount Expensed	9.0	8.4	8.1	10.0	11.3

Please note that the numbers in the table may not sum due to rounding.

Table 11: 2025-2029 Pension Costs ($ Millions)

	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast	2029 Forecast
Pension Contributions	24.8	26.4	28.0	29.6	31.0
Less: Amount Capitalized	12.4	13.3	14.2	15.0	15.8
Amount Expensed	12.4	13.2	13.8	14.5	15.2

Please note that the numbers in the table may not sum due to rounding.

In addition to pension benefits, Toronto Hydro pays certain medical, dental, and life insurance benefits on behalf of its retired employees. An actuarial analysis using the projected unit credit method determines the cost of these benefits. This method incorporates Toronto Hydro's best estimate of future salary levels, retirement ages of employees, health care costs, and other actuarial factors. The latest actuarial valuation was performed by Willis Towers Watson based on information current as of January 1, 2022, and forecasts of post-employment benefit costs are based on extrapolations of those results (see Exhibit 4, Tab 4, Schedule 4, Appendix A).

Tables 12 and 13 below presents Toronto Hydro's post-employment benefit costs, including capitalized and expensed amounts, for the current 2020-2024 and the future

2025-2029 rate periods, respectively. Toronto Hydro's post-employment benefit costs are recovered using a default accrual basis.

Table 12: 2020-2024 Post-employment Benefit Costs ($ Millions)

	2020 Actual	2021 Actual	2022 Actual	2023 Bridge	2024 Bridge
Benefit Costs	15.7	14.6	13.9	11.5	13.0
Capitalized Amounts	7.4	6.9	7.0	5.8	6.5
Expensed Amounts	8.2	7.7	6.9	5.7	6.5

Please note that the numbers in the table may not sum due to rounding.

Table 13: 2025-2029 Post-employment Benefit Costs ($ Millions)

	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast	2029 Forecast
Benefit Costs	14.1	15.0	15.8	16.6	17.4
Capitalized Amounts	7.0	7.5	8.0	8.4	8.9
Expensed Amounts	7.1	7.4	7.8	8.2	8.5

Please note that the numbers in the table may not sum due to rounding.

January 27, 2023

Ms. Stazia Harding
Toronto Hydro Corporation
14 Carlton Street
Toronto, ON
M5B 1K5

Dear Stazia:

POST-EMPLOYMENT BENEFITS FOR EMPLOYEES OF TORONTO HYDRO
2022 YEAR-END DISCLOSURES AND ESTIMATED 2023 AND 2024 BENEFIT EXPENSE UNDER INTERNATIONAL ACCOUNTING STANDARDS

As requested, this letter and appendices have been prepared for Toronto Hydro Corporation ("the Company", or "Toronto Hydro") and present the Company's liabilities and costs in respect of the following post-retirement and post-employment benefits plans ("the Plans"):

- Extended health benefits for retirees and members on disability;
- Dental benefits for retirees and members on disability;
- Life insurance benefits for retirees;
- Vested and non-vested sick leave benefits;
- OMERS top up pension;
- Executive OMERS top up pension; and
- Executive retirement allowance.

This letter and appendices have been prepared for the Company and its external reporting, for the following purposes:

130 King St. West
Suite 1500
P.O. Box 424
Toronto, Ontario M5X 1E3
Canada

T +1 416 960 2700
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Towers Watson Canada Inc.

- Determining the final calculation of the 2022 benefit expense under International Financial Reporting Standards (IFRS) in accordance with International Accounting Standards Section 19 (IAS 19),

- Providing the required information for year-end disclosure purposes as of December 31, 2022 under IAS 19, and

- Determining an estimate of the 2023 and 2024 benefit expenses under IAS 19.

The information contained in this letter and appendices are presented in thousands of Canadian dollars and are in respect of the benefits mentioned above only.

The 2022 net periodic benefit cost is based on the results of the January 1, 2020 actuarial valuation. The 2022 year-end disclosure obligation and extrapolations for 2023 and 2024 are based on the results of the January 1, 2022 actuarial valuation.

The balance of this letter sets out comments and notes to our calculations. Appendix A provides details of the relevant accounting results. Additional information regarding the summaries of the plan provisions, the membership data and the actuarial basis used in the January 1, 2022 valuation are going to be included in the forthcoming actuarial valuation report prepared by WTW.

Actuarial Assumptions and Methods

- The measurement date used for Fiscal 2022 year-end financial reporting is December 31, 2022.

- The 2022 benefit expense is based on a discount rate of 3.00% per annum and the defined benefit obligation (“DBO”) at December 31, 2022 is based on a discount rate of 5.10% per annum, as instructed by the Company. The discount rates are based on long-term high-quality Canadian corporate bond yields at December 31, 2021 and December 31, 2022, respectively.

- Other than those noted in this letter, the actuarial methods and assumptions used for the determination of the 2022 net periodic benefit cost are consistent with those used for the 2021 year-end disclosures and the actuarial methods and assumptions used for the December 31, 2022 obligation are consistent with those used for the January 1, 2022 valuation.

- The obligation as of December 31, 2022 and the 2023 and 2024 expense estimates are based on extrapolations from the January 1, 2022 valuation results for the medical, dental, life insurance, sick leave, OMERS top-up and retirement allowance benefit plans, assuming no experience gains or losses other than from actual benefit payments being different from expected, and reflecting changes in assumptions as at the measurement date. As instructed by the Company, the 2023 preliminary expense reflects a one-time adjustment to the Retirement Allowance gain/loss, reflected as at January 1, 2023, impacting 2023 preliminary gains and losses recognized in expense and OCI.

Accounting Methods

- Under IAS 19, we understand that Toronto Hydro has determined that both the non-vested sick leave benefit program and the vested sick leave benefit program should be included for post-employment benefits reporting. As such, these benefits are included in the financial information under IAS 19 presented in this letter.

- On an ongoing basis, actuarial gains and losses for all benefit plans other than the sick leave benefits plan and the incentive plan retirement allowance will be immediately recognized in other comprehensive income. Actuarial gains and losses for the sick leave benefit plan and the incentive plan retirement allowance will be recognized immediately in expense.

- On an ongoing basis, the impact of plan changes will be immediately recognized in benefit expense.

Summary of Financial Results

The summary of Fiscal 2022 benefit expense, the defined benefit liability and the DBO as at December 31, 2022, under IAS 19 is as follows (in $ 000s):

($000s)	Fiscal 2022 Net Periodic Benefit Costs	Defined Benefit Asset/(Liability) at December 31, 2022	DBO at December 31, 2022
Electric System Limited	9,255	(221,692)	221,692
Toronto Hydro Corporation	993	(5,779)	5,779
Energy Service Incorporated	34	(1,131)	1,131
LDC Unregulated	99	(1,357)	1,357
Consolidated	10,381	(229,959)	229,959

- Actual benefit payments for 2022 of $10,427,590 are based on information provided by the Company on January 10, 2023. We have projected 2023 and 2024 benefit payments based on the valuation assumptions.

Other Comments

- We understand that the post-employment benefits plans are not pre-funded, and therefore our accounting results do not consider any expected investment income on plan assets.
- As directed by the Company, the full defined benefit liability has been classified as a non-current liability.
- We understand that the Company could be making adjustments to the results presented herein, in respect to certain executive employees currently on salary continuance. Reflecting any adjustments for these participants is beyond the scope of our engagement with the Company. As instructed by the Company on November 25, 2021, we haven't made any adjustments for these participants.
- Other than those described in this letter and appendices, the Company's management has confirmed that there have been no significant events, changes to the plan provisions or changes to plan membership since January 1, 2022 for all benefit plans, that would materially affect the results of our valuations.

The breakdown of net actuarial (gain)/loss as at December 31, 2022 is as follows (in $000s):

	Electric System Limited	Toronto Hydro Corporation	Energy Service Incorporated	LDC Unregulated	Total
Demographic Assumptions:					
Sick Leave Program	(164)	-	-	-	(164)
Retirement Allowance #1	-	-	-	-	-
Other Plans	2,114	(95)	-	9	2,028
Economic Assumptions:					
Sick Leave Program	(266)	-	-	-	(266)
Retirement Allowance #1	-	(70)	-	-	(70)
Other Plans	(82,079)	(1,814)	(420)	(523)	(84,836)
Plan Experience:					
Sick Leave Program	(3,209)	-	-	-	(3,209)
Retirement Allowance #1	-	(59)	-	-	(59)
Other Plans	5,219	507	400	46	6,172
Total Net Actuarial (Gain)/Loss:					
Sick Leave Program	(3,639)	-	-	-	(3,639)
Retirement Allowance #1	-	(129)	-	-	(129)
Other Plans	(74,746)	(1,402)	(20)	(468)	(76,636)
Sub-Total	(78,385)	(1,531)	(20)	(468)	(80,404)

Actuarial Certification

The Company may make a copy of this report available to its auditors, but we make no representation as to the suitability of this report for any purpose other than that for which it was originally provided and accept no responsibility or liability to the Company's auditors in this regard. We are aware that the information contained in this report will be used to support the audit of the Company's financial statements. Except where we expressly agree in writing, this report should not be disclosed or provided to any third party, other than as provided above. WTW accepts no responsibility for any consequences arising from any other party relying on this report or any advice relating to its contents.

In preparing these results, we have relied upon information and data provided to us orally, electronically and/or in writing by the Company and other persons or organizations designated by the Company. We have relied on all the data and information provided, including plan provisions and membership data as being complete and accurate. Based on discussions with and concurrence by the plan sponsor, assumptions or estimates may have been made if data were not available. We have not independently verified the accuracy or completeness of the data or information provided, but we have performed limited checks for consistency.

We are not aware of any errors or omissions in the data that would have a significant effect on the results of our calculations.

The results presented in this report are directly dependent upon the accuracy and completeness of the underlying data and information. Any material inaccuracy in the data, plan provisions or other information provided to us may have produced results that are not suitable for the purposes of this report and such inaccuracies may produce materially different results that could require that a revised report be issued.

The results summarized in this report involve actuarial calculations that require assumptions about future events. The Company is responsible for the selection of the assumptions, as required by IAS 19. Other assumptions may also be reasonable and appropriate, and their use would produce different results.

The results provided in this report reflect data and assumptions appropriate for the purpose of the measurement. As of the date of this report, there remains significant uncertainty regarding the effects on financial markets, regulations and experience for the following:

- The long-term effects of the COVID-19 pandemic;
- Events related to Russia's military action against Ukraine that commenced on February 24, 2022

The results presented in this report make no explicit allowances for the effects of these events as at December 31, 2022. As these events evolve, there may be significant impacts on plan experience and/or assumptions use in future measurements.

The expense and obligation levels will change in the future as a result of future changes in the actuarial methods and assumptions, the membership data, the plan provisions, accounting rules, legislature, and the government health care programs, or as a result of future experience gains or losses. None of these changes has been anticipated at this time but will be revealed in future accounting valuations.

The figures provided in this letter reflect, to the best of our knowledge, all of the Company's substantive commitments and obligations, as described herein. Furthermore, to the best of our knowledge, there are no subsequent events, the occurrence of which is probable and the effects of which are reasonably estimable, which have not been reflected in the figures provided as of the date of our letter.

In our opinion:

- the membership data on which the valuation is based are sufficient and reliable for purposes of the valuation;
- the assumptions are appropriate for the purposes of the valuation;
- the methods employed in the valuation are appropriate for the purposes of the valuation;
- the calculations have been made in accordance with our understanding of the requirements of IAS 19 and the Company's accounting policies.

This report has been prepared, and our opinions given, in accordance with accepted actuarial practice in Canada.

We are pleased to provide you with this year-end disclosure report. Please contact us if you need any additional information.

Carl Larose, FCIA
Direct Dial: (514) 982-3013

Ross Cristiano, FCIA
Direct Dial: (416) 960-2837

Toronto, Ontario
January 27, 2023

Enclosures

cc:
Sandra Lau, Claudia Oancea, Helen MacDonald, Dave Clark - THC
Edward Eun, Dion Salandy and Graham Allison - WTW

Post-Employment Benefits Plan - IFRS (rev. 2011) - 2022 Year-End Disclosure Information ($ 000's)

	Electric System Limited	Toronto Hydro Corporation	Energy Services Incorporated	LDC Unregulated	Consolidated
Statement of Financial Position at Beginning of Period			January 1, 2022		
Defined Benefit Asset/(Liability) at Beginning of Period	(297,479)	(6,205)	(1,167)	(1,791)	(306,642)
Reconciliation of Defined Benefit Obligation			2022		
Defined Benefit Obligation at Beginning of Period	297,479	6,205	1,167	1,791	306,642
Employer Service Cost at Beginning of Period	2,675	345	-	44	3,064
Interest Cost	8,900	212	34	55	9,201
Past Service Cost (Credit)	1,319	565	-	-	1,884
Net Actuarial (Gain) or Loss					-
Sick Leave Plan	*(3,639)*	-	-	-	*(3,639)*
Retirement Allowance Benefit	-	*(129)*	-	-	*(129)*
Other Plans	*(74,746)*	*(1,402)*	*(20)*	*(468)*	*(76,636)*
Total Net Actuarial (Gain) or Loss	(78,385)	(1,531)	(20)	(468)	(80,404)
Benefits Paid Directly by the Employer	(10,296)	(17)	(50)	(65)	(10,428)
Defined Benefit Obligation at Current Period End	221,692	5,779	1,131	1,357	229,959
Change in Plan Assets			2022		
Fair Value of Plan Assets at Prior Period End	-	-	-	-	-
Employer Contributions	10,296	17	50	65	10,428
Benefits Paid	(10,296)	(17)	(50)	(65)	(10,428)
Fair Value of Plan Assets at Current Period End	-	-	-	-	-
Total Benefit (Expense)/Income for Period			2022		
Employer Service Cost at Beginning of Period	2,675	345	-	44	3,064
Interest Cost	8,900	212	34	55	9,201
Past Service Cost (Credit)	1,319	565	-	-	1,884
Actuarial (Gain)/Loss Recognized in Expense	(3,639)	(129)	-	-	(3,768)
Total Benefit Expense/(Income)	9,255	993	34	99	10,381
Reconciliation of Balance Sheet			2022		
Defined Benefit Asset/(Liability) at Prior Period End	(297,479)	(6,205)	(1,167)	(1,791)	(306,642)
Total Benefit (Expense)/Income for Period	(9,255)	(993)	(34)	(99)	(10,381)
Benefits Paid Directly by the Employer	10,296	17	50	65	10,428
Gain/(Loss) Recognized via OCI	74,746	1,402	20	468	76,636
Defined Benefit Asset/(Liability) at Current Period End	(221,692)	(5,779)	(1,131)	(1,357)	(229,959)
Change in Accumulated Other Comprehensive Income			2022		
Cumulative Actuarial (Gain)/Loss Recognized via OCI at Prior Period End	23,151	(1,934)	(2,166)	189	19,240
Actuarial (Gain)/Loss Recognized via OCI for Period	(74,746)	(1,402)	(20)	(468)	(76,636)
Cumulative Actuarial (Gain)/Loss Recognized via OCI at Current Period End	(51,595)	(3,336)	(2,186)	(279)	(57,396)
Statement of Financial Position at End of Period			December 31, 2022		
Defined Benefit Asset/(Liability) at Current Period End	(221,692)	(5,779)	(1,131)	(1,357)	(229,959)
Breakdown of Defined Benefit Obligation: Current and Non-Current			December 31, 2022		
Current Liabilities	-	-	-	-	-
Non-Current Asset/(Liability)	(221,692)	(5,779)	(1,131)	(1,357)	(229,959)
Defined Benefit Asset/(Liability) at Current Period End	(221,692)	(5,779)	(1,131)	(1,357)	(229,959)

Sensitivity to Changes in Medical and Dental Trend Rate Assumption					
Effect on total of service and interest cost for 2022					
1% point increase	1,568	5	5	15	1,593
1% point decrease	(1,373)	(4)	(4)	(14)	(1,395)
Effect on accrued benefit obligation at December 31, 2022					
1% point increase	24,520	136	145	157	24,958
1% point decrease	(21,295)	(115)	(127)	(138)	(21,675)
Sensitivity to Changes in Discount Rate Assumption					
Effect on total of service and interest cost for 2022					
1% point increase	537	(23)	5	(4)	515
1% point decrease	(940)	20	(7)	1	(926)
Effect on accrued benefit obligation at December 31, 2022					
1% point increase	(26,105)	(641)	(136)	(169)	(27,051)
1% point decrease	32,130	783	166	206	33,285
Sensitivity to Changes in Mortality Rates Assumption					
Effect on accrued benefit obligation at December 31, 2022					
Set back 1 year	6,802	75	38	37	6,952
Set forward 1 year	(6,719)	(80)	(37)	(37)	(6,873)
Key Assumptions					
Discount rate at Dec 31/22 (used for Dec 31/22 obligation)	5.10%	5.10%	5.10%	5.10%	5.10%
Discount rate at Dec 31/21 (used for 2022 Benefit Costs)	3.00%	3.00%	3.00%	3.00%	3.00%
Assumed medical and dental cost trend rate at December 31, 2022					
Dental care cost trend rate assumed for next year	4.00%	4.00%	4.00%	4.00%	4.00%
Health care cost trend rate assumed for next year	5.10%	5.10%	5.10%	5.10%	5.10%
Expected Benefit Payments					
Following Year	10,752	287	48	53	11,140
Following Year +1	11,233	244	49	55	11,581
Following Year +2	11,504	289	50	57	11,900
Following Year +3	11,692	193	51	61	11,997
Following Year +4	11,939	466	54	64	12,523
Following Year +5	12,173	408	57	67	12,705
Modified Duration at the end of the year	13.0	13.3	13.2	13.7	13.0

Post-Employment Benefits Plan - IFRS (rev. 2011) - 2023 Expense Estimate ($ 000's)

	Electric System Limited	Toronto Hydro Corporation	Energy Services Incorporated	LDC Unregulated	Consolidated
Statement of Financial Position at Beginning of Period			January 1, 2023		
Defined Benefit Asset/(Liability) at Beginning of Period	(221,692)	(5,779)	(1,131)	(1,357)	(229,959)
Reconciliation of Defined Benefit Obligation			2023		
Defined Benefit Obligation at Beginning of Period	221,692	5,779	1,131	1,357	229,959
Employer Service Cost at Beginning of Period	1,544	264	-	5	1,813
Interest Cost	11,111	301	56	68	11,536
Net Actuarial (Gain) or Loss	-	-	-	-	-
Sick Leave Plan	-	-	-	-	-
Retirement Allowance Benefit	-	*94*	-	-	*94*
Other Plans	-	*(94)*	-	-	*(94)*
Total Net Actuarial (Gain) or Loss	-	-	-	-	-
Benefits Paid Directly by the Employer	(10,752)	(287)	(48)	(53)	(11,140)
Defined Benefit Obligation at Current Period End	223,595	6,057	1,139	1,377	232,168
Change in Plan Assets			2023		
Fair Value of Plan Assets at Prior Period End	-	-	-	-	-
Employer Contributions	10,752	287	48	53	11,140
Benefits Paid	(10,752)	(287)	(48)	(53)	(11,140)
Fair Value of Plan Assets at Current Period End	-	-	-	-	-
Total Benefit (Expense)/Income for Period			2023		
Employer Service Cost at Beginning of Period	1,544	264	-	5	1,813
Interest Cost	11,111	301	56	68	11,536
Actuarial (Gain)/Loss Recognized in Expense	-	94	-	-	94
Total Benefit Expense/(Income)	12,655	659	56	73	13,443
Reconciliation of Balance Sheet			2023		
Defined Benefit Asset/(Liability) at Prior Period End	(221,692)	(5,779)	(1,131)	(1,357)	(229,959)
Total Benefit (Expense)/Income for Period	(12,655)	(659)	(56)	(73)	(13,443)
Benefits Paid Directly by the Employer	10,752	287	48	53	11,140
Gain/(Loss) Recognized via OCI	-	94	-	-	94
Defined Benefit Asset/(Liability) at Current Period End	(223,595)	(6,057)	(1,139)	(1,377)	(232,168)
Change in Accumulated Other Comprehensive Income			2023		
Cumulative Actuarial (Gain)/Loss Recognized via OCI at Prior Period End	(51,595)	(3,336)	(2,186)	(279)	(57,396)
Actuarial (Gain)/Loss Recognized via OCI for Period	-	(94)	-	-	(94)
Cumulative Actuarial (Gain)/Loss Recognized via OCI at Current Period End	(51,595)	(3,430)	(2,186)	(279)	(57,490)
Statement of Financial Position at End of Period			December 31, 2023		
Defined Benefit Asset/(Liability) at Current Period End	(223,595)	(6,057)	(1,139)	(1,377)	(232,168)
Breakdown of Defined Benefit Obligation: Current and Non-Current			December 31, 2023		
Current Liabilities	-	-	-	-	-
Non-Current Asset/(Liability)	(223,595)	(6,057)	(1,139)	(1,377)	(232,168)
Defined Benefit Asset/(Liability) at Current Period End	(223,595)	(6,057)	(1,139)	(1,377)	(232,168)
Key Assumptions					
Discount rate at Dec 31/22 (used for December 31, 2023 obligation)	5.10%	5.10%	5.10%	5.10%	5.10%
Discount rate at Dec 31/22 (used for 2023 Benefit Costs)	5.10%	5.10%	5.10%	5.10%	5.10%
Assumed medical and dental cost trend rate at December 31, 2023					
Dental care cost trend rate assumed for next year	4.00%	4.00%	4.00%	4.00%	4.00%
Health care cost trend rate assumed for next year	5.10%	5.10%	5.10%	5.10%	5.10%
Expected Benefit Payments for Following Year	11,233	244	49	55	11,581

Post-Employment Benefits Plan - IFRS (rev. 2011) - 2024 Expense Estimate ($ 000's)

	Electric System Limited	Toronto Hydro Corporation	Energy Services Incorporated	LDC Unregulated	Consolidated
Statement of Financial Position at Beginning of Period			January 1, 2024		
Defined Benefit Asset/(Liability) at Beginning of Period	(223,595)	(6,057)	(1,139)	(1,377)	(232,168)
Reconciliation of Defined Benefit Obligation			2024		
Defined Benefit Obligation at Beginning of Period	223,595	6,057	1,139	1,377	232,168
Employer Service Cost at Beginning of Period	1,623	277	-	5	1,905
Interest Cost	11,200	317	57	69	11,643
Net Actuarial (Gain) or Loss	-	-	-	-	-
Benefits Paid Directly by the Employer	(11,233)	(244)	(49)	(55)	(11,581)
Defined Benefit Obligation at Current Period End	225,185	6,407	1,147	1,396	234,135
Change in Plan Assets			2024		
Fair Value of Plan Assets at Prior Period End	-	-	-	-	-
Employer Contributions	11,233	244	49	55	11,581
Benefits Paid	(11,233)	(244)	(49)	(55)	(11,581)
Fair Value of Plan Assets at Current Period End	-	-	-	-	-
Total Benefit (Expense)/Income for Period			2024		
Employer Service Cost at Beginning of Period	1,623	277	-	5	1,905
Interest Cost	11,200	317	57	69	11,643
Total Benefit Expense/(Income)	12,823	594	57	74	13,548
Reconciliation of Balance Sheet			2024		
Defined Benefit Asset/(Liability) at Prior Period End	(223,595)	(6,057)	(1,139)	(1,377)	(232,168)
Total Benefit (Expense)/Income for Period	(12,823)	(594)	(57)	(74)	(13,548)
Benefits Paid Directly by the Employer	11,233	244	49	55	11,581
Gain/(Loss) Recognized via OCI	-	-	-	-	-
Defined Benefit Asset/(Liability) at Current Period End	(225,185)	(6,407)	(1,147)	(1,396)	(234,135)
Change in Accumulated Other Comprehensive Income			2024		
Cumulative Actuarial (Gain)/Loss Recognized via OCI at Prior Period End	(51,595)	(3,430)	(2,186)	(279)	(57,490)
Actuarial (Gain)/Loss Recognized via OCI for Period	-	-	-	-	-
Cumulative Actuarial (Gain)/Loss Recognized via OCI at Current Period End	(51,595)	(3,430)	(2,186)	(279)	(57,490)
Statement of Financial Position at End of Period			December 31, 2024		
Defined Benefit Asset/(Liability) at Current Period End	(225,185)	(6,407)	(1,147)	(1,396)	(234,135)
Breakdown of Defined Benefit Obligation: Current and Non-Current			December 31, 2024		
Current Liabilities	-	-	-	-	-
Non-Current Asset/(Liability)	(225,185)	(6,407)	(1,147)	(1,396)	(234,135)
Defined Benefit Asset/(Liability) at Current Period End	(225,185)	(6,407)	(1,147)	(1,396)	(234,135)
Key Assumptions					
Discount rate at Dec 31/22 (used for December 31, 2024 obligation)	5.10%	5.10%	5.10%	5.10%	5.10%
Discount rate at Dec 31/22 (used for 2024 Benefit Costs)	5.10%	5.10%	5.10%	5.10%	5.10%
Assumed medical and dental cost trend rate at December 31, 2024					
Dental care cost trend rate assumed for next year	4.00%	4.00%	4.00%	4.00%	4.00%
Health care cost trend rate assumed for next year	5.10%	5.10%	5.10%	5.10%	5.10%
Expected Benefit Payments for Following Year	11,504	289	50	57	11,900

Toronto Hydro-Electric System Limited
EB-2023-0195
Exhibit 4
Tab 4
Schedule 5
ORIGINAL
(10 pages)

Non-Executive Compensation and Benefits Review

Toronto Hydro Electric System Limited

13 March 2023

Introduction and Executive Summary

Mercer Canada Limited ("Mercer") has been engaged by Toronto Hydro Electric System Limited ("THESL") to conduct a complete market review of compensation and benefits program competitiveness for union and non-union within Toronto Hydro.

The purpose of this review is to provide an independent, market-based assessment of the market positioning of THESL's non-executive total remuneration that includes base salary, short-term incentives, total cash compensation, active employee benefits, and pensions relative to the markets THESL competes with for talent. THESL employee groups considered include non-union professionals (i.e non-executive) and union positions represented by the Power Workers' Union ("PWU") and the Society of United Professionals ("SIT" or "SE").

Executive Summary

This review approach is consistent with Mercer's standard market benchmarking methodologies, and relies on compensation and benefits practices information provided by THESL, in addition to Mercer's proprietary compensation databases. Market comparisons are made to a group of peer organizations, selected by Mercer and confirmed by THESL, that are representative of the energy and general industry sectors THESL competes with for talent.

In conducting the compensation analysis, Mercer worked together with THESL to identify benchmark positions to compare to market that represent a valid cross sample of the organization's functions and levels. The breadth of benchmark positions selected is within the range of 50% to 75% of employees, considered best practice when benchmarking on an organization basis. The benchmarking review includes positions that represent approximately 67% of employees at THESL.

Mercer considers compensation levels to be within a "competitive range" if they fall within 10% of the target market positioning on a position-by-position basis (where you have a smaller sample size and higher variability in observations) and 5% on an overall organization basis (where you have a larger sample size and smaller variability in observations) when compared to target positioning (e.g., the 50th percentile).

On an overall organization basis, THESL's total remuneration, including the value of all cash compensation, benefit and pension plans are positioned within a market competitive range relative to the 50th percentile of the energy market, and are above the general industry market. The general industry market is generally representative of publicly traded, for-profit organizations. Competitive positioning varies by job and by level within THESL. Union and non-union positions are generally positioned competitively against the 50th percentile of the energy sector and at or above the market 50th percentile against the general industry due to the availability of base salary and pension and benefits in the general industry. Society and PWU represented roles are generally positioned competitively against the energy sector, and are reflective of energy sector specific positions.

Methodology

Mercer worked with THESL to determine the appropriate markets and organizations for comparison given the organizations they compete with for talent (i.e., organizations that Toronto Hydro might reasonably recruit employees from or lose employees to) and that are comparable in scope or type of operations. Two specific peer groups were identified for the purposes of the compensation and benefits review:

- **Energy Peer Group**
  - Reflects select Canadian organizations from Mercer's Total Compensation Survey ("MTCS") and proprietary custom surveys with energy industry-specific roles
  - Organizations were selected considering the comparability of their operations, relative size of revenues and full-time employee equivalents when compared to THESL, resulting in a peer group primarily consisting of other energy utilities
- **General Industry Peer Group**
  - Reflects select for-profit Canadian Organizations from Mercer's Benchmark Database ("MBD") that includes general industry roles and organizations
  - Aligned with Mercer's standard benchmarking methodology, organizations are generally within ½ to 2x the size of THESL on the basis of annual revenue
  - Where required to provide statistically significant market information for a specific position, the peer group is expanded to include organizations within 1/3 to 3x the size of THESL on the basis of annual revenue

A listing of organizations that belong to each of these peer groups for the purposes of either cash compensation, benefits or pension benchmarking is presented in Appendix A.

A sample of THESL's jobs across all grades were benchmarked against equivalent roles within organizations from the defined peer groups. Equivalences were determined on the basis of overlaps in responsibilities between THESL and survey position descriptions.

- 47 non-union jobs at THESL were matched to equivalent survey jobs and levels in the two peer groups.
- 14 union jobs were matched to equivalent survey jobs and levels in the energy peer group, as positions are generally energy industry specific in their responsibilities

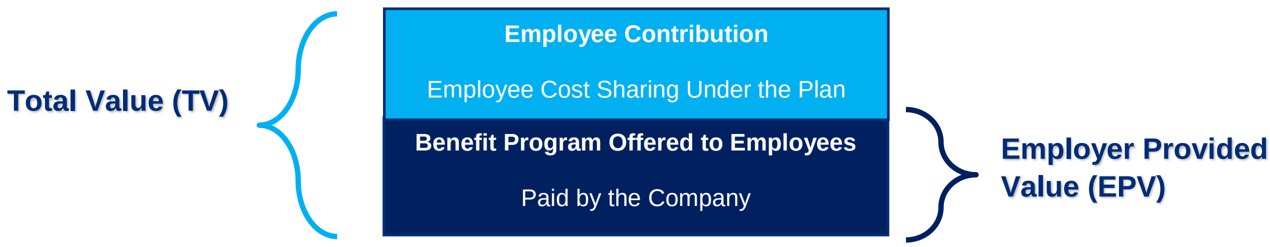
Mercer's benchmarking objective with this review is to map a reasonable sample of THESL's positions that best represent the total employee population across the different job levels in the organization. With this approach, our analysis includes 67% of the total population considered in-scope for this review. Mercer believes this to be a statistically reliable and representative sample for assessing the competitive levels of total remuneration for THESL's employees.

A listing of the specific THESL benchmark positions matched to market as part of this review is presented in Appendix B.

Cash compensation levels tend to be aligned with the scope and complexity of the individual position and as such, to the extent possible, Mercer analyzed market data specific to the individual position. Benefit and pension programs tend to be common to all participants within a defined group and, as such comparisons to market are made on a plan or aggregate basis for each employee group (e.g., non-union, Society, PWU, etc.).

For the retirement and benefits program review, Mercer similarly benchmarked THESL against the energy peer group and general industry peer groups for organizations available in the Mercer Plan Design databases considering their relative **employer provided value** ("EPV"). Relative value analysis focuses only on the plan design as it sets all other cost drivers at a common level and is more consistent when comparing the value of the benefit programs of several organizations.

We note how benchmarking Total Value (TV) compares to Employer Provided Value (EPV) for the benefits analysis:



Plans for all comparator organizations have been valued using the same earnings information and composite workforce profile. Using different earnings levels would change the dollar value of the benefit, but any change in relative value of the plan amongst the participants would not, in Mercer's opinion, be material.

As each element of the total remuneration package serves a different role, and companies may choose to offer a different pay mix in order to accomplish different objectives, Mercer recommends THESL consider the competitiveness of its total remuneration package as a whole (considering total remuneration) rather than the competitiveness of each individual compensation element. In order to provide a complete picture, report findings and observations are presented for separate compensation elements as well as aggregate total remuneration.

All compensation data is reflective of the most recently available data as of the completion of the analysis, and is presented effective for 2022.

Summary of Findings

Our commentary describes the competitiveness of THESL's base salary, short-term incentive, total cash compensation and total remuneration at an aggregate level for each grade in the organization, relative to the 50th percentile of the respective market. Based on Mercer's compensation practices and policy research, the majority of organizations target compensation at the 50th percentile of their competitive market, which balances fiduciary and cost considerations with the need to attract and retain talent.

- As stated above, Mercer considers THESL to be within the competitive range if they fall within 10% of the target market positioning on a position-by-position basis and 5% on the overall grade and organization basis.
- Market figures are presented where there is sufficient data to show the 50th percentile (Conversely, insufficient data is denoted by a "-").

The table below presents THESL's base salaries, target STI, target total cash compensation (TTC) and total remuneration (TRem) at an aggregate level, compared to the market 50th percentile across the two peer groups:

ABOVE MARKET (+5%)
BELOW MARKET (-5%)

Toronto Hydro					Energy Peer Group				General Industry Peer Group			
Grade	Base Salary ($)[1]	Target STI (%)	TTC ($)[2]	TRem ($)[3]	Base Salary ($)[1]	Target STI (%)	TTC ($)[2]	TRem ($)[3]	Base Salary ($)[1]	Target STI (%)	TTC ($)[2]	TRem ($)[3]
Y3	$190	25%	$237	$286	$211	23%	$260	$296	$196	25%	$237	$282
					-10%	2%	-9%	-3%	-3%	0%	0%	1%
Y1	$148	15%	$171	$205	$177	21%	$219	$257	$157	19%	$180	$205
					-16%	-6%	-22%	-20%	-6%	-4%	-5%	0%
W4	$139	10%	$153	$182	$149	16%	$171	$192	$130	15%	$147	$165
					-7%	-6%	-11%	-5%	7%	-5%	4%	10%
W3	$131	10%	$144	$169	$139	14%	$158	$177	$138	17%	$164	$179
					-6%	-4%	-9%	-4%	-6%	-7%	-13%	-5%
W2	$113	8%	$122	$150	$106	15%	$129	$150	$109	13%	$123	$141
					6%	-7%	-6%	0%	3%	-5%	-1%	6%
V4	$131	8%	$141	$169	$127	10%	$136	$156	$131	10%	$146	$160
					3%	-2%	4%	8%	0%	-2%	-3%	6%
V3	$123	8%	$133	$158	$123	11%	$136	$157	$113	11%	$130	$145
					0%	-3%	-2%	1%	9%	-3%	2%	9%
V2	$113	8%	$122	$145	$115	10%	$125	$142	$109	10%	$119	$131
					-2%	-2%	-2%	2%	4%	-2%	3%	11%
V1	$102	8%	$110	$133	$107	10%	$117	$134	$97	11%	$101	$114
					-5%	-2%	-6%	-1%	5%	-3%	9%	17%
V0	$90	8%	$97	$118	$87	9%	$95	$111	$76	8%	$83	$94
					3%	-1%	3%	6%	18%	0%	17%	25%
U2	$81	6%	$86	$105	$85	9%	$90	$105	$79	8%	$86	$96
					-4%	-3%	-5%	0%	2%	-2%	1%	9%
U1	$74	6%	$78	$96	$79	9%	$80	$95	$70	7%	$72	$82
					-7%	-3%	-2%	1%	6%	-1%	10%	18%
T1	$58	6%	$62	$76	$65	6%	$66	$78	$58	5%	$56	$65
					-11%	0%	-7%	-2%	0%	1%	9%	17%
SIT	$107	8%	$115	$139	$101	9%	$108	$128	$92	7%	$87	$99
					5%	-1%	7%	8%	15%	1%	33%	41%
SE	$123	8%	$133	$158	$111	10%	$122	$142	$106	10%	$116	$130
					10%	-2%	9%	11%	16%	-2%	14%	21%
PWU	$111	--	$111	$133	$101	8%	$105	$124	--	--	--	--
					10%	--	6%	7%	--	--	--	--
Overall					98%		95%	99%	103%		103%	110%

(1) Toronto Hydro base salary reflects salary structure job rates
(2) Toronto Hydro target total cash ("TCC") reflects salary structure job rates plus target short-term incentives
(3) Total remuneration ("TRem") reflects target total cash compensation plus the value of long-term incentives, pensions and benefits
Note: Figures are rounded to the nearest thousand (dollars) or percent

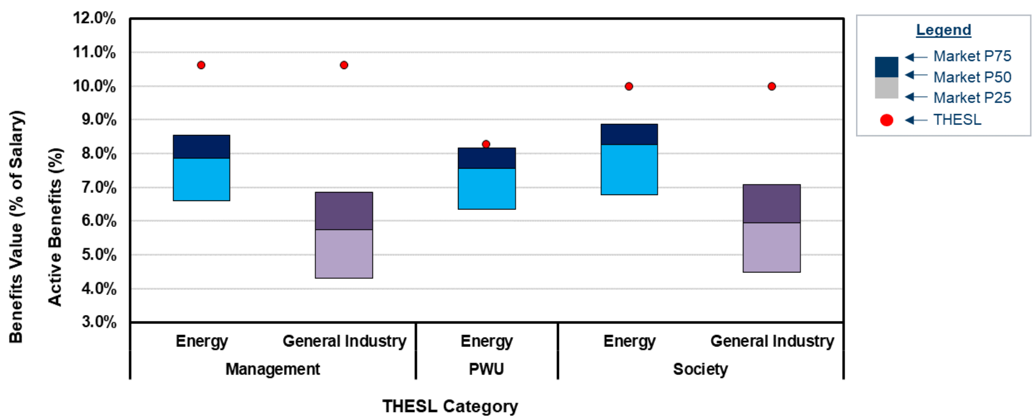
Overall, Toronto Hydro's compensation program, on a **total remuneration** basis, is closely aligned with the 50th percentile market pay levels of the energy peer group, the most comparable peer group given relative roles and responsibilities, and is above the market competitive level relative to the general industry peer group. Relative to the energy peer group, Y1 is the only grade that falls below the market 50th percentile for total remuneration. When compared to the general industry peer group, the majority of positions are positioned within or above the market 50th percentile, with the exception of W3 which is below the market competitive range.

On **base salaries** for non-union positions, Toronto Hydro is generally within the market competitive zone. Exceptions include Y1 which is below the competitive range relative to both the energy peer group and general industry peer group, and T1 which is below the competitive range relative to only the energy peer group. Salary grade V0 is above the market competitive range compared to general industry peers. Additionally, PWU and Society represented positons are paid above the competitive range relative to both the energy and general industry peer groups.

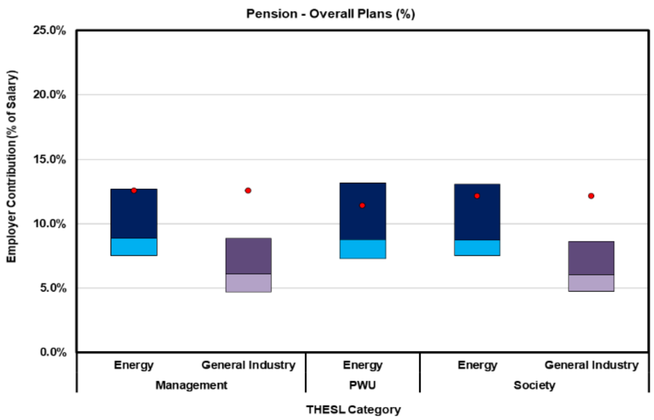
Market eligibility for **short-term incentives** ("**STI")** is generally more prevalent for team leader levels and above (i.e., close to 100% eligibility for jobs benchmarked to the W2 grade level and above). In comparison, THESL offers incentive pay for all positions, except for the PWU represented positions. On STI target opportunity, THESL is below market competitiveness for both energy and general industry peers.

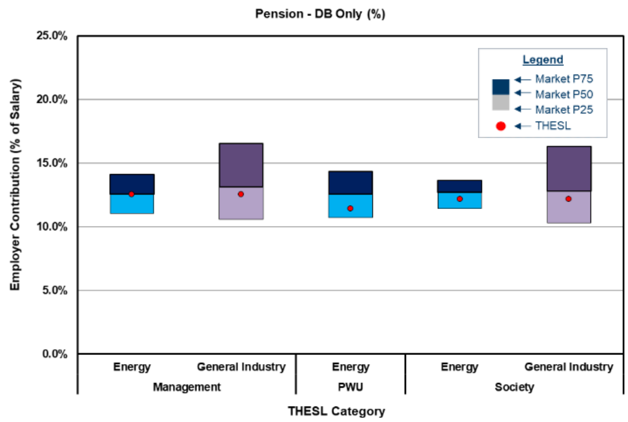
Overall, on **total cash compensation,** THESL remains within the range of market competitiveness for both the energy and general industry peer group. Grades Y3, Y1, W4 and W3 are below the competitive range relative to the energy peer group. Compared to the general industry peer group, all grades are within or above the competitive range, with the exception of W3 whose total cash compensation is below the competitive range. Consistent with base salary, PWU and Society represented positions are paid above the competitive range relative to both the energy and general industry peer groups.

To illustrate the impact of the benefits element on total remuneration, the tables below present THESL's **active benefits** and **pension** value for each employee group considering employer-provided value, compared to the market 50th percentile across the two peer groups.



When compared to the energy and general industry peer groups, THESL provides a top quartile active benefits plan, which is the overall value of active benefits (including life insurance, accidental death and dismemberment, short-term disability, long-term disability, healthcare spending account and health and dental) across all employee groups. Overall, THESL's position for active group benefits is driven by above market disability, health and dental benefits, many of which have been enhanced to incorporate higher maximums or annual limits in the past 5 years.





THESL's pension arrangements through OMERS for all employees are above the 50th percentile of the employer provided value among both the energy and general industry peer group companies. The energy sector market median is higher than the general industry because the energy sector has about half of the comparators providing Defined Benefits ("DB") pensions to new hires, while the general industry is dominated by Defined Contribution pension and savings plans that provide less value than DB pensions. The trend continues to be away from DB plans in the private sector, while the public sector remains mainly DB.

When considering only comparators that continue to provide DB pensions to new hires, THESL's pension for non-union employees is aligned to the 50th percentile of the employer provided value among both the energy and general industry peer group companies.

We note that the employer-provided pension value for the OMERS pension plan is set to 50% of the total value of the plan, since the cost of the plan is equally shared between Toronto Hydro and employees. Compared to a traditional single employer provided Defined Benefit pension plan, where the employer is responsible for all risk in the plan and the employee is only responsible for contributing a fixed contribution rate, this structure reduces the risk to Toronto Hydro.

Appendix A

The following companies comprise the **energy peer group** used for the purposes of the review:

ENERGY INDUSTRY COMPARATOR COMPANIES	
Alectra Inc.*	Hydro One Inc.*
Algonquin Power & Utilities Corp*	Hydro Ottawa Limited*
AltaLink L.P.	Hydro-Quebec*
ATCO Electric*	Manitoba Hydro*
BC Hydro Power & Authority*	Nalcor Energy*
Capital Power Corporation	New Brunswick Power *
ENMAX Corporation*	Nova Scotia Power (Emera, Inc.)*
EPCOR Utilities*	Ontario Power Generation*
Fortis, Inc. - FortisAlberta, Inc.	SaskPower*
Fortis, Inc. - FortisBC, Inc.	TransAlta Corporation*

(*) Energy companies from the Mercer Plan Design databases used in the benefits analysis

The following companies comprise a sample of the **general industry peers** used in the review:

GENERAL INDUSTRY COMPARATOR COMPANIES	
Aecon Group, Inc.	John Deere Canada ULC
AltaGas, Ltd.	Keyera Corp.
Capital Power Corporation	Lassonde Industries, Inc.
Colas Canada, Inc.	SaskPower
Deschênes Group Inc.	Sonepar Canada Inc.
Emera, Inc.	Stantec, Inc.
EPCOR Utilities, Inc.	TC Transcontinental
Generac Power Systems	Tourmaline Oil Corp.
Hudbay Minerals Inc	TransAlta
Hydro One, Inc.	Valero Energy, Inc.
Inter Pipeline, Ltd.	Vale Canada Limited
Linamar Corporation	Vermilion Energy, Inc.

Appendix B

Mercer worked closely with THESL to select jobs that best represent the total employee population across the different job levels in the organization. The following 47 non-bargaining positions were included within the scope of the review:

THESL Position	Grade
Director, Capital Projects	Y3
Director, Design & Construction	Y3
Controller	Y3
Director, Internal Audit & Compliance	Y3
Director, Environment, Health and Safety	Y3
Director, Commercial Legal Services	Y3
Senior Manager, Customer Support Centre	Y1
Senior Manager, Finance Systems	Y1
Senior Manager, Change Management	Y1
Senior Manager, Warehouse Mgmt & Fleet Services	Y1
Senior Manager, Regulatory Services	Y1
Senior Manager, Litigation & Privacy	Y1
Manager, Finance Management Reporting	W4
Manager, Engineering	W4
Manager, Project Execution	W3
Manager, Design	W3
Manager, Construction & Maintenance	W3
Manager, Facilities	W3
Manager, Supply Chain Services	W3
Manager, Accounts Receivable Operations	W2
Manager, Call Centre	W2
Manager, Capital Construction Analytics	W2
IT Architect	V4
Audit & Compliance Consultant	V3

THESL Position	Grade
EHS Consultant	V3
Employee Labour Relations Consultant	V3
Senior Commercial Services Counsel	V3
Regulatory Affairs Consultant	V3
Senior Financial Analyst	V2
Training Design Consultant	V2
Program Management Consultant	V2
Enterprise Risk Management Consultant	V2
External Communications Specialist	V2
Capital & Maintenance Program Analyst	V1
Asset Investment Analyst	V1
Governance Counsel	V1
Talent Management Associate	V0
Financial Analyst	V0
HR Systems Associate	V0
Payroll & Disbursements Analyst	U2
Executive Assistant	U2
Law Clerk, Litigation	U2
Operations Analyst	U1
HR Analyst	U1
Communications Coordinator, Customer Operations	U1
Human Resources Administrator	T1
Human Resources Administrator	T1

The following 14 bargaining positions were included within the scope of the review:

THESL Position	Union
IT Client Consultant	SIT
IT Technical Support Analyst	SIT
IT Technical Consultant	SIT
Engineer	SE
Cert Meter Mechanic	PWU
Programmer / Analyst	PWU
Power Line Technician	PWU

THESL Position	Union
Cert Crew Leaders, Power Line Tech	PWU
Distribution System Technologist	PWU
Power System Controller	PWU
Fleet Mechanic	PWU
Engineering Technologist Level 1	PWU
Engineering Technologist Level 2	PWU
Customer Relationship Representative	PWU

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SHARED SERVICES AND CORPORATE COST ALLOCATIONS

1. OVERVIEW

This schedule provides information about shared services and corporate cost allocations between Toronto Hydro and the affiliated corporate entities described below:

- **Toronto Hydro Corporation ("THC"):** THC provides strategic direction, corporate governance, and financial stewardship to Toronto Hydro and Toronto Hydro Energy Services Inc. ("TH Energy"). Toronto Hydro is wholly-owned by THC. THC receives shared corporate services from Toronto Hydro and provides such services to Toronto Hydro as described below.

- **TH Energy:** TH Energy's primary line of business is the provision of street lighting and expressway lighting services to the City of Toronto. TH Energy receives shared corporate services from Toronto Hydro.

For more information about these entities and their relationship to Toronto Hydro, please refer to Corporate Structure and Governance evidence at Exhibit 1C, Tab 2, Schedule 1.

This schedule also provides information about corporate cost allocations to the non-rate regulated aspects of Toronto Hydro's business (referred to as "THESU"), including climate advisory services and generation activities.

2. OEB APPENDIX 2-N

A completed copy of OEB Appendix 2-N is filed at Exhibit 4, Tab 5, Schedule 2. This appendix provides cost information and allocation details relating to each shared service provided or received by Toronto Hydro in the historical years (2020-2022), bridge years (2023-2024), and forecast years (2025-2029). Board of Directors-related costs included in THC's cost allocation to Toronto Hydro is also shown in this appendix.

3. SHARED SERVICE MODEL

Toronto Hydro's shared services methodology has not changed since the utility's last rebasing application.[1]

Each service transaction is reviewed to determine the costing formula and method of allocation. In establishing the price of a service transaction, Toronto Hydro follows the Affiliate Relationships Code ("ARC"). The ARC provides for the use of fully allocated cost-based pricing ("CBP") for shared corporate services and the use of fair market value ("FMV") where a reasonably competitive market exists. If market price can be determined, Toronto Hydro charges the higher of fully-allocated cost or market price for any non-shared corporate services that it provides to the affiliated entities, and pays the lower of fully-allocated cost or market price for any such services that it receives from the affiliated entities.

If a competitive market does not exist, Toronto Hydro uses fully-allocated cost-based pricing, which includes direct costs, indirect costs, and cost of capital, to determine the cost of providing or receiving the non-shared corporate service.

[1] EB-2018-0165, Exhibit 4A, Tab 5, Schedule 1.

With regard to these fundamental principles and historical information about the quantity of services provided, Toronto Hydro assesses the approximate annual cost of each service. At the end of the fiscal year, the estimated cost of providing or receiving each service is reconciled with the actual cost and any differences are settled.

Table 1 below provides a description of Toronto Hydro's corporate cost allocators by each functional service.

Table 1: Shared Corporate Services Primary Allocation Drivers

Functional service	Allocator	Reason
Finance (other than payroll, accounts payable, insurance)	Time allocation	Financial support, analysis, planning, calculations, and reports are more labour intensive for certain affiliates than others.
Finance – Payroll	Headcount	Amount of required payroll services, such as processing, is dependent on the number of employees.
Finance – Accounts Payable	Number of Invoices	Amount of required accounts payable services, such as processing, is dependent on the number of invoices received.
Finance – Insurance	Usage proportion	Amount of required insurance is dependent on the coverage required.
Information Technology	By employee	Required equipment and IT services are dependent on the number of employees who need equipment/services.
Public, Legal and Regulatory Affairs	Time allocation	Legal and regulatory services, including services related to councillor administration and requests, are more labour intensive for some affiliates than others.
Human Resources, Environment and Safety ("HRES") (other than Talent Management and Administration)	Headcount	Amount of required HR services, such as services related to compensation/benefits, is dependent on the number of employees.

Functional service	Allocator	Reason
HRES – Talent Management and Administration	New hires	Amount of required Talent Management services, such as hiring, is dependent on the number of new hires.
Supply Chain Service – Procurement	Number of purchase orders	Amount procured for each affiliate is dependent on the number of purchase orders.
Facilities Management	Square footage	Amount of building space required is measured in square feet.
Customer Care – Billing	Number of invoices	Amount of required accounts receivable services, such as processing is dependent on the number of invoices issued.
THC – CEO, CFO, Board of Directors	Time allocation	Services provided to certain affiliates are more labour intensive than others.

4. VARIANCE ANALYSIS

4.1 THC

Further to Appendix 2-N, Table 2 below provides a summary of the costs of shared services provided by and received by Toronto Hydro to or from THC. A variance analysis between 2020 OEB-approved and 2025 test year amounts, 2020 actuals and 2025 test year amounts, as well as 2022 actuals and 2025 test year amounts are included after the table.

Table 2: Summary of the Costs of Shared Services Provided by and Received by Toronto Hydro to/from THC ($ Millions)

Segment	Approved	Actual			Bridge		Forecast				
	2020	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Services Provided by Toronto Hydro	3.9	2.7	2.6	3.0	3.1	2.9	3.2	3.4	3.4	3.6	3.9
Services Recovered by Toronto Hydro	4.6	4.0	3.8	4.6	3.6	4.1	4.2	4.4	4.4	4.6	4.9

2020 OEB-Approved versus 2025 Test Year

- **Services Provided by Toronto Hydro:** The $0.7 million variance between the 2020 OEB approved and the 2025 test year is primarily attributable to lower than estimated support from the Public, Legal, and Regulatory and Finance programs to support corporate risk and compliance functions.
- **Services Received by Toronto Hydro:** The $0.4 million variance from the 2020 OEB approved and the 2025 test year is primarily due to lower expected stewardship costs allocated to the regulated business.

2020 Actual versus 2025 Test Year

- **Services Provided by Toronto Hydro:** The $0.5 million variance between the 2020 actual and the 2025 test year is primarily attributable to higher estimated support from the Finance and Public, Legal, and Regulatory programs to support corporate risk and compliance functions.
- **Services Received by Toronto Hydro:** The $0.2 million variance from the 2020 actual and the 2025 test year is primarily due to higher expected stewardship costs allocated to the regulated business.

2022 Actual versus 2025 Test Year

- **Services Provided by Toronto Hydro:** The $0.2 million variance between the 2022 actual and the 2025 test year is due to higher estimated support from the Finance and Public, Legal, and Regulatory programs to support corporate risk and compliance functions.

- **Services Received by Toronto Hydro:** The $0.4 million variance from the 2022 actual and the 2025 test year is primarily due to lower expected stewardship costs allocated to the regulated business.

4.2 TH Energy

Further to Appendix 2-N, Table 3 below provides a summary of the costs of shared services provided by Toronto Hydro to TH Energy. A variance analysis between 2020 actuals and 2025 test year amounts, as well as 2022 actuals and 2025 test year amounts are included after the table.

Table 3: Summary of the Costs of Shared Services Provided by Toronto Hydro to TH Energy ($ Millions)

Segment	Approved	Actual			Bridge		Forecast				
	2020	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Services Provided by Toronto Hydro	1.6	1.6	2.6	2.1	2.3	2.4	2.4	2.6	2.7	2.8	3.2

<u>2020 OEB-Approved versus 2025 Test Year</u>

The $0.8 million variance between the 2020 OEB approved and the 2025 test year is primarily attributable to higher estimated expenditures to support streetlighting projects.

<u>2020 Actual versus 2025 Test Year</u>

The $0.8 million variance between the 2020 actual and the 2025 test year is primarily attributable to higher estimated expenditures to support streetlighting projects.

<u>2022 Actual versus 2025 Test Year</u>

The $0.3 million variance between the 2022 actual and the 2025 test year is primarily attributable to higher estimated expenditures to support streetlighting projects.

4.3 Non-Rate Regulated Toronto Hydro Activities

Further to Appendix 2-N, Table 4 below provides a summary of the costs of shared services relating to Toronto Hydro's non-rate regulated activities (e.g. climate advisory services and generation). A variance analysis between 2020 actuals and 2025 test year amounts, as well as 2022 actuals and 2025 test year amounts are included after the table.

Table 4: Summary of the Costs of Services relating to Non-Rate Regulated Toronto Hydro Activities ($ Millions)

Segment	Approved	Actual			Bridge		Forecast				
	2020	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Services Provided by Toronto Hydro	1.7	1.5	1.7	1.6	2.0	2.5	2.8	2.4	2.4	2.5	2.6

2020 OEB-Approved versus 2025 Test Year

For non-rate regulated Toronto Hydro activities, the $1.1 million variance between the 2020 OEB Approved and the 2025 test year is primarily attributable to higher estimated expenditures to support climate advisory services.

2020 Actual versus 2025 Test Year

For non-rate regulated Toronto Hydro activities, the $1.3 million variance between the 2020 actual and the 2025 test year is primarily attributable to higher estimated expenditures to support climate advisory services.

2022 Actual versus 2025 Test Year

For non-rate regulated Toronto Hydro activities, the $1.2 million variance between the 2022 actual and the 2025 test year is primarily attributable to higher estimated expenditures to support climate advisory services.