London Hydro

Distribution System Plan

2027-2031

Issued: August 2026

INTRODUCTION

This Distribution System Plan (DSP) is reflective of a unique period in London Hydro's history. The past DSP period (2022 to 2026) has seen exceptional load growth, approximately twice as high as the original forecast. During this same period, unprecedented inflation has driven up the cost of materials, equipment, and labour far exceeding what was anticipated in 2020 when the previous DSP was prepared. These factors – growth and inflation – have contributed to investment costs approximately 32% higher than expected for the historical period. To mitigate this increase, the second service centre, which was intended to be constructed during that period, was deferred to this current DSP period, along with the deferral of some information technology initiatives.

For this DSP period, higher than historical load growth is expected to continue with new customers and existing customers selecting electricity as their preferred energy choice. Inflation is anticipated to continue to be high and unpredictable due to the influence of world-wide events impacting the supply chain. While the forecast investments incorporate the OEB's expectation of inflation, London Hydro intends to complete all London Hydro-initiated projects within the forecast period with no adjustments to account for the variation of actual inflation.

This DSP includes significant investments in major strategic initiatives that are needed to:

- respond to actual and forecasted immediate- and long-term growth,
- support economic development,
- enable and manage a growing population of distributed energy resources (DERs) and an increasingly complex grid, and
- ensure the grid provides the level of reliability our customers expect as the impact of climate change adds additional risk to service continuity.

London Hydro has taken a disciplined approach to pacing capital investments, phasing major initiatives over five to ten years where feasible to sustain existing assets and accommodate system growth, while moderating near-term rate impacts. In a period of accelerating demand, electrification, and increasing system complexity across Ontario, the London Hydro Board-approved DSP reflects a careful balance between affordability, reliability, and strategic modernization, delivering value to customers and maintaining long-term system performance. Through a rigorous review of the initial comprehensive

needs-based capital plan, London Hydro reprioritized investments, optimized project scope, and adjusted pacing, resulting in approximately $130 million in capital savings over the five-year planning period, and at the same time, continuing to address its core asset management, reliability, and growth requirements. This approach is consistent with the OEB's objective to regulate the electricity sector in a manner that supports economic growth, while maintaining a continued focus on customer value and affordability.

The DSP identifies the core system investments required to manage aging assets, maintain system reliability, and accommodate typical load growth. These investments account for approximately 69% of forecast DSP expenditures. The remaining 31% consists of five major strategic investments that respond to emerging and longer-term system, operational, and customer needs:

- New Transformer Station (MTS-1) – adding long-term supply capacity to accommodate exceptional load growth and support continued economic development;
- ADMS/DERMS – modernizing grid operations through greater visibility, automation, outage management, and capabilities to support the increasing integration of DERs;
- AMI Refresh – renewing aging metering infrastructure with advanced capabilities that enhance customer and system information and provide a platform for future programs, including eDSM;
- Second Operations Centre – providing the facilities, inventory, fleet, and employee capacity required to support a growing distribution system, while improving operational resiliency and mitigating flood-related risks at the existing facility; and
- Bus-Tie Reactors – increasing DER hosting capacity and enabling fuller utilization of available transformer station supply capacity, thereby improving operational flexibility and the ability to accommodate growth across the distribution system.

Together, these investments position London Hydro to address the combined challenges of growth, aging infrastructure, electrification, increasing DER adoption, evolving customer expectations, and system resiliency while maintaining a continued focus on affordability.

To provide independent assurance regarding the development of the DSP and its underlying asset condition information, London Hydro retained ACUMEN to conduct a third-party assurance review (see Appendix A3). ACUMEN concluded that London Hydro prepared the DSP in accordance with Good Asset Management Practice, Good Utility Practice, and the applicable Chapter 5 Filing Requirements, and that

the Asset Condition Assessment (ACA), which provides a key foundation for system renewal investment planning, was prepared consistent with industry best practices.

The outcomes of these investments align with the expectations of our customers, who consistently prioritize a safe and reliable grid delivered at an affordable cost. Through London Hydro's ongoing and application-specific engagement, customers have demonstrated broad support for the proposed strategic investments and confidence that London Hydro will continue to exercise appropriate due diligence and apply industry best practices in selecting solutions that meet both current and future system needs.

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- 2024 London Area Needs Assessment Report, Hydro One, November 26, 2024
- 2022 London Area Regional Infrastructure Plan, Hydro One, August 12, 2022
- 2017 Greater London Integrated Regional Resource Plan, IESO, January 20, 2017

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5.2 DISTRIBUTION SYSTEM PLANS

London Hydro has prepared this Distribution System Plan (DSP) in accordance with the Ontario Energy Board's (OEB) Chapter 5 – Distribution System Plan Filing Requirements for Electricity Distribution Rate Applications for 2027 Rate Applications (December 16, 2025). The DSP forms part of London Hydro's 2027 Cost of Service Application (the Application) and is filed as a stand-alone document in support of the Application.

The DSP spans a ten-year planning horizon, covering both a historical period (2022–2026), with 2026 as the bridge year, and a forecast period (2027–2031), with 2027 as the Test Year.

The document is structured as follows:

- Section 5.2 provides an overview of the DSP, including coordinated planning with external parties and London Hydro's performance measurement approach for continuous improvement.
- Section 5.3 outlines London Hydro's asset management framework, including an overview of distribution assets and the processes, practices, and procedures that guide their management.
- Section 5.4 presents the 2027–2031 capital expenditure plan, variance analysis of historical expenditures, forecast expenditure requirements, and justification for material projects exceeding the OEB-approved materiality threshold.

The DSP has been developed to support the four performance outcomes of the OEB's Renewed Regulatory Framework for Electricity (RRFE): Customer Focus, Operational Effectiveness, Public Policy Responsiveness, and Financial Performance. These outcomes are directly aligned with London Hydro's 2026–2030 Strategic and Business Plans (See Exhibit 1).

For purposes of this DSP, London Hydro's materiality threshold is $549,000. Details for projects and programs above this threshold are provided in Section 5.4.2.1.

5.2.1 Distribution System Plan Overview

This section provides a high-level overview of London Hydro's 2027–2031 DSP, highlighting the key capital investment themes, major changes since the previous filing, and the objectives that will guide the

company's performance over the forecast period. The overview is intended to provide stakeholders with a concise summary of the direction and focus of the DSP.

5.2.1a Capital Investment Highlights

Over the 2027–2031 forecast period, London Hydro plans to invest approximately $490.0 Million in its distribution system, representing an average annual capital expenditure before capital contributions of $98 Million. Nearly one-third of the investment can be attributed to the following major strategic projects for which plans and estimates are still under development. London Hydro may submit an ICM once plans and estimates are finalized.

- $77.0 M for a new Transformer Station to provide supply capacity and enable economic development
- $34.5 M for a second Operations Centre to protect against environment flood risk and support growth
- $18.0 M for an AMI refresh to start replacing the aging fleet of first generation smart meters
- $11.8 M for Advance Distribution Management System (ADMS) and Distributed Energy Resource Management System (DERMS) to modernize control room operating technology
- $9.9 M for bus-tie reactors at existing Transformer Stations to support increased DERs

Excluding these major strategic projects, London Hydro's planned investment in core (normal) activities total $338.7 Million, representing an average annual capital expenditure before capital contributions of $67.7 Million. The $151.2 Million allocated to major strategic initiatives is equivalent to an average annual investment of $30.2 Million. Together, these investments reflect London Hydro's commitment to sustaining a safe and reliable distribution system, while proactively addressing evolving system needs associated with electrification, DER integration, continued customer growth, enabling economic development, and the renewal of smart metering infrastructure.

By comparison, over the 2022–2026 historical period, total capital spending on core (normal) activities, before capital contributions and excluding special projects such as CIS, amounted to $249.4 Million. The planned increase of $89.3 Million over the subsequent five-year period represents a 35.8% increase, or approximately $17.9 Million annually. This level of growth is considered modest but reasonable in the context of sustained increases in material and contract labour costs, as well as, the continued need to invest in aging infrastructure to support system reliability, safety, and performance.

London Hydro's capital investments for the planning period are organized according to the four categories outlined in the Filing Requirements: System Access, System Renewal, System Service, and General Plant. Key highlights include:

- System Access ($97.2 Million):
  - **Drivers & Priorities:** Customer service, third-party infrastructure, and regulatory obligations; timing influenced by external factors. London Hydro coordinates with external parties to plan for future capacity. Expenditures are expected to rise due to residential, commercial, and industrial growth, new service requests, renewal of smart meters, and third-party relocations.
  - **Programs:** Ensure timely, reliable connections, particularly for residential subdivisions. Coordination with municipal/regional authorities on projects like road widening supports hydro asset relocation and upgrades. Key 2027–2031 projects include expansions, third-party relocations, connections, and revenue metering. Further details are provided in Section 5.4.1.2 and Appendix A1.
- System Renewal ($183.8 Million):
  - **Drivers & Priorities**: Expenditures are primarily guided by asset condition, critical for reliability, safety, and performance. London Hydro's 2024 Asset Condition Assessment (located in Appendix D) and Asset Management process inform capital planning and the prioritization of renewal investments. These investments mitigate risks associated with aging infrastructure, support public safety, maintain service reliability and customer satisfaction, and, where appropriate, incorporate system-hardening measures that improve resiliency to severe weather and other identified vulnerabilities.
  - **Programs:** Key 2027–2031 projects include targeted replacement of aging underground and overhead infrastructure (e.g. cable, poles, and switchgear) through programs such as subdivision rebuilds and 4kV conversions. Overhead infrastructure renewal includes targeted system hardening measures that address asset condition and reliability needs while also improving resiliency to vegetation, severe weather, and supporting public safety. Further details are provided in Sections 5.3.6, 5.4.1.2 and Appendix A1.

- System Service ($101.2 Million):
  - **Drivers & Priorities:** Expenditures are driven by the need to ensure the distribution system meets operational objectives – reliability, grid flexibility, and integration of DERs – while addressing anticipated future customer electricity service requirements, such as station capacity increases and feeder extensions.
  - **Programs:** Capacity and reliability enhancements, including the following two key projects – a new MTS-1 transformer station to provide supply capacity for anticipated load growth and ADMS/DERMS installation to support London Hydro's grid modernization initiatives. Further details are provided in Section 5.4.1.2 and Appendix A1.
- General Plant ($107.7 Million):
  - **Drivers & Priorities:** Expenditures are driven by the need to modify, replace, or expand non-distribution system assets that support London Hydro's ongoing 24/7 operations.
  - **Programs:** Upgrades and modifications to land and buildings, tools and equipment, fleet vehicles, and IT hardware and software. Key projects include a second London Hydro Operations Centre, installation of bus-tie reactors to increase DER hosting capacity at Hydro One transformer stations, and IT/cybersecurity enhancements. Further details are provided in Section 5.4.1.2 and Appendix A1.

These investments are aligned with the OEB's RRFE outcomes – enhancing customer focus, operational effectiveness, and public policy responsiveness – while maintaining prudent financial performance.

5.2.1b Key Changes Since Last DSP

London Hydro provides the following summary of key changes since its last Distribution System Plan, which was filed as part of the 2022 Cost of Service application. Since that filing, London Hydro has advanced a number of organizational, operational, and technological initiatives to strengthen system reliability, enhance asset management practices, support a more modern and resilient distribution system, and position the utility to respond to sector transformation, customer growth, and enable economic development.

Key changes are summarized below.

Strategic Direction

- London Hydro recently updated its strategic plan, enhanced its enterprise risk assessment capabilities, and created a new business plan. The organization's purpose, vision, and strategic priorities were refreshed. These updates are intended to position London Hydro for a rapidly evolving electricity sector, while maintaining a continued focus on safe, reliable, and customer-focused service.

Grid Resiliency and Operational Readiness

- London Hydro has strengthened grid resiliency and operational readiness through targeted investments in overhead covered conductors (Hendrix), automated switching devices, and communicating fault circuit indicators. In parallel, the utility has expanded material and equipment inventory levels, enhanced procurement practices, and strengthened supplier relationships to mitigate supply chain disruptions, inflationary pressures, and improve readiness for both planned capital work and unplanned events.

Asset Management and Condition Assessment Improvements

- Significant enhancements have been made to asset management and condition assessment practices. These include implementation of a Very Low Frequency (VLF) testing program for underground primary cable, improvements to the padmounted transformer inspection program, and a transition in wood pole testing methodology from the sound-and-bore method to resistograph based testing to improve assessment accuracy. London Hydro has also improved inspection data collection and asset information quality and deployed Engineered Intelligence's ENGIN platform to support asset condition assessment and more informed asset management planning.

Safety Management Improvements

- London Hydro has further strengthened its health and safety management practices through implementation of an enhanced incident classification approach based on a Safety Classification and Learning model. This framework places greater emphasis on identifying high-energy hazards, understanding the presence and release of hazardous energy, and improving learning from incidents with the potential for serious injury to prevent the occurrence of serious injuries.

Information Technology and Cybersecurity Advancements

- London Hydro has continued to modernize its technology environment through cybersecurity and information technology investments, including implementation of a cybersecurity framework aligned with OEB expectations. Operational technology enhancements have also progressed, including Radio Frequency and Fiber communication system upgrades, and pilot initiatives involving coordinated operation of series reclosers and early fault detection technology to improve fault identification, reduce outage impacts, and support more proactive system operation.

Supply Capacity Planning and Regional Coordination

- Regional planning activities have advanced in coordination with Hydro One and the IESO in response to accelerating load growth associated with population increases, electrification, and economic development. Updated load forecasts, developed in accordance with OEB's Load Forecast Guideline, indicate a higher growth trajectory than reflected in historical trends, reinforcing the need for additional transformer station capacity and longer-term supply planning solutions.

5.2.1c DSP Objectives

London Hydro's DSP objectives are fully aligned with the OEB's four performance outcomes as outlined in the RRFE Report (2012). These outcomes provide the foundation for London Hydro's strategic planning and guide investment decisions across the distribution system. The key outcomes include:

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

These outcomes have shaped London Hydro's high-level strategies – including Purpose, Vision, Values, and Strategic Priorities – and provide the framework for evaluating performance, selecting solutions, and

developing this DSP. Consequently, DSP outputs, including Capital and Maintenance Plans, are directly linked to one or more OEB outcomes, as well as London Hydro's broader Strategic Plan.

London Hydro's Strategic Foundation

Strategic Foundation	
Purpose:	To be a trusted electricity provider and community partner.
Vision:	Earn every customer.
Values:	Safety First, Always.
	Hold Yourself Accountable.
	Don't Sacrifice the Future for Today.
	Seek to Understand the Views of Others.
	Be Collaborative. Be Respectful. Be Creative.

London Hydro's Strategic Priorities

London Hydro's five strategic priorities reflect stakeholder insights and leadership guidance. They provide a clear framework to guide decisions, align with our Purpose and Vision, and define our focus and metrics for the next five years.

Strategic Priorities	Goal
Building for the Future	We will continue to invest in our people, technology, and infrastructure to meet the evolving needs of our customers, with a focus on high performance, grid capacity, resiliency, and automation.
Creating and Communicating Value	We will build enterprise and financial value for our customers, community, and shareholder with a focus on prudence, planning, and the achievement of our strategic vision.

Strategic Priorities	Goal
Pursuing Operational Excellence	We will be a top-quartile electricity distributor in Ontario, respected in our industry for our innovation and efficiency, with a relentless focus on safety, reliability, and quality of service.
Serving our Customers and Community	We will continue to build trusted and meaningful relationships with our customers and community, making a difference locally with a focus on affordability, sustainability, and economic growth.
Strengthening People and Culture	We will be a people-focused organization, employing and retaining great people with a focus on providing purpose, meaningful work, and rewarding careers.

The following table illustrates how London Hydro's Purpose, Vision, Values, and Strategic Priorities align with the OEB Performance Outcomes.

Corporate Statement	Customer Focus	Operational Effectiveness	Public Policy Responsiveness	Financial Performance
Purpose	Builds trust and strengthens customer relationships	Supports safe, reliable, efficient service delivery	Commits to public-interest obligations	Guides prudent, long-term stewardship
Vision	Places customer experience at the centre	Drives continuous improvement	Reflects evolving expectations (DERs, choice)	Promotes disciplined financial management

Corporate Statement	Customer Focus	Operational Effectiveness	Public Policy Responsiveness	Financial Performance
Values	Collaboration, understanding, respect	Safety, accountability, efficiency	Sustainability and compliance mindset	Accountability and long-term thinking
Building for the Future	Ensures capacity and reliability for customer needs	Modernizes and hardens the grid	Supports electrification and DER policy goals	Delivers prudent, value-driven capital investment
Creating & Communicating Value	Clarifies the value delivered to customers	Improves efficiency through disciplined planning	Aligns with regulatory and municipal expectations	Sustains system and enterprise value
Pursuing Operational Excellence	Improves service quality and reliability	Advances productivity and innovation	Meets reliability and cybersecurity requirements	Supports sustainable cost savings
Serving Our Customers & Community	Strengthens engagement, affordability, partnership	Enhances responsiveness and service delivery	Advances community sustainability and growth goals	Supports affordability and prudent resource use
Strengthening People & Culture	Empowers staff to deliver better service	Builds a safe, capable, high-performing workforce	Meets workforce-related obligations and standards	Strengthens long-term organizational stability

The DSP is prepared with a vision of sustaining assets at current levels of safety and reliability, and maintaining prudence in managing costs. For each asset type, sustainment options – including increased maintenance, proactive and reactive replacement, and elimination or substitution – are considered and evaluated. Asset condition and performance are continuously monitored, allowing adjustments to the sustainment plan to maintain safety, reliability, and cost efficiency.

London Hydro's Distribution System Plan is guided by three primary objectives that reflect the utility's commitment to delivering safe, reliable, and affordable electricity service, at the same time, preparing for a rapidly changing energy landscape. These objectives, which are outlined below, are fully aligned with customer expectations, regulatory priorities, and the evolving demands of a growing, electrifying city.

Meeting Growing Energy Needs Through Strategic Capacity Expansion

As London grows and electrification accelerates across residential, commercial, and industrial sectors, London Hydro is proactively planning to expand system capacity. This includes the development of new transformer stations, supply feeders, and a second Operations Centre necessary for both day-to-day operations and long-term growth. These investments ensure that emerging demands – driven by industrial expansion, EV adoption, and building electrification – can be met without compromising service quality. They also safeguard system reliability during planned and unplanned outages, reducing customer disruption and supporting economic development across the region.

Delivering a Safe, Reliable, and Climate-Resilient Grid

London Hydro continues to strengthen system resilience by upgrading aging assets and preparing for the increasing frequency of extreme weather events. Through risk-based asset renewal, strategic hardening, and enhanced monitoring, the utility is prioritizing public and worker safety, while reducing the number and duration of outages. These measures reflect a commitment to preserving the reliability customers expect today, and positioning the grid to withstand tomorrow's challenges, including climate-related risks.

Accelerating Grid Modernization Through Digital Innovation

The DSP lays out a roadmap toward a more intelligent, adaptable distribution system. Key initiatives such as the deployment of Advanced Distribution Management Systems (ADMS), preparation for Distributed Energy Resource Management Systems (DERMS), deployment of early fault detecting technology, and renewal of aging smart meters will modernize grid operations and improve situational awareness. These technologies enable faster outage response, more accurate data-driven planning, and enhanced support for distributed energy resources – all of which improve service quality and reduce operating costs over

time. Enhanced workforce management and digital asset tools also contribute to safer, more efficient service delivery.

Through these three objectives, London Hydro's DSP provides a clear, measurable framework that considers prudence and affordability while balancing operational effectiveness with long-term customer benefit. Each objective contains supporting initiatives that are measurable and provide a baseline for assessing performance in future DSP filings enabling continuous improvement in alignment with regulatory expectations.

5.2.1d Capital Investment Outcomes Assessment

London Hydro's initial Comprehensive needs-based capital plan contemplated approximately $621.8 Million in capital spending, which included accelerated infrastructure deployment, expanded resiliency initiatives, and broader modernization investments. The plan was reviewed and modified to maximize technical outcomes and maintain customer affordability, stable investment pacing, execution practicality, and long-term value. The revised plan was presented to the Board. After additional refinement, the Board approved a prioritized and Balanced needs-based capital investment plan, which includes approximately $490 Million in capital expenditures. To further evaluate the prudency, strategic balance, and customer value of the 2027–2031 capital plan, a comparative evaluation was conducted between the original Comprehensive plan and the board approved Balanced plan.

This assessment confirms that the Balanced capital investment plan provides an appropriate balance between sustaining core system performance, advancing modernization, enabling growth and economic development, strengthening resiliency, and maintaining affordability. These strategic outcomes collectively support London Hydro's three core DSP objectives: meeting growing energy needs through strategic capacity expansion, delivering a safe, reliable, and climate-resilient grid, and accelerating grid modernization through digital innovation, while also reinforcing London Hydro's strategic priorities of Building for the Future, Pursuing Operational Excellence, and Serving our Customers and Community.

Table 1 Comparative Assessment of Proposed and Enhanced 2027–2031 Capital Investment Plans Against Strategic DSP Outcomes and Customer Objectives

Outcome	2027–2031 Balanced Plan ($490M)	2027–2031 Comprehensive Needs-Based Plan ($621.8M)
Sustain Asset Health and Stable Investment Pacing	Achieves Goal	Surpasses Goal
Preserve Reliability and Strengthen Climate Resilience	Achieves Goal	Surpasses Goal
Support Growth, Electrification, and Customer Development	Achieves Goal	Surpasses Goal
Expand Capacity, Enable DER Integration, and Support Economic Development	Achieves Goal	Surpasses Goal
Advance Grid Modernization and Operational Intelligence	Achieves Goal	Surpasses Goal
Enhance Customer Value, Operational Resilience, and Utility Foundations	Achieves Goal	Surpasses Goal[1]

Legend: Achieve - plan achieves outcome(s) at prudent pace | Surpasses - plan accelerates or advances outcome(s) faster.

London Hydro's 2027–2031 Proposed Capital Investment Plan represents a disciplined and strategically balanced approach to capital investment that aligns with the utility's long-term objectives, at the same

[1] As the Comprehensive Plan surpasses certain strategic goals, these incremental benefits require higher capital investment and must be considered against associated affordability, investment pacing, execution, and potential overbuild risks.

time maintaining prudent consideration for customer affordability. The plan is intentionally designed to sustain core system performance through continued investment in asset renewal, reliability, and operational continuity, while selectively advancing modernization, resiliency, and capacity expansion in response to clearly identified system pressures.

Rather than pursuing an accelerated expansion, London Hydro's proposed plan prioritizes investment where emerging needs are most material – particularly in areas such as electrification, customer growth, economic development, DER integration, climate resilience, and critical infrastructure modernization. Major strategic projects, including MTS-1, ADMS/DERMS, AMI smart meter renewal, DER enabling bus-tie reactors, and a second (remote) Operations Centre, have been incorporated to proactively position the utility for future demands, while preserving implementation flexibility and rate impact management.

By contrast, the Comprehensive needs-based Capital Investment Plan would accelerate performance improvements across several strategic outcomes, including capacity readiness, grid modernization, and system resiliency. However, these incremental benefits would likely come at materially higher capital costs, increased near-term customer bill pressures, greater execution complexity, and a heightened risk of overbuilding or prematurely deploying infrastructure ahead of realized demand.

The Balanced Capital Investment Plan reflects a prudent "right-sized" strategy. One that balances sustaining existing strengths with targeted improvements where justified, while preserving stable investment pacing and maintaining affordability for customers. This approach is consistent with customer priorities, regulatory expectations, and sound asset management principles. It demonstrates that London Hydro is optimizing investments to deliver safe, reliable, resilient, and modern electricity service in a financially responsible manner.

As the distribution system continues to age, a significant portion of the proposed capital plan is directed toward System Renewal, with increased investment required to manage deteriorating asset condition and increasing failure risk. London Hydro's objective is to maintain asset health and sustain historical equipment-failure-related reliability levels through disciplined, risk-based renewal, rather than accelerate asset replacement solely to achieve incremental reliability improvements. This approach is consistent with customer feedback indicating general satisfaction with current reliability while also identifying affordability as an important consideration.

Improvements in overall reliability and resiliency will be pursued through a combination of targeted renewal and complementary investments in automation, early fault detection, enhanced vegetation management and monitoring, ADMS, and additional supply points. These initiatives are intended to

reduce the frequency, duration, and consequences of outages and support achievement of the OEB's reliability performance expectations, while avoiding the significantly higher costs that could result from pursuing reliability improvements primarily through accelerated asset replacement.

Overall, London Hydro's selected plan appropriately balances infrastructure renewal, growth enablement, economic development, modernization, resiliency, and customer value, providing a prudent, sustainable path forward for the 2027–2031 planning horizon.

5.2.1e Potential ICM

London Hydro is actively advancing several major strategic initiatives that are currently in various stages of planning and business case development. These initiatives include the construction of its first Municipal Transformer Station (MTS-1), a second Operations Centre, replacement of the existing Outage Management System (OMS) with a modern ADMS incorporating DERMS capabilities, and the staged renewal of its first-generation smart meter infrastructure. The magnitude and timing of these investments presented in this DSP represent the best available planning estimates as of April 2026 and will continue to be refined as engineering, procurement, regulatory approvals, and implementation planning progress.

The expenditure estimates presented in this DSP are provided for long-term distribution system planning purposes and are intended to illustrate the anticipated magnitude and timing of these strategic initiatives based on information available at the time of filing. Furthermore, these initiatives represent discrete, material strategic investments that are separate from London Hydro's normal recurring System Renewal, System Service, System Access, and General Plant capital programs. As project scopes, schedules, and cost estimates mature, London Hydro will evaluate the appropriate regulatory funding approach for each initiative, including whether an Incremental Capital Module (ICM) application may be warranted in accordance with the OEB's applicable requirements. Any future ICM application would be supported by detailed engineering, updated cost estimates, project-specific business cases, and the regulatory evidence available at that time.

In addition, London Hydro notes in Exhibit 2, Section 7, that the CIS Refresh project, previously submitted as an Advanced Capital Module (ACM) in our prior Cost of Service application, has been temporarily paused. This pause allows London Hydro to thoroughly evaluate its options for moving forward in light of shifting operational priorities and emerging technological requirements. The project remains under review alongside the major strategic initiatives outlined herein, and its scope, timing, and regulatory treatment will be re-assessed as part of London Hydro's comprehensive capital planning process.

As discussed in Section 5.2.2a.4 – Regional Planning, an Integrated Regional Resource Plan (IRRP) is currently underway and may identify additional distribution investments required to support regional electricity system needs. These investments could include, for example, new distribution feeders from existing Hydro One-owned transformer stations and customer contributions toward regional transmission infrastructure. As the scope, timing, and implementation responsibilities for these potential investments have not yet been established, they are not included within the five-year DSP capital plan. Depending on the outcome of the regional planning process and the resulting investment requirements, these projects could represent material capital expenditures beyond those contemplated in this DSP. Should such investments proceed during the DSP period, London Hydro will also evaluate whether an ICM application or other appropriate regulatory funding mechanism is warranted.

5.2.2 Coordinated Planning with Third Parties

5.2.2a Description of Third Party Consultations

5.2.2a.1 Customers (Residential and Businesses/Key Accounts)

Residential/Small Business/Commercial (GS <50)

London Hydro actively communicates with the community it serves through its social media, website, bill inserts, and at local events. It is important for the public and customers to see London Hydro as part of the community, not just a service provider. For the customer engagement required by the OEB's Chapter 5 filing requirements for program expenditures in the 2027-2031 period, London Hydro conducted an online survey that was deployed to all customers with an email address (>127,000), as well, the survey was promoted through a generic link on London Hydro's website and social media platforms.

More than 12,000 residential and 300 small businesses customers participated in the survey, along with 26 commercial customers. Questions collected demographic data, familiarity with the electricity system and London Hydro's role within, and general satisfaction. Information about LEAP and OESP Qualification was also shared and data collected.

Specific to the DSP, the survey explained the overall plan's goals, the financial impacts of different investments, and the impacts if the proposed investments were altered. The questions focused on:

- Replacing and Repairing Equipment (System Renewal)

- Investing in Technology (System Service)
- A new remote Operations Centre
- Overall Evaluation of the Plan

The survey results show that there is strong support across all customer types for a level of investment at or above London Hydro's 2027-2031 draft investment plan.

A summary of survey results is provided in Exhibit 1 Customer Engagement.

Commercial and Industrial Customers

London Hydro maintains ongoing engagement with its Commercial and Industrial (C&I) customers through a dedicated account management function. This approach supports regular, two-way communication regarding operational performance, emerging customer needs, and planned system investments, and contributes to the development of informed, customer-responsive distribution planning.

As part of the DSP development, London Hydro invited its C&I customers to participate in a targeted consultation webinar on March 11th, 2026. This presentation outlined the proposed capital plan and major strategic investment priorities. A total of 28 participants attended, representing a cross-section of key commercial and industrial sectors within the service territory.

Drawing on insights from ongoing engagement activities, London Hydro presented a summary of customer priorities that are consistently communicated by this customer group, including reliability, power quality, and timely access to capacity to support growth and electrification. Participants confirmed that these priorities were appropriately characterized. London Hydro further solicited customer input regarding anticipated changes in electricity usage, including potential load reductions driven by efficiency measures and increases associated with electrification initiatives and business expansion.

The webinar included a structured presentation describing the purpose and regulatory context of the DSP, followed by an overview of planned investments across core program areas, including asset management and renewal, grid modernization, and operational and outage mitigation initiatives. Consistent with its commitment to transparency, London Hydro also provided an overview of major strategic investments, including the development of municipal transformer station capacity required to support long-term load growth and enable customer development within the City of London.

The session concluded with a question-and-answer period and a survey to capture customer feedback. A summary of survey results is provided in Exhibit 1 Customer Engagement.

Feedback received through this engagement reinforced the importance of maintaining high levels of reliability and power quality, as well as supporting proactive capacity expansion to accommodate customer growth and electrification. These inputs are reflected in the prioritization of System Renewal and System Access investments within the DSP, and in the advancement of strategic supply-side projects. No material concerns or objections were raised that would necessitate changes to the proposed capital plan.

5.2.2a.2 Municipal government

London Hydro coordinates infrastructure planning with the municipality and other utilities through structured, recurring forums designed to surface opportunities for coordination, avoid conflicts, and minimize disruption and project costs.

As a standing member of the Utilities Coordinating Committee (UCC) – a monthly forum of roughly sixteen participants spanning City departments (roads, sewer, water, traffic/transportation, construction, and development), utility stakeholders (e.g., Hydro One, Enbridge, Imperial Oil, and telecommunications companies) and other infrastructure owners with assets within the road allowance – London Hydro tables its upcoming underground rebuilds, overhead rebuilds, and cable rehabilitation programs for review at each session. Participants exchange their upcoming project plans, identify coordination opportunities, resolve potential conflicts with current or future works, and align schedules and designs before approvals are issued. Between January 2024 to December 2025, more than 77 London Hydro projects were coordinated through the UCC process, demonstrating sustained, practical coordination.

Beyond the UCC, London Hydro undertakes bilateral planning with the City. London Hydro obtains the City's annual planned works program and incorporates it into its capital planning cycle, with updates received and reflected throughout the year as plans evolve. London Hydro also convenes semi-annual meetings with the City's traffic and transportation teams to review current and emerging projects. These sessions focus on opportunities for joint trenching and aligned construction windows, reducing duplicate pavement cuts, avoiding overlapping road closures, and sequencing work to limit disruption to residents and businesses.

These consultations have directly influenced the DSP by informing project sequencing and scope. In particular, several projects have been advanced or deferred to coincide with municipal road renewal timelines; localized design adjustments have been made to accommodate transportation plans; and

joint-work opportunities with third-party utilities have been incorporated where feasible. The result is a more efficient capital plan – fewer customer impacts from repeated construction, better use of limited road-right-of-way, and improved cost effectiveness for ratepayers. London Hydro initiates portions of this engagement and participates by invitation as a standing UCC member.

5.2.2a.3 Supporting Economic Development Through Development Community Coordination

London Hydro maintains regular and proactive communication with the local development community through participation in several key organizations including, but not limited to, the London Development Institute, the London Home Builders' Association, and the London Economic Development Corporation. These partnerships facilitate broad-based engagement and ensure alignment with the City's ongoing growth and infrastructure initiatives.

During the planning and approval stages of new developments, London Hydro receives formal liaison communications from the City of London. These liaisons provide an opportunity for London Hydro to review and respond to all new development proposals. Our responses showcase the utility's capacity to provide electrical service, outline the requirements related to easements and access, and identify the appropriate point of contact for further coordination. These early consultations with prospective new customers shape our short-term and long-term capacity plans, ensuring we will have the infrastructure necessary to support economic development within London.

Once projects advance to the construction phase, London Hydro convenes Joint Trench meetings with the Developer for each specific project. These meetings are used to coordinate installation requirements, finalize design elements, and establish timelines leading up to the installation and energization of electrical services.

In the vast majority of cases, Developers elect to have London Hydro design, supply, install, and energize their electrical infrastructure. While Developers retain the option to engage an external contractor for this work, feedback from the industry consistently indicates that London Hydro's integrated approach offers both process efficiency and cost-effectiveness, making it the preferred choice for most projects.

Consultations with developers provide key inputs – such as load requirements, construction timelines, and feeder connection points – necessary to evaluate capacity and plan System Access investments. These discussions ensure budgets and resources are effectively allocated for residential expansions and individual service connections.

Through its ongoing coordination with the development community, London Hydro obtains early visibility into the location, timing, and magnitude of anticipated development and associated electricity requirements. This information is incorporated into system planning, load forecasting, and the timing and prioritization of System Access and capacity investments included in this DSP. This coordination helps ensure that distribution infrastructure is planned and delivered in a manner that supports timely customer connections and anticipated community growth, while avoiding unnecessary or premature investment.

These activities also demonstrate how London Hydro's DSP supports the OEB's legislative objective to regulate the electricity sector in a manner that supports economic growth, consistent with the policies of the Government of Ontario. By proactively coordinating with developers and aligning infrastructure planning with municipal growth, London Hydro helps ensure that distribution system capacity is available to support housing, commercial and industrial development, and broader economic growth.

5.2.2a.4 Regional Planning with Hydro One and IESO

London Hydro actively coordinates supply infrastructure planning activities with both Hydro One, the area transmitter, and the Independent Electricity System Operator (IESO) as part of the London Area Regional Planning process. This coordinated planning ensures that investments in transmission and distribution infrastructure are aligned, efficient, and responsive to emerging regional needs, ultimately benefiting customers through cost-effective and reliable service delivery.

The third cycle of regional planning for the London Area Region was initiated by Hydro One in July 2024[2]. Other participants in this consultation include Entegrus, Tillsonburg Hydro, ERTH Power, and Hydro One Distribution. London Hydro actively participated in the Needs Assessment phase of the regional planning process, led by Hydro One.

The Needs Assessment (NA) identified several transformation and supply capacity needs affecting London Hydro's service area, in addition to broader system considerations across the London planning region. The Technical Working Group (TWG), comprising the participating LDCs, Hydro One, and the IESO, recommended that these needs undergo further assessment under the IESO led Scoping Assessment phase due to their potential regional significance. The findings of the NA were formally documented in Hydro One's London Region Needs Assessment Report (November 26, 2024), provided in Appendix H.

[2] Refer to Appendix H for the previous cycle Regional Planning documents: 2022 London Area Regional Infrastructure Plan and the 2017 Greater London Integrated Regional Resource Plan

During the Scoping Assessment phase, the TWG reviewed all identified needs to determine the most appropriate planning approach. The Scoping Assessment considered three planning streams: an Integrated Regional Resource Plan (IRRP), where both wires and non-wires options are viable; a Regional Infrastructure Plan (RIP), which addresses needs through transmission and distribution ("wires") solutions; and a Local Plan undertaken directly by the transmitter and affected distributor. The Scoping Assessment Outcome Report (April 25, 2025, Appendix H) concluded that the London Area Region should proceed under an IRRP framework to identify, evaluate, and recommend solutions to the emerging capacity and supply needs.

London Hydro is an active participant in the IRRP phase, which provides for collaboration among the IESO, Hydro One, and local distribution companies, as well as opportunities for engagement with municipalities, Indigenous communities, and other stakeholders. This phase considers community energy plans, net-zero strategies, economic development initiatives, and electrification trends – including electric vehicle adoption and heat pump conversion – within a 20-year regional demand forecast. Updated analyses continue to indicate significant load growth across the City of London, confirming the need for additional transformation and supply capacity to maintain reliable and resilient service.

The outcomes of these consultations have directly influenced this DSP. Both the NA and IRRP phases demonstrate that near-term transformation capacity expansion is required, and London Hydro believes that these needs cannot be met solely through conservation or distributed generation. In response, London Hydro has incorporated the development of two new Municipal Transformer Stations (MTSs): one in the southeast area of the city, targeted for in-service by 2030-2031, and a second one is planned for the northwest area, where work would begin in 2031. These projects are essential to accommodate forecasted growth, relieve loading on existing supply stations, and enhance system resilience in alignment with regional and provincial priorities.

As the IRRP and subsequent RIP phases of the third cycle of regional planning remain ongoing, a Regional Planning Status Letter from Hydro One has been included in Appendix I to confirm the current status of this coordinated process. Hydro One's Status Letter identifies near-term capacity needs for five transformer stations serving London Hydro: Clarke TS, Talbot TS T1/T2, Talbot TS T3/T4, Nelson TS, and Wonderland TS. As discussed previously, the proposed two new MTSs form a key component of the coordinated regional supply strategy, addressing forecast capacity requirements while aligning with Hydro One's planned renewal of aging transformer stations based on its asset condition assessments.

5.2.2.1 Telecommunications Entities

London Hydro maintains regular engagement with telecommunication and utility companies operating within the City of London, including Bell, Rogers, Execulink, Enbridge, Hydro One, Zayo, Telus, Start.ca and City of London departments, among others. These interactions occur primarily through monthly Utilities Coordinating Committee (UCC) meetings, which provide a structured forum for coordination of planned infrastructure works within the municipal right-of-way. In addition, there is a process and a UCC portal where all utilities submit their construction plans when working within the right of way and all other utilities have an opportunity to provide feedback, coordinate work and finally, approve or reject the applications. The UCC coordination process is focused on projects within the near-term planning horizon, typically one to two years before construction, when project scope, location, and timing are sufficiently defined to support meaningful coordination.

Feedback received through these consultations is incorporated into project planning and execution, including construction scheduling, utility conflict identification, and opportunities for coordinated infrastructure work. For projects included in the latter years of the DSP planning period, detailed project scope and design have not yet been finalized and therefore are not presented for specific review by telecommunications providers. As a result, no material changes to the proposed five-year capital plan arose directly from these consultations. Telecommunications entities will continue to be engaged through the UCC as individual projects advance toward implementation and become suitable for detailed coordination.

In addition to ongoing participation in the UCC, London Hydro developed a Joint Use Management Portal to enhance collaboration and streamline communication and permit processing with third parties. The portal provides a formalized process for telecommunication companies and other third parties to submit applications for pole attachments or network extensions. It also facilitates early identification of overlapping work where multiple applicants intend to construct along the same pole line, allowing London Hydro to proactively coordinate schedules and approvals to optimize efficiency, cost-effectiveness and safety.

London Hydro also coordinates directly with affected telecommunication companies on plant relocations associated with its planned infrastructure renewal projects and indirectly through the municipality's contract administrator on municipal relocation requests initiated by the road authority. As projects advance to detailed design, written notifications are issued to all relevant third parties, ensuring they are aware of upcoming work previously discussed at committee meetings. This process allows stakeholders to allocate resources, schedule activities, and plan necessary relocations, transfers, or removals in advance.

London Hydro leads joint-trench coordination meetings for new residential developments to align the installation of telecommunications and electrical infrastructure. These meetings, chaired by London Hydro, promote efficient joint design and construction practices, reduce duplication of effort, and ensure safe and orderly access to the construction corridor.

Through these ongoing coordination efforts and the use of dedicated communication tools such as the Joint Use Management Portal, London Hydro supports efficient, well-planned, and cost-effective infrastructure development consistent with the Ontario Energy Board's expectations for collaboration among utilities and third parties.

5.2.2.2 Renewable Energy Generation (REG)

In Section 5.3.4 – System Capability Assessment for Renewable Energy Generation and Distributed Energy Resources, it is discussed that portions of London Hydro's distribution system are currently constrained by limited hosting capacity, primarily driven by upstream transformer station limitations. To address these constraints and support customer adoption of REG, London Hydro is implementing a coordinated, three-pronged strategy consisting of targeted capital investments, continued collaboration with Hydro One, and the planned deployment of advanced operational technologies (refer to Section 5.3.4 for further information).

While London Hydro's plan is designed to enable and facilitate the integration of renewable energy resources across its distribution system, it does not include the ownership, development, or operation of generation assets by the utility at this time. Consistent with OEB requirements, London Hydro prepared and submitted its Renewable Energy Generation Investment Plan (Appendix J) to the IESO on March 30, 2026, and subsequently received a comment letter from the IESO on May 6, 2026 (DSP Appendix K).

5.2.3 Performance Measurement for Continuous Improvement

5.2.3.1 Distribution System Plan

London Hydro's last Distribution System Plan (DSP) established a series of performance metrics and continuous-improvement objectives across five domains: system reliability, project delivery, cybersecurity, customer digital engagement, and cost efficiency. These objectives were designed to measure the effectiveness of London Hydro's asset management practices, ensure alignment with customer expectations, and drive continual enhancement of planning, execution, and operational performance. This

section summarizes the objectives identified in the previous DSP, evaluates the results achieved, and explains how these outcomes have informed the development of the current DSP.

5.2.3.1a Reliability Improvement Objectives

Objective:

Maintain stable year-over-year performance for controllable reliability with a slight improvement over time (SAIDI–EDRO and SAIFI–EDRO)[3], reduce equipment-related outages (cables, switching enclosures, poles), and address worst-performing feeders through targeted asset renewal.

Assessment of Achievement:

London Hydro achieved meaningful improvements in several reliability indicators in the previous DSP period. Analysis of SAIDI–EDRO and SAIFI–EDRO (excluding Major Event Days) demonstrates a continued downward (i.e., improving) trend (Figure 1), consistent with customers' expectations for gradual reliability improvement. Targeting Equipment Design Related Outages (EDRO) involves both proactive prevention – such as replacing assets at elevated risk of failure – and enhanced response through investments in system automation. These efforts address more controllable interruption drivers, including Adverse Environment, Adverse Weather, Animal Contacts, Equipment Failure, Lightning and Tree Contacts.

Accordingly, a significant portion of both operating and capital programs is directed toward mitigating these controllable causes, supporting the objective of maintaining and incrementally improving distribution system reliability inline with customer expectations.

[3] Since much of the focus of the annual Capital Plan is replacing infrastructure at risk of failure, the SAIDI and SAIFI numbers have been analyzed to separate Equipment Design Related Outages (EDRO) from other non-design related or controllable outages (e.g. Scheduled Outages, Loss of Supply).

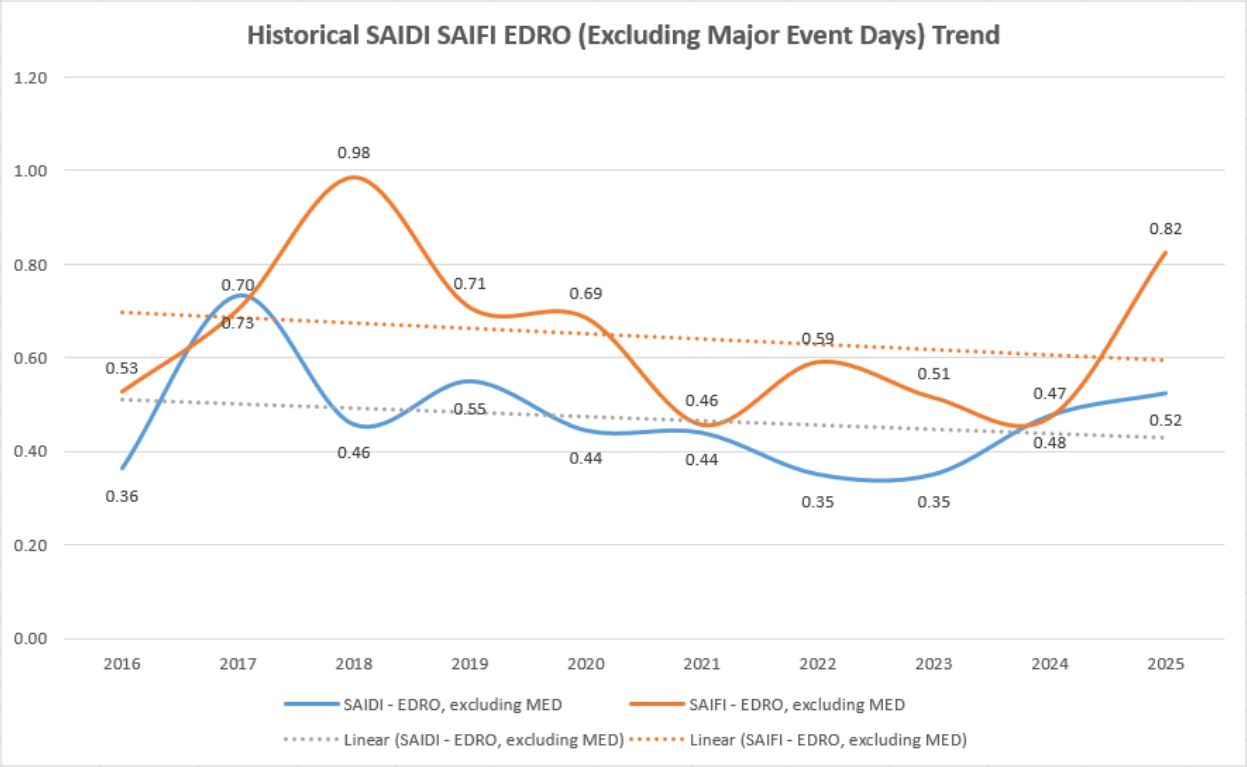


Figure: 1 SAIDI SAIFI EDRO (Excluding Major Event Days) Historical Trend 2016 to 2025

However, when Major Event Days are included, EDRO related interruptions exhibit an upward trend, contributing to the observed increase in total SAIDI and SAIFI over the last ten years (Figures 2 and 3). As illustrated in Figure 2, the upward trend in total annual SAIDI closely aligns with the increase in SAIDI-EDRO when Major Events are included, indicating that severe weather events are a primary driver of deteriorating overall reliability performance. This trend is largely attributable to the growing frequency and severity of adverse weather-related events. For example, the May 2022 derecho extreme wind storm and the December 2025 freezing rain storm resulted in a significant spike in SAIDI due to widespread and prolonged outages across London Hydro's service territory.

In response, the proposed DSP builds on the foundation established in the previous plan by continuing to emphasize both reliability and system resilience, while recognizing the need to further enhance the effectiveness and targeting of resilience measures. While traditional asset replacement and automation programs remain essential to sustaining baseline reliability, London Hydro is advancing a more deliberate and data-informed approach to resilience – refining how vulnerabilities are identified and how mitigation strategies are prioritized to better address the increasing impacts of extreme weather. A range of

resilience-focused design and operational considerations continue to be incorporated into ongoing capital and maintenance activities where appropriate. These include evaluating opportunities to strengthen structural design, enhancing vegetation risk identification and management practices, and assessing the application of engineered failure points to limit damage propagation during severe events (e.g. secondary breakaway conductors). As an example, London Hydro is piloting the use of satellite-based analytics to improve identification of at-risk vegetation and other system vulnerabilities. These insights support more targeted interventions and enable coordination with our municipal partner, the City of London, to proactively mitigate risk.

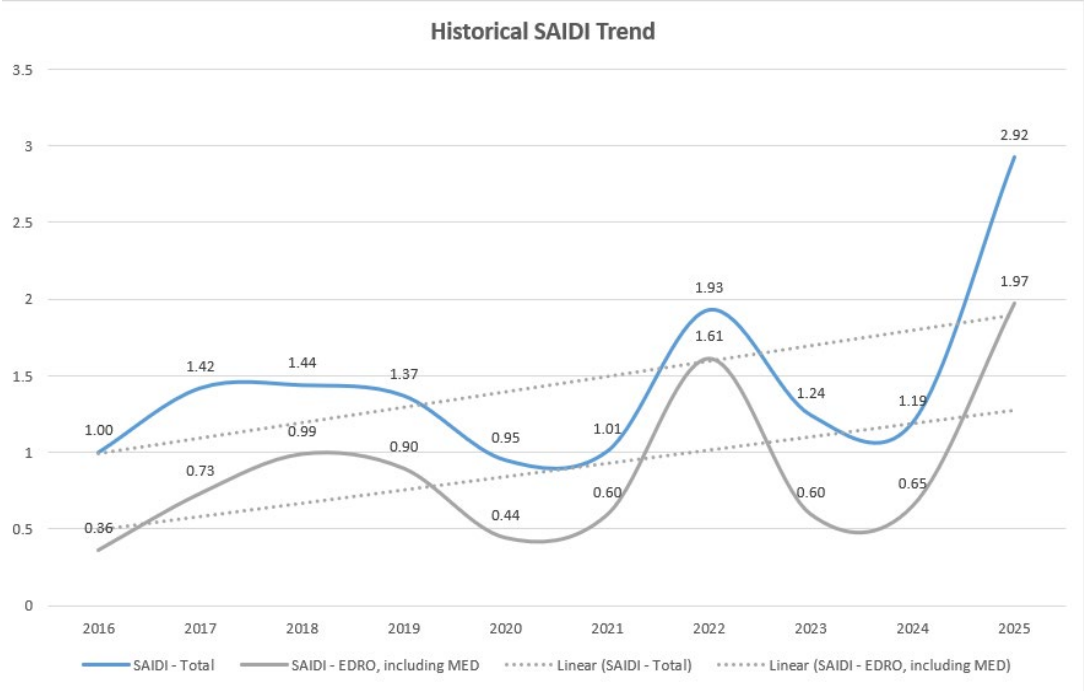


Figure: 2 SAIDI EDRO (Including Major Events) Historical Trend 2016 to 2025

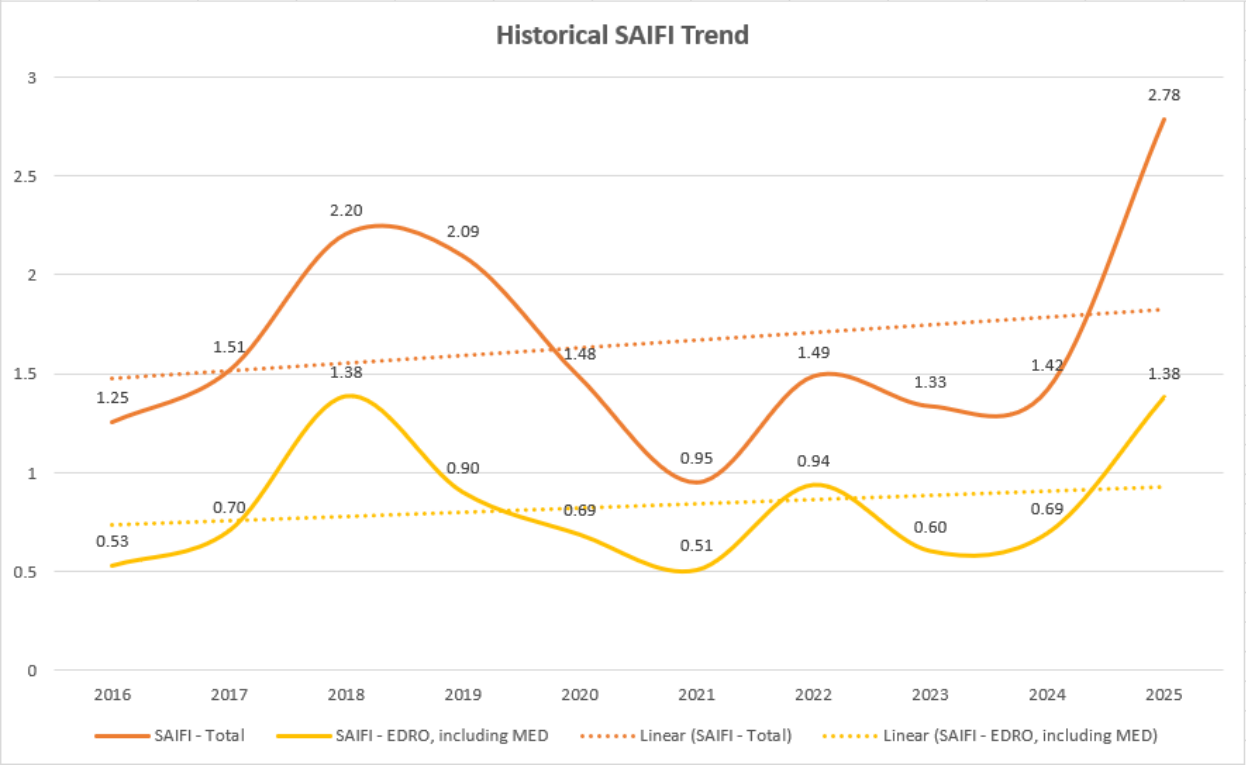


Figure: 3 SAIFI EDRO (Including Major Events) Historical Trend 2016 to 2025

Primary cable faults remained consistent with historical levels of 16 faults per year on average, confirming the effectiveness of the annual underground cable rehabilitation program in mitigating failures as cables age. Failures of sectionalizing enclosures declined as these high-risk assets were systematically removed from service, although isolated failures persisted during the transition period. Broken pole incidents, excluding motor-vehicle events or weather/tree related incidents, remained consistently low, demonstrating the value of risk-based pole inspection and targeted replacements.

Table 2 Reliability Metrics by Main Causes 2016-2025

Reliability Metric	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Number of Faults in Residential Underground Primary Cable	12	17	15	17	17	15	19	23	13	14
Number of Broken Poles (not due to motor vehicles or weather/tree related incidents)	1	3	4	2	0	1	1	1	0	0
Number of Failures of Sectionalizing Enclosure (SE)	1	1	7	2	2	4	0	0	0	0

According to UtilityPULSE survey results from years 2023 to 2025, customer satisfaction with service reliability remained high, maintaining a 90% average.

Implications for Proposed DSP:

These results validate London Hydro's asset renewal and inspection programs have been effective and support the continuation of risk-based strategies for cable replacements, switchgear renewal, feeder refurbishment, and pole testing. The proposed DSP reinforces a disciplined approach to prioritizing assets with the highest reliability impact and integrates new resilience objectives in response to climate-related risks.

In addition to core sustainment programs, London Hydro's major strategic investments have been selected to progressively strengthen system reliability and operational performance over the medium and long term. Investments such as Advanced Distribution Management System (ADMS) implementation will enhance outage prediction, fault location, restoration efficiency, and system visibility, while new municipal transformer stations and coordinated supply capacity expansions will reduce emerging capacity constraints, improve network flexibility, and mitigate the reliability risks associated with load growth and electrification. Together, these strategic initiatives complement traditional asset renewal by addressing broader system reliability and capacity challenges, positioning London Hydro to meet evolving customer and regulatory performance expectations while supporting a safer, more resilient, and modernized distribution system.

5.2.3.1b DSP Implementation and Project Delivery Objectives

Objective:

Maintain annual capital spending within ±10% of budget for controllable System Renewal and System Service projects, improve estimating accuracy, and enhance project execution through structured governance and variance reviews.

Assessment of Achievement:

London Hydro consistently met this objective, with the exception of 2022, when a variance of 10.2% was recorded. This variance was primarily driven by escalating material costs associated with underground projects, coupled with the utility's commitment to advance the replacement of primary cable infrastructure. Over the five-year period, the average variance for controllable capital projects was 4.6%, demonstrating strong financial discipline and effective project management. Variance analyses for projects exceeding ±10% thresholds provided actionable insights that improved estimating practices and scheduling accuracy. Regular bi-weekly and monthly coordination meetings strengthened execution oversight and ensured alignment between engineering, operations, and financial planning.

Table 3 Target Variance

DSP Implementation (% variance from budget)	2021	2022	2023	2024	2025	5 Year Total
Annual Controllable Capital Budget	$18.6M	$18.6M	$16.5M	$21.5M	$23.2M	$98.4M
Actual Spending	$17.6M	$20.5M	$17.7M	$21.6M	$25.5M	$102.9M
Variance $	-$1.0M	$1.9M	$1.2M	$0.1M	$2.3M	$4.5M
Variance %	-5.5%	10.2%	7.3%	0.5%	9.9%	4.6%

Implications for Proposed DSP:

The capital governance framework adopted in the previous DSP has proven effective. The proposed DSP maintains the ±10% variance objective and strengthens forecasting tools to support ongoing improvements in multi-year capital planning accuracy.

5.2.3.1c Cyber Security Enhancement Objectives

Objective:

Implement monthly cyber-risk reporting for IT and OT systems, complete cybersecurity initiatives in accordance with industry best practices, and improve vulnerability detection and threat response.

Assessment of Achievement:

London Hydro has advanced its cybersecurity posture through a series of continuous improvement initiatives, grounded in consistent governance and visibility. Central to this evolution was the implementation of monthly cybersecurity reporting, which provides the data necessary to drive ongoing enhancements and track residual risk.

This continuous visibility is underpinned by the deployment of an OT-specific Intrusion Detection System (IDS), enabling passive monitoring of network traffic to identify anomalies in real-time. To further harden the environment, we enforced Multi-Factor Authentication (MFA) for secure system access where available, and deployed encryption protocols for over-the-air operational traffic, safeguarding data integrity during transit.

These progressive controls – combined with SCADA security enhancements and legacy serial-to-IP modernization – have materially reduced our attack surface, demonstrating a sustained commitment to maintaining high operational resilience against an evolving threat landscape.

Implications for Proposed DSP:

The proposed DSP incorporates expanded cybersecurity and OT modernization initiatives, recognizing the increasing importance of cyber resilience to system reliability and customer trust. The monthly reporting framework will continue and will be expanded to include enhanced risk indicators appropriate for a more digitized grid environment.

London Hydro is adopting an enterprise cybersecurity model that explicitly includes all systems across IT, OT, SCADA, AMI, with future maturity planning aligned to the Ontario Cyber Security Framework. As OT is further incorporated into this model, London Hydro will operate through a more coordinated cyber program with clearer governance, shared accountability, and common risk visibility across technology environments. This will support more risk-based investment prioritization and remediation, guided by safety, reliability, operational impact, and regulatory requirements, and increasingly integrated with London Hydro's broader Enterprise Risk Management processes and reporting

5.2.3.1d Customer Participation and Digital Engagement Objectives

Objective:

Increase participation in digital services including myLH enrollment, paperless billing, outage notifications, and online move-in/move-out transactions, as well as expanding the range of electronic self-service offerings.

Assessment of Achievement:

London Hydro has achieved the customer participation and digital engagement objectives established in its previous DSP. Over the plan period, London Hydro continued to expand customer access to digital and self-service options, while enhancing the functionality, convenience, security, and reliability of those services.

The MyLondonHydro portal and mobile app have evolved to provide customers with a broader range of self-service capabilities, including access to billing and consumption information, paperless billing, no-fee credit card payments, outage information and notifications, online move transactions, and tools to compare and select electricity price plans. Digital onboarding enhancements have also simplified registration and access to these services while maintaining appropriate authentication and security requirements.

These developments have generated benefits beyond digital participation itself. Increased use of paperless billing has reduced reliance on physical mail and mitigated postage cost pressures; expanded self-service functionality provides customers with convenient access to information and services when they choose; and enhanced automated communications provide more timely and proactive information while reducing the need for manual processes. Investments in the underlying communications and notification platform have also materially increased processing capacity and strengthened London Hydro's ability to deliver timely communications across multiple channels.

Accordingly, the objective has evolved from a singular focus on encouraging enrolment in individual digital services to ensuring that customers have access to an expanding range of useful, reliable, and efficient service options that enable them to interact with London Hydro in the manner that best meets their needs.

Implications for Proposed DSP:

The proposed DSP builds on this foundation with the goal of continuously improving an integrated omnichannel customer experience. London Hydro recognizes that customer preferences and needs vary and that digital adoption, while continuing to grow, is not itself the end objective.

London Hydro's customer research demonstrates strong customer interest in having access to a range of convenient communication and service options. In the 2025 UtilityPulse survey, a significant majority of surveyed customers identified e-billing (84%), email communications (83%), website callback requests (81%), telephone service (74%), SMS/text updates (69%), and live webchat (61%) as important communication options. For planned outages specifically, email and text alerts were the two most preferred communication methods, identified by 68% and 64% of respondents, respectively. These results demonstrate that customers value expanded digital and self-service capabilities, while continuing to place importance on access to traditional person-to-person service channels.

Future investments will therefore focus on continuously improving the quality, functionality, accessibility, depth and breadth of information, and integration of customer service across digital, self-service, and person-to-person channels. This includes continuing to enhance the MyLondonHydro portal, other self-service portals, the mobile app, communications and notification capabilities, and other self-service tools, while maintaining responsive and effective service through telephone, email, webchat, and other channels. Particular emphasis will be placed on enabling timely, proactive communications through the channels customers have indicated they value, including email and SMS/text notifications.

This customer-informed, omnichannel approach supports London Hydro's broader objective of earning customer trust through convenient, consistent, and high-quality service, while using technology and process improvements to increase operational efficiency, manage costs, and respond to evolving customer expectations.

5.2.3.1e Cost Efficiency and Unit-Cost Monitoring Objectives

Objective:

Monitor unit cost metrics (capital and O&M per customer, per kilometre of line, and per MW of peak demand), and begin peer benchmarking once sufficient trend data is available.

Assessment of Achievement:

London Hydro monitors the following unit cost metrics for capital expenditures and O&M per customer, kilometer of line, and peak capacity.

- **Total Cost per Customer** – is the sum of London Hydro's capital and O&M costs divided by the total number of customers.
- **Total Cost per km of Line** – is the sum of London Hydro's capital and O&M costs divided by the total number of kilometers of line.
- **Total Cost per MW** – is the sum of London Hydro's capital and O&M costs divided by the total peak MW.
- **Total CAPEX per Customer** – is the sum of London Hydro's capital costs divided by the total number of customers.
- **Total CAPEX per km of Line** – is the sum of London Hydro's capital costs divided by the total number of kilometers of line.
- **Total O&M per Customer** – is the sum of London Hydro's O&M costs divided by the total number of customers.
- **Total O&M per km of Line** – is the sum of London Hydro's O&M costs divided by the total number of kilometers of line.

For the purposes of these metrics, the Peak MW is the system peak demand for the year (actual measured peak, including any generation on at time of peak) measured in MW. The number of customers and kilometers of line are as of year-end. Please note that the cost efficiency metrics presented in this section differ in scope from the standard performance metrics published on London Hydro’s annual OEB Scorecard. While the OEB Scorecard evaluates continuous productivity and cost control using total

Operating, Maintenance, and Administrative (OM&A) expenditures, the metrics set out in this section isolate direct Operations and Maintenance (O&M) expenditures.

London Hydro met the monitoring and reporting requirements for all prescribed cost metrics. While the dataset was still maturing during the previous DSP period, the utility established the necessary framework for future benchmarking. Cost fluctuations during the period largely reflected changes in capital activity levels, system peak variability, and external factors such as DER adoption. Refer to Exhibit 1 Section 1.7.2 for further discussion on benchmarking performed by London Hydro.

Table 4 Modified Chapter 5 Appendix 5-A

Cost Metric	2021	2022	2023	2024	2025	5 Year Average
Total Cost per Customer	$316	$389	$399	$430	$479	$403
Total Cost per km of Line	$16,747	$20,730	$21,357	$18,029	$25,824	$21,554
Total Cost per MW	$79,154	$97,367	$101,097	$107,062	$113,459	$99,628
Total CAPEX per Customer	$193	$257	$266	$297	$334	$269
Total CAPEX per km of Line	$10,214	$13,700	$14,224	$15,954	$18,029	$14,424
Total O&M per Customer	$123	$132	$133	$133	$145	$133
Total O&M per km of Line	$6,532	$6,532	$7,133	$7,160	$7,795	$7,130

Implications for Proposed DSP:

The growing dataset enables London Hydro to begin more meaningful year-over-year comparisons. These findings will help identify areas where process improvements or alternative delivery strategies may enhance cost performance.

5.2.3.1f Overall Conclusion and Continuous-Improvement Direction

Across all five domains, London Hydro achieved the majority of the continuous improvement objectives identified in the previous DSP. These results demonstrate the effectiveness of the utility's asset management practices, reliability programs, financial governance frameworks, customer engagement strategies, and cybersecurity initiatives. Areas where trends are still emerging, such as reliability and cybersecurity maturity, have informed the development of more robust monitoring, reporting, and investment strategies in the proposed DSP.

The continuous improvement outcomes from the previous DSP have directly shaped London Hydro's 2027-2031 DSP by reinforcing the importance of risk-based asset renewal, capital planning discipline, digital modernization, customer-driven service enhancements, and grid resilience in the face of evolving operational and environmental challenges.

5.2.3.2 Service Quality and Reliability

5.2.3.2a Service Quality

London Hydro's Service Quality Requirements (SQR) performance over the historical period is summarized in Table 5 and is consistent with the utility's published scorecard. No material changes, missed targets, or declining trends have been identified.

Over the past five years, London Hydro has consistently met or exceeded its service quality targets, with performance that is stable or improving across nearly all metrics.

Table 5 Historical Service Quality Metrics

Service Quality Metric[4]	2021	2022	2023	2024	2025	Minimum Standards
Low Voltage Connections	99.15%	99.27%	98.01%	99.14%	99.67%	> 90%
High Voltage Connections	100.00%	100.00%	N/A	100.00%	N/A	> 90%
Telephone Accessibility	68.27%	69.81%	74.84%	71.23%	75.27%	> 65%
Appointments Met	100.00%	100.00%	100.00%	100.00%	100.00%	> 90%
Written Responses to Enquiries	100.00%	100.00%	100.00%	100.00%	100.00%	> 80%
Emergency Urban Response	93.10%	97.33%	99.20%	99.09%	98.74%	> 80%
Emergency Rural Response	N/A	N/A	N/A	N/A	N/A	> 80%
Telephone Call Abandon Rate	5.26%	5.03%	4.96%	6.68%	6.41%	< 10%
Appointment Scheduling	100.00%	100.00%	100.00%	100.00%	100.00%	> 90%
Reschedule Missed Appointment	N/A	N/A	N/A	N/A	N/A	> 100%
Reconnection Standard	98.49%	96.95%	96.12%	98.12%	95.32%	> 85%
Micro-Embedded Generation Facilities Connected	100.00%	100.00%	100.00%	100.00%	100.00%	> 90%

[4] "N/A" means that the specific metric for that year was either not applicable or no relevant events occurred.

Service Quality Metric[4]	2021	2022	2023	2024	2025	Minimum Standards
Billing Accuracy	99.82%	99.88%	99.85%	99.66%	99.96%	> 98%
First Contact Resolution	99.52%	99.72%	99.43%	99.39%	99.39%	

5.2.3.2b Reliability Performance

A summary of London Hydro's reliability performance over the historical period (2021-2025) using the SAIDI and SAIFI annual metrics and trends are provided below in Table 6 and Figures 4 and 5. The data presented includes all interruptions, all interruptions excluding Loss of Supply (LOS), and all interruptions excluding Major Event Days (MEDs) and LOS. The table and figures demonstrate that both SAIDI and SAIFI (excluding MEDs and LOS) are exhibiting a relatively stable trend in reliability over the historical period, with a slight uptick experienced in the recent reporting year.

Table 6 SAIDI and SAIFI Reliability Metrics 2021-2025

	2021	2022	2023	2024	2025
All interruptions					
SAIDI	1.01	1.93	1.25	1.19	2.92
SAIFI	0.95	1.49	1.34	1.42	2.78
All interruptions excluding loss of supply					
SAIDI	0.98	1.90	1.23	1.04	2.42
SAIFI	0.89	1.30	1.18	1.14	1.87
All interruptions excluding Major Events and loss of supply					
SAIDI	0.83	0.63	0.76	0.78	0.97
SAIFI	0.85	0.95	0.96	0.88	1.31

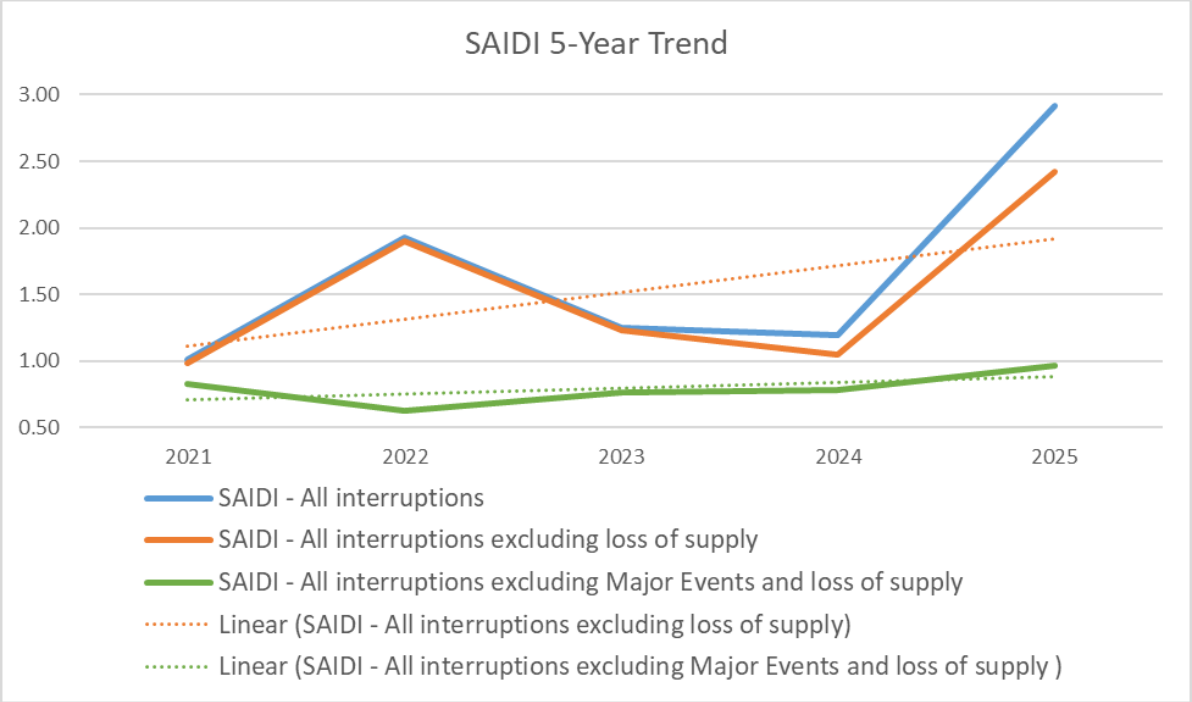


Figure: 4 SAIDI 5-Year Trend

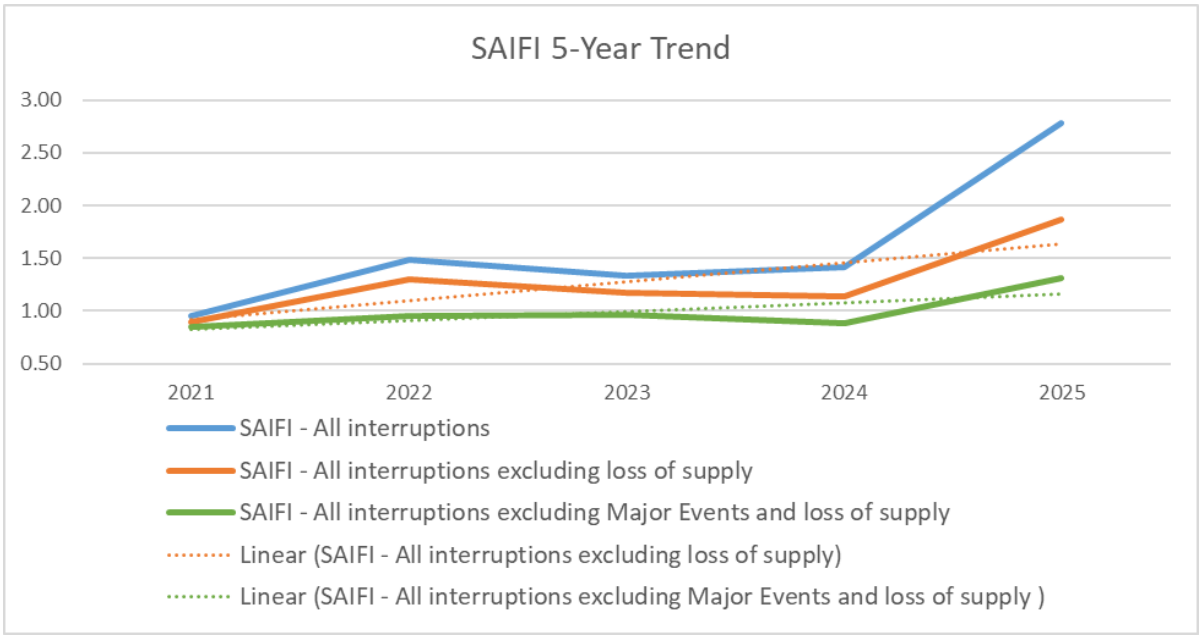


Figure: 5 SAIFI 5-Year Trend

Table 7 illustrates London Hydro's reliability performance (excluding MEDs and LOS) compared to its fixed performance target, based on historical averages set by the OEB and published in the Scorecard for SAIDI and SAIFI (excluding MEDs and LOS). London Hydro met its reliability targets in each year 2021-2024 for both SAIDI and SAIFI, but the reliability targets were not achieved in 2025 for either SAIDI or SAIFI.

Table 7 Historical Reliability Performance vs OEB Target

	Target 2021	LH Actual 2021	Target 2022-2025	LH Actual 2022	LH Actual 2023	LH Actual 2024	LH Actual 2025
SAIDI	0.92	0.83	0.85	0.63	0.76	0.78	0.97
SAIFI	1.14	0.85	1.09	0.95	0.96	0.88	1.31

When comparing the outages by cause code in 2025 compared to the average of those from 2021-2024, the largest contributing cause codes to the increased SAIDI in 2025 are Tree Contact and Equipment Failure, and for SAIFI the increase is primarily driven by Tree Contact, Equipment Failure, and Unknown caused interruptions. See Tables 8 and 9 for the respective contributions.

Table 8 Largest Outage Causes Contributing to an increase in SAIDI in 2025

Primary Cause	Average SAIDI 2021 - 2024	2025 SAIDI	Delta
Tree Contact	0.06	0.14	0.08
Equipment Failure	0.20	0.29	0.09

Table 9 Largest Outage Causes Contributing to an increase in SAIFI in 2025

Primary Cause	Average SAIFI 2021 - 2024	2025 SAIFI	Delta
Tree Contact	0.05	0.13	0.08
Equipment Failure	0.31	0.48	0.17
Unknown	0.15	0.19	0.05

A summary for these large differences in 2025 is provided below:

1) Tree contact related interruptions contributed significantly to reliability impacts in 2025. These events were primarily caused by large limbs or entire trees failing within the public right-of-way and contacting electrical infrastructure, resulting in widespread outages. Notably, many of the affected trees in the public right-of-way exhibited no visible external signs of deterioration at ground level during prior vegetation inspections. It is suspected that internal decay or structural weakening, potentially exacerbated by cumulative storm impacts in preceding periods, contributed to these failures, which in several cases occurred during otherwise moderate weather conditions.

   London Hydro anticipates that its pilot initiative leveraging satellite-based vegetation analytics will enhance the identification of at-risk trees and areas susceptible to failure. As this data becomes available, identified locations will be further assessed in coordination with the City to determine appropriate mitigation measures aimed at reducing risk to electrical infrastructure and improving overall system resilience.

2) Equipment failures remain a consistent and significant contributor to SAIDI and SAIFI on an annual basis. As the asset base continues to age and degrade, the emergence of new failure modes is expected, which may result in occasional high-impact reliability events.

   In 2025, switch failures were the primary driver of increased reliability impacts. This was attributable to the emergence of a previously unobserved failure mode in overhead switches. This failure mode has since been characterized, enabling the implementation of targeted inspection protocols, enhanced condition monitoring, and proactive remediation planning going forward.

3) Interruptions attributed to unknown causes can have a disproportionate impact on SAIFI, as feeder-level events may affect a large number of customers simultaneously. However, the corresponding SAIDI impact is typically limited, as service is often restored within minutes through the use of system automation.

By definition, the precise location and initiating cause of these events are not identifiable at the time of occurrence. While post-event inspections and audits may, in some cases, determine a definitive cause, a significant portion of these events remain unclassified. For example, transient animal contacts that do not result in fuse operation or observable equipment damage may leave no clear physical evidence, making localization and root-cause identification challenging.

To improve visibility and diagnostic capability, London Hydro is planning a pilot deployment of early fault detection line sensors on feeders with a history of persistent unknown-cause events. This initiative is intended to enhance fault localization, support more accurate cause attribution, and inform targeted mitigation strategies.

When Major Events are considered (as illustrated in Figures 4 and 5), SAIDI and SAIFI excluding Loss of Supply (LOS) exhibit a steeper upward trend, as reflected by the orange trendlines in the five-year trend graphs. This indicates that the impact of Major Events has intensified over the historical period.

Over the next DSP period, London Hydro will be investing in further grid resiliency and system hardening strategies, including enhanced vegetation management utilizing satellite imagery analytics, critical infrastructure hardening, and integrated smart grid technologies to improve reliability with respect to the growing concern around Major Events.

The reliability trends presented in this section also reinforce the need for increased investment in system renewal. Equipment failures continue to be a significant contributor to customer interruptions, and as the asset base ages, the likelihood of new and higher-impact failure modes increases. Accordingly, London Hydro's proposed system renewal program has been developed using asset health assessments, historical asset performance, and reliability analytics to prioritize investments that reduce equipment-related failures, improve asset reliability, and strengthen the long-term resilience of the distribution system.

5.2.3.2b.1 Summary of Major Events

Table 10 is a summary of all Major Events that occurred between 2021 and 2025.

Table 10 Summary of Major Events (2021 – 2025)

Year	Date	Total Customer Minutes of Interruption	Total Customer Interruptions	Primary / Dominant Cause Codes	Description of Major Event
2021	9/12/2021	1,523,513	8,004	Adverse Weather - Extreme Wind	Severe thunderstorms, accompanied by high winds and lightning, passed through London Hydro's distribution service territory on September 12, 2021 at approximately 10pm. The resulting high wind from the storm knocked down several trees throughout the region that damaged various hydro poles and power lines.
2022	5/21/2022	12,490,045	57,034	Adverse Weather - Extreme Wind	A Derecho storm involving severe thunderstorms, accompanied by high winds, heavy rain and hail, passed through London Hydro's distribution service territory on May 21, 2022 at approximately 11:30am. The resulting high wind from the storm, that left a trail of destruction from Windsor to Ottawa, knocked down several trees throughout the region that damaged various hydro poles and power lines.
2023	6/2/2023	1,449,003	12,613	Foreign Interference - Vehicle Accident	On Friday, June 2nd at 10:40am, a truck struck and broke a hydro pole that was installed far from the curb, behind a sidewalk, exceeding minimum clearance requirements. This caused an outage to 12,613 customers across two main feeders as this pole was a tie point between both feeders. The customer count on the impacted feeders was higher than normal as the system was abnormally configured due to a construction process occurring on another feeder. Due to the varying and unclear incident reports received, it was necessary for London Hydro crews to be on site to accurately assess the extent of the damage and determine the scope of work required. Further complicating the matter, a critical customer (hospital) was adjacent to the accident location, and both of its power supplies were

Year	Date	Total Customer Minutes of Interruption	Total Customer Interruptions	Primary / Dominant Cause Codes	Description of Major Event
					affected as a result of this outage. Recognizing the complexity of the situation, London Hydro needed to determine a holistic plan and procedure that would allow for the safe restoration of power to all in a timely manner.
2023	7/20/2023	2,470,874	14,616	Adverse Weather - Extreme Wind	Severe thunderstorms, accompanied by high winds and heavy rain, passed through London Hydro's distribution service territory on July 20, 2023 at approximately 5:00pm. The resulting high wind from the storm knocked down several trees throughout the region that damaged various hydro poles and power lines.
2023	11/10/2023	803,912	8,450	Foreign Interference - Vehicle Accident	On Friday, November 10 at 3:37am, a vehicle struck and broke a hydro pole that was installed far away from the curb, behind a sidewalk, exceeding minimum clearance requirements. This caused an outage to 8,450 customers across two main feeders as this pole location carried two feeders. Furthermore, the customer count on the impacted feeders was higher than normal as the system was abnormally configured due to a construction process occurring on another feeder. Using automated devices, 82% of the customers were restored within 30 minutes after the accident reports were received. Due to the incident location, temporary switches were installed on both feeders to safely isolate the accident location, and restore power to the remaining groups of customers.
2024	6/25/2024	2,352,340	47,132	Adverse Weather - Tree Contact Weather/Loss of Supply	High winds accompanied by heavy rain, passed through London Hydro's distribution service territory on June 25, 2024 at approximately 11:45am. The resulting high wind

Year	Date	Total Customer Minutes of Interruption	Total Customer Interruptions	Primary / Dominant Cause Codes	Description of Major Event
					from the storm knocked down trees throughout the region that damaged various hydro poles and power lines.
2024	12/27/2024	911,583	7,374	Foreign Interference - Vehicle Accident	On Monday December 27, 2024 at 8:54 pm, during dark and poor rainy weather conditions, a vehicle swerved into oncoming traffic, caused a multiple vehicular accident, as well as struck and broke a hydro pole. The pole was installed far away from the curb, behind a sidewalk, exceeding minimum clearance requirements. This caused an outage to 7,374 customers across two main feeders that were attached to this pole. Using automated devices, nearly 50% of customers were restored within ten minutes. Another 20% of customers were restored in 1.5 hours after reports were received of the accident location. Due to the incident location, a temporary switch was installed to safely isolate the accident location, make the necessary repairs, and restore power to the remaining groups of customers.
2025	2/11/2025	1,678,658	33,532	Loss of Supply - Hydro One (Transmission)	On Tuesday February 11th, 2025 at 7:16am a Hydro One Transmission Loss of Supply event occurred affecting the 230-kV W36 circuit supplying Talbot T3/T4 Station Q1&Q2 and J1&J2 Bus. Reports from Hydro One indicated that the cause of the outage was due to a downed sky wire that made contact with the transmission line. This interrupted a total of 95MW of London Hydro load that was interrupted, impacting a total of 33,532 customers.

Year	Date	Total Customer Minutes of Interruption	Total Customer Interruptions	Primary / Dominant Cause Codes	Description of Major Event
					Using London Hydro distribution ties, 45% of customers were restored within 35 minutes and the remaining customers were restored within 68 minutes after Hydro One's 230-kV supply to Talbot's T3 was restored. Under normal circumstances, a single transmission circuit loss of supply event on a Dual Element Spot Network Transformer Station does not result in an interruption to customers. However, at the time of this incident, the Talbot T3/T4 Transformer Station, which is normally supplied by W36 and W37 transmission lines, was in an abnormal configuration due to a Hydro One scheduled maintenance that had the T4 transformer (supplied by W37) out of service. The unplanned outage of the W36 transmission circuit resulted in a loss of supply to the T3 transformer that was in-service which affected customers supplied by the Talbot T3/T4 Station.
2025	3/8/2025	1,378,955	68,018	Loss of Supply - Hydro One (Transmission)	On Saturday March 8th, 2025 at 11:32 am, a Hydro One Transmission Loss of Supply event occurred, affecting the Talbot T3/T4 Station Q1&Q2 and J1&J2 Bus, and the Talbot T1/T2 Station BY Bus. At the time of this incident, the Talbot T3/T4 Transformer Station, which is normally supplied by W36 and W37 transmission lines, was in an abnormal configuration due to Hydro One scheduled maintenance that had the T4 transformer (supplied by W37) out of service. Hydro One was performing switching to bring the T4 transformer back into service after completion of the scheduled maintenance. During switching, the drive mechanism for the T3-A transformer disconnect switch failed to operate correctly, which led to single phasing

Year	Date	Total Customer Minutes of Interruption	Total Customer Interruptions	Primary / Dominant Cause Codes	Description of Major Event
					at the T3 transformer. Hydro One had to take the Talbot 230kV A-Bus out of service to resolve the single phasing to customers, and isolate the T3-A transformer disconnect switch for future repairs. As per designed configuration, the operation of the Talbot 230kV A-Bus breaker, which impacted the supply to Talbot T3 Station, also removed supply for the Talbot T1 Station. This impacted a total of 68,018 customers for 22 minutes.
2025	4/29/2025	4,401,081	23,949	Adverse Weather - Tree Contact Weather / Equipment Breakage / Extreme Wind	A severe thunderstorm accompanied by strong wind gusts, lightning, hail and heavy rain passed through London Hydro's distribution area on April 29th around 4:30 pm. The resulting high wind from the storm knocked down trees throughout the region, damaged various hydro poles and power lines, and also caused other equipment breakage throughout the distribution system.
2025	6/24/2025	1,390,264	10,735	Adverse Weather - Tree Contact Weather Lightning - Lightning	A severe thunderstorm accompanied by rain, lightning and high winds, caused trees to be brought down onto power lines in London Hydro's distribution area on June 24th around 5:00 pm.
2025	8/10/2025	1,759,496	16,765	Loss of Supply - Hydro One (Transmission)	On Sunday August 10th at 12:31 PM, a fault on a London Hydro distribution feeder and Hydro One Transmission Loss of supply event on the Talbot TS Q2 Bus occurred. This outage impacted 16,765 customers. The outage was initially triggered

Year	Date	Total Customer Minutes of Interruption	Total Customer Interruptions	Primary / Dominant Cause Codes	Description of Major Event
					by an issue on the distribution feeder. However, a significant portion of this outage was due to Loss of Supply as the Q2 Bus was not available for restoring load.
2025	12/26/2025	8,862,530	58,955	Adverse Weather - Tree Contact Weather/ Abnormal Winter Condition/ Equipment Breakage	On Friday December 26th at approximately 12:31 PM, a freezing rain storm hit London Hydro's distribution area. The resulting freezing rain coated trees and power lines with a significant accumulation of ice. The weight of the ice caused tree branches to come down and further equipment breakage.

Two consistent drivers of Major Events over the past five years have been: (i) severe weather events resulting in uprooted trees or significant limb failures that damage electrical infrastructure, and (ii) vehicle collisions with poles at critical circuit locations, including installations that exceed minimum clearance requirements.

In both cases, grid hardening measures and enhancements to outage response and mitigation are key focus areas that will be addressed directly, or realized as supplementary benefits, through investments planned in this DSP period. For example, targeted replacement of aged, end-of-life overhead switches provides opportunities to deploy reclosers at strategic locations, introducing advanced protection and automation capabilities that improve system performance during such events.

Given the inherently unpredictable nature of weather-related impacts and vehicle collisions, a system-wide, risk-informed approach is required to identify areas of heightened vulnerability and prioritize resiliency improvements. This approach supports the development of targeted mitigation strategies that enhance the distribution system's ability to withstand, respond to, and recover from future incidents.

London Hydro currently evaluates historical Major Events and other significant outage events as part of its reliability performance reviews. Building on this foundation, London Hydro plans to further strengthen its system-wide, risk-informed planning approach by developing a catalogue of outage scenarios and associated mitigation measures. Applying this type of analysis on a feeder-by-feeder basis could help identify localized vulnerabilities based on historical performance and evaluate opportunities to improve resiliency. Additional inputs to such an assessment could include emerging vegetation-related risks identified through satellite-imagery-based vegetation analytics. As this approach evolves, it will support the Vulnerability Assessment for System Hardening (VASH) described in Section 5.3.6 and help prioritize investments that strengthen the distribution system against future major events.

5.2.3.2b.2 Historical Interruption Cause Statistics

Below is a summary of all interruptions excluding Major Events, split by Cause Code, that occurred between 2021 and 2025.The percentage contribution by primary cause is provided for the cumulative 5-year period.

Table 11 Summary of Interruptions by Cause Code (2021-2025)

	2021	2022	2023	2024	2025	5-Year TOTAL	% of TOTAL
Number of interruptions							
Unknown/Other	50	59	56	60	53	278	7%
Scheduled	448	474	510	420	436	2288	55%
Loss of Supply	4	9	6	11	8	38	1%
Tree Contacts	43	25	20	10	20	118	3%
Lightning	17	5	5	19	12	58	1%
Equipment Failure	142	174	139	110	124	689	17%
Adverse Weather	22	20	4	21	30	97	2%
Adverse Environment	4	0	0	0	0	4	0%
Human Element	8	7	6	7	3	31	1%
Foreign Interference	102	112	116	111	112	553	13%
TOTAL	840	885	862	769	798	4154	100%
Number of customer interruptions							
Unknown/Other	25,584	22,012	23,094	26,059	32,379	129,128	13%
Scheduled	14,452	11,539	14,925	10,403	11,798	63,117	7%
Loss of Supply	8,743	31,174	26,869	35,739	35,944	138,469	14%
Tree Contacts	20,673	891	11,291	378	21,253	54,486	6%
Lightning	4,663	57	116	6,087	5,742	16,665	2%

	2021	2022	2023	2024	2025	5-Year TOTAL	% of TOTAL
Equipment Failure	26,753	72,509	65,978	39,879	81,054	286,173	30%
Adverse Weather	16,928	17,955	73	21,162	22,617	78,735	8%
Adverse Environment	597	-	-	-	-	597	0%
Human Element	261	6,210	1,690	7,114	3,036	18,311	2%
Foreign Interference	27,942	25,634	43,066	36,057	43,643	176,342	18%
TOTAL	146,596	187,981	187,102	182,878	257,466	962,023	100%
Number of customer-hours of interruptions							
Unknown/Other	4,422	3,419	3,982	2,604	7,440	21,867	3%
Scheduled	29,305	27,776	33,612	29,537	31,814	152,044	22%
Loss of Supply	3,776	5,434	2,857	15,531	5,099	32,697	5%
Tree Contacts	25,312	1,821	8,714	547	23,187	59,581	9%
Lightning	2,824	63	223	2,825	1,034	6,968	1%
Equipment Failure	21,327	35,181	43,155	32,033	49,238	180,933	26%
Adverse Weather	15,376	15,468	179	24,070	12,500	67,593	10%
Adverse Environment	4,888	-	-	-	-	4,888	1%
Human Element	154	1,976	959	691	1,033	4,812	1%
Foreign Interference	31,431	18,948	35,243	38,079	37,470	161,170	23%
TOTAL	138,815	110,085	128,923	145,916	168,814	692,553	100%

There are many similarities among the leading cause code contributors (highlighted in Table 11 above) across the number of interruptions, total customer interruptions, and customer-hours of interruption. A Summary overview is provided below:

1. **Scheduled outages** represent 55% of the number of interruptions customers experienced over the 5-year period. These interruptions, with advance notice provided to customers, are required for London Hydro to execute its yearly capital and operating plan. Scheduled interruptions are necessary to avoid future unplanned interruptions from failures causing unexpected power interruptions to customers and ensuring the safety of both staff and the public. The significant number of scheduled interruptions taken each year is a testament to London Hydro's care and consideration for the reliability of its customers.

2. **Loss of Supply** events refer to the discontinuity of supply from Hydro One Networks Inc., the transmitter, while London Hydro is ready to accept supply. Generally, these events have a much larger impact to SAIFI (customers interrupted) compared to SAIDI (average duration of interruptions) due to the large number of customers typically impacted when an entire feeder or Transformer Bus/Station is impacted by a Loss of Supply event. If Hydro One is unable to restore supply immediately, London Hydro can, in most cases, leverage automated devices at distribution feeder tie points to provide backup supply to the affected customers.

   London Hydro engages in discussions with Hydro One after large-scale Loss of Supply events. Hydro One provides customer briefings with explanations and possible follow-ups on select events. Going forward, London Hydro will continue to engage with Hydro One post all Loss of Supply events, in alignment with the January 1, 2026 updates to the OEB's Electricity Reporting and Recordkeeping Requirements, section 2.1.4.2.13.

3. **Equipment Failure** is the leading cause code for contribution to the total number of customer interruptions and the total number of customer-hours of interruptions. Equipment failure has several sub-causes; by identifying those that are predominant, we gain valuable insights that can help refine the direction of capital resource allocation contributing to improved system performance. Over the cumulative 5-year period, cable failures and overhead switch failures were the leading sub-cause contributors to the equipment failure cause code.

   London Hydro proactively manages its aging underground infrastructure through an ongoing, risk-informed cable replacement program. Replacement priorities are established using a

failure-risk framework that incorporates asset health indices from the latest ACA, results from targeted very-low-frequency (VLF) tan delta testing, and historical fault records. This approach enables London Hydro to identify and prioritize subdivision rebuilds with the highest probability of failure, ensuring that investments are directed to areas of greatest need.

The continued occurrence of cable faults offers a meaningful indicator of program effectiveness. While faults cannot be fully eliminated, London Hydro's targeted renewal efforts are successfully maintaining a consistent level of reliability from equipment failures, that meets customer expectations, even as infrastructure ages.

London Hydro maintains several types of overhead switches throughout its distribution system; however, failures of mainline switches represent the most significant reliability risk. Although such failures are infrequent, their high-impact nature can result in widespread outages affecting an entire feeder or large segments between protective devices. Historical failure analysis has shown that age, corrosion, and environmental degradation are the primary contributing factors.

All overhead switches undergo both visual inspection and infrared thermography testing as part of London Hydro's three-year overhead circuit inspection cycle. While these complementary assessment methods enhance condition monitoring by identifying visible deterioration and abnormal thermal signatures, they may not always fully capture internal degradation. In some cases, switches may only exhibit failure upon operation. To mitigate this risk, London Hydro has reintroduced a targeted maintenance program focused on applicable switches. This program aims to extend the useful life of in-service units and identify deficiencies that require intervention prior to failure.

In alignment with the Asset Sustainment Plan, London Hydro also replaces end-of-life switches and associated components that exhibit elevated failure risk. These assets are rebuilt to current construction standards to enhance system resilience, reduce the likelihood of high-impact outages, and maintain service reliability for customers.

4. **Foreign interference** interruptions include incidents caused by animal contact, vehicle accidents, theft or vandalism of distribution equipment. Among these, vehicle accidents have been the predominant driver of both SAIDI and SAIFI impacts for this category. Historically, vehicle-related incidents have accounted for more than 60% of Foreign Interference SAIDI contributions over the historical 5-year period, with certain years reaching as high as 90%.

Although the number of such incidents remains relatively consistent year over year, reliability impacts can vary significantly. In most cases, a small number of high-impact events are responsible for the majority of customer interruptions in a given year. For example, in 2022, a lower overall reliability impact from Foreign Interference interruptions coincided with fewer customers being affected by vehicle-related events. This was due in part to the fact that the poles struck were located in less critical locations and the incidents themselves caused comparatively minor damage.

London Hydro continues to monitor and analyze this trend, with strategies to identify and mitigate the risk of high-impact vehicle accidents. These measures aim to reduce the frequency and severity of such interruptions and improve overall system reliability for customers.

London Hydro must continue to sustain, and in some areas enhance, its investment and operational focus to preserve existing levels of system reliability in the face of evolving challenges, including an increasing cohort of aging assets and more frequent severe weather events. At the same time, targeted improvements are required in areas that exhibit comparatively lower reliability performance or heightened vulnerability to reliability risks, in order to meet customer expectations and regulatory standards.

5.2.3.3 Distributor Specific Reliability Targets

In alignment with the OEB's enhanced framework for setting reliability performance targets – established through the Reliability and Power Quality Review (OEB File No. EB-2021-0307), London Hydro is adopting the new methodology without proposing any deviations. Under this enhanced approach, London Hydro's reliability performance targets for the 2027–2031 period are determined based on the following three components defined by the OEB:

1. **Baseline Performance:** Reflecting the utility's five-year average for SAIDI and SAIFI over the 2020-2024 period.

2. **Trend-Based Improvement Factor:** Derived from a linear performance trend analysis of London Hydro's SAIDI and SAIFI metrics over the same five-year period.

3. **Benchmarking-Based Improvement Factor:** Based on London Hydro's relative performance within the peer cohort[5] assigned by the OEB.

In the OEB's communication dated October 3, 2025, London Hydro's combined improvement factor, reflecting both trend and benchmarking analyses, was confirmed at 0% for both SAIDI and SAIFI. This improvement factor is fixed for a five-year term and applied to the baseline on a compounded basis for each year of the 2027–2031 target period. Since the baseline was established in 2025, the 2027 performance targets incorporate compounding improvements over two years (2026 and 2027).

Table 12 provides London Hydro's baseline SAIDI and SAIFI values (excluding Loss of Supply and Major Event Day) and corresponding annual targets for the 2027–2031 period:

Table 12 2027-2031 SAIDI & SAIFI Target

	Baseline 2020-2024 Average	Annual Performance Percentage Improvement Target	2027 Target	2028 Target	2029 Target	2030 Target	2031 Target
SAIDI	0.77	0%	0.77	0.77	0.77	0.77	0.77
SAIFI	0.94	0%	0.94	0.94	0.94	0.94	0.94

The targets established for the 2027–2031 period represent a meaningful increase in performance expectations relative to the historical period. As shown in Table 13, the target improvements from the 2021 baseline period to the 2022–2025 period were 8% for SAIDI and 4% for SAIFI. The targets established for the 2027–2031 period are more stringent, requiring a further 9% improvement in SAIDI and a further 14% improvement in SAIFI relative to the 2022–2025 period.

[5] London Hydro is in the *Southwestern Large with High Undergrounding* Cohort along with Essex Powerlines Corporation, Entegrus Powerlines Inc., and ENWIN Utilities Ltd.

Table 13 Historical SAIDI & SAIFI Target Comparison

	OEB Target for 2021	OEB Target for 2022-2025	Target Improvement Percentage from Period 2021 to 2022-2025	OEB Target for 2027-2031	Target Improvement Percentage from Period 2022-2025 to 2027-2031
SAIDI	0.92	0.85	-8%	0.77	-9%
SAIFI	1.14	1.09	-4%	0.94	-14%

When compared against actual annual reliability performance over the past five years, the newly established targets represent a level of performance that would not have been achieved in any individual year for both SAIDI and SAIFI. As illustrated in Table 14, red text denotes years in which the annual performance exceeded the newly established targets. This comparison demonstrates that the new targets represent a significantly more challenging level of performance and reinforces the need for continued investment in asset renewal, system modernization, and operational improvements to sustain and improve long-term reliability.

Table 14 Historical SAIDI & SAIFI Performance Compared against 2027-2031 Target

	OEB Target for 2027-2031	LH Actual 2021	LH Actual 2022	LH Actual 2023	LH Actual 2024	LH Actual 2025
SAIDI	0.77	0.83	0.63	0.76	0.78	0.97
SAIFI	0.94	0.85	0.95	0.96	0.88	1.31

The increasingly stringent reliability targets have been an important consideration in the development of this DSP. While annual reliability performance will continue to be influenced by factors beyond London Hydro's control – including severe weather and third-party damage – the targets provide an important benchmark for evaluating the effectiveness of asset management and reliability driven programs and guiding capital investment decisions.

London Hydro uses outage analytics, asset condition information, and risk assessments to evaluate reliability performance, identify the causes of customer interruptions, and prioritize investments that provide the greatest long-term reliability benefit to the system and customers.

Maintaining the level of reliability currently experienced by customers cannot be achieved by continuing historical investment levels alone. As the distribution system continues to age and customer demand grows, increased investment is required to offset asset deterioration, replace end-of-life infrastructure, and strengthen system resiliency. This need is reinforced by the fact that equipment failure has been the leading contributor to both customer interruptions and customer-hours of interruption over the past five years. Without increased investment in asset renewal and modernization, maintaining and improving current reliability performance, and achieving the increasingly stringent reliability targets, would become progressively more difficult.

Accordingly, the proposed capital plan includes targeted investments that support the long-term achievement of London Hydro's reliability targets through:

- Renewal of end-of-life overhead and underground distribution assets.
- Targeted replacement of high-risk assets identified through condition assessments and asset health analysis.
- Proactive vegetation management (O&M initiative leveraging satellite-imagery-based analytics).
- Grid modernization initiatives, including distribution automation, ADMS implementation, and enhanced outage management capabilities.
- Inspection, testing, condition-based asset management programs, and Early Fault Detection (EFD) technology to identify emerging failures before they result in customer outages.

Together, these programs demonstrate how the reliability targets have been incorporated into London Hydro's asset management and capital planning processes. The proposed capital plan reflects a balanced approach that seeks to maintain and improve reliability where justified, while ensuring investments remain prudent and deliver value for customers. As reliability performance improves, further incremental gains typically require progressively greater investment for comparatively smaller improvements in customer outcomes. Consistent with customer engagement undertaken for this DSP, the proposed capital plan balances reliability and affordability, recognizing that customers are generally satisfied with the current levels of reliability.

5.3 Asset Management Process

London Hydro applies a structured Asset Management (AM) process to plan, prioritize, and optimize expenditures across its distribution system. The AM process ensures that investment decisions are systematic, data-driven, and directly linked to corporate objectives and customer needs. The purpose of this section is to describe London Hydro's AM framework, demonstrate how it informs the capital planning process, and show the linkage between AM activities and the capital investment plan presented in this Distribution System Plan.

London Hydro's AM process seeks to balance the outcomes most valued by customers - safety, reliability, and cost. Through customer surveys and engagement activities, London Hydro has consistently confirmed that customers prioritize safe and reliable service delivered at reasonable cost.

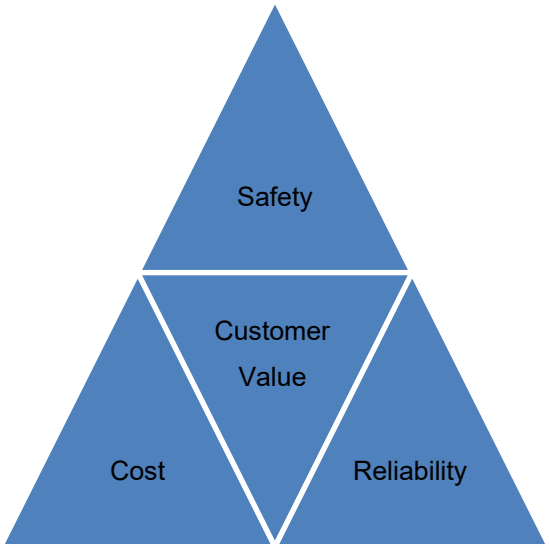


Figure: 6 Customer Value Triangle - Safety, Reliability, Cost

5.3a Asset Management Process Overview

At the core of London Hydro's AM process is an engineering-driven planning approach that applies a life-cycle perspective to system assets. Engineering principles guide decisions on how each component should operate, be monitored, maintained, and replaced, while maintaining the balance of safety, reliability, and cost.

London Hydro's AM framework is outlined in its internal guidance document Engineering Instruction 31 (EI-31): "Asset Management and Capital Expenditures Planning – Policy and Processes" (Appendix E). EI-31 defines the governance structure, responsibilities, and procedures for identifying, selecting, and approving capital and maintenance projects. It is reviewed and updated periodically to reflect evolving customer expectations, industry best practices, and the regulatory environment.

London Hydro recognizes that asset management practices operate along a continuum – from low effort reactive maintenance (replacing assets upon failure) to extreme effort highly intensive preventive programs (comprehensive inspection and testing of every equipment, and proactive replacement). As asset management process maturity increases, so do capital efficiency, system performance, and overall customer value through improved safety, reliability, and cost optimization. However, beyond an optimal level of rigor, additional asset management activities, such as expanded monitoring, testing, and evaluation, produce diminishing returns in performance and can introduce unnecessary administrative and operational costs.

The overarching goal of London Hydro's AM process is therefore to operate near the "efficient frontier": the optimal position at which incremental investment in asset management practices provides the greatest net benefit to customers by balancing safety, reliability, and cost-effectiveness without imposing undue administrative burden.

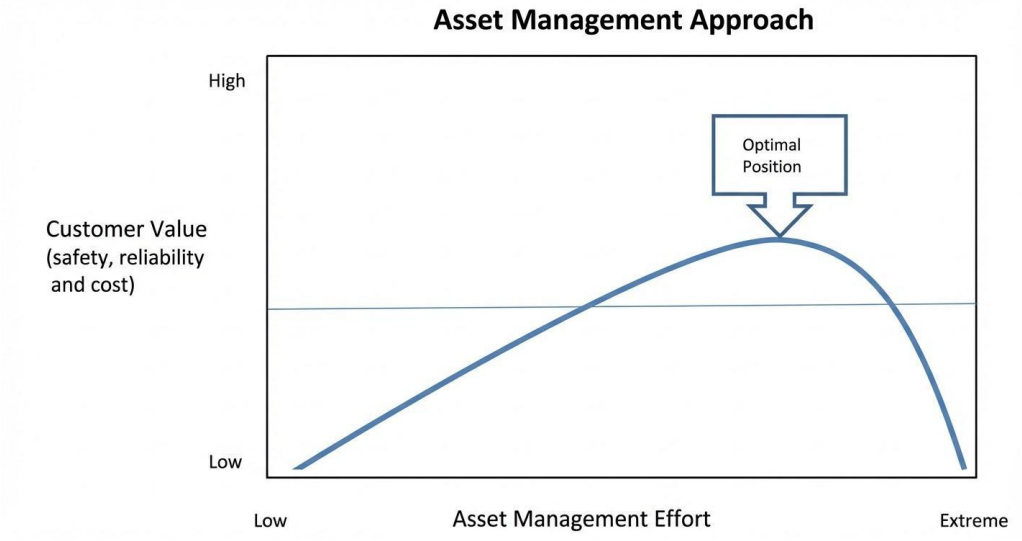


Figure: 7 London Hydro's Asset Management Approach

To achieve this balance, London Hydro:

- Maintains a qualified mix of internal and external experts
- Ensures staff have access to relevant training and professional development
- Networks with industry peers to review and incorporate best practices
- Monitors asset performance metrics (e.g., outage trends, condition indices) to guide decisions

London Hydro's AM framework aligns with the OEB performance outcomes of **Customer Focus, Operational Effectiveness, Public Policy Responsiveness, and Financial Performance**. The company's AM objectives and corporate mission form the foundation for its capital planning process.

London Hydro's Asset Management Policy (EI-31 in Appendix E of this DSP), identifies the Asset Management objectives as follows:

London Hydro continually seeks innovative methods to meet the following objectives, while balancing the competing needs of its stakeholders.

Safety – ensuring that London Hydro's assets are maintained in a safe condition so they never cause injury to employees or the public;

Regulatory – ensuring that London Hydro complies with all legislative requirements;

Environmental – ensuring that the assets are managed in an environmentally responsible manner by meeting and, where practical, exceeding all environmental regulatory requirements;

Capacity – ensuring that the distribution system has sufficient capacity to supply both new and existing customer loads and, where appropriate, connect new generation facilities;

Reliability – ensuring that London Hydro's reliability performance meets or exceeds OEB requirements and equals or is better than the average of its LDC peer group;

Customer Focus – ensuring that services are provided in a manner that responds to customer preferences when they are identified and practical;

Losses – ensuring that the distribution system's technical losses are effectively minimized through the introduction of changes in system design or operating practices;

Costs – ensuring that the lifecycle costs of London Hydro's assets are optimized while meeting the above objectives and ensuring that capital expenditures are paced to levelize the impact on customer bills.

These objectives align with the Guiding Principles identified in the Asset Management Plan.

Safety – ensure our system is safe – for the public as well as workers

Reliability – ensure our system can provide the level of reliability expected by our customers

Capacity – ensure our system can accommodate the growing needs for load and generation

EI-31, Appendix E, is referenced throughout this section. The Asset Management Plan, Appendix B, provides further detail on the components and processes that underpin London Hydro's asset management framework.

5.3b Governance and Accountability

London Hydro's asset management and capital planning functions are governed by an internal hierarchy of accountability:

- **Board of Directors and Senior Executive Team** – establish corporate strategy, approve annual capital budgets and the five-year DSP budget, and oversee pacing of investments to manage rate impacts
- **Directors and Department Managers** – identify and prioritize projects consistent with AM objectives and budget envelopes
- **Asset Management and Engineering Teams** – apply data-driven tools and methodologies (per EI-31) to develop investment options and recommendations
- **Operations and Maintenance Teams** – execute approved programs and provide field data for continuous improvement

Decision-making follows a transparent "top-down and bottom-up" process that ensures capital plans are aligned with strategic priorities, regulatory compliance, and customer expectations.

5.3.1 Planning Process

5.3.1a Planning Process Overview

London Hydro's planning process forms the foundation of its five-year capital plan and ensures investments are strategically aligned, risk-based, and customer-focused.

The process includes the following key steps:

1. **Identification of needs** - through condition assessments, performance data, forecasts, and customer input
2. **Evaluation of options** – refurbishment, replacement, operational alternatives, or non-wires solutions
3. **Prioritization and optimization** - based on risk, cost, and customer value
4. **Sequencing and pacing** - to balance affordability, system performance, and implementation capacity
5. **Review and adjustment** - to reflect emerging information and evolving needs

A high-level overview of the process for managing the assets of London Hydro is summarized in the following flowchart (Figure 8). Each step of the Lifecycle is described in detail in EI-31 and is summarized in Section 5.3.1.1.

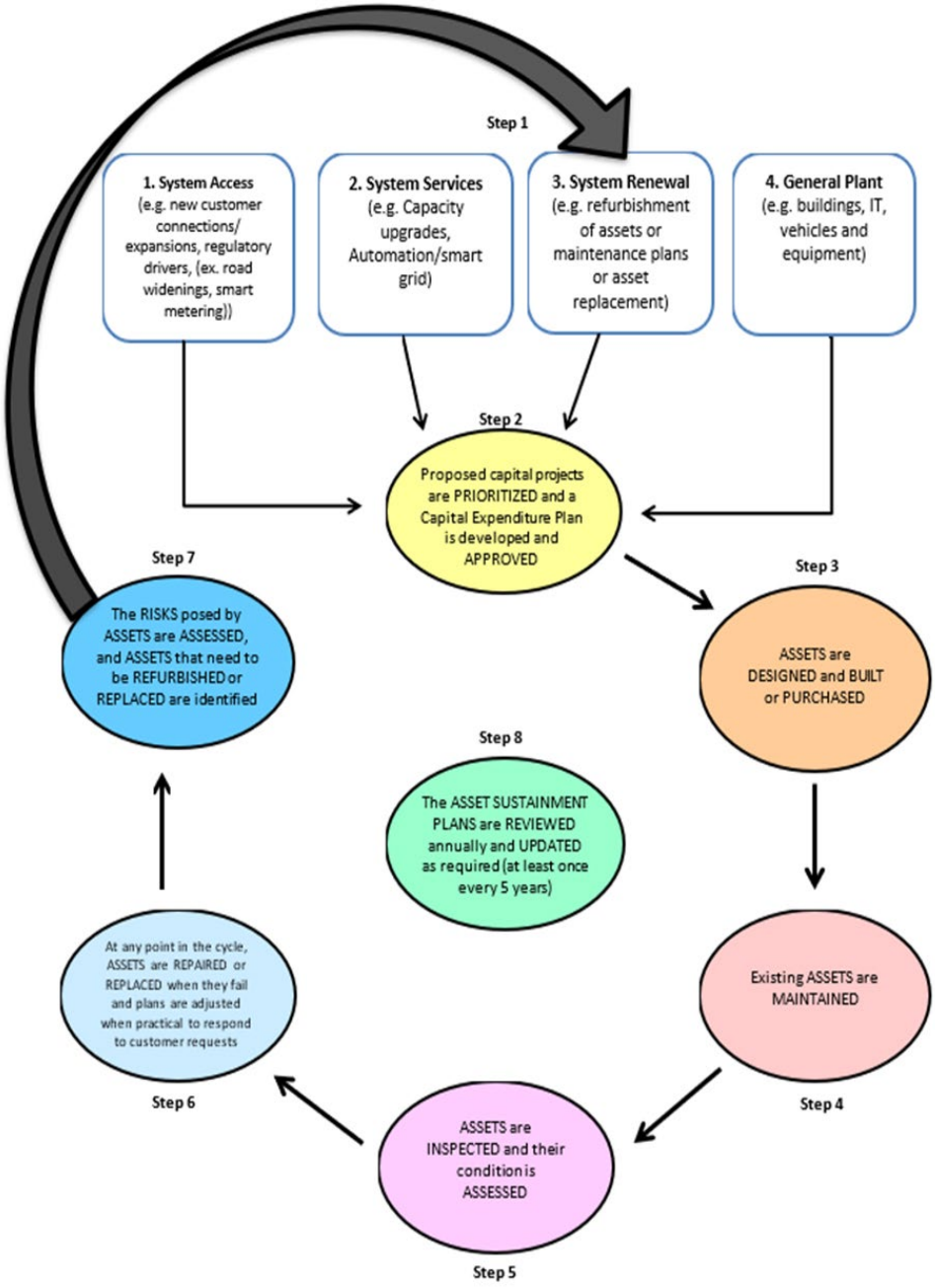


Figure: 8 Asset Management Lifecycle

5.3.1b Changes to Asset Management Process Since Last DSP

Since the last DSP filing, London Hydro has implemented a series of targeted enhancements to its asset management process to improve data quality, analytical capability, and decision-making rigor. These refinements support more consistent, risk-informed planning and strengthen alignment between asset condition, investment prioritization, and long-term system needs. Collectively, these improvements enable more direct translation of asset condition and risk insights into capital planning outcomes, supporting more efficient prioritization of investments and improved alignment with system needs identified in this DSP.

Enhanced data quality and asset information management

London Hydro has improved both the scope and quality of asset data used to inform planning decisions. Key advancements include the expansion of condition data coverage through enhanced inspection programs, improved GIS integration, and modernization of field data collection practices. The conversion of legacy scanned subdivision drawings into GIS has materially improved the accuracy and completeness of underground asset records, while mobile tablet-based inspections have enabled more standardized and efficient data capture in the field.

Inspection and testing programs have also been refined to better align with industry best practices. For example, inspection frequency for padmounted transformers has been increased for units exceeding 35 years of age, enabling earlier identification of deterioration that may pose safety or environmental risks. Expanded application of Very Low Frequency (VLF) cable testing has improved the identification and prioritization of deteriorated underground cable assets. In addition, asset attribute completeness has been enhanced, including the near-complete closure of historical data gaps related to switchgear age.

To further improve consistency and reduce subjectivity, London Hydro has implemented enhanced training and standardized evaluation criteria for condition assessments of padmounted transformers. Asset condition testing results for cable assets have been integrated into GIS systems, enabling both Engineering and Operations staff to incorporate condition and risk information directly into project planning and design activities. This integration supports more targeted identification of deteriorated cable assets and improves the efficiency of capital program development by linking condition-based insights directly to project scoping and prioritization.

Advancement of analytical tools and asset condition assessment methodology

London Hydro has adopted the ENGIN platform (Engineered Intelligence Inc.) to support its Asset Condition Assessment (ACA) program. While maintaining the philosophy of the previous assessment, the

updated approach places greater emphasis on condition-based inputs relative to age, resulting in more representative asset health scoring.

In addition, London Hydro is planning to advance the use of ENGIN's analytical capabilities through implementation of optimization and forecasting modules. These tools will enable scenario-based investment planning, support evaluation of alternative investment strategies, and enhance the utility's ability to assess long-term system impacts under varying assumptions related to asset condition, load growth, and risk tolerance. This represents a transition toward a more adaptive and forward-looking asset management framework that can be refined as new data becomes available.

Refinement of asset-specific strategies and lifecycle assumptions

Targeted studies have been undertaken to refine lifecycle strategies for specific asset classes. For maintenance hole and vault structures, London Hydro engaged AECOM to conduct detailed condition and risk assessments of high-risk and aged assets. This work informed updated service life assumptions – extending expected life for concrete and masonry structures in alignment with broader civil infrastructure standards – while also reinforcing the need to prioritize assets approaching or exceeding service life due to the limitations of visual inspection in detecting hidden deterioration. These insights have been incorporated into replacement planning to support more levelized and risk-informed capital investment.

Similarly, enhancements to substation asset management practices, including updated power transformer oil testing guidelines, support improved condition monitoring which enables a better optimization of asset life. This contributes to more efficient coordination of substation renewal strategies, including ongoing system voltage conversion initiatives. These refinements support more effective timing of renewal investments and reduce the likelihood of premature replacement or in-service failure, contributing to improved reliability outcomes and more efficient capital deployment.

London Hydro has also enhanced its approach to wood pole condition assessment through the adoption of resistograph testing, replacing the previous sound and bore methodology. This transition provides more precise, quantitative measurement of internal wood condition and decay – improving the accuracy and consistency of pole health assessments. Early results from the updated program indicate a higher identification rate of structurally compromised poles relative to the previous approach, supporting more proactive identification of high-risk assets. This improvement enables more targeted pole replacement planning, reduces the risk of in-service failure, and strengthens alignment between condition assessment outputs and system reliability and safety objectives.

Improved Capital Tracking and Feedback Into Planning

London Hydro has strengthened its ability to track capital expenditures and associated unit quantities at a program level. This enhancement enables improved validation of planning assumptions, supports benchmarking of unit costs and productivity, and provides greater visibility into the relationship between planned and actual asset replacement outcomes. These feedback mechanisms enhance the utility's ability to continuously refine investment forecasts and manage variance across planning cycles.

This improved feedback loop enables London Hydro to better calibrate future capital plans based on observed outcomes, supporting continuous improvement in forecast accuracy and enhancing transparency in the relationship between planned investments and delivered results, as discussed in Sections 5.2.3.1 and 5.4.

Emerging Risk Considerations – Vandalism and Asset Security

London Hydro has also incorporated emerging risks, such as increased copper theft, into its asset management considerations. In 2025 alone, assets with a replacement value of more than $796,500 were stolen or damaged resulting in real risks to public safety, worker safety, and power quality. The utility has undertaken coordination with municipal and law enforcement partners and implemented targeted mitigation measures, particularly within the downtown network vaults. However, given the scale and dispersion of underground distribution assets across the system, theft risk remains a persistent operational and financial consideration. As a result, provisions for asset reinstatement and ongoing mitigation measures of approximately $520,000 per year have been incorporated into planning assumptions.

Integration with Broader DSP Planning Framework

The enhancements described above are integrated with London Hydro's broader planning framework and directly support key DSP pillars, including reliability performance, system resilience, and prudent capital planning. Improved asset condition data and analytics inform reliability-focused investments by enabling more precise targeting of assets contributing to outages and power quality issues. In addition, outputs from the asset management process are increasingly aligned with vulnerability and system hardening (VASH) assessments, supporting identification of assets exposed to climate-related risks and informing mitigation strategies such as pole replacement, vegetation management, and targeted system hardening.

Furthermore, the integration of asset data, analytical tools, and enterprise systems – including GIS, OMS, and planned ADMS capabilities – supports a more coordinated and data-driven approach to both

planning and operations. This integration enhances situational awareness, improves outage response, and ensures that planning decisions are informed by both long-term asset condition trends and real-time operational insights.

5.3.1.1 Process

London Hydro employs an integrated capital planning process that balances technical risk assessment with strategic financial constraints to optimize customer value. This process combines bottom-up project identification and ranking with top-down governance to establish an annual Capital Budget and a rolling five-year capital expenditure forecast that aligns with corporate objectives and regulatory obligations.

5.3.1.1a Investment Identification and Selection

The process for identifying investment needs is systematic and informed by multiple data sources and analytical inputs. Once identified, each potential investment is classified based on its primary driver and is supported by documented justification and thorough analysis.

Investment needs are primarily identified through the following channels:

- **Compliance Obligations:** Addressing mandatory requirements from regulatory bodies and legislation, including the OEB, the Electrical Safety Authority (ESA), and environmental regulations.
- **Load and Capacity Forecasts:** Evaluating projections of system demand and capacity requirements, accounting for emerging trends such as electrification and the integration of DERs.
- **Asset Condition Assessments:** Utilizing data from physical inspections, diagnostic testing, and analysis of asset age demographics to determine the condition of infrastructure.
- **System Performance Monitoring:** Analyzing key metrics and trends, such as reliability indices and historical outage data, to identify areas requiring performance improvement.
- **Customer and Stakeholder Feedback:** Incorporating input gathered through both formal and informal channels like customer surveys, public consultations, development requests, C&I outreach, and stakeholder engagement.

While needs and opportunities are identified throughout the year, the annual Capital Budget is predominantly driven by the formalized Asset Sustainment Plan (ASP). The ASP is the principal source

for projects classified under the System Renewal category. This plan undergoes an annual review and is comprehensively updated at least once every five years. The ASP can be found in Appendix C.

Each category of investment – System Access, System Service, System Renewal, and General Plant – adheres to a defined process. These processes are formally outlined in the flowcharts included in EI-31, Step 1.

5.3.1.1b Prioritization, Optimization, and Pacing

London Hydro recognizes a key goal of capital planning is to achieve a balance between system needs and affordability. This plan includes modest and reasonable projections for sustainment spending, and carefully considered projects related to growth and building for the future. All projects considered have merit, but the process undertaken by London Hydro allows for a level of pacing that balances systems needs with affordability. That process is discussed below.

Following the identification and selection of candidate capital expenditures (Step 1 of the Asset Management Lifecycle), London Hydro applies a systematic prioritization, optimization, and pacing methodology (EI-31, Step 2, page 14). Projects originating from the Asset Sustainment Plan are evaluated using an Analytical Ranking Model that employs weighted criteria reflecting corporate priorities and regulatory obligations.

Table 15 Analytical Ranking Model Criteria and Weights

Criterion	Weight (%)
Safety	35
Reliability	25
Environment	15
Capacity	15
Efficiency	10

Each project receives a composite score based on these weighted factors, including the primary drivers defined in EI-31 (reliability, safety, environmental benefits, capacity, efficiency, and customer value) and applicable secondary drivers. This quantitative assessment produces a ranked list of candidate investments. To ensure objectivity and minimize bias, rankings are validated by an internal review committee composed of senior engineers and managers who are not directly involved in project

development. This process ensures that capital expenditures are directed toward the areas of highest risk mitigation and customer value.

Strategic Financial Framework

London Hydro's Board of Directors, in collaboration with senior management, establishes annual capital spending targets informed by corporate constraints including cash flow requirements, spending levelization objectives, and the balance between asset sustainment needs and customer preferences. These strategic parameters define the financial envelope within which capital investments must be optimized.

Integration and Optimization

The capital planning process integrates technical prioritization with strategic financial constraints through an iterative optimization approach. Engineering, Operations, and IT personnel identify and rank all potential projects in alignment with the AM Objectives established in Section 5.3a. Directors and Managers subsequently propose specific project portfolios designed to meet the approved annual budget target, while achieving Asset Management Plan objectives.

The Senior Executive team and Board of Directors determine the overall pace of capital investment across both short-term and long-term horizons, ensuring that the investment strategy considers bill impacts, accommodates customer preferences, and addresses asset sustainment requirements, including any proposed renewable energy generation (REG) investments.

Project Categories and Forecasting Approaches

London Hydro's capital portfolio encompasses multiple investment categories, each governed by distinct planning methodologies:

- **Asset Sustainment Projects** are prioritized using the Analytical Ranking Model described above, with detailed procedures outlined in EI-31.
- **Customer-Driven Work**, including new and upgraded connections for load and distributed generation, subdivision development, and line relocations required for municipal infrastructure projects, is forecasted based on historical demand patterns and consultation with customers, developers, and municipal planning authorities.
- **System Capacity Projects**, such as transformer station additions or upgrades, feeder expansion or enhancement, and switching capability improvements, are identified through short-term and

long-term load forecasting combined with standardized planning criteria, contingency analysis, Asset Sustainment Plans, distributed generation integration requirements, municipal development plans, and Regional Planning coordination.

- **Grid Modernization Projects,** such as ADMS, DERMS, smart meter renewal, and automation are identified based on customer expectations, technology obsolescence, industry best practices, and regulatory obligations.

- **Information Technology Projects** are prioritized based on regulatory compliance requirements (billing system modifications, meter data management), customer preference initiatives (digital service enhancements), and internal operational needs (technology modernization, process automation, business system support).

- **Fleet and Facilities Projects** are driven by asset management lifecycle decisions to replace or upgrade capital assets (vehicles, HVAC systems, furniture) and capacity requirements to support operational growth (substation properties and buildings, facility expansions or renovations).

Dynamic Budget Management and Reprioritization

London Hydro maintains flexibility to reprioritize capital investments throughout the five-year DSP to respond to changing circumstances, emerging risks, and evolving customer and system needs. The Capital Plan is reviewed and refreshed annually to reflect updated asset condition and performance information, system reliability trends, customer growth, project delivery status, regulatory requirements, cost increases due to inflation, and other emerging risks. This ongoing review ensures that capital investments remain aligned with London Hydro's highest priorities while supporting the efficient use of ratepayer funding.

Throughout both the planning and execution phases of the Capital Plan, senior management regularly reviews project priorities to determine whether investments should be advanced, deferred, rescoped, or substituted in response to changing conditions. Reprioritization decisions are guided by the same risk-based investment framework used to develop the Capital Plan, considering factors such as asset health and performance, reliability and safety impacts, regulatory obligations, operational requirements, interdependencies with other projects, and overall value to customers.

Where emerging requirements cannot be accommodated through reprioritization within the approved capital budget – for example, in response to significant customer requests, cost increases due to inflation, major equipment failures or damage, or new regulatory obligations – management may present a business case to the Board of Directors requesting an adjustment to the annual capital spending

authorization. Such requests include an assessment of the impacts on the five-year Capital Plan and demonstrate continued alignment with London Hydro's strategic objectives, long-term investment priorities, and prudent stewardship of ratepayer resources.

Guiding Framework

As described in Section 5.3a, London Hydro's Asset Management Objectives provide overarching guidance for investment prioritization decisions. These objectives are organized into three priority tiers rather than individually ranked:

- **Obligations:** Projects required to meet safety, legal, and regulatory duties.
- **Performance:** Investments needed to maintain or improve system reliability, efficiency, and capacity adequacy.
- **Customer Preference and Cost:** Work driven by customer requests, service enhancements, and affordability.

This tiered framework ensures that mandatory requirements are fulfilled, at the same time, optimizing discretionary investments to maximize customer value within available financial resources.

In summary, London Hydro applies optimization to align the timing and sequencing of investments with available funding, resource capacity, and system dependencies. If financial constraints arise, the Board of Directors reviews and approves any adjustments to the capital plan. Projects are paced to maintain rate stability, maximize efficiency, and coordinate with municipal or third-party works.

5.3.1.1c Alignment with Customer Needs and Feedback

Customer needs and feedback are integral to London Hydro’s investment planning process. The utility systematically incorporates input obtained through customer engagement activities and expressed service expectations into its Selection, Prioritization, Optimization, and Pacing framework. This integration ensures that capital investments reflect customer priorities and deliver optimal value to ratepayers.

London Hydro employs multiple engagement mechanisms to inform investment decisions, including periodic customer satisfaction surveys, stakeholder workshops, and targeted consultations with key customer segments. These activities provide both quantitative and qualitative insights into customer preferences regarding service reliability, safety, investment priorities, and affordability.

Feedback gathered through these channels consistently indicates that customers value three core service attributes: safety, reliability and cost. Customers emphasize the need for safe, well-maintained infrastructure, while also expressing a strong preference for cost-effective service delivery and stable, affordable rates. This balance between safety, service quality and affordability forms the foundation of London Hydro's value proposition and directly guides capital allocation decisions.

London Hydro's capital investment strategy is structured to respond to these expressed preferences. Planned investments in grid modernization, asset sustainment, and system reliability are designed to strengthen safety outcomes and improve service continuity while maintaining cost discipline. The Analytical Ranking Model, described in the preceding section, embeds customer value criteria within the prioritization process to ensure that each investment decision appropriately balances performance improvement with rate impact.

Through this integrated and evidence-based approach, London Hydro ensures that its capital plan remains aligned with customer priorities: delivering measurable enhancements in the service attributes that matter most to ratepayers, while sustaining the affordability that customers identify as essential to acceptable utility performance.

5.3.1.1d Risk Assessment of Capital Expenditures

London Hydro evaluates the risks and benefits associated with proceeding or not proceeding with each proposed capital project or program. This assessment informs decisions on the optimal timing, scope, and approach for investments, balancing system reliability, safety, environmental stewardship, and cost-effectiveness.

Risk evaluation is an integral component of London Hydro's asset management and investment planning framework. It assesses both the risk of asset failure and the risk of investment deferral for each asset class and project. Risks are evaluated based on their potential impacts to:

- **Reliability:** likelihood and consequence of service interruptions or equipment failure
- **Safety:** hazards to workers or the public
- **Environment:** potential for spills, contamination, or regulatory non-compliance

Risk data are collected through inspections, maintenance, and condition assessments, and recorded within the ASP database. These data are analyzed to identify trends and to support both near-term capital

prioritization and long-term lifecycle planning. Details of the risk assessment process for each asset category are provided in the ASP and in EI-31 Step 7, which outlines the procedures and responsibilities for assessing asset failure risk and defining appropriate mitigation actions.

During inspections and maintenance activities, qualified personnel assess individual components for failure risk. Where imminent failure is identified, the asset is repaired or replaced immediately, or flagged for urgent work. For assets not requiring immediate intervention, condition and performance data are used to update risk profiles, enabling forecasted replacement planning based on risk trends and asset condition.

Risk assessment results are also used to prioritize projects within the annual capital budget process. As described in EI-31 Step 2, Appendix E, London Hydro applies an Analytical Ranking Model to rank projects using the five weighted criteria identified in Section 5.3.1.1b.

Each project receives a composite Health Index score derived from asset condition, performance, and risk factors. This model minimizes subjectivity in investment prioritization and ensures that risks are addressed while maintaining alignment with corporate and regulatory objectives.

Project rankings are reviewed by a multidisciplinary team of distribution engineers and managers independent of the original project proponents to ensure objectivity. The results are subsequently reviewed by senior management to confirm that prioritization outcomes are consistent with corporate strategy and customer value objectives.

Where capital expenditure reductions are required, the ranking results provide a transparent basis for identifying lower-priority projects that may be deferred or scaled back, ensuring that deferral decisions do not compromise safety, reliability, or environmental compliance. Details regarding the ranking of each project are included in the material investment (project) sheets.

5.3.1.1e System Optimization and Innovation

London Hydro's Investment Planning incorporates a whole-system perspective to achieve cost-effective and reliable outcomes. This includes assessing opportunities for grid optimization, the use of non-wires solutions where appropriate, and the adoption of innovative technologies that enhance reliability and efficiency to work in concert to meet evolving customer needs in a cost-effective manner.

Section 5.3.1.1b demonstrates London Hydro's approach to system optimization which includes prioritization and pacing of all projects in four categories: System Access, System Renewal, System Service, and General Plant.

London Hydro employs a whole-system planning approach to ensure cost-effective and reliable outcomes.

This includes:

- Assessing non-wires alternatives (NWA) for deferral of traditional investments.
- Integrating Distributed Energy Resources (DERs) into capacity and reliability planning.
- Leveraging automation, ADMS/DERMS systems, and data analytics to enhance grid performance.
- Pursuing innovative pilots that support regulatory modernization and customer value.

5.3.1.1f Planning for Future Capacity Needs

Planning for Future Capacity Needs

London Hydro maintains a comprehensive capacity planning process to assess and address long-term distribution system requirements in response to evolving demand patterns, including the impacts of transportation and building electrification. This planning framework is designed to comply with OEB requirements and incorporates the methodologies recommended in the "Load Forecast Guideline for Ontario" published by the Regional Planning Process Advisory Group (RPPAG) in November 2022.

Capacity Assessment Methodology

London Hydro assesses future capacity needs through a spatial load forecasting methodology that addresses three critical dimensions of demand growth: magnitude (how much load growth is expected), timing (when growth will materialize), and location (where on the distribution system growth will occur). This multidimensional approach enables the utility to identify the most cost-effective solutions for addressing anticipated demand, while optimizing the utilization of existing infrastructure.

The capacity assessment process examines available headroom at both the distribution feeder level and transformer station level. This holistic review identifies opportunities for load rebalancing and system reconfiguration that can defer, stage, or minimize capital investments in new supply capacity, thereby reducing rate impacts and maintaining service adequacy.

To ensure the DSP remains adaptable under both lower- and higher-growth scenarios, London Hydro refreshes its load forecast annually and continuously monitors regional development, customer

connection trends, and broader electrification drivers. This regular reassessment supports the prudent timing, pacing, and prioritization of both near-term and long-term capacity investments, allowing the utility to defer projects where growth is slower than anticipated or accelerate strategic infrastructure development where demand materializes more rapidly than forecast.

Demand Forecasting Framework

London Hydro's demand forecasting methodology aligns with OEB's mandate to support economic growth, discussed further in Exhibit 1, and integrates multiple data sources to develop comprehensive spatial load projections:

- **Municipal Development Plans:** The City of London's official forecasts for residential development (low-density, medium-density, and high-density housing) and Industrial, Commercial, and Institutional (ICI) development provide the foundation for growth projections.

- **Large Customer Intelligence:** Direct engagement with London Economic Development Corporation and major electricity consumers provide insight into new large customers and existing planned facility expansions, operational changes, and load requirements that may not be captured in aggregate municipal forecasts.

- **Electrification Trends:** Forecasts explicitly incorporate emerging demand drivers consistent with RPPAG guidance, recognizing that electrification is fundamentally altering historical growth patterns. London Hydro draws upon the Sustainability Solutions Group’s assessment – prepared for the City of London as part of its Climate Emergency Action Plan – which modelled greenhouse gas emissions under various future scenarios. This assessment served as a key input to London Hydro’s growth projections for electrification trends.

  In accordance with OEB directives and RPPAG guidance, London Hydro's load forecasts explicitly account for electrification as a transformative demand driver that deviates from historical trends:

- **Electric Vehicle (EV) Adoption:** EV load forecasts consider light-duty vehicle electrification, incorporating assumptions regarding residential charging behaviour, spatial distribution of EV ownership, and diversity in charging patterns. The forecasts reflect recent market dynamics, including slower-than-anticipated uptake rates and adjustments to federal zero-emission vehicle mandates, ensuring that projections remain aligned with observable adoption trajectories.

- **Building Electrification:** Forecasts incorporate heating electrification driven by heat pump adoption trends in the residential sector. This projection utilizes Canada Energy Regulatory Energy Future 2023 (EF2023), Net Zero projections for residential space heating and the incremental winter peak demand impacts characteristic of cold-climate heat pump operation.

  These electrification components represent substantial departures from historical load patterns and are therefore modeled explicitly rather than extrapolated from historical trends, consistent with RPPAG's recognition that "electrification is expected to change the growth patterns such as they are not well represented by historical trends."[6]

Sensitivity Analysis and Scenario Planning

To address uncertainty in demand forecasting, London Hydro applies the sensitivity analysis framework recommended in the OEB's Load Forecast Guideline. The utility develops three distinct forecast scenarios – Low, Reference (medium), and High – each incorporating different assumptions regarding:

- **Growth certainty factors:** Probability of planned development proceeding as scheduled
- **Diversity factors:** Coincidence of individual loads within aggregated demand
- **Electrification penetration rates:** Range of potential EV and heat pump adoption trajectories

This scenario-based approach enables London Hydro to identify investment requirements that are robust across multiple futures ("no-regret investments"), while maintaining flexibility to adjust capital plans as actual demand patterns emerge. The Reference scenario represents the utility's best reasonable forecast based on current information and stakeholder input, while the Low and High scenarios bound the range of plausible outcomes for planning purposes.

Regional Planning Coordination

London Hydro participates actively in Ontario's Regional Planning process, currently in its third planning cycle in the Integrated Regional Resource Planning (IRRP) phase. As a member of the regional Technical Working Group (TWG), London Hydro collaborates with neighboring Local Distribution Companies (LDCs), Hydro One Networks, and the Independent Electricity System Operator (IESO).

[6] Ontario Energy Board (OEB), Load Forecast Guideline for Ontario (October 13, 2022), Section 6.2.1.

Forecasting methodologies are coordinated among Regional Planning participants to ensure consistency and alignment between distribution system and transmission system planning. London Hydro provides gross demand forecasts (demand excluding the offsetting effects of distributed energy resources and generation) to the regional process, while the IESO contributes electricity Demand Side Management (DSM) forecasts and applies extreme weather correction factors. These inputs are integrated to develop net demand forecasts at each transformer station interface point, enabling coordinated planning for system reinforcements that may involve both distribution and transmission infrastructure.

This collaborative approach ensures that London Hydro's capacity planning remains aligned with broader regional system requirements and leverages opportunities for coordinated investment that optimizes ratepayer value across multiple utilities.

Investment Identification and Optimization

London Hydro utilizes scenario-based forecasts to identify capacity investment requirements through a systematic screening process. Projects that appear necessary across all three scenarios (Low, Reference, and High) and demonstrate consistent timing requirements are designated as "no-regret investments" – capital expenditures that are prudent regardless of which demand trajectory materializes.

Prior to committing to supply capacity expansion, London Hydro conducts comprehensive reviews of existing system capacity to identify non-wires alternatives and operational solutions. Load transfer capabilities between feeders, voltage optimization opportunities, demand response potential, and strategic deployment of distributed energy resources are evaluated as mechanisms to defer or reduce the magnitude of traditional capital investments.

In summary, London Hydro's capacity planning framework provides a rigorous, forward-looking approach to assessing and addressing distribution system requirements in an era of fundamental demand transformation. By incorporating the OEB's Load Forecast Guideline, explicitly modeling electrification drivers including EV adoption and building heating conversion, applying scenario-based sensitivity analysis, and participating actively in Regional Planning coordination, London Hydro ensures that its distribution system will be positioned to meet evolving customer needs reliably and cost-effectively. This planning discipline enables the utility to make informed, timely investments that support Ontario's energy transition while maintaining the affordability and service quality that customers expect.

5.3.1.1g Process Summary

The following flowcharts (Figures 9, 10, 11, and 12) illustrate the process for developing the Capital Expenditures list. A dedicated chart is provided for each of the four investment categories (System Access, System Service, System Renewal, and General Plant) outlining the specific inputs, key steps, and outputs for each.

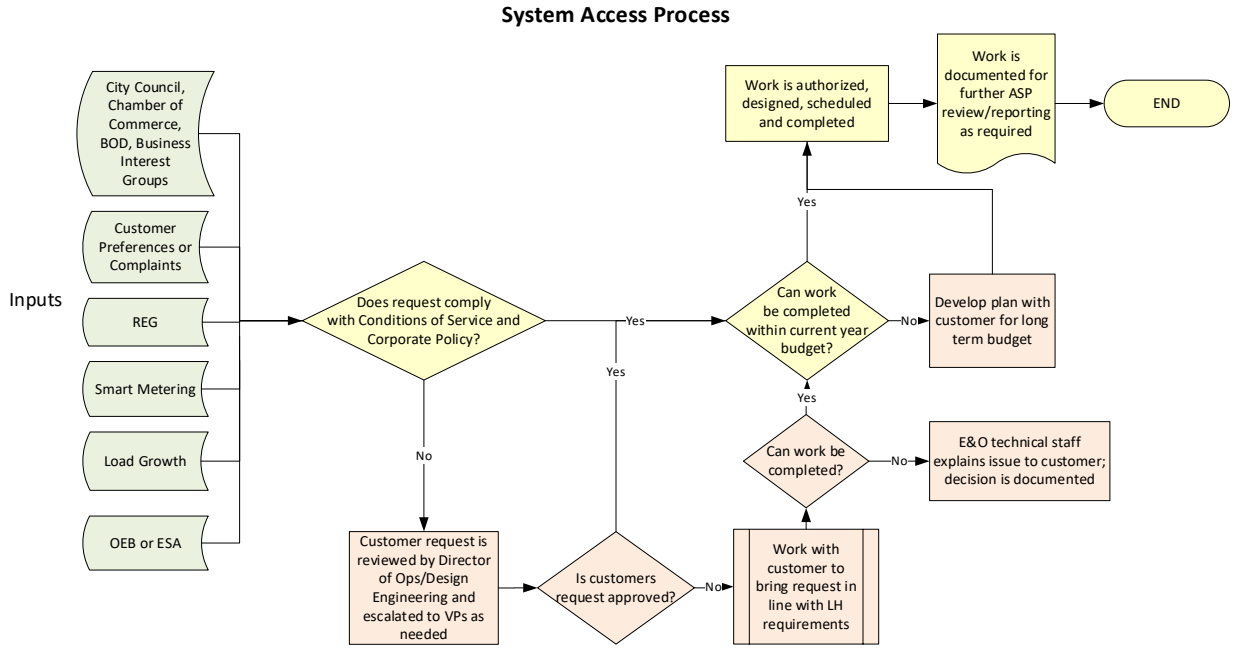


Figure: 9 Process for Determining Capital Expenditures for System Access

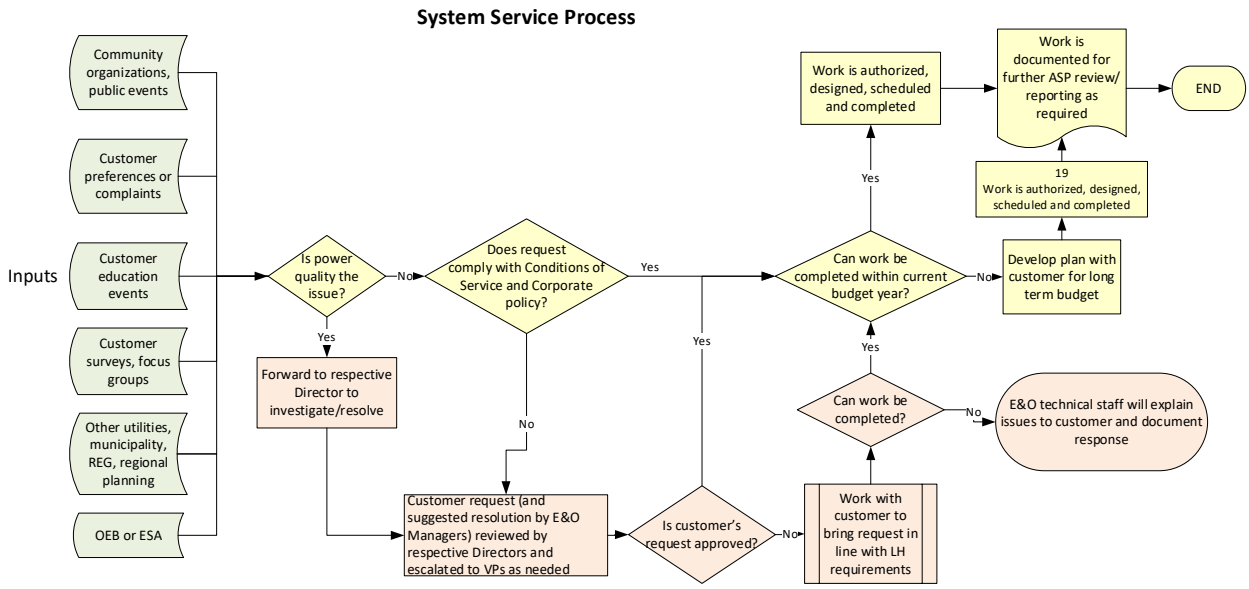


Figure: 10 Process for Determining Capital Expenditures for System Service

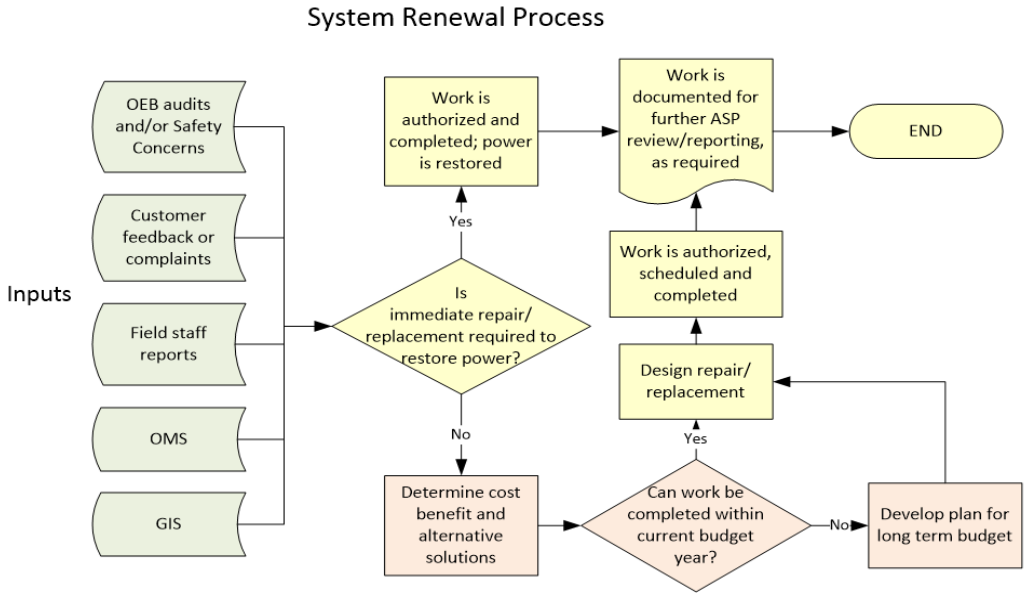


Figure: 11 Process for Determining Capital Expenditure for System Renewal

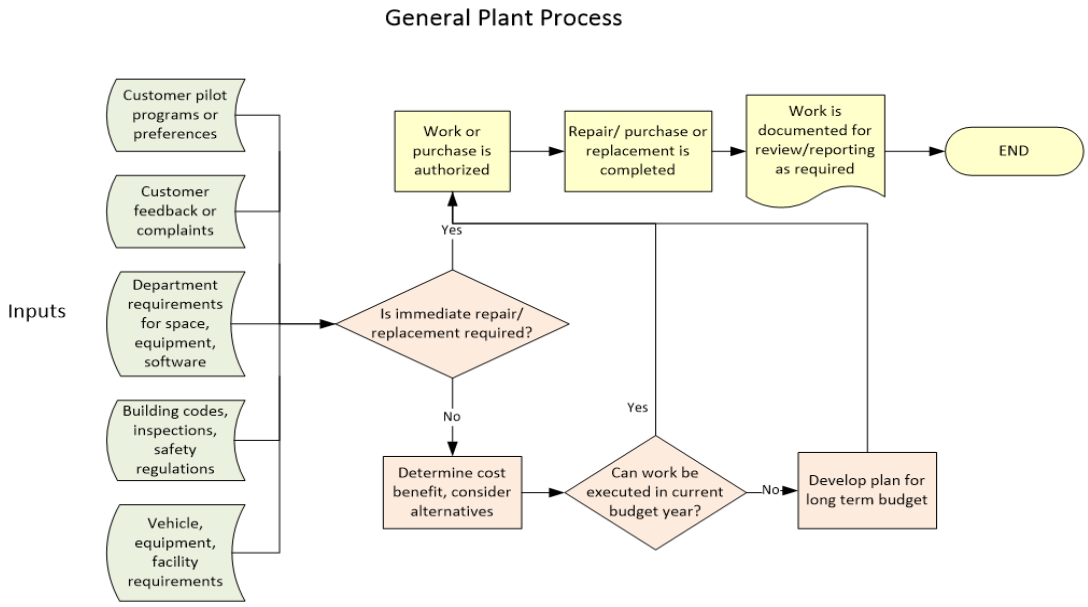


Figure: 12 Process for Determining Capital Expenditures for General Plant

5.3.1.2 Data

5.3.1.2a Data Sources

The company's asset management process is supported by a range of data sources that inform investment identification, prioritization, and optimization. These data sets provide the evidence base for assessing asset condition, system performance, and customer needs, and are critical to ensuring that capital plans are transparent, risk-based, and cost-effective.

Data are collected from:

- Field inspections and maintenance reports
- Asset Condition Assessments (ACA)
- Reliability Performance (outage and non-outage equipment failure trends, feeder and station level performance for SAIDI, SAIFI, and MAIFI)
- SCADA/OMS event logs

- GIS mapping and asset registries
- Customer engagement results
- Load forecasts and demand models
- Financial systems and cost databases

These datasets provide the analytical foundation for risk-based decision-making and performance monitoring.

For each major asset class, London Hydro maintains condition and performance data derived from inspections, testing programs, and failure history. Reliability performance data (e.g., SAIDI, SAIFI, MAIFI) are monitored to identify worst-performing assets and to evaluate the effectiveness of past investments. Customer engagement feedback is incorporated to ensure that investment decisions reflect customer expectations regarding reliability, safety, and affordability. Demand forecasts, prepared in accordance with the OEB's Load Forecast Guideline for Ontario, are used to assess future capacity requirements, including those driven by electrification and electric vehicle adoption.

5.3.1.2b Data Summary

Table 16 summarizes the major datasets used in planning, the purpose each serves, and recent enhancements in data quality since the last DSP filing. Together these datasets inform London Hydro's planning processes via various studies, such as the Asset Condition Assessment (ACA), customer surveys-informed planning, the construction of a new Transformer Station, etc. This summary demonstrates the increasing robustness of the company's asset information and its ability to support evidence-based decision making.

Table 16 Primary datasets used in London Hydro's Planning Process

Dataset	Data Collected	Purpose in Planning	Data Quality / Improvements
Overhead Conductors	Age, length, inspection results, failure history	Identify replacement/ refurbishment needs, assess reliability impact	Condition assessment expanded since last DSP; now >80% mapped in GIS
Overhead Components	Deficiencies by type (e.g. porcelain), failure history	Identify immediate vs planned replacement needs, assess reliability impact	Data collection increased to identify and track known locations for replacement planning

Dataset	Data Collected	Purpose in Planning	Data Quality / Improvements
Poles	Age, height, inspection & testing results, failure history	Identify immediate vs planned replacement needs	Improved testing methodology from Sound & Bore to the Resistograph method
Underground Cable	Age, length, sampling condition cable testing, failure history	Identify replacement needs, assess reliability impact	VLF Tan Delta Condition assessment expanded since last DSP (~10 km tested every year and the results tracked in GIS for performance assessment)
Distribution Transformers	Age, loading, inspections results, failure history	Predict failures, plan proactive vs. reactive replacements	Improved inspections program (all units over 35 years of age or potential leakers inspected more frequently); transformer Loss of Life (LOL) monitoring
Switchgear	Age, type (e.g. SF6), inspection results, failure history	Identify replacement/refurbishment needs, assess reliability impact	Collected age data for all assets except very few legacy junction splices from annexed area
Substations	Nameplate capacity, utilization, outage history	Identify capacity constraints, forecast upgrades needed	Integrated SCADA data allows real-time monitoring, combined with aggregated AMI data for Planning
Reliability Data	SAIDI, SAIFI, MAIFI by feeder, equipment failure trends and impacts	Identify worst-performing feeders, target reliability projects	Enhanced outage management system improves accuracy
Customer Engagement	Survey results, stakeholder workshops	Align investment priorities with customer expectations	New large-customer survey added in 2024
Load Forecasts	Historical demand, EV / heat pump adoption scenarios, municipal and economic development forecast, existing large customer expansion plans, municipal energy plans	Plan capacity investments, sensitivity testing	Applied OEB/RPPAG Load Forecast Guideline in 2025

5.3.2 Overview of Assets Managed

London Hydro's distribution system serves a diverse service area encompassing a mix of dense urban cores, established suburban neighbourhoods, and rural areas. Understanding the service area, asset condition, load growth and utilization is fundamental to supporting the capital expenditure plans presented in this DSP.

5.3.2a Service Area Overview

5.3.2a.1 Service Area Introduction

London Hydro services over 170,000 customers within the City of London and a municipal water pumping station (Arva) located immediately north of the municipal boundary. The total service area is approximately 423 square kilometers (split approximately 42% urban and 58% rural) and has a summer coincident peak load of approximately 714 MW with Generation contributing an additional 30 MW approximately in 2025[7].

The neighbouring LDCs are Hydro One Networks Inc., which supplies most of the rural areas outside of the municipal boundary of the City of London, and ERTH Power Corporation, which supplies the Belmont area to the southeast.

London Hydro has no retail metered embedded utilities connected to its distribution system. London Hydro is connected to a single host distribution system – Hydro One. There are six retail metered locations at which London Hydro is connected to Hydro One as a host utility. The following is a description of each host location and the approximate load. The total load through these retail points is less than 1% of London Hydro's total load and is considered negligible for planning purposes.

1. Highway 4: This is an approximate 550 kW three phase supply to London Hydro from Hydro One.
2. Westdel Bourne: This is an approximate 50 kW single phase supply to London Hydro from Hydro One.

[7] There is approximately 114 MW of connected DER with 30MW of DER contribution at the time of system peak representing 4.3% of peak demand and 26% of total connected DER capacity.

3. Sharon Road: This is an approximate 35 kW single phase supply to London Hydro from Hydro One.

4. Nissouri Road: This is an approximate 50 kW single phase supply to London Hydro from Hydro One.

5. Westminster Drive: This is an approximate 50 kW single phase supply to London Hydro from Hydro One.

6. Wilton Grove Road: This is an approximate 300 kW three phase supply to London Hydro from Hydro One.

London Hydro does not currently have transmission-level assets (> 50 kV) that have been previously deemed as distribution assets by the OEB. However, as part of this application, London Hydro is seeking OEB approval to deem a future high-voltage asset as a distribution asset. Specifically, London Hydro is proposing a new municipal transformer station (MTS-1) which is under development (in construction work-in-progress) with an anticipated in-service date of 2030-2031. This has been included within Exhibit 1, Section 4.14.

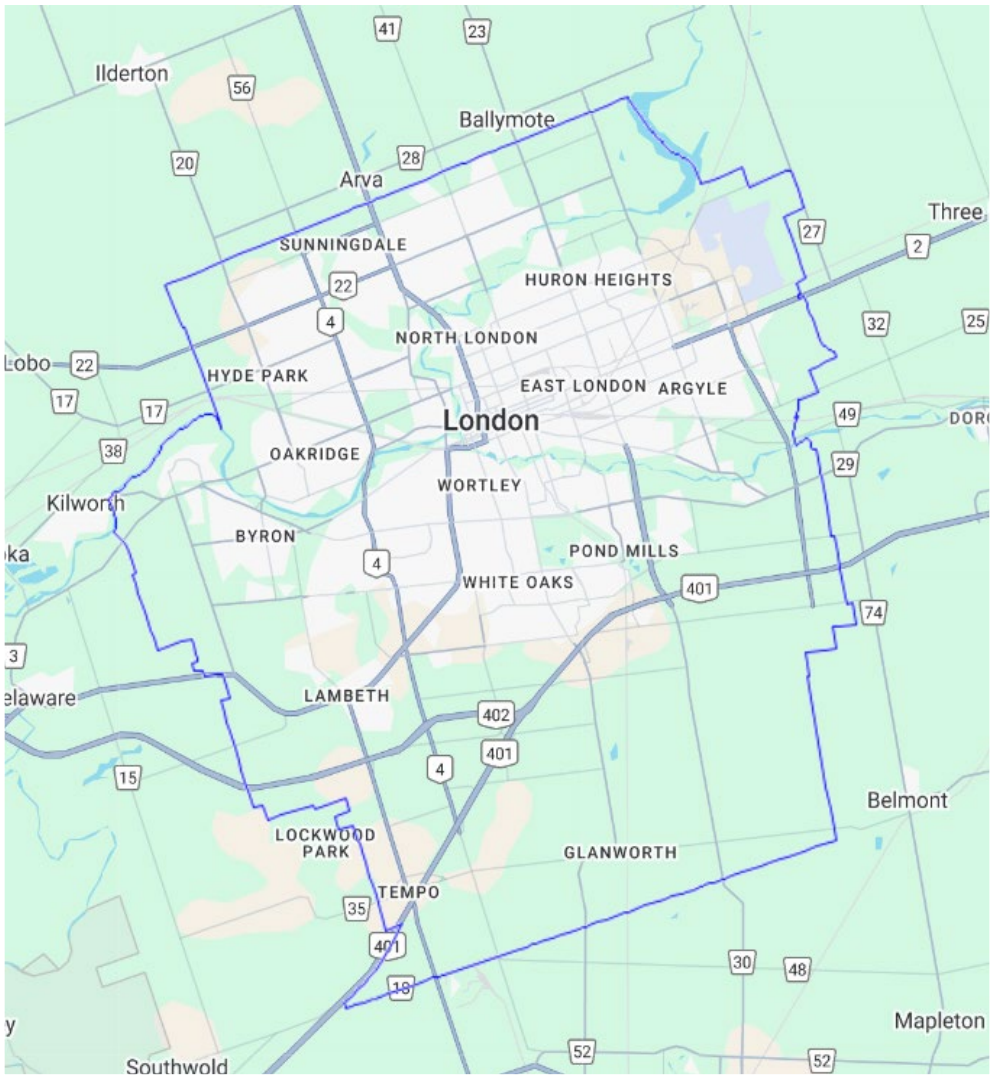


Figure: 13 Map of London Hydro's Service Area

5.3.2a.2 Network Topology

The City of London is supplied by seven Hydro One owned and operated high-voltage transformer stations located throughout the City.[8] The transformer stations and transmission circuitry serving the City of London is shown in Figure 14, Location of London Hydro Transformer Stations.

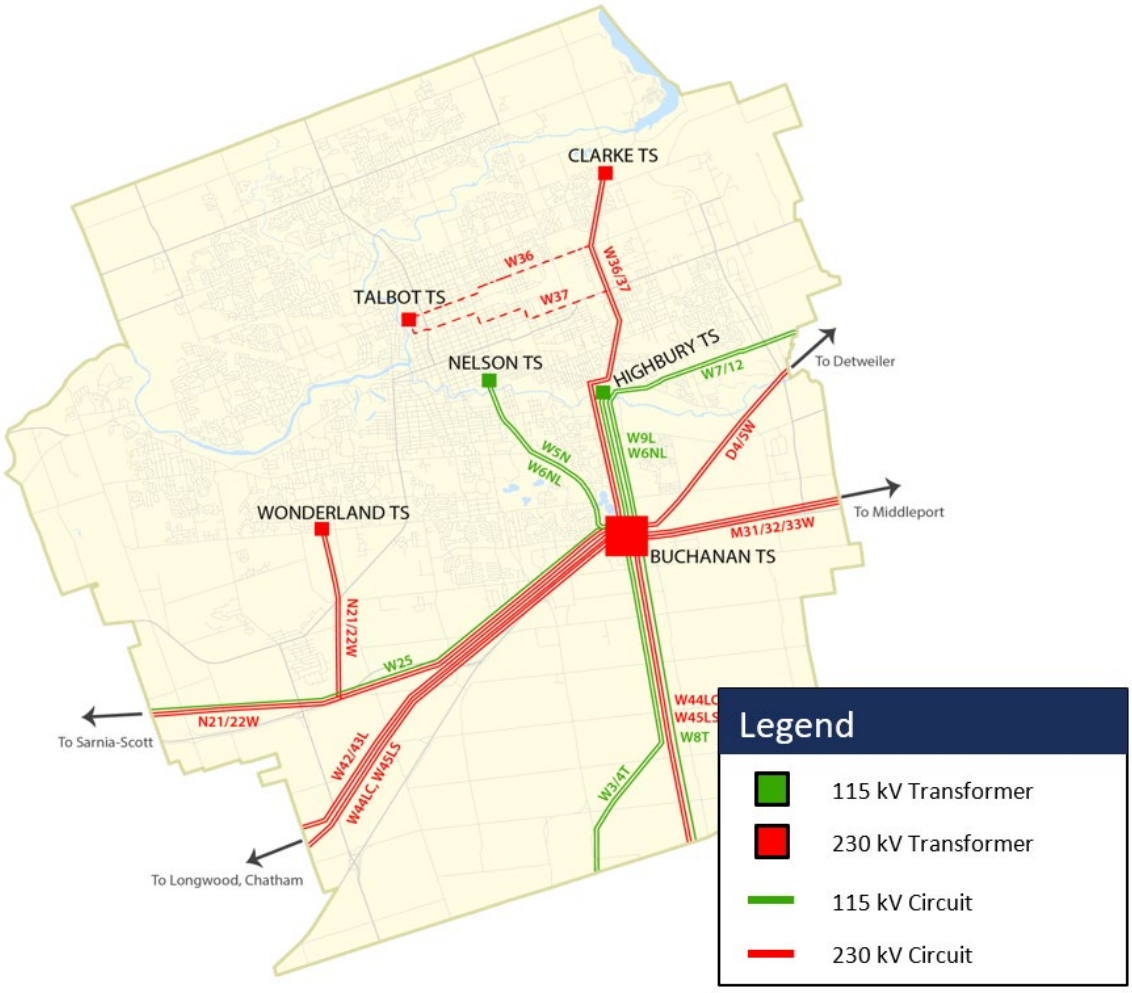


Figure: 14 Location of London Hydro Transformer Stations (Source: IESO)

[8] London Hydro also shares a feeder from Edgeware TS as an embedded distributor, but the load is less than 1MW so it has not been included.

The distribution system is primarily operated at 27.6kV with 58 distribution feeders emanating from the seven transformer stations. There are 30 distribution feeders served from 18 substations on the legacy 4.16kV system, which is being upgraded to 27.6kV as the corresponding aging assets are replaced. In addition, an 8.32kV system exists to supply the rural areas of London Hydro's grid.

The load in the downtown core is supplied at 27.6 kV from Talbot TS and Nelson TS, which supplies some of the larger loads and some secondary spot networks. The 27.6 kV supply from Nelson also supplies three step-down distribution stations (Subs 10, 11, and 12) that create a 13.8 kV Ring Bus, which services the downtown secondary network system and some spot loads.

The distribution system in London is a balance of overhead and underground. Overhead distribution is used for most of the main feeder routes and in older residential areas, while underground distribution is used in newer developments and the downtown core. The trend for the past, and the foreseeable future, is an increase in underground distribution. Table 17 Amount of Underground Distribution as a Percentage of the Total shows the trend in the amount of underground distribution relative to the total amount of distribution for the previous five years.

Table 17 Amount of Underground Distribution as a Percentage of the Total (2020-2025)

Circuit Length[9]	2020	2021	2022	2023	2024	2025
Overhead km of Line	1,390	1,390	1,389	1,384	1,386	1,385
Underground km of Line	1,680	1,687	1,711	1,726	1,736	1,753
Total km of Line	3,070	3,077	3,100	3,110	3,122	3,138
Underground % of Total	54.7%	54.8%	55.2%	55.5%	55.6%	55.9%

London Hydro's distribution system is supported by 15,997 overhead and underground distribution transformers, 64 network transformers and network protectors, 30,490 Poles[10], and 1,173 manual

[9] Circuit Length is the "running" length of the complete circuit, which could include more than one conductor/cable per km

[10] 27,360 poles are London Hydro owned, and 3,130 poles are third-party owned.

switches providing service across the territory. A growing number of automated devices (50 motorized switches and 141 reclosers) support sectionalization and fault location.

5.3.2a.3 Climatic Conditions

Situated in the centre of southwestern Ontario, London experiences temperature ranges and weather patterns characteristic of the region, with a recent trend toward more frequent and intense extreme weather events, including ice storms, heavy snowfall, high winds, and severe thunderstorms. The city's climate is classified as humid continental (Köppen Dfb), influenced by its downwind position relative to Lake Huron and by local variations in elevation across the service area. London lies near the transitional boundary between the Dfa (hot summer) and Dfb (warm summer) zones – conditions that are typically warmer and more humid in the southwest near the confluence of the South and North Thames Rivers, and cooler toward the northeast, including the London Airport.

London, Ontario experiences pronounced seasonal variability, with climatic conditions influenced and moderated by the surrounding Great Lakes. Summers are typically warm to hot and humid, with an average July temperature of approximately 21.5 °C and historically about 10-11 days per year exceeding 30 °C over the past ten years. Year over year variability can be significant; for example, 2025 recorded 18-days above 30 °C and 2022 recorded 22 such days. For context, 2012 still remains to be the historical peak with 27 days exceeding 30 °C.

The region is frequently affected by thunderstorms during the summer months due to the combination of high humidity and the convergence of lake breezes originating from Lake Huron and Lake Erie. These conditions can produce severe weather events, including funnel clouds and tornadoes.

London, Ontario is situated within a recognized severe-weather corridor of Southwestern Ontario, a region where atmospheric conditions frequently support tornado-producing thunderstorms. Long-term climatology indicates Ontario averages approximately 15–20 tornadoes annually, with the highest concentration occurring in Southern and Southwestern Ontario, and the majority rated weak (EF0–EF1).[11]

[11] Northern Tornadoes Project (Western University), "A new 1991-2020 Canadian tornado database", blog post, May 09, 2024, https://www.uwo.ca/ntp/blog/2024/a_new_19912020_canadian_tornado_database.html

On July 10, 2024, the Northern Tornadoes Project verified two EF0 tornadoes in the City of London associated with the remnants of Hurricane Beryl, producing localized tree and minor structural damage.[12] In 2025, the community of Lucan, approximately 20km northwest of London, experienced three events, two of which were classified as EF0 events. Spring 2026, on May 9[13] and again on May 19[14], London and region were impacted by a total of six events, four of which were confirmed tornadoes.

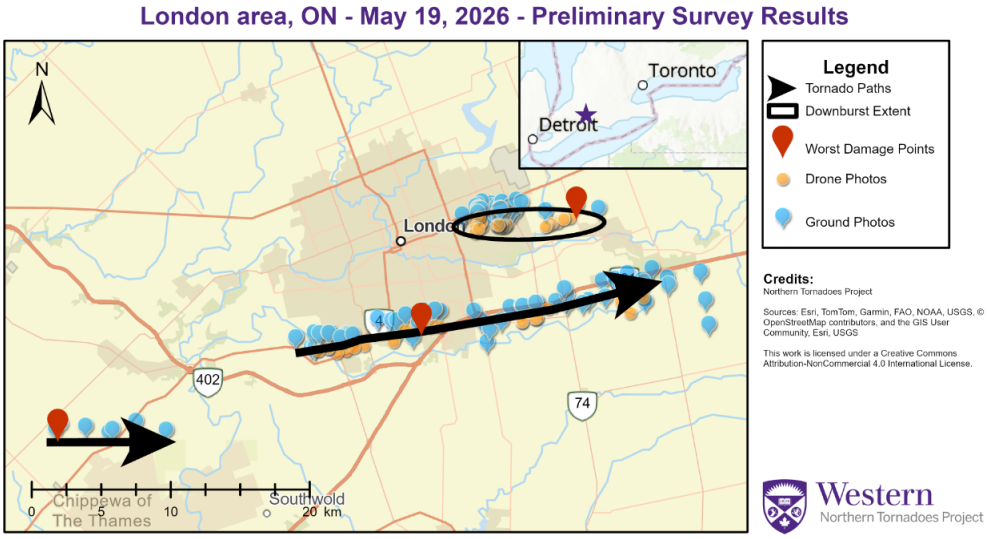


Figure: 15 Summary Map of Tornado Tracks

The survey summary map shows the tracks of the EF0 and EF1 tornadoes (arrows) and the location of the EF1 downburst (oval). Considerable damage was reported including downed powerlines and snapped poles, trees were snapped and uprooted, houses, commercial buildings and several farm buildings were

[12] Northern Tornadoes Project (Western University), "Two EF0 tornadoes in London, ON on July 10," blog post, July 13, 2024, https://www.uwo.ca/ntp/blog/2024/two_ef0_tornadoes_in_london_on_on_july_10.html

[13] Northern Tornadoes Project (Western University), May 9 storm in Lucan, ON area produced EF0 microburst and tornado, blog post May 9, 2026 https://uwo.ca/ntp/blog/2026/the_ntp_confirms_may_9_storm_in_lucan_on_area_produced_ef0_microburst_and_tornado.html

[14] Northern Tornadoes Project (Western University), Two tornadoes and a downburst on May 19 in the London, ON area, blog post May 19, 2026 https://uwo.ca/ntp/blog/2026/two_tornadoes_and_a_downburst_on_may_19_in_the_london_on_area.html

damaged, as well as a toppled transport truck. The reliability impact from the 2026 Tornadoes as of May 19, 2026 was significant with 13,263 number of customers experiencing an interruption and 3,188,991 customer minutes of interruption.

Spring and autumn are relatively brief transitional seasons, while winters are cold and interspersed with periodic thaws. London receives an annual average of approximately 1,011 mm of precipitation, including about 194 cm of snow.[15] Heavy snowfall events often result from lake-effect snow and snow squalls generated over Lake Huron, located roughly 60 km northwest of the city, when strong cold winds align from that direction. London Hydro's overhead infrastructure designs are engineered to the Canadian Standards Association (CSA) 22.3 No. 1-20 Overhead Systems standard for heavy loading conditions of radial thickness of ice, horizontal wind loading and temperature.

These climatic characteristics – marked by significant temperature variability, intense summer storms, and substantial winter snowfall – underscore the need for continued investment in system resilience. Infrastructure planning must account for weather-related stresses such as high winds, ice loading, flooding, and lightning activity, all of which pose risks to the reliability and safety of the distribution system. Consistent with the Government of Canada's 2019 Canada's Changing Climate Report[16], which projects increasing frequency and severity of certain climate-related extreme weather risks, London Hydro recognizes that future system planning must increasingly incorporate climate adaptation and resilience measures to ensure long-term service reliability.

5.3.2b Asset Demographics and Condition

London Hydro maintains comprehensive records of all major asset categories through an integrated Asset Registry and Geographic Information System (GIS) database. Asset condition is assessed using both age-based indicators and empirical data collected from field inspections and diagnostic testing. This information is reviewed and analyzed as part of the Asset Sustainment Plan (ASP) (Appendix C), which directly informs the broader Asset Management Plan (AMP) (Appendix B).

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[15] Environment and Climate Change Canada, Canadian Climate Normals 1981–2010: London A, Ontario, https://climate.weather.gc.ca/climate_normals/

[16] Government of Canada, Canada's Changing Climate Report, Natural Resources Canada, 2019, https://changingclimate.ca/CCCR2019/

The asset summaries presented in the following sections, including age distribution and condition profiles, are derived from the 2026–2035 ASP and reflect data validated as of year-end 2024. There have been no changes to the asset base since that time that would materially alter the findings of the ASP.

The scope of both the ASP and AMP is limited to core distribution system assets (e.g., poles, conductors, transformers). Other corporate assets, such as fleet, facilities, and information technology systems, including metering, are managed under separate planning processes.

Key insights and trends by asset class are summarized in the sections that follow.

5.3.2b.1 Overhead Infrastructure

Poles

London Hydro owns approximately 27,360 distribution poles and shares an additional estimated 3,130 poles with Hydro One and Bell Canada as part of joint-use arrangements. As critical components of the overhead distribution system, these poles support conductors, line equipment, and attachments essential for safe and reliable service delivery. Their age, condition, and structural integrity have a direct effect on outage rates, worker safety, and customer satisfaction.

As of year-end 2024, approximately 96% of wood poles were assessed to be in “fair to very good” condition (Table 19[17]), based on pole testing and inspection results collected between 2008 and 2022 and compiled in the 2024 ACA[18]. Table 20 presents health data for London Hydro concrete distribution poles where 100% of the poles were assessed to be in “fair to very good” condition. Pole condition is tracked using Health Index methodology, and the latest results indicate an overall average Health Index of 88%, consistent with a stable asset population.

[17] The quantities presented in Table 19 reflect asset health data for London Hydro-owned wood poles (27,104) and Bell-owned poles (2,171) for which sufficient data were available to calculate a health index. Hydro One-owned poles (850) are excluded from the results.

[18] See DSP Appendix D for the ACA report.

Table 18 Health Index Categorization of Wood Poles

Health Index Distribution of Wood Poles by Number of Units					
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	73	916	2988	4120	21178
Percentage	<1%	3%	10%	14%	72%

Table 19 Health Index Categorization of Concrete Poles

Health Index Distribution of Concrete Poles by Number of Units					
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	0	0	8	18	109
Percentage	0%	0%	6%	13%	81%

Poles are tested by a third party using the following criteria:

- Poles that have been in service less than 20 years are not tested (and assumed to be in very good condition)
- Poles that have been in service for 20 years are tested in that year
- Poles that have been tested at least once are re-tested according to the interval determined by the pole testing company

Based on the test results, pole age and other observations, the pole tester makes a recommendation for immediate action or a retest interval that ranges from 1 year to 5 years. In 2023, London Hydro transitioned from legacy sound-and-bore testing to the resistograph method, which delivers improved detection of internal decay and structural degradation. Early results from the 2023–2024 testing program, covering over 7,800 poles, reveal a replacement rate of 3.2%, or approximately 245 poles – more than three times higher than the <1% replacement rate observed under the previous method. This higher detection rate signals that internal decay had likely been under-reported in prior assessments, underscoring the value of improved inspection practices.



Figure: 16 Severe Decay in Wood Pole

The enhanced methodology is helping London Hydro identify and target deteriorated poles more effectively, including structurally compromised units with less than 60% remaining strength or those exposed to carpenter ant infestation. Immediate action on these poles mitigates risks of structural failure during storms, high winds, or ice loading – events that increasingly affect reliability in the region.

Table 20 Pole Testing Result to Recommended Action Matrix

Results	Recommendation
Extensive Carpenter Ants Damage	Replace Immediately
Strength < 60%	Replace Immediately
Strength 60% to 67%	Re-test in 1-5 years

Concrete poles, though generally in good condition compared to wood poles, are also monitored for structural degradation. Some older units show signs of deterioration such as spalling and rebar exposure, requiring targeted intervention to prevent future failures.



Figure: 17 Severe Deterioration in Concrete Pole

The age profile of all poles, summarized in Figure 18, confirms that while most poles are performing as intended, a growing subset is reaching end-of-life thresholds. The number of wood poles in “poor” or “very poor” condition has decreased from 8% in 2019 to less than 4% today due to sustained testing and targeted replacements. However, the need to continue managing aging infrastructure is amplified by more frequent severe weather, increasingly posing a risk to system reliability and public safety.

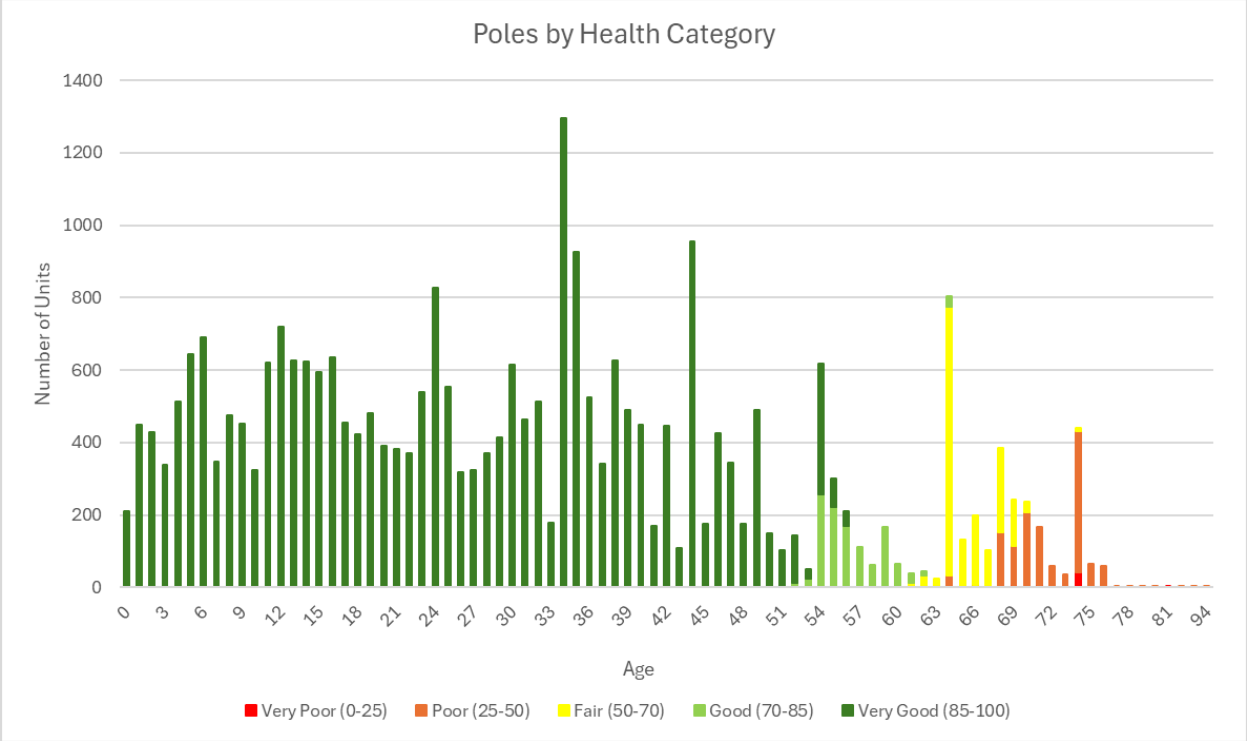


Figure: 18 Health Index Distribution of Poles

Given the scale of the pole population and the potential reliability impact of failures – especially where multi-circuit or corner poles are involved, London Hydro has adopted a risk-based approach to pole lifecycle management. Instead of relying solely on age thresholds or widespread programs, pole renewal activities are prioritized based on condition, criticality, and location-specific risk factors. This strategy supports reliable service, effective capital deployment, and a more stable long-term rate impact for customers.

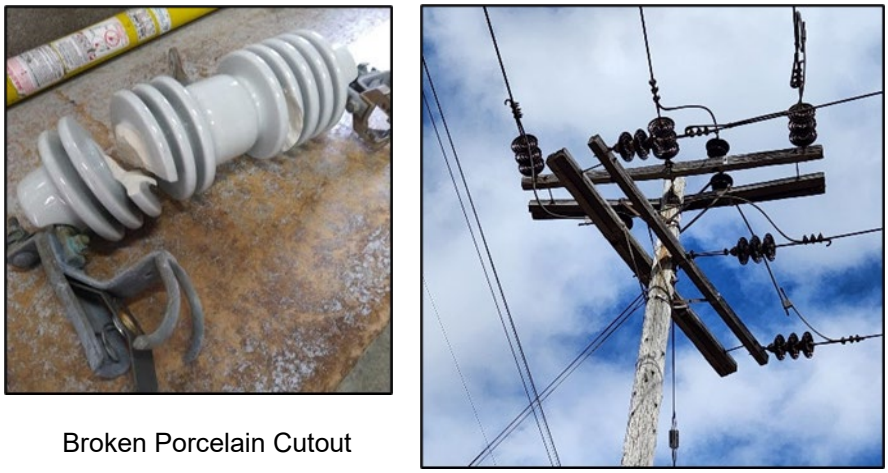
Pole Attachments

Pole attachments – such as insulators, cross arms, splices, and switch hardware – form an essential part of London Hydro's overhead distribution system. While these smaller components are not individually tracked in GIS due to their varied types and installation history, their presence and condition are assessed through routine field inspections. The results indicate that several attachment types are nearing the end of their useful lives or exhibit material deficiencies that elevate failure and safety risks.

Most pole attachments are designed to last as long as the pole structure itself, but some legacy units have increasingly demonstrated performance issues due to age or inherent weaknesses. As a result, failures of

pole attachments have become a contributing factor in unplanned outages, particularly where degraded insulators or splices lead to conductor failures, electrical flashovers, or localized equipment damage.

Aging wooden cross arms are one example. While the utility transitioned to steel cross arms for new installations years ago, a small number of original wooden cross arms remain on the system, many exceeding 40 years of age and approaching end of life. Similarly, several porcelain attachment types – such as insulators and cutouts – have become susceptible to cracking and moisture ingress, particularly in areas subject to high mechanical loading or freeze–thaw cycles. Once cracks form, dielectric strength deteriorates and flashovers become more likely, contributing to momentary outages and, in some cases, sustained outages.



Broken Porcelain Cutout

Wooden Cross-Arms

Figure: 19 Porcelain Insulator and Wooden Cross-Arms

Other legacy components are also exhibiting performance concerns (see Table 21). PERMALI and EPAC insulators, for example, have demonstrated material degradation through surface tracking and inconsistent leakage patterns, while automatic splices and mid-span taps have shown increased susceptibility to loosening and failure, particularly under wind-induced loading. In addition, aging switch attachment hardware – such as clamshell connectors – has resulted in localized switching failures that complicate fault isolation and can extend outage restoration times.



Automatic Splices



4-bolt cane clamps (Clamshell connectors)

Figure: 20 Automatic Splices and Clamshell Connectors

To mitigate these risks, London Hydro conducts a comprehensive overhead inspection program on an annual basis, covering one-third of the distribution system each year. This program is supplemented by targeted audits focused on areas with recurring reliability issues, critical customer facilities, or heightened outage exposure. These inspections are further enhanced with infrared thermography to identify thermal hotspots indicative of mechanical stress or elevated electrical resistance.

The findings confirm that several classes of legacy pole attachments are disproportionately contributing to asset-related failures, including momentary outage events, full feeder lockouts, and increased customer minutes of interruption (CMI). This trend underscores the need for proactive replacement strategies to preserve system reliability and public safety.

Table 21 Quantity of Pole Attachment Deficiencies

Pole Attachments	Number of Known Locations
Suspect Insulators	650
Porcelain Cutouts	1900

Pole Attachments	Number of Known Locations
Automatic Splices	250
Mid-Span Taps	50
Switch Installation Components	180

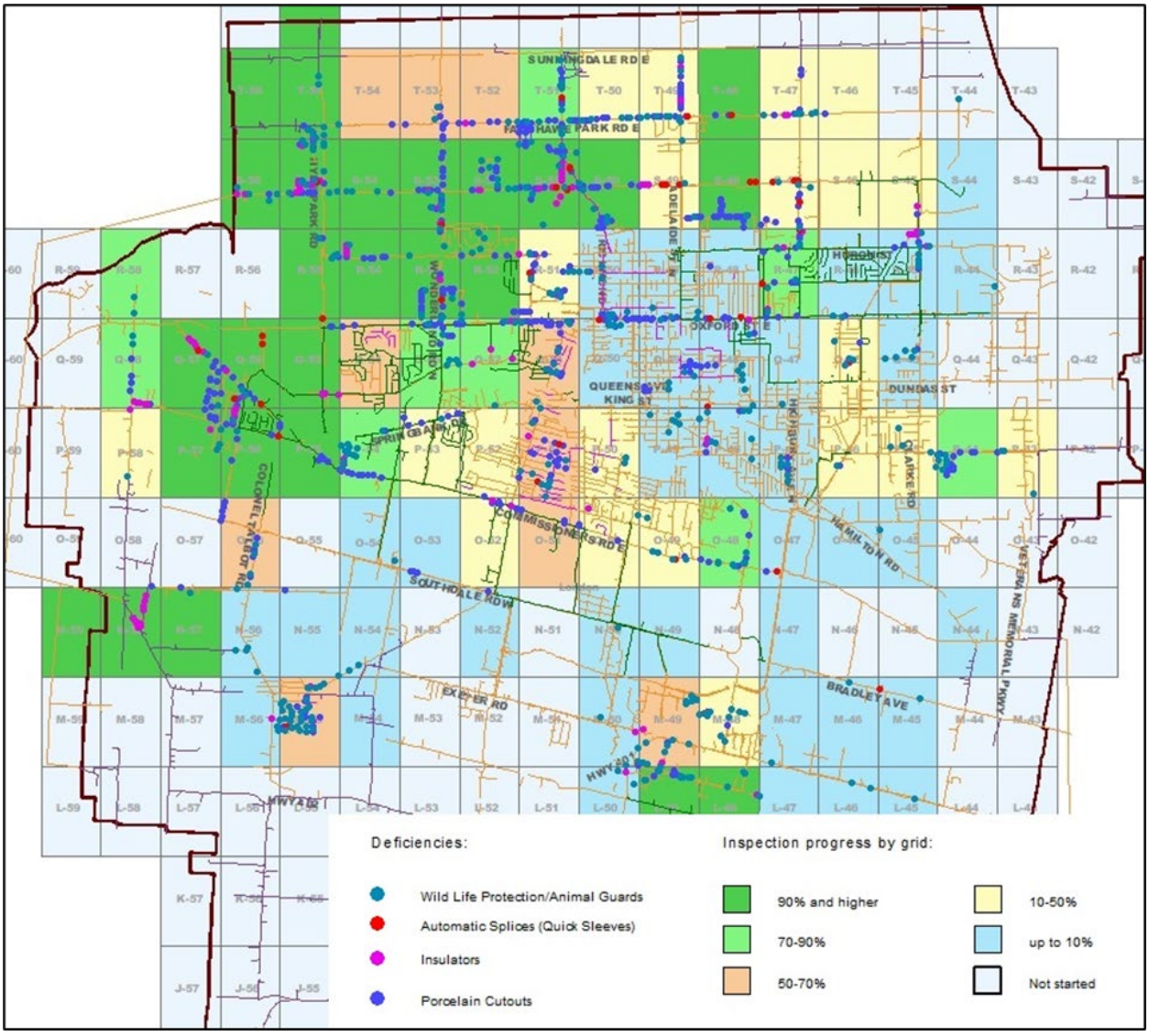


Figure: 21 Sample Inventory Audit Results

Although these assets represent a small fraction of total capital investment, their failure can trigger disproportionately large customer impacts. Replacing high-risk attachment types through targeted, risk-based programs – and aligning them with broader overhead rebuilds or area-based capital projects – will reduce unplanned outages, improve safety, and enhance long-term system resilience.

Deteriorated pole attachments elevate the risk of widespread outages and pose serious safety hazards. Failures on main feeder lines can interrupt service to thousands of customers, with restoration often delayed by the need for field patrols to identify the fault location. Over the past five years, failures of pole attachments have resulted in an average of 12,800 customer hours of interruption per year – equivalent to over 768,000 customer minutes – and have caused roughly 22,000 customer interruptions annually. This represents approximately 11% of system SAIDI and 14% of SAIFI (excluding Loss of Supply and Major Event Days), as shown in Figure 22.

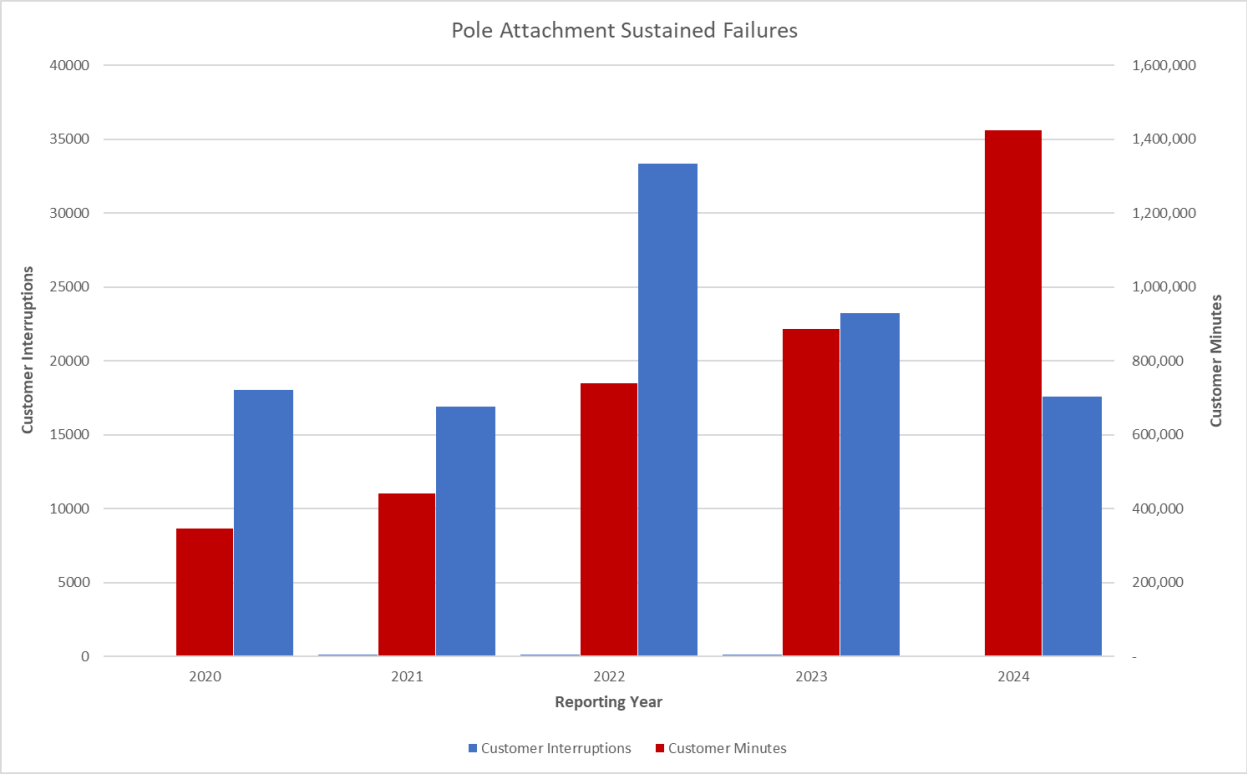


Figure: 22 Failure Impact from Pole Attachments

In addition to reliability concerns, certain failure modes present elevated public safety risks. A broken porcelain cutout can cause a pole fire and structural damage, while a failed splice may result in an energized conductor falling to the ground. Although past risks associated with older configurations, such as

the “Christmas tree” wood cross arm construction, have largely been mitigated, risk persists due to remaining outdated components, including #6 solid copper conductors and deteriorating porcelain devices.

Taken together, these trends highlight the need for a proactive, risk-based approach to replacement. Comprehensive renewal programs are planned to align legacy assets with current overhead construction and safety standards, improve network resilience, and reduce the likelihood of customer outages and public safety incidents.

Pole Mounted Distribution Transformers

London Hydro maintains a substantial population of 7,532 pole-mounted transformers across its distribution network, evenly divided between single-phase and three-phase configurations. These assets play a key role in serving dispersed loads throughout the service territory, especially in areas with predominantly overhead distribution lines.

Unlike many other asset classes, the replacement of pole-mounted transformers is typically driven by line relocations, voltage conversions, overloads, or damage observed during inspections rather than end-of-life based on age alone. The most recent ACA shows that 94% of single-phase units and 99% of three-phase units are in "fair to very good" condition, reflecting a generally healthy asset base. Of the 7,532 assets in the population, 7,525 had sufficient data to calculate a health index and are summarized in Table 22 and Table 23.

Table 22 Health Index Categorization of Pole Mounted Single-Phase Transformers

Health Index Distribution of Pole Mounted Single-Phase Transformers by Number of Units					
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	43	165	167	163	3251
Percentage	<1%	4%	4%	4%	86%

Table 23 Health Index Categorization of Pole Mounted Three-Phase Transformers

Health Index Distribution of Pole Mounted Three-Phase Transformers by Number of Units					
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	1	12	97	148	3478
Percentage	<1%	<1%	3%	4%	93%

The health distribution by asset year, illustrated in Figure 23, shows average health indices of 93% for single-phase and 97% for three-phase assets, underscoring their relatively strong condition performance profile.

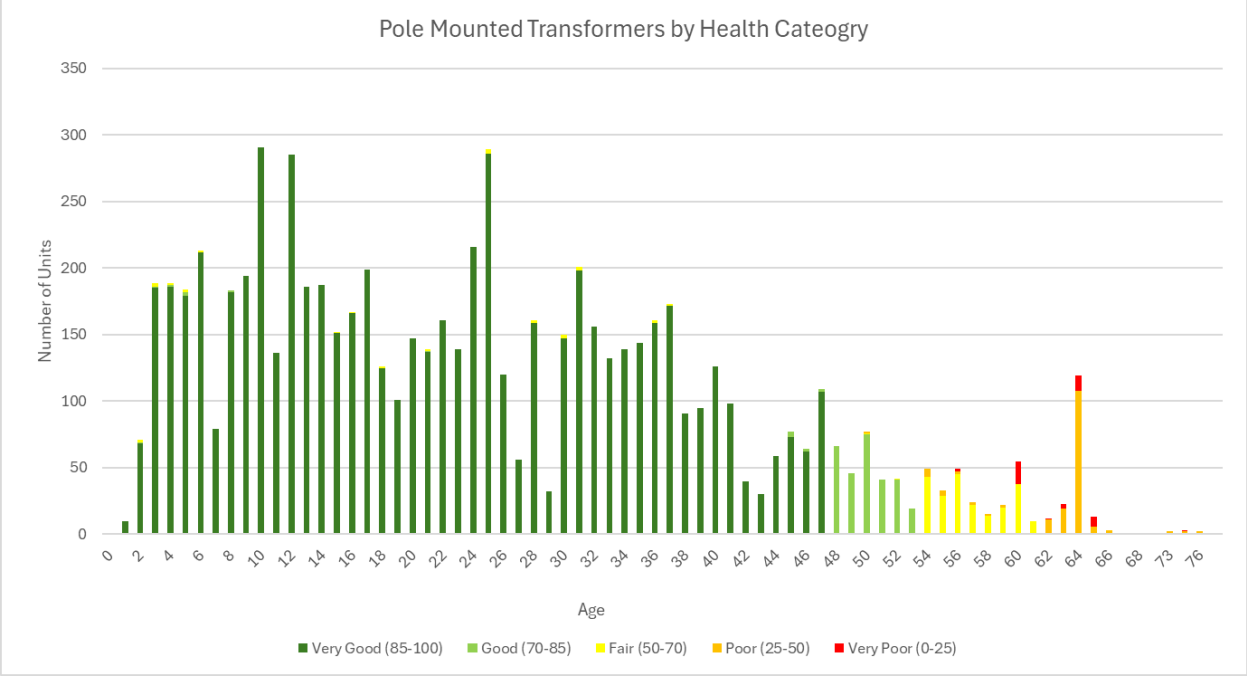


Figure: 23 Health Index Distribution of Single and Three-Phase Pole Mounted Transformers

While individual pole-mounted transformers typically supply a small number of customers and therefore pose a limited direct reliability risk, isolated failures can still impact local service quality, and, in rare cases, create safety hazards. To mitigate these risks, London Hydro installs current-limiting fuses on 27.6 kV transformers, enabling fault interruption in less than a quarter cycle and effectively containing fault energy. Retrofitting current-limiting fuses on existing installations is generally undertaken

opportunistically during other pole-top activities, such as porcelain replacement, rather than through a standalone targeted program. Ongoing inventory audits document these occurrences, and any remaining locations are addressed in coordination with other planned pole-level replacement work to maximize operational efficiency.

Over the past five years, London Hydro has experienced an annual average of 22 pole-mounted transformer failures, an approximate 0.3% failure rate. The resulting average customer impact has been approximately 83,000 customer minutes of interruption per year, a relatively minor contribution compared to other asset classes such as pad-mounted transformers. This performance history supports the conclusion that pole-mounted transformers are generally reliable and do not represent a significant system-wide risk.

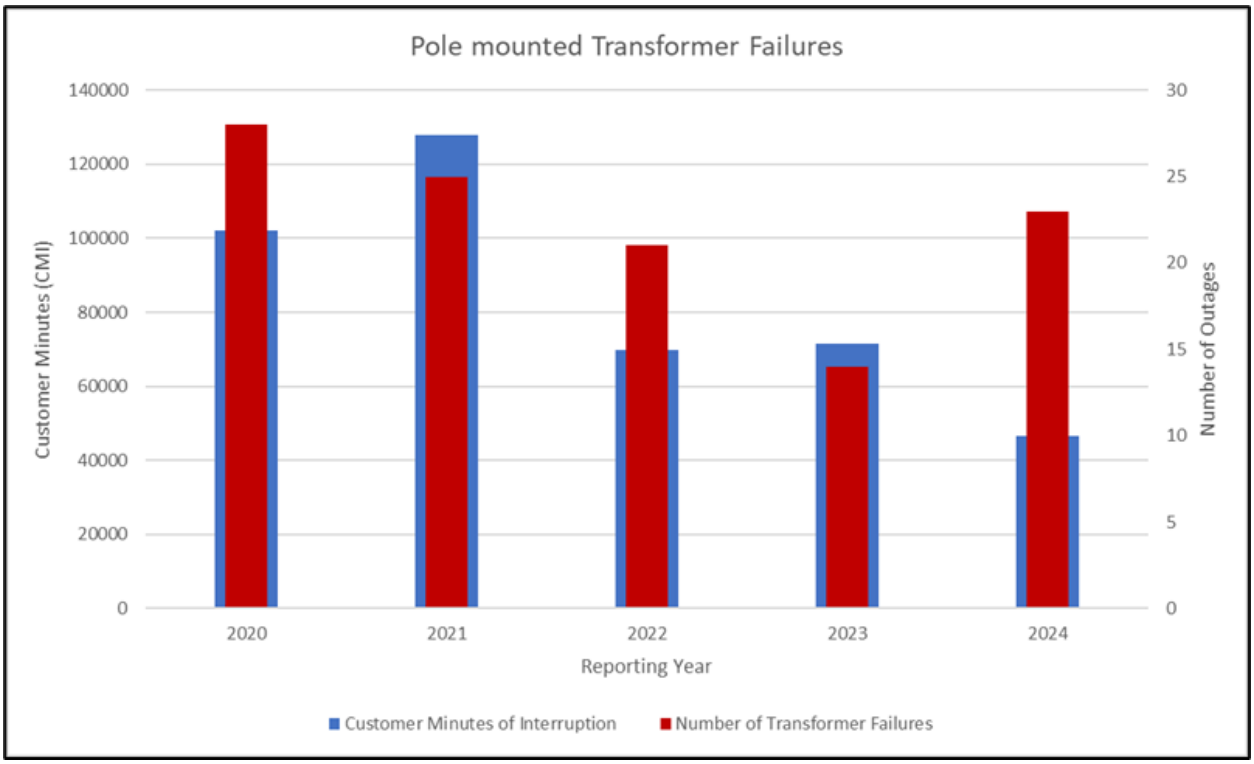


Figure: 24 Failure Impact from Pole Mounted Transformers

That said, unplanned failures can incur elevated financial costs due to emergency replacement work, environmental remediation for potential oil spills, and customer disruption. The small portion of transformers rated as “poor” or “very poor” are predominantly located in legacy 4.16 kV and 8.32 kV areas.

From a loading perspective, pole-mounted transformers generally exhibit moderate utilization levels. Where failures occur, failed units are usually replaced with like-for-like kVA ratings; however, in the context of planned feeder rebuilds or system conversions, transformers are upsized if existing loading is at or above 70–80% of installed kVA capacity to accommodate future growth. This flexible upgrade approach helps mitigate overload risks and supports organic load growth in the distribution system.

Overall, London Hydro's current pole-mounted transformer fleet is performing well with low failure rates and limited reliability impacts. However, continued monitoring and targeted reinvestment – particularly in areas undergoing voltage conversion or exhibiting localized degradation – will be critical to maintaining system resilience and mitigating future failure risk.

Overhead Switches

London Hydro relies on a fleet of overhead switches to sectionalize feeders, isolate faults, and restore service during both planned and unplanned events. The inventory includes approximately 50 motorized switches, 276 manual load-break switches, and nearly 900 disconnect switches, with installation dates unknown for over 500 units. The motorized switches, largely installed in the late 1990s, have an average age of approximately 22 years, placing them at mid-life for their expected service duration. The manual load-break switches exhibit a wider age range, with some units in service for more than 40 years and others installed more recently.

Overhead switches are subject to ongoing visual inspection and infrared thermal scanning as part of London Hydro's annual overhead circuit patrol program. While these activities provide effective screening for external deterioration and abnormal operating conditions, certain mechanical wear and internal component degradation cannot be fully assessed without planned de-energization and functional servicing. In response to observed performance trends, including occasional operational failures, London Hydro enhanced and formalized a structured five-year maintenance program for manual load-break switches to supplement routine inspection activities. Since 2020, over two-thirds of the switch fleet has undergone detailed maintenance and condition assessment.

Due to limited condition data, Health Index scoring for overhead switches during the 2024 ACA was based solely on age for units with known installation dates. This approach indicates that the majority of devices with known age are in very good health.

Table 24 Health Index Categorization of Overhead Switches

Health Index Distribution of Overhead Switches by Number of Units					
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	0	0	0	3	712
Percentage	0%	0%	0%	0%	100%

The age distribution of switches with known installation dates is presented in Figure 25. A substantial portion of the population has exceeded 20 years of service life. Notably, more than 500 switches, representing approximately 40% of the total population, are classified within an “Unknown/Unassessed” category and are therefore not reflected in Figure 25. These units are suspected to be among the earliest vintages and are likely over 30 years in service, introducing a material data gap in the overall condition and age profile. As condition assessment efforts expand, improved data is expected to provide greater transparency into this subset and may reveal elevated levels of deterioration, reinforcing the emerging risk profile for the asset class.

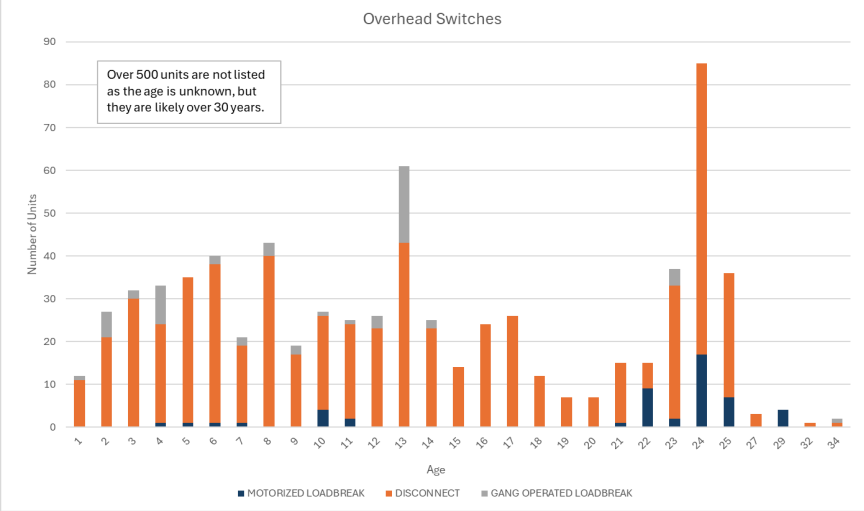


Figure: 25 Age Distribution of Overhead Switches

Switch failures, while infrequent, have a disproportionate impact because these devices are located on primary 27.6 kV feeders. Over the past five years, six switch failures directly resulted in customer interruptions

affecting thousands of customers. These failures typically occurred when switches were called upon for sectionalizing, resetting, or fault isolation – precisely when operational reliability is most critical.

An additional 11 failures rendered switches inoperable without immediately resulting in interruptions to power. These events extend restoration times and limit operational flexibility during planned work or fault response.

Table 25 Non-Outage and Outage Switch Failures Impacting System Operations

Year		2020	2021	2022	2023	2024
No. of non-interruption failures	Manual Switch	1	0	0	1	0
	Motorized Switch	4	0	0	1	4
No. of interruption Failures	Manual and Motorized Switches	3	1	1	0	1

Overall, the condition and performance of overhead switches suggest emerging risks to system reliability. With a significant cohort of switches aging beyond mid-life, growing evidence of in-service failures, and limitations in current condition monitoring methods, targeted renewal and improved lifecycle management will be required.

5.3.2b.2 Underground Infrastructure

Underground Primary Cable

London Hydro operates approximately 1,628 circuit-kilometres of medium-voltage underground cable throughout its service territory, serving customers at 4.16 kV, 8.32 kV, 13.8 kV, and 27.6 kV. These circuits, representing more than 2,200 conductor-kilometres, include a mix of legacy and modern insulation types ranging from paper-insulated lead-covered (PILC) cable to several generations of polymeric cable.

Table 26 Underground Cable by Voltage and Insulation Type (ASP Table 6-1)

	Circuit-km				Total Circuit-km	Total Cond-km
Insulation	**4.16kV**	**8.32kV**	**13.8kV**	**27.6kV**		
PILC[19]	2	0	4	0	6	6
EPR[20]	0	0	17	9	26	26
RUBBER	1	0	0	0	1	2
PE	2	0	0	0	2	2
XLPE[21]	9	1	0	380	390	489
TR-XLPE[22]	7	5	0	1190	1202	1682
Total	21	6	20	1580	1628	2208

Most of the PILC and early-generation polymeric cable is now several decades old. Modern tree-retardant XLPE (TR-XLPE) and EPR cable materials are in better condition, but make up a smaller portion of the total population. The age distribution of each cable type reflects the utility's historic shift from PILC in the 1960s–70s, to XLPE in the 1980s, and more recently to improved polymerics.

[19] PILC is Paper Insulated Lead Cover

[20] EPR is Ethylene Propylene Rubber

[21] XLPE is Cross-Linked Polyethylene

[22] TR-XLPE is Tree-Retardant Cross-Linked Polyethylene

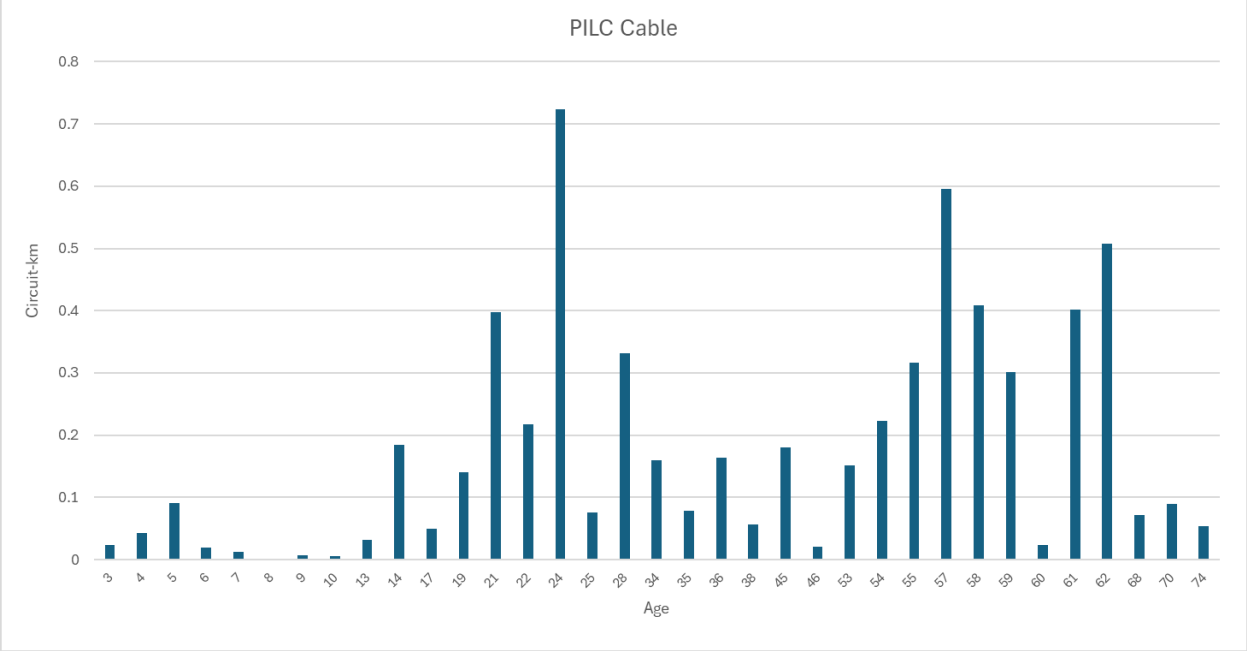


Figure: 26 Age Distribution of PILC Cable

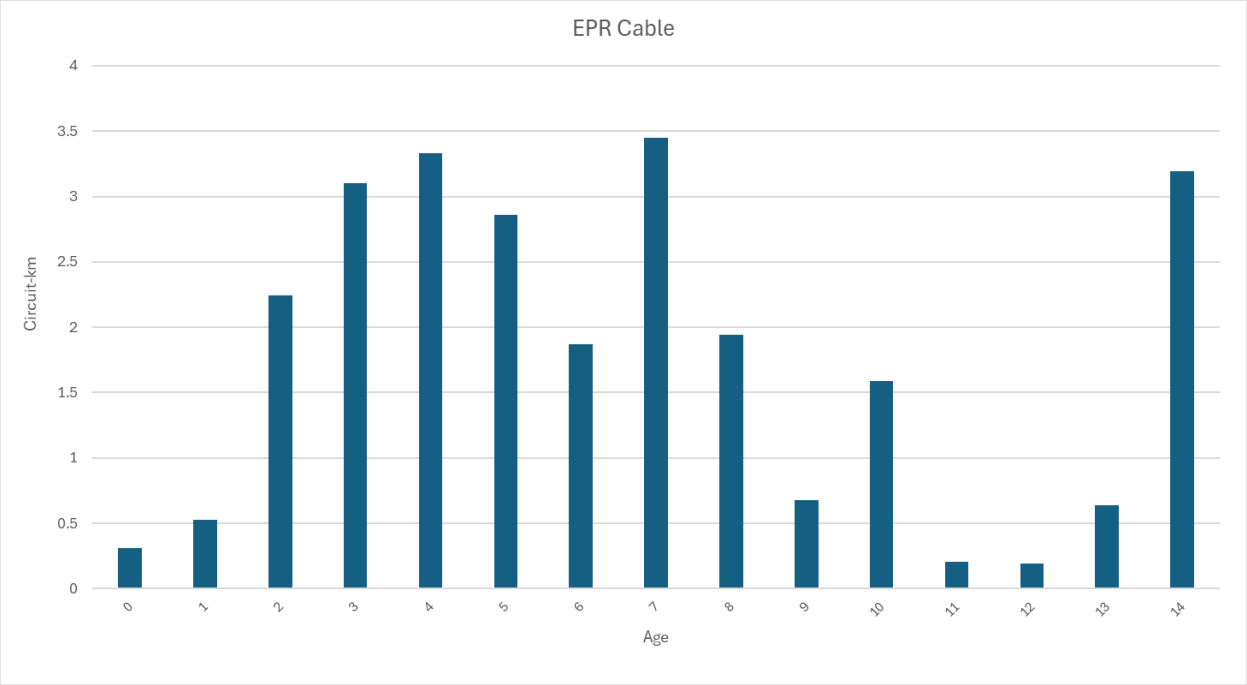


Figure: 27 Age Distribution of EPR Cable

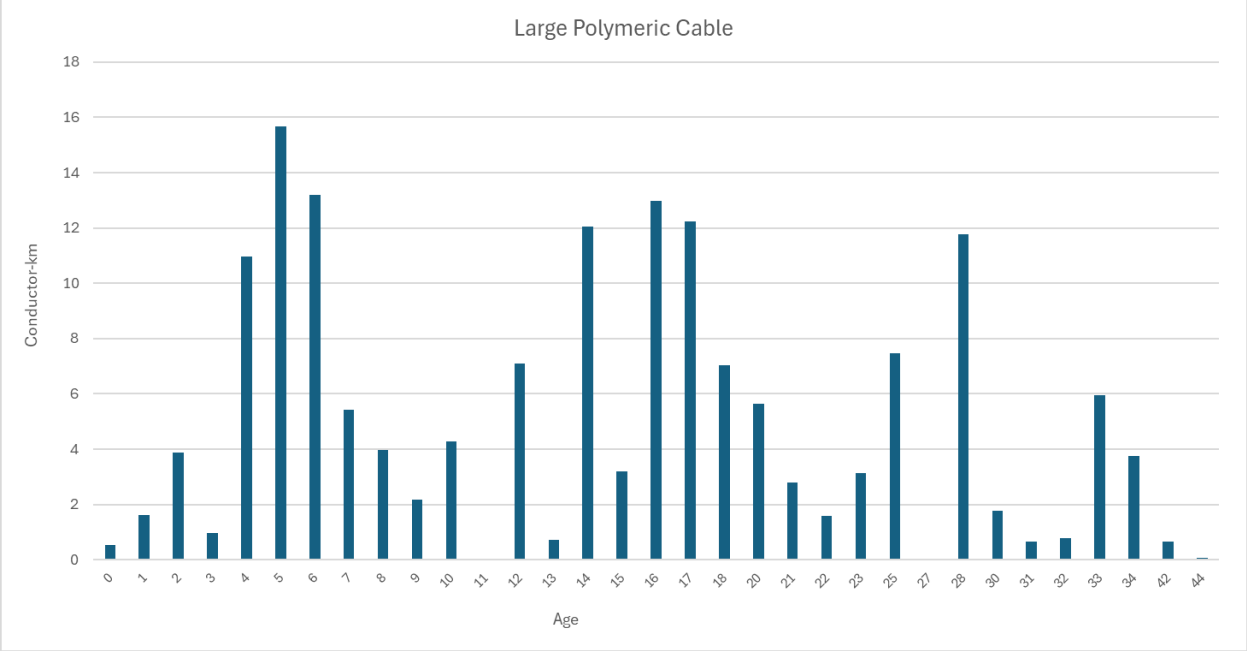


Figure: 28 Age Distribution of Large Polymeric Cable

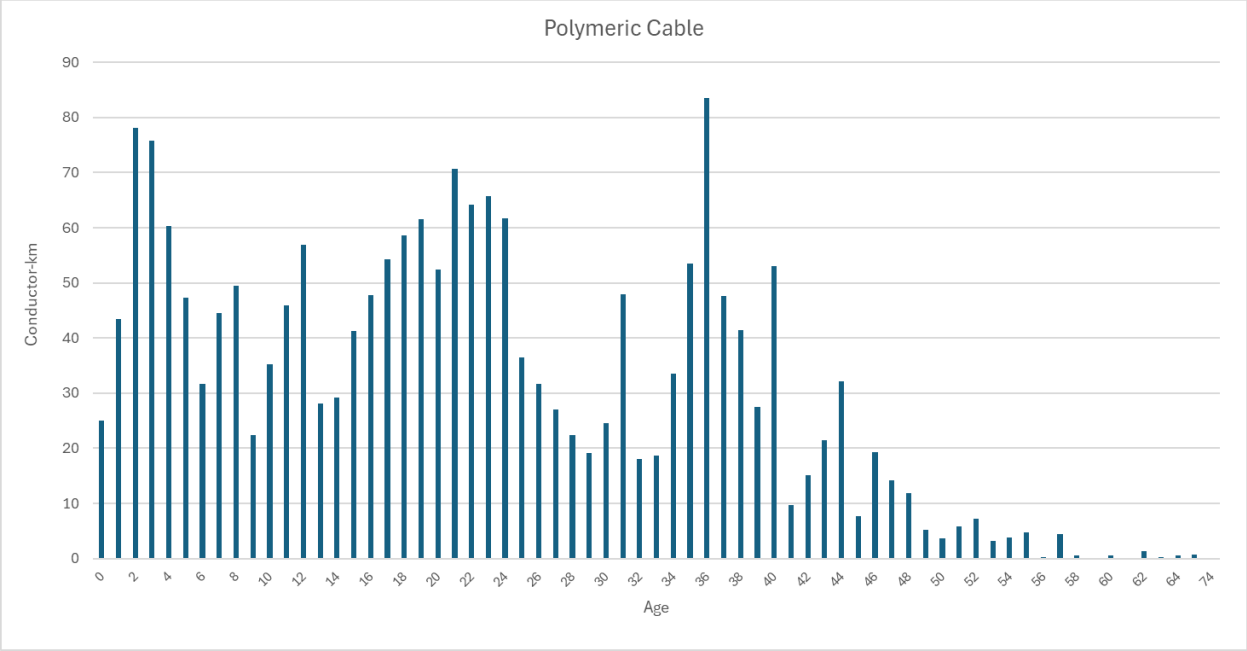


Figure: 29 Age Distribution of Polymeric Cable

Assessing the condition of underground primary cable is inherently challenging because much of the deterioration occurs inside the insulation and cannot be visually detected. To address this, London Hydro has deployed Very-Low-Frequency (VLF) Tan Delta and Partial Discharge (PD) testing to diagnose insulation health, detect water treeing, and identify cables at risk of failure. Since 2020, approximately 60 km of polymeric cable in residential subdivisions has been assessed using this method, supporting more proactive renewal planning.

Overall, most cable types remain in good condition based on the Health Index scores from the 2024 ACA. PILC cable shows the lowest average Health Index score, though the affected population is small and now largely isolated from critical supply routes. EPR and large polymeric cables are generally in very good condition. The most significant concern is aging XLPE cable used in residential and commercial subdivisions, where about 15% of cable (275 km) is already in poor or very poor condition. Another 200 km of cable, currently in fair condition, will reach end of life within the next five years (refer to Table 30).

Table 27 Health Index Categorization of PILC Cable

	Health Index Distribution of PILC Cable by Number of Units				
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Circuit-km and Cond-km	0.2	0.9	0.7	1.1	3.2
Percentage	3%	15%	12%	18%	52%

Table 28 Health Index Categorization of EPR Cable

	Health Index Distribution of EPR Cable by Number of Units				
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Circuit-km and Cond-km	0	0	0	0	26
Percentage	0%	0%	0%	0%	100%

Table 29 Health Index Categorization of Large Polymeric Cable

Health Index Distribution of Large Polymeric Cable by Number of Units					
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Cond-km	0	0.6	2.5	0.6	160
Percentage	<1%	<1%	2%	<1%	98%

Table 30 Health Index Categorization of Polymeric Cable

Health Index Distribution of Polymeric Cable by Number of Units					
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Cond-km	112	162	199	9	1529
Percentage	6%	8%	10%	<1%	76%

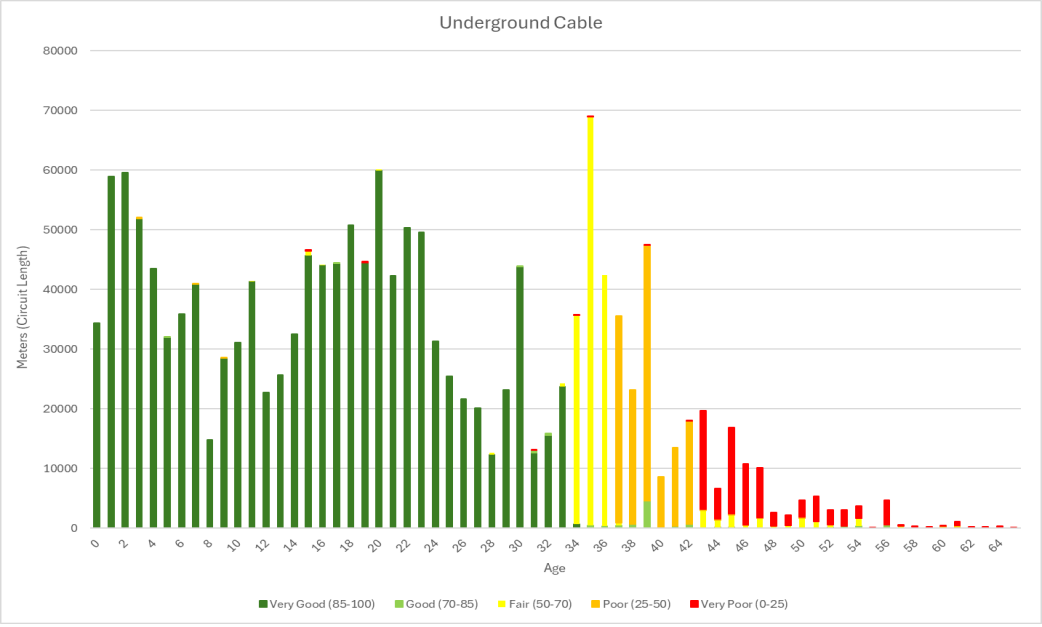


Figure: 30 Health Index Distribution of Underground Cables

Aging subdivision cable accounts for most interruptions. On average, approximately 16 cable failures occur each year, impacting more than 6,500 Customer Hours of Interruption (CHI). These faults represent about 7% of total SAIDI (excluding loss of supply and major events) and roughly one-quarter of equipment-related SAIDI. This trend is expected to worsen unless cable replacement rates increase to stay ahead of aging failure curves. Figure 32 shows a relatively steady cable failure rate over the past 10 years, with a temporary increase in 2023 resulting from multiple repeated failures at several locations that exposed underlying system vulnerabilities. Failure levels returned to historical norms in 2024; however, the 2023 experience highlights the importance of continued investment in cable renewal to mitigate emerging asset deterioration and reduce the risk of similar high-impact events in the future.

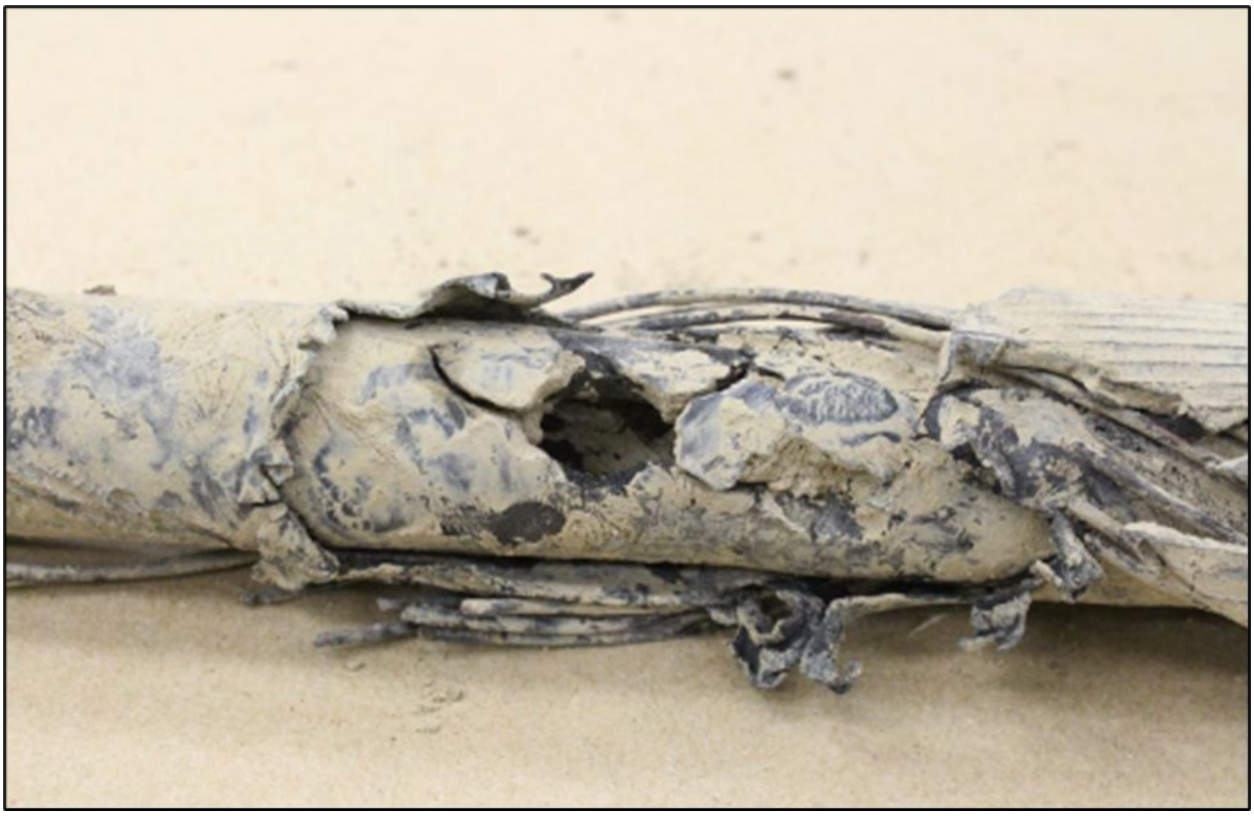


Figure: 31 XLPE Polymeric Cable Failure

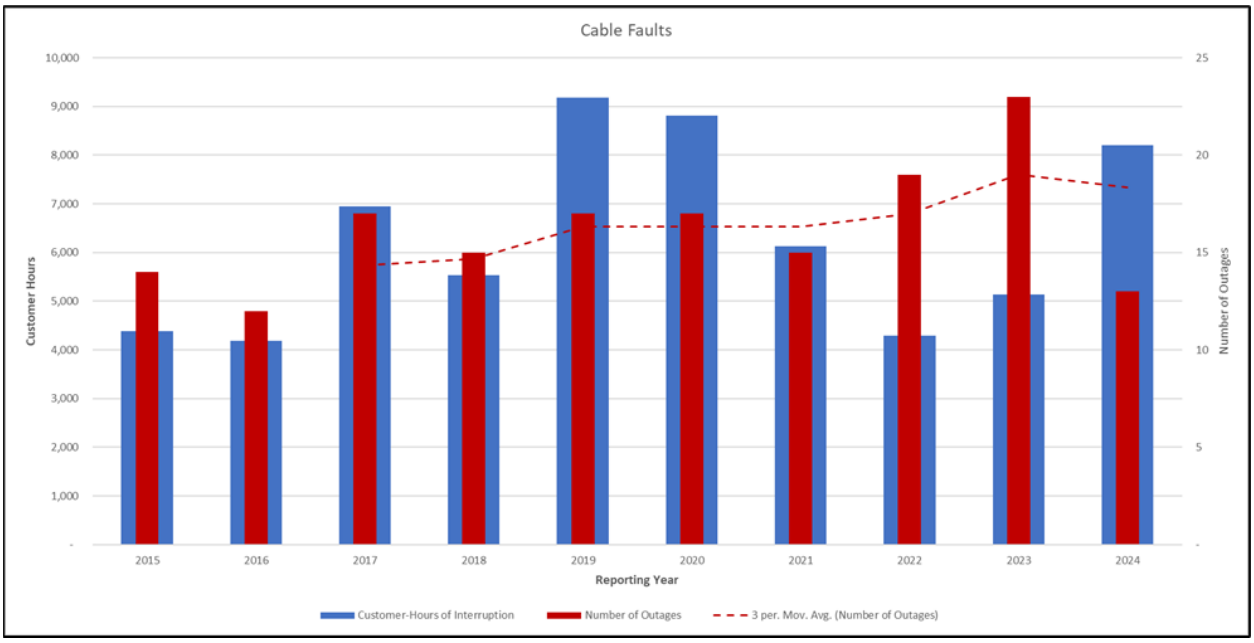


Figure: 32 Failure Impact from Cable Faults

The failure mode of buried cable is often sudden and difficult to anticipate. In residential subdivisions, failures typically occur without warning, resulting in power outages and requiring excavation and repair. While rare, PILC cable faults in the downtown core pose a distinct safety risk due to the potential for explosive failures in maintenance holes. In radial commercial and multi-residential feeders, prolonged outages can occur when faulted cable segments require full replacement before supply can be restored.

To manage these risks, London Hydro has developed a risk-based replacement strategy driven by a combination of cable age, condition, failure history, and customer criticality. Cable in fair to poor condition is prioritized for proactive replacement, particularly in subdivisions, commercial corridors, and downtown network supply areas. The utility's cable renewal program is guided by a rolling 15-year plan to address the aging XLPE population in a measured manner, avoiding a sudden spike in end-of-life replacements that could have material implications for reliability and capital budgets.

Targeted renewal of large-customer feeders and downtown network cables is also underway. These assets serve high-density load areas and critical infrastructure, and maintaining them in sound condition is essential to mitigate the risk of widespread outages and enabling continued grid modernization.

The cable condition profile underscores the need for ongoing, proactive investment to maintain reliability and support customer expectations. As cable assets continue to age, London Hydro's lifecycle

optimization strategies, diagnostic testing, and capital reinvestment will focus on sustaining service quality, mitigating failure risks, and ensuring safe, dependable operation of the underground distribution network.

Pad Mounted Distribution Transformers

London Hydro operates 8,421 pad-mounted transformers across its distribution system, including about 6,950 single-phase and 1,470 three-phase units. These assets play a critical role in stepping down voltage to serve residential, commercial, and industrial customers. Because they are installed at ground level and often in public spaces, their condition has direct implications for both system reliability and public safety.

The most recent Asset Condition Assessment indicates that the fleet is generally in sound condition, with 96% of units rated as fair to very good. Of the 8,421 assets in the population, 8,420 had sufficient data to calculate a health index and are summarized in Tables 31 and 32, with health distribution by installation year shown in Figure 33. Average Health Index scores remain high – 94% for single-phase and 92% for three-phase units, but roughly 300 transformers fall into the poor or very poor category, warranting closer monitoring or replacement.

Table 31 Health Index Categorization of Pad Mounted Single-Phase Transformers

Health Index Distribution of Pad Mounted Single-Phase Transformers by Number of Units					
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	1	241	82	511	6119
Percentage	< 1%	3%	1%	7%	88%

Table 32 Health Index Categorization of Pad Mounted Three-Phase Transformers

Health Index Distribution of Pad Mounted Three-Phase Transformers by Number of Units					
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	5	60	58	97	1246
Percentage	< 1%	4%	4%	7%	85%

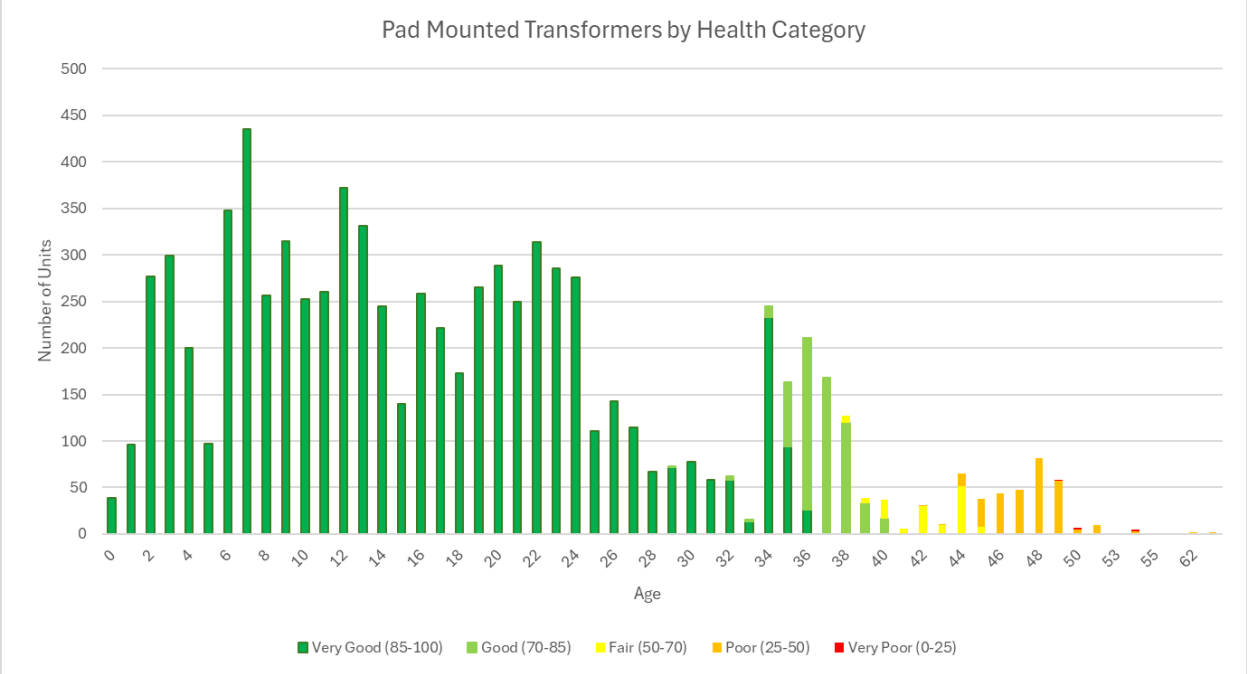


Figure: 33 Health Index Distribution of Pad Mounted Transformers

Condition assessments and field audits are performed on a three-year cycle to evaluate oil leaks, corrosion, mechanical integrity, and other external signs of deterioration. A recent inspection covering approximately 8,500 units confirmed that the majority of assets remain in serviceable condition; however, aging units, particularly those of older standard designs, are beginning to show accelerated deterioration.

Dead-front transformers make up the majority of the fleet. While still reliable, approximately 400 units have surpassed their anticipated service life of 40 years. These are expected to remain in service until their condition warrants replacement or until renewal projects in their area create an opportunity for proactive replacement. Live-front transformers, by contrast, are now largely obsolete, with only a small number remaining. Most of these are well beyond their service life and show significant corrosion and insulation degradation. They also pose higher safety risks to maintenance staff and are prioritized for removal. A few older Positek units remain at 4.16 kV; all are over 60 years old and will be replaced in conjunction with associated underground cable replacements.

From a reliability perspective, single-phase pad-mounted transformer failures have limited impact on system performance, typically interrupting power to 14 to 16 residential customers per event. The power quality impacts associated with the voltage sag on the station bus can affect thousands of customers and be more impactful for commercial or industrial customers with sensitive equipment or processes.

Three-phase transformer failures, on the other hand, can interrupt power to larger commercial or industrial customers and therefore carry a higher operational and economic consequence, in addition to the voltage sag power quality impacts previously mentioned.

Although the anticipated service life of these assets is around 40 years, many continue to perform reliably beyond that threshold. Nonetheless, external factors such as corrosion, environmental exposure, and occasional vehicle damage can shorten life expectancy. The example shown in Figure 34 illustrates premature deterioration resulting in oil leakage from a 27.6 kV three-phase unit installed in 2007.



Figure: 34 Pad Mounted Transformer Deterioration Resulting in Oil Spillage (manufactured in 2007)

Overall, London Hydro's pad-mounted transformers remain in good health and continue to provide dependable service to customers. However, the age profile of a portion of the fleet, combined with observed condition issues and the presence of obsolete live-front designs, indicates a trend of a gradual decrease in performance and increase in safety risk over the next decade. Targeted reinvestment will be required to manage end-of-life assets, sustain reliability performance, and ensure continued public and worker safety as part of the utility's broader lifecycle optimization strategy.

Vault Transformer

London Hydro operates 44 vault-style transformers located in customer-owned electrical rooms. These units play a critical role in serving commercial and residential load in urban areas where above-ground installations are not feasible. The transformer population is divided between older dry-type units operating on the legacy 4.16 kV system and newer fluid-filled units operating at 27.6 kV.

Twelve[23] vault transformers are dry-type units that have been in service for more than 60 years, well beyond their 50-year life expectancy. These assets are in poor condition and represent the portion of the population most at risk of failure. Their deteriorating condition, combined with the challenges posed by underground vault environments, such as moisture ingress and limited access, increases the likelihood of unplanned outages and raises safety risks for both crews and the public. London Hydro plans to remove these units within the next five years as part of its voltage conversion and system renewal strategy.

The remaining 32 vault transformers are filled with flame-resistant fluid (FR3 or R-TEMP) and operate on the 27.6 kV system. These units are relatively new and in good condition, with no failures to date. They are expected to remain in service for the foreseeable future, provided that their housing vaults remain structurally sound.

The most recent Asset Condition Assessment shows that 73% of vault transformer units are in very good condition, with all the poor ratings concentrated among the aged dry-type units.

Table 33 Health Index Categorization of Vault Transformers

	Health Index Distribution of Vault Transformers by Number of Units				
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	12	0	0	0	32
Percentage	27%	0%	0%	0%	73%

Figure 35 highlights the link between age and declining asset health within this class.

[23] Six out of the 12 units were being addressed at the time of writing the ACA report in 2024. The remaining six units are planned to be addressed as part of the 4kV conversion program in 2027-2031.

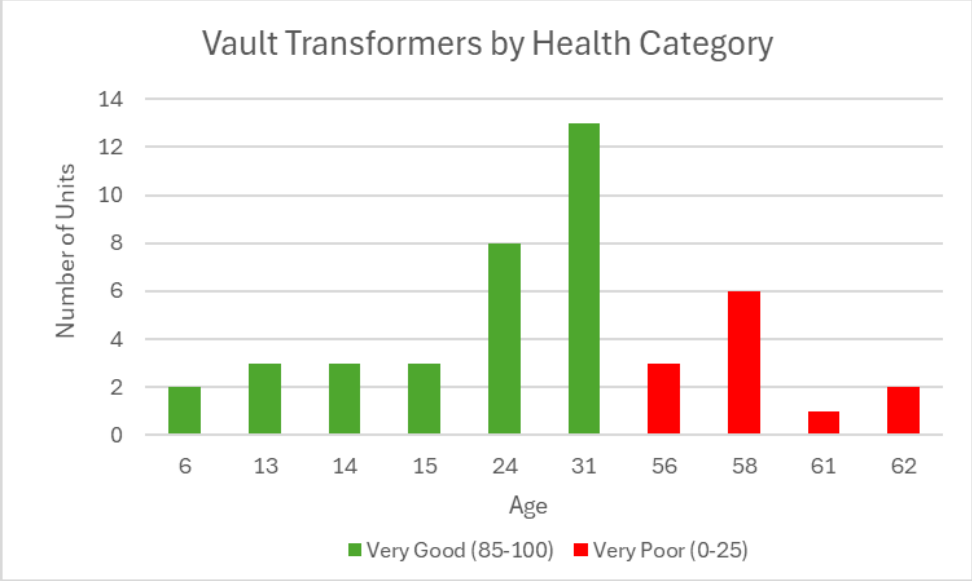


Figure: 35 Health Index Distribution of Vault Transformers

Although London Hydro owns the equipment, the vaults themselves are on private property, often in basements with inadequate ventilation, drainage, or security. These conditions increase inspection and maintenance challenges and expose the equipment to higher risks from environmental factors and unauthorized access. As a result, the utility's strategy is to relocate vault transformers to surface-mounted installations whenever feasible. This approach reduces operating risk and it aligns with long-term conversion of the 4.16 kV system to 27.6 kV.

Where relocation is not possible, London Hydro may replace the existing transformer in place with a new FR3-filled unit, provided the vault can support ongoing safe operation.

This dual approach ensures that both system performance and customer reliability are maintained, while also improving worker and public safety and aligning infrastructure investment with prudent asset management practices.

The condition assessment of vault transformers underscores the need for targeted reinvestment in this asset class to mitigate failure risk, maintain service continuity, and comply with best practices for managing aging electrical infrastructure.

Distribution Switchgear

Pad-mounted switchgear is a key element of London Hydro's underground distribution network, providing sectionalizing and switching capability to improve system reliability and operational flexibility. These units are typically located in residential, commercial, and industrial areas, and are fed by underground cable systems.

London Hydro operates 180 pad-mounted switchgear units, primarily rated at 200 A and 600 A. About three-quarters of the fleet consists of 200 A units, with the remaining 600 A units, most of which are SCADA connected, serving higher-load areas and providing enhanced remote control and monitoring capability.

The switchgear population is categorized by insulating medium and configuration. Historically, London Hydro's system included both live-front (air-insulated) and dead-front designs. The live-front air-insulated units have been largely phased out over the past 15 years due to safety and reliability concerns, with only four units remaining that are planned for replacement by 2028. The current fleet includes 127 solid-dielectric units, 31 SF_6 gas-insulated units, and 18 junctions. Solid-dielectric technology was introduced in the early 2000s, while SF_6 units – some in service for over 30 years – are primarily located in the downtown network. Newer five-way SF_6 units have been installed on the 27.6 kV system to improve reliability for critical commercial loads, following premature failures of solid-dielectric units in similar applications.

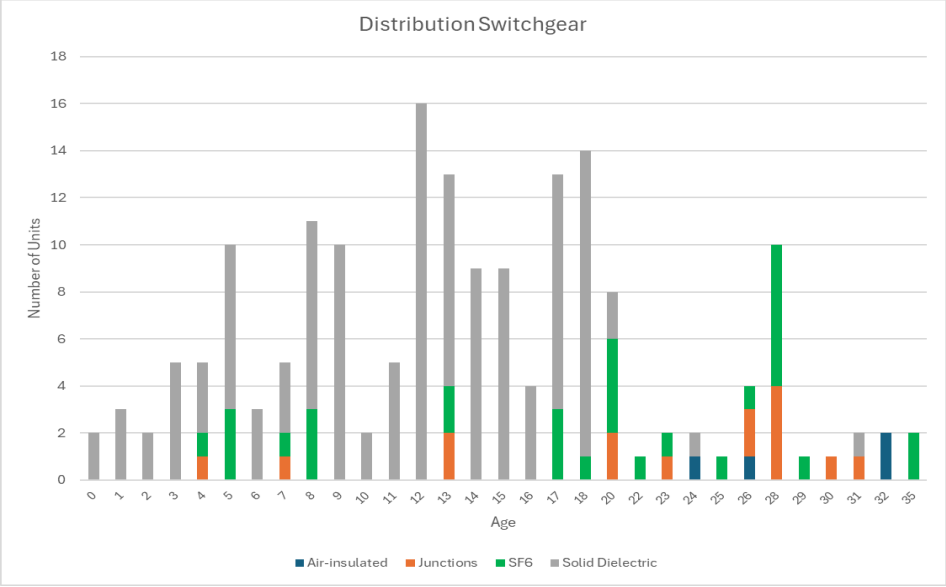


Figure: 36 Age Distribution of Pad-Mounted Switchgear by Insulation Type

Condition assessments show the overall switchgear population remains in very good health, with an average Health Index of 97%. Approximately 96% of units are rated in very good condition, reflecting the effectiveness of ongoing inspection, maintenance, and replacement programs. Of the 180 assets in the population, 179 had sufficient data to calculate a health index and are summarized in Table 34.

Table 34 Health Index Categorization of Pad Mounted Distribution Switchgear

	Health Index Distribution of Pad Mounted Distribution Switchgear by Number of Units				
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	0	2	0	6	171
Percentage	0%	1%	0%	3%	96%

The small number of remaining air-insulated (live-front) units exhibit typical end-of-life deterioration such as corrosion, barrier degradation, and moisture ingress, all of which can lead to internal flashovers and mechanical failure.

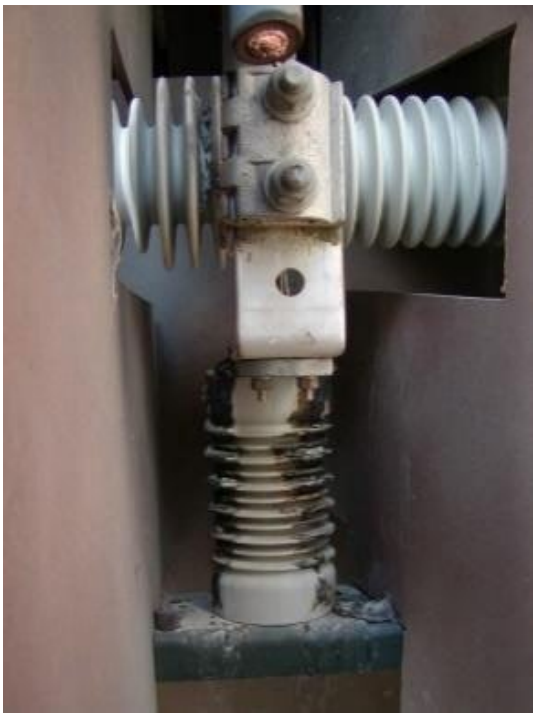


Figure: 37 Internal Flashover Damage Example

From 2020 to 2024, six outages were attributed to this equipment type, averaging 69,000 customer minutes per event; notably, no failures have occurred in the last three years as replacements have progressed.

Dead-front switchgear – encompassing solid-dielectric and SF_6 units – have experienced five sustained outages in the past five years, averaging 82,700 customer minutes per event and affecting approximately 2,700 customers per outage, with one event impacting as many as 7,500 customers.

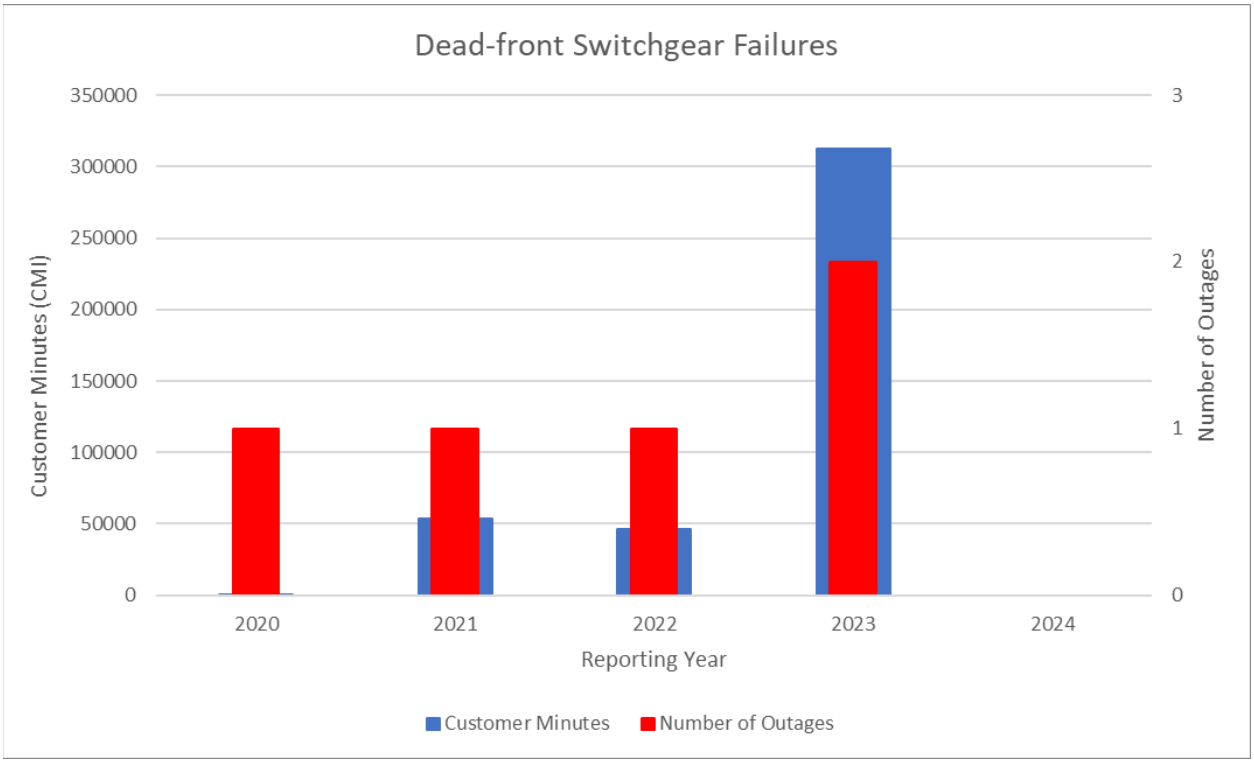


Figure: 38 Failure Impact from Dead-Front Switchgear

While these events are relatively infrequent, they highlight the significant reliability implications of switchgear failures, especially in dense commercial and mixed-use service areas.

Switchgear degradation can also contribute to momentary interruptions due to minor flashovers or insulation breakdown preceding full failure. Such events, though short in duration, can disrupt operations for commercial customers and sensitive facilities, reinforcing the need for proactive asset management.

Overall, London Hydro's pad-mounted switchgear population is in sound condition, supported by systematic renewal and monitoring programs. Continued focus on replacing remaining live-front assets, addressing aging SF_6 and solid-dielectric units showing early signs of deterioration, and deploying

modern SCADA-enabled designs will be critical to sustaining distribution system reliability and minimizing customer impacts in high-density service areas.

Maintenance Holes and Vaults

London Hydro's civil infrastructure includes 1,028 maintenance holes and 67 vaults, which are key components of the underground distribution network. These assets play a critical role in safely housing and providing access to primary and secondary cables, as well as associated communication and utility hardware. Many of these structures are among the oldest assets still in service, with some maintenance holes approaching 100 years of service. Most maintenance holes are concentrated in the downtown core, though there are scattered units across other areas of the city. Vaults are fewer in number, and their condition is also monitored closely given their role in supporting network transformers in the downtown core.

Maintenance holes had been assigned a conservative expected service life (80 years for concrete and 50 years for masonry structures) more than a decade ago, when London Hydro first conducted their condition assessment using a third party civil engineering firm (AECOM). By those standards, 3% (31 units) of the maintenance holes, still in service today, have exceeded life expectancy and another 4% (43 units) will reach it within the next decade.

The likelihood of asset removal increases with age: around 20% at 75 years and 95% at 95 years. While the underlying concrete or masonry structures are generally durable, exposure to corrosive salts, moisture, and mechanical loads, such as vehicle traffic, can reduce practical life expectancy. Roof slabs and chimneys typically require replacement sooner than the main structure; many have been renewed in the past 10–15 years to maintain safe access and reduce public and employee risk.

The age distribution of maintenance holes (Figure 39) shows an average age of 35 years, with the oldest unit at 96 years. Over the last decade, London Hydro has continued to engage civil engineering consultants to inspect a subset of structures annually. The inspection cycle has evolved from a blanket five-year schedule to a risk-based approach that considers location (road vs. boulevard) and a 1-5 condition ranking system, with 1 representing the worst condition. Over the past five years, roughly 150 maintenance holes were inspected annually. Inspection findings inform decisions regarding replacement, refurbishment, or further monitoring.

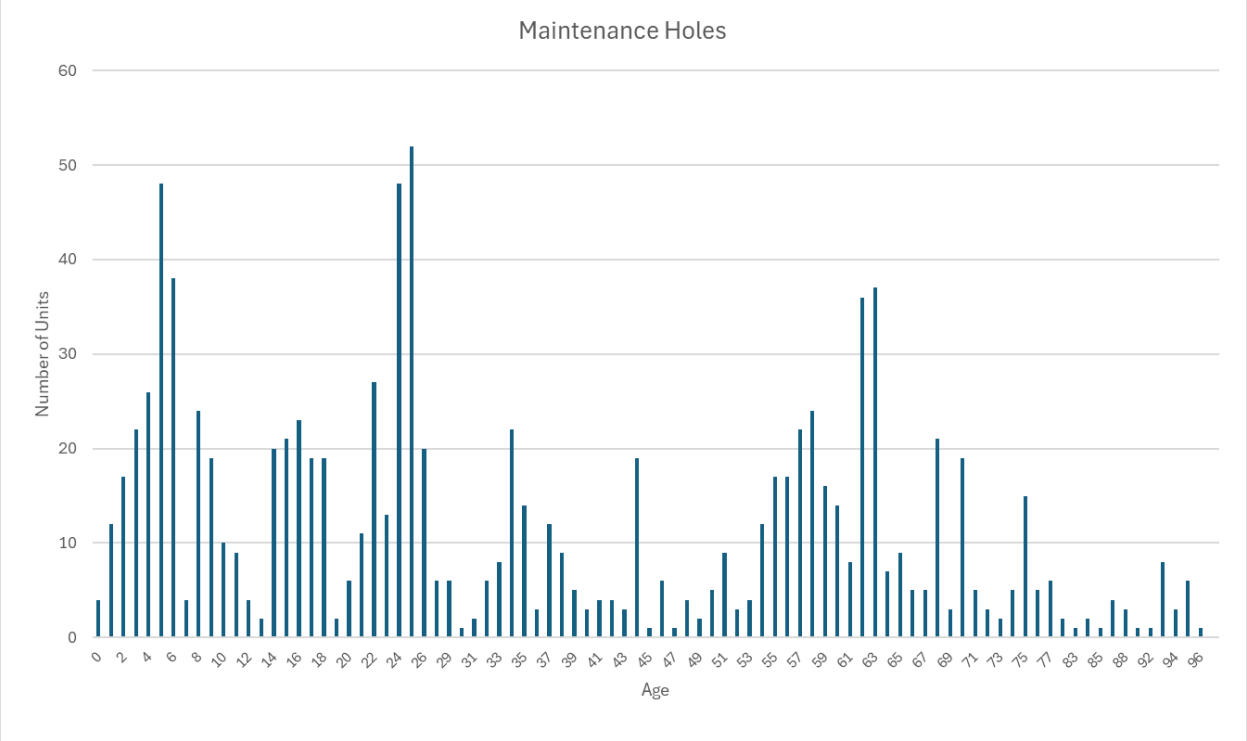


Figure: 39 Age Distribution of Maintenance Holes

The 2024 ACA, which combines installation year and inspection data, indicates an average Health Index of 90% for maintenance holes (Table 35). Although failing maintenance holes rarely cause outages directly, deteriorated structures can pose safety risks and occasionally contribute to service interruptions, as when a water main failure undermined a nearby maintenance hole. To mitigate these risks, deteriorated structures are sometimes “condemned” until repaired or refurbished.

Table 35 Health Index Categorization of Maintenance Holes

	Health Index Distribution of Maintenance Holes by Number of Units				
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	0	21	40	253	714
Percentage	0%	2%	4%	25%	69%

Refurbishment strategies London Hydro has deployed over the years, ranging from roof slab replacement to partial reconstruction, have successfully extended asset life, and they also allow some units to reach very advanced ages. Recognizing the limitations of refurbishment and the potential for sudden structural failures, London Hydro is developing a plan to replace the most at-risk units in a levelized manner. This approach aims to manage safety and reliability risks while avoiding large, uneven capital expenditures in future years.

Vaults share similar considerations. The 67 vaults on London Hydro's system have a similar service life expectancy as that of the maintenance holes, with approximately 4% (three units) currently past that threshold and another 4% expected to reach it within ten years. Vaults include various components such as access grates, ladders, lighting, and sump pumps, which are inspected regularly, but represent a relatively minor financial value.

The age distribution of vaults is shown in Figure 40, with an average age of 47 years. Vault inspections are conducted semi-annually by Operations staff using an internal checklist covering walls, roof slabs, ladders, pumps, and lighting. Even decommissioned vaults are inspected until fully removed to manage residual safety risk. Over the past five years, an average of 17 vaults were inspected annually by a civil engineer. Inspection results guide decisions for replacement, refurbishment, or follow-up inspections.

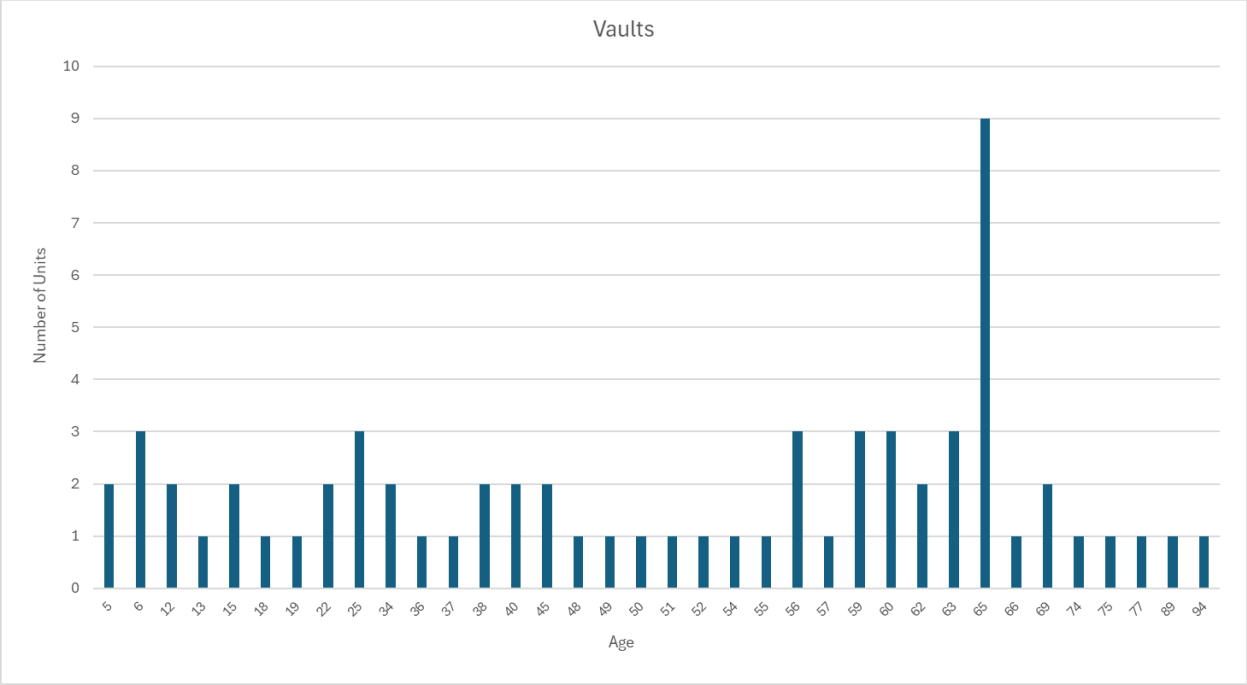


Figure: 40 Age Distribution of Vaults

Of the 67 assets in the population, 66 had sufficient data to calculate a health index and are summarized in Table 36. The 2024 ACA found one vault in poor condition and seven in fair condition, with an average Health Index of 86%. Vault deterioration primarily presents safety risks rather than direct operational outage risk. Most vaults are not located beneath roadways, thereby limiting exposure to traffic-induced stresses; however, roof slabs located in sidewalks remain susceptible to weathering and road salts. Where condition warrants, deteriorated units are rebuilt or removed from service to ensure public safety.

Table 36 Health Index Categorization of Vaults

	Health Index Distribution of Vaults by Number of Units				
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	0	1	7	20	38
Percentage	0%	2%	11%	30%	58%

Recognizing that refurbishment can only extend asset life so far, London Hydro commissioned AECOM again in 2025, to assess 66 high-risk or aged assets (61 maintenance holes and 5 vaults), approaching or exceeding life expectancy, ranging from 75 to 97 years in age (example Figure 41). This assessment provided detailed condition ratings, risk evaluations, and recommended actions to support levelized capital planning. Structural element ratings averaged around 3.0 range, with 15 maintenance hole elements rated in the 2.0 range, reflecting elevated risk (Tables 37 and 38).



Figure: 41 Example of a 97 Year Old Maintenance Hole (434)

Table 37 AECOM Assessment of High Risk Aged Maintenance Holes (AECOM Table 4)

	Ring and Lid		Roof Slab		Walls		Floors	
Condition Rating	Total Maintenance Holes	Percent of Inspected Maintenance Hole Inventory	Total Maintenance Holes	Percent of Inspected Maintenance Hole Inventory	Total Maintenance Holes	Percent of Inspected Maintenance Hole Inventory	Total Maintenance Holes	Percent of Inspected Maintenance Hole Inventory
1.0	0	0%	0	0%	0	0%	0	0%
2.0	9	15%	0	0%	6	10%	0	0%
3.0	22	36%	21	34%	47	77%	60	98%
4.0	26	43%	31	51%	8	13%	1	2%
5.0	4	7%	9	15%	0	0%	0	0%
Total	61		61		61		61	
Avg Rating	3.4		3.8		3.0		3.0	

Table 38 AECOM Assessment of High Risk Aged Vaults (AECOM Table 5)

	Roof Slab		Walls		Floors	
Condition Rating	Total Vaults	Percent of Inspected Vaults	Total Vaults	Percent of Inspected Vaults	Total Vaults	Percent of Inspected Vaults
1.0	0	0%	0	0%	0	0%
2.0	0	0%	0	0%	0	0%
3.0	2	40%	4	80%	4	80%
4.0	3	60%	1	20%	1	20%
5.0	0	0%	0	0%	0	0%
Total	5		5		5	
Avg Rating	3.6		3.2		3.2	

AECOM's historical service life assumptions for structures are assigned 80 years for concrete and 50 years for masonry. Updated reviews in 2025 recommend 100 years for concrete and 75 years for masonry, consistent with civil infrastructure standards such as bridges and culverts. While condition ratings offer useful guidance, visual inspections cannot capture hidden deterioration, such as corrosion/ degradation of internal reinforcement. As assets age, the risk of failure increases, potentially impacting safety and system reliability. Where replacement cannot be achieved prior to exceeding anticipated service life, AECOM recommends these units be prioritized on the replacement schedule to ensure completion within a maximum of five years past service life, and be closely monitored during that time.

This overview of maintenance holes and vaults provides a critical foundation for London Hydro's lifecycle optimization strategy. Understanding asset demographics, condition, and associated risks allows the utility to prioritize investments strategically, maintain a safe and reliable distribution system, and manage capital expenditures efficiently.

Network Transformers and Protectors

London Hydro's secondary network system supplies the downtown core using a fleet of 64 network transformers and an equal number of associated network protectors. These assets are critical to serving dense customer loads in the city's commercial and institutional districts, where underground installation is required to mitigate space constraints and enhance service continuity. Most network transformers operate at 13.8 kV and serve end-users at 208Y/120 V, with seven spot networks at 600Y/347 V and 12 additional 27.6 kV transformers supporting a commercial mini-grid in the downtown core. Transformer sizes range from 500 to 1,500 kVA and are housed in compact concrete vaults beneath sidewalks.

The network transformers are primarily fed through nine radial 13.8 kV feeders that connect to nine 27.6 kV step-down transformers and five load centres located across three substations. The interconnected design of the low voltage secondary network significantly reduces customer exposure to outages. Loads can be redistributed among multiple transformers in real time if an individual unit fails or is taken out of service. This level of redundancy, combined with underground construction, provides a high degree of reliability in an area with critical commercial and economic activity.

At the time of the 2024 ACA, network transformers had an average age of 20 years, with the oldest unit installed in 1989. All units remain below their anticipated service life of 45 years, based on industry practice and empirical data. Condition assessments based on age and field inspections assign a Health Index of 100% across the fleet (Table 39). Although the current health profile is favorable, the effects of aging are expected to become more pronounced over the planning horizon. As illustrated in Figure 42, an increasing number of units will reach mid-life or beyond over the next 10 to 15 years, underscoring the need for planned reinvestment and condition-based intervention.

Table 39 Health Index Categorization of Network Transformers

	Health Index Distribution of Network Transformers by Number of Units				
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	0	0	0	0	64
Percentage	0%	0%	0%	0%	100%

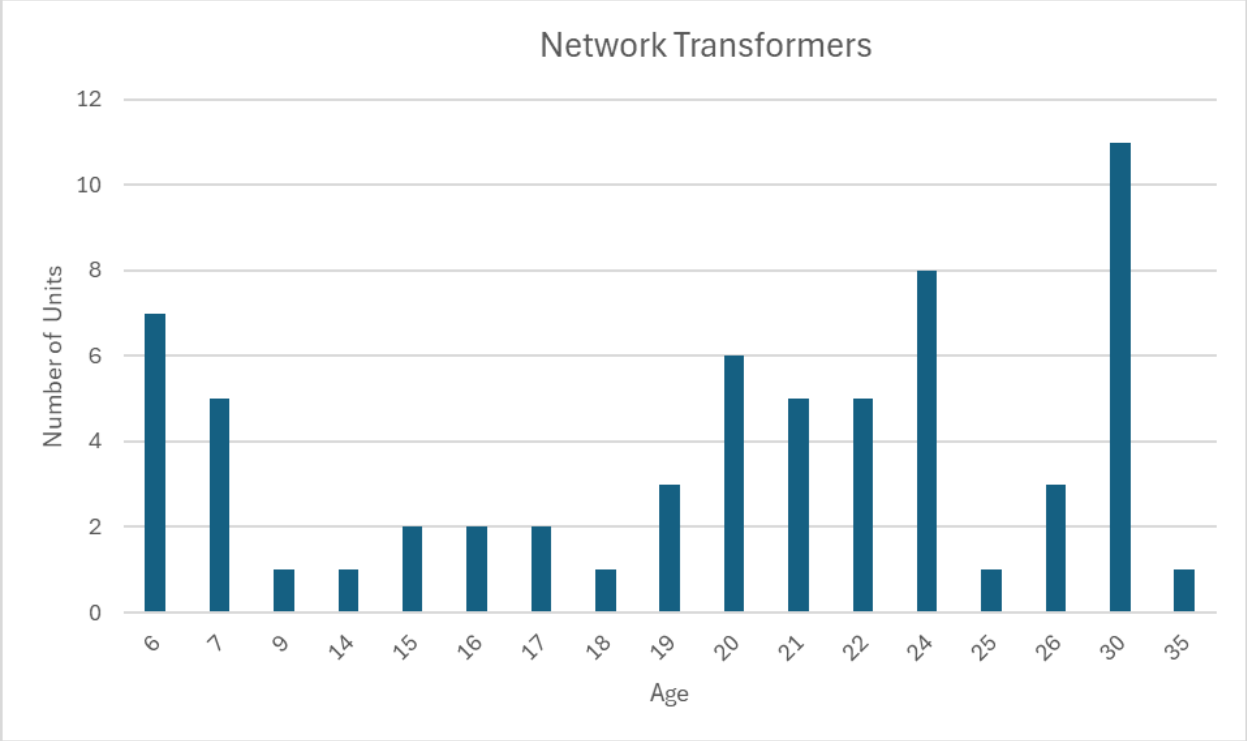


Figure: 42 Age Distribution of Network Transformers

To ensure continued asset performance, London Hydro inspects each vault and transformer at least semi-annually. Deficiencies are assigned corrective action priorities, with urgent work carried out immediately and non-urgent repairs addressed through refurbishment or replacement. Transformers have gradually been upgraded to use FR3 natural ester insulating fluid or other non-oil based fluid, which are biodegradable, non-toxic, and significantly more fire-resistant than conventional oil. This reduces environmental and public safety risks associated with potential leaks or vault fires, particularly in the confined and highly accessible locations where the transformers are installed.

Although transformer failures are infrequent and do not typically lead to customer outages due to the networked configuration, the location of transformers beneath public walkways introduces safety and reputational risks. Failures can result in vault fires, smoke emissions, or explosive pressure events, representing hazards for both the public and field workers. Some units also rely on older paper-insulated lead-covered (PILC) primary cables that are increasingly prone to degradation. As these cables fail, vault reconstruction and cable replacement are required, often with significant structural intervention at street level.

To mitigate emerging performance risks, London Hydro has deployed real-time monitoring and control technologies that enhance visibility and control over transformer conditions and relays. Two systems were piloted and subsequently adopted: Eaton's TRTL solution, which communicates through fiber to provide remote relay monitoring and control, and a power-line carrier-based system for real-time vault sensor data (temperature, oil level, liquid entry). Together, these systems help operators make informed, proactive decisions and reduce the need for intrusive manual inspections and isolations.

Related to the transformers are 64 network protectors, which are critical to fault isolation in the underground system. These devices detect reverse power flow and isolate transformer secondary connections to prevent fault propagation. Network protectors range from 1,200 to 2,500 Amps and were assigned a Health Index of 100% in the 2024 ACA (Table 40). Their average age is estimated to be 20 years, and all units remain below their anticipated service life of 45 years. Protectors are housed in submersible steel enclosures and are inspected during transformer vault visits. All protectors have been modernized with electronic relay controls to improve trip accuracy and reduce nuisance operations.

Table 40 Health Index Categorization of Network Protectors

	Health Index Distribution of Network Protectors by Number of Units				
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	0	0	0	0	64
Percentage	0%	0%	0%	0%	100%

The reliability impact of network protectors failure is low under normal operating conditions, as redundant transformers typically continue to supply the secondary network. The primary operational risks relate to worker safety and confined-space electrical hazards during live isolation activities. However, recent integration with SCADA enables remote relay operation, reducing the need for manual field operation of network protectors.

Overall, London Hydro's network transformers and protectors remain in good condition with low near-term failure risk. However, several factors point to the need for ongoing monitoring and targeted reinvestment as assets age. Exposure to winter road salt can accelerate corrosion on vault enclosures and metallic housings for both transformers and protectors. This deterioration heightens safety concerns, increases the potential for environmental exposure, and could impair long-term performance without timely intervention. Strategically addressing these risks as they are identified through routine inspections will be critical to sustaining reliability and public safety in the city's core.

Low Voltage Underground Cable

Low-voltage (LV) underground cables form the backbone of London Hydro's secondary distribution system, supplying residential and commercial customers throughout the service territory. These assets also include older components such as pedestal assemblies, which were widely used in earlier subdivision designs to facilitate secondary connections. London Hydro owns approximately 4,012 km of LV underground cable, representing nearly all (96%) of the 4,174 km installed across the system, which includes some customer owned cable, or owned by other utilities (i.e., Bell, Rogers).

A significant portion of these assets was installed during the 1960s and 1970s as part of subdivision development. The fleet has an average age of approximately 31 years, and while typical service life is generally estimated at 60 years or more, roughly one quarter of the population (~1000+km) is projected to exceed the end of useful service life within the next 20 years. Recent enhancements to GIS-based asset tracking have reduced unknown installation years to less than 1% of the total inventory, as illustrated in Figure 43. A breakdown of this cable by voltage and phase classification is provided in Table 41, for reference.

Table 41 Low Voltage Cable Length by Service Classification

Service Type	LV Single-Phase	LV Three-Phase		
Service Voltage	240/120 V	208Y/120 V	600Y/347 V	Non-standard[24]
Length (km)	4038	71	64	<1
Total Length (km)	4174			

[24] Non-standard low voltages present on the London Hydro system are: 416/240 V, 480Y/277 V and 600 V Delta.

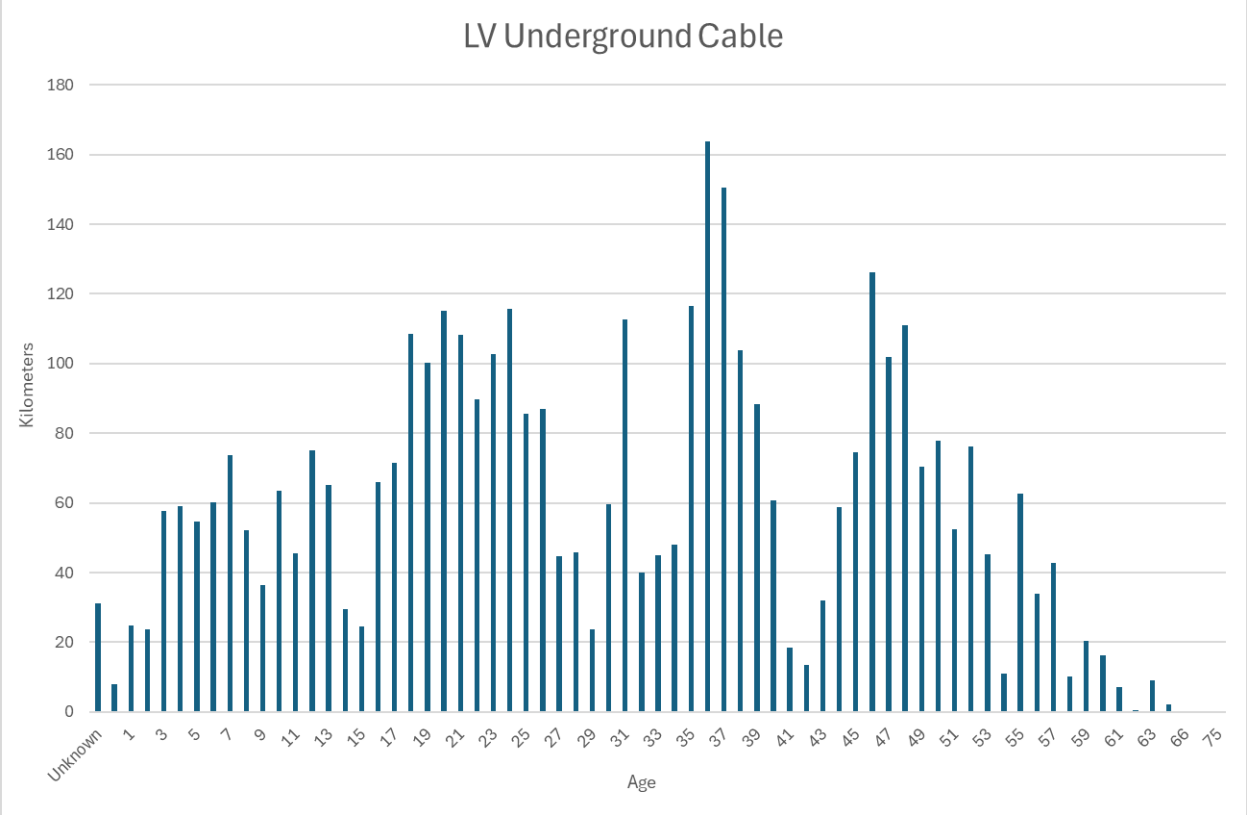


Figure: 43 Age Distribution of LV Underground Cable

In addition to cable, London Hydro maintains approximately 1,600 pedestals and 5,000 underground pullboxes that support secondary distribution. Many of these enclosures exceed 30 years in service and have begun to exhibit deterioration, including structural corrosion and degradation of internal components. While the direct reliability impact of pedestal deterioration is generally limited, these assets present increasing safety and operational risks if left unaddressed. The growing frequency of condition-driven, reactive replacements and failures indicates a gradual shift in the asset risk profile. Figure 44 provides an example of a deteriorated pedestal enclosure.



Figure: 44 Rusted LV Pedestal

Unlike primary underground cables, low-voltage secondary cables are not subject to routine inspection and are typically only assessed when exposed during maintenance or failure events. Failures are most commonly associated with splice degradation or localized environmental factors such as soil movement, moisture ingress, or third-party damage. Annual fault volumes have remained relatively stable, averaging approximately 150 to 175 occurrences per year since 2012 – representing roughly 0.2% of the total secondary services in operation. These events are typically localized, affecting a single customer or a small group of customers, and therefore have minimal impact on overall system reliability. Trends in these faults are presented in Figure 45.

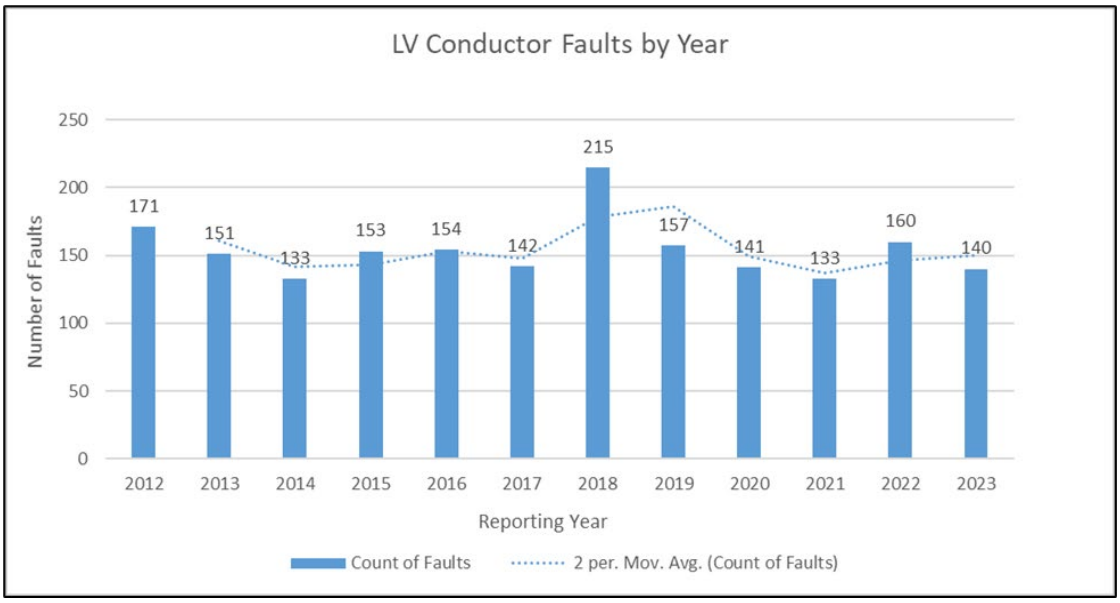


Figure: 45 Failure Impact from LV Underground Cable Faults

Given this performance, London Hydro continues to manage low-voltage secondary cables and associated assets on a reactive basis, with repairs and replacements undertaken as failures or condition issues arise. This approach remains appropriate under current conditions; however, the aging profile of both cables and enclosure assets, combined with the accumulation of repairs and splices over time, is expected to gradually reduce the effectiveness and cost-efficiency of a purely reactive strategy.

At the same time, evolving load characteristics – particularly increased residential demand associated with electrification, including EV adoption – are contributing to more frequent service upgrades. In older subdivisions, where cables are direct-buried and lack spare duct capacity, these upgrades often require trenching and civil works, increasing cost, complexity and customer property disruption. London Hydro has addressed these challenges in new developments by installing primary and secondary duct systems with spare capacity, improving long-term flexibility, reducing future replacement costs with less customer property disruption.

While reliability impacts from low-voltage secondary cable failures remain limited today, London Hydro continues to monitor asset condition, failure trends, and loading impacts across both cable and enclosure assets. This ongoing assessment will inform the appropriate timing and scope of any transition toward a more proactive and structured sustainment approach, ensuring that investment decisions remain aligned with system risk, customer needs, and cost-effectiveness.

5.3.2b.3 Substations

Substation Transformers

London Hydro operates 63 substation transformers across its service area, which are vital to delivering power to homes and businesses. These transformers step voltage down from the 27.6 kV system to distribution levels and support both municipal substations and customer-dedicated facilities. Of the total fleet, 32 units are located at municipal stations feeding 4.16 kV or 13.8 kV systems, while the remaining 31 are dedicated to customer sites. A handful of legacy 4.16 kV stations still operate with reduced load due to ongoing conversion to 27.6 kV infrastructure.

Most municipal substations were built during the 1960s and 1970s in response to rapid urban growth, with 4.16 kV distribution fed by 27.6 kV sub-transmission. Since then, London Hydro has systematically retired or converted older stations based on condition and performance, aligning the system with modern standards and improving reliability and system efficiency. This conversion strategy has reduced loading on older transformers, helping extend their service lives.

Substation transformer aging remains an important planning consideration. Seven transformers now exceed their anticipated service life of 55 years and continue to operate at low load levels. Fleet-wide, the average age is 28 years, indicating a mid-life profile, as shown in Figure 46.

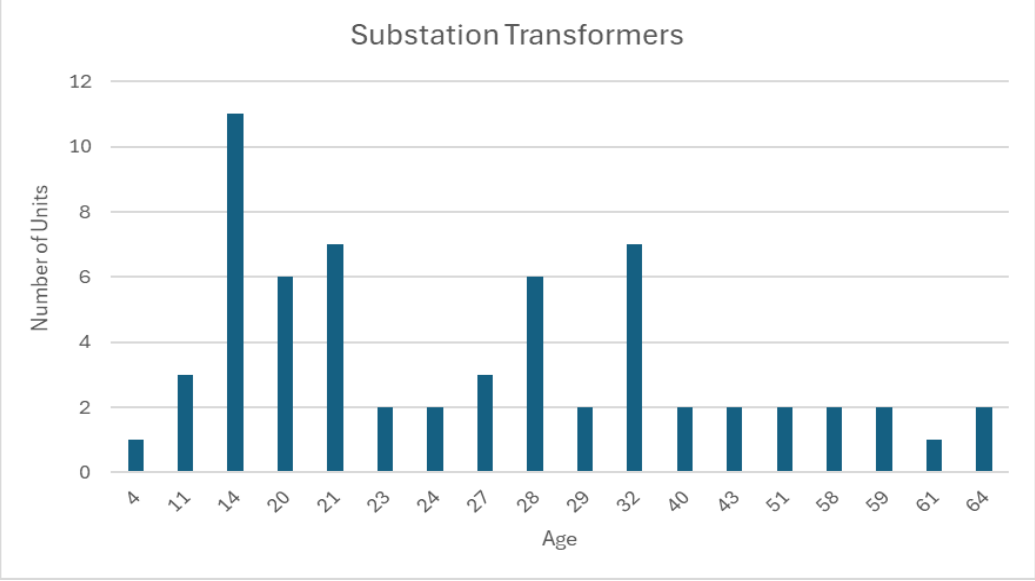


Figure: 46 Age Distribution of Substation Transformers

Transformer condition is assessed through quarterly visual inspections and annual diagnostic oil testing, including Oil Quality (OQ) and Dissolved Gas Analysis (DGA), and Furan test every couple of years. These tests are aligned with industry standards and are key to detecting issues such as thermal stress or insulation degradation. Infrared scanning is also used to identify hot spots or loose connections.

The 2024 ACA rates 17 substation transformers as being in “poor” condition, with none falling into the “very poor” category. While the absence of very poor units reflects effective maintenance, the number of poor-rated assets signals growing risk as the fleet continues to age.

Table 42 Health Categorization of Substation Transformers

	Health Index Distribution of Substation Transformers by Number of Units				
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	0	17	1	5	40
Percentage	0%	27%	2%	8%	63%

Although all transformers are PCB-free, oil-filled units can pose environmental risks if leaks occur. London Hydro has invested in improved oil containment systems since 2020. The containment systems have been installed at two environmentally sensitive sites and more are planned for further deployment subject to environmental risk evaluation on a case-by-case basis.

As transformers age, the primary risk is declining reliability, especially during peak demand or equipment failure events. While the system design typically offers backup supply options, outages at older substations can still result in extended customer interruptions or emergency work. These risks are heightened where legacy 4.16 kV assets remain in service, and do not offer full redundancy.

Looking ahead, London Hydro’s strategic approach combines continued voltage conversion, reuse of serviceable equipment, and planned reinvestment in aging substation assets to extend service-life. This supports lifecycle optimization, while managing emerging risks. Given the age profile, number of poorly-rated units, and environmental considerations, targeted renewal of substation transformers will be an important component of sustaining reliable and resilient service over the planning horizon.

Substation Switchgear and Batteries

Substation switchgear and station batteries form the backbone of London Hydro's distribution system, enabling the safe and reliable delivery of power across the network. These assets are integral to protection, control, and fault response and play a critical role in supporting customer reliability and public safety.

Over the past five years, London Hydro has reduced the number of municipal substations in service from 36 to fewer than 30, resulting in a corresponding reduction in the quantity of switchgear assemblies. However, the remaining fleet still represents a wide range of vintages, designs, and configurations, reflecting the evolution of distribution system architecture over several decades. Switchgear assets are installed at both municipal and customer-dedicated substations, with a total of 34 units currently in service.

The existing switchgear mix includes older circuit breaker line-ups and oil-filled reclosers dating back to the 1960s and 1970s. As well, more modern pad-mounted solid-dielectric and SF6-insulated switchgear have been installed at newer substations within the past 15 years. According to the 2024 ACA, service life for these assets typically ranges from 40 to 50 years, depending on the type. Based on this benchmark, 13 units, including 10 circuit breaker assemblies and 3 oil reclosers, are currently beyond their assumed end-of-life. The overall fleet averages 37 years of age. The age profile of these assets is shown in Figure 47.

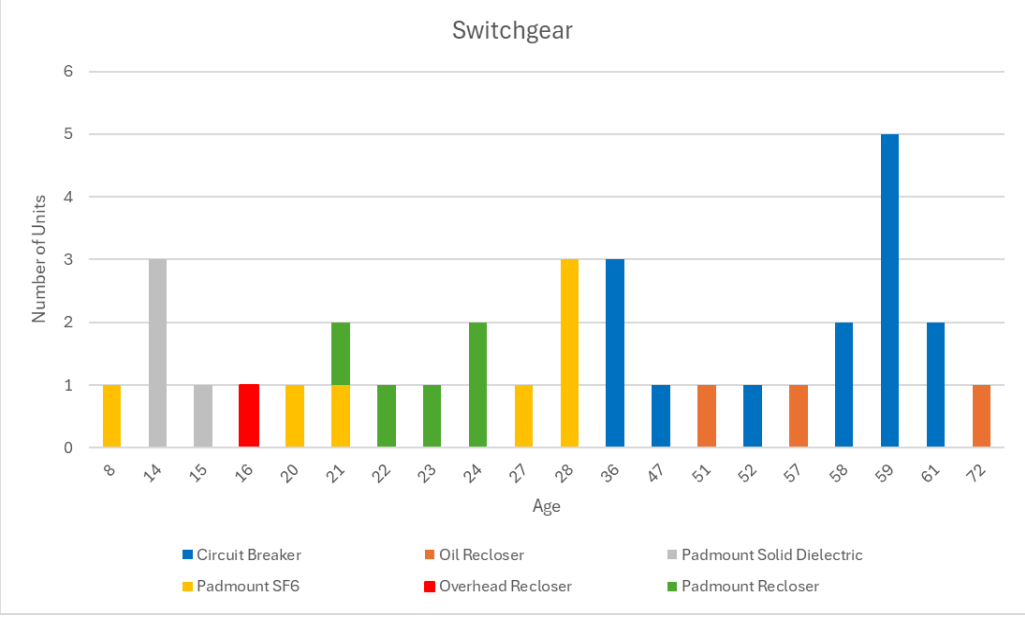


Figure: 47 Age Distribution of Substation Switchgear

While routine inspections, 5-year maintenance cycles, and corrective work have enabled continued operation of this aging infrastructure, performance and condition data indicate increasing reliability and safety risks. Corrosion, insulation degradation, and spare part obsolescence are becoming more prevalent as the switchgear continues to age. The 2024 ACA places several assets in very poor condition, reinforcing the likelihood of rising failure rates and potential for wider service disruptions. Detailed condition ratings are provided in Table 43.

Table 43 Health Index Categorization of Substation Switchgear

Health Index Distribution of Substation Switchgear by Number of Units					
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	12	0	1	1	20
Percentage	35%	0%	3%	3%	59%

System reliability risks increase where switchgear failure could impact multiple feeders or compromise operation of protection devices. Failure of a circuit breaker or relay panel could prolong outages for a significant number of customers, especially at stations or periods without equivalent levels of redundancy. In smaller substations where reclosers are used as stand-alone devices, failure scenarios are more localized, but still result in prolonged interruptions and reduced operational flexibility.

Station batteries serve as essential backup power for protection, communication, and control systems during outages or loss of supply. London Hydro currently maintains 18 battery banks at municipal substations, along with additional batteries embedded in selected SF6 switchgear installations. These systems typically have a useful life of 20 years, and 83 percent of the battery fleet remains within this expected period. The average age is 13 years, as summarized in Figure 48. Battery health is managed through regular inspections and annual capacity testing, with the majority assessed in fair or better condition as shown in Table 44.

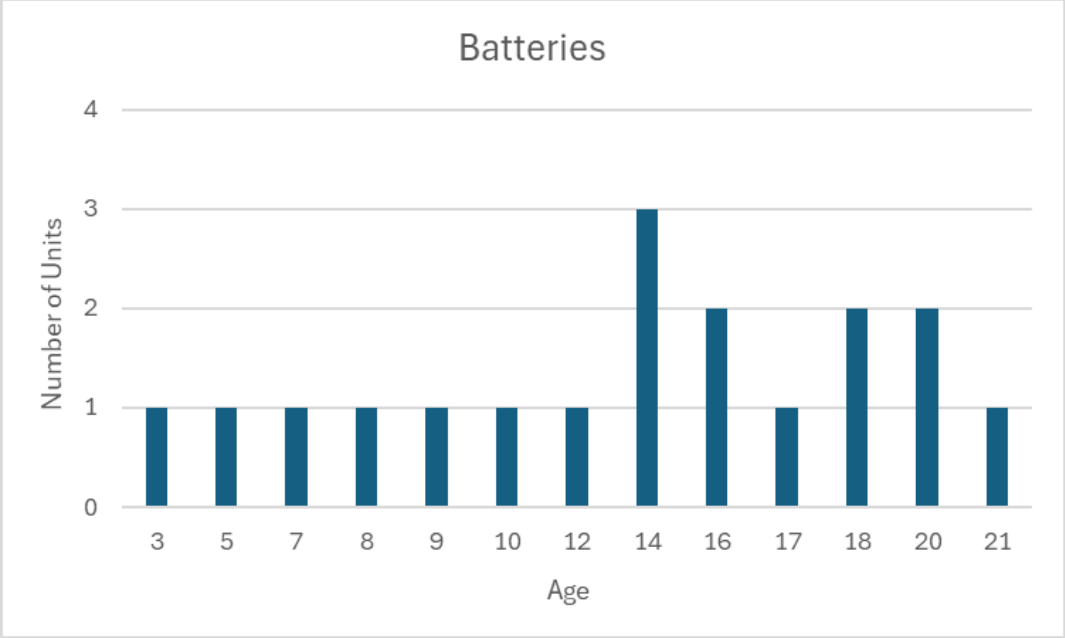


Figure: 48 Age Distribution of Station Batteries

Table 44 Health Index Categorization of Station Batteries

	Health Index Distribution of Station Batteries by Number of Units				
	Very Poor	**Poor**	**Fair**	**Good**	**Very Good**
Units	1	1	4	3	9
Percentage	6%	6%	22%	17%	50%

Despite this generally positive condition profile, aging batteries can pose a significant risk to system protection and restoration, particularly if bank degradation results in insufficient reserve power to operate relays or breakers during an outage or disturbance. If a battery fails in service, the ability to remotely isolate faults or restore supply may be diminished, resulting in longer outage durations and greater operational risk.

The combined aging profiles and condition assessments of switchgear and station batteries illustrate the need to continue 4kV conversions and targeted asset renewal of switchgear and batteries to sustain the reliability and resilience of London Hydro's distribution system.

5.3.2c Supply Capacity and Utilization

5.3.2c.1 Station Capacity & Utilization

London's population at the end of 2025 was estimated at 494,785, up from 441,572 in 2021 based on Statistics Canada estimates[25]. This represents a four-year compound annual growth rate (CAGR) of approximately 2.9%. While growth moderated to about 1% in 2025, this is not indicative of a sustained slowdown, as population increases between 2021 and 2024 were consistently in the 3.3% to 3.9% range. Importantly, development activity remains strong, with the City of London issuing building permits for 5,462 new housing units in 2025, a 48% increase over 2024 and the highest annual total of all time.[26] This level of permitting signals a robust pipeline of development and supports the expectation that population and electricity demand growth will remain elevated over the planning horizon.

According to Ontario's Ministry of Finance Ontario's Long-Term Report on the Economy (May 2024)[27], the population of Southwestern Ontario is projected to increase by approximately 36%, rising from 1.8 million in 2023 to 2.5 million by 2046.

The Ministry of Finance further notes a sustained structural trend in which population growth is heavily concentrated within CMAs. Over the past two decades, only 7% of provincial population growth occurred outside CMAs, even though 18% of Ontarians live outside them. From 2002 to 2022, the population living outside CMAs grew by just 9% (222,000 residents), compared with a 29% increase within the 16 CMAs,

[25] Link to Statistics Canada's population estimate for City of London. For comparison, Statistics Canada showed the larger London CMA area population from 2021-2024 had a strong growth rate of 3.4% per year from 567,539 to 626,875 persons, then slowed in 2025 to a population of 633,002 representing approximately a 1% increase.

[26] City of London, "London set new records for housing growth and development approvals in 2025", Newsroom, February 11, 2026, https://london.ca/newsroom/london-set-new-records-housing-growth-development-approvals-2025

[27] Ontario Ministry of Finance, *Ontario's Long-Term Report on the Economy*, May 2024, p. 7, https://www.ontario.ca/document/ontarios-long-term-report-economy-2024

which collectively added 2.8 million residents. The Ministry projects that this divergence between CMA and non-CMA growth will persist into the future.[28]

Given London's position as the region's largest Census Metropolitan Area (CMA) and its role as the primary economic and service hub for Southwestern Ontario, it is reasonable to expect that a substantial share of this regional growth will occur within the London CMA.

Taken together, these trends – strong projected regional growth in Southwestern Ontario and the continued concentration of population growth within CMAs – support the expectation that the City of London will experience a significant portion of the region's long-term population increase. This provides a robust demographic basis for planning future electricity demand, system expansion, and long-term distribution infrastructure needs within London Hydro's service territory.

London Hydro's average customer growth over the past five years is illustrated in Figure 49. Based on average customer counts from 2021 to 2025, the service area has experienced a CAGR of approximately 0.9%, resulting in a cumulative increase of about 3.4% over the period.

[28] Ontario Ministry of Finance, *Ontario's Long-Term Report on the Economy*, May 2024, p. 19, https://www.ontario.ca/document/ontarios-long-term-report-economy-2024

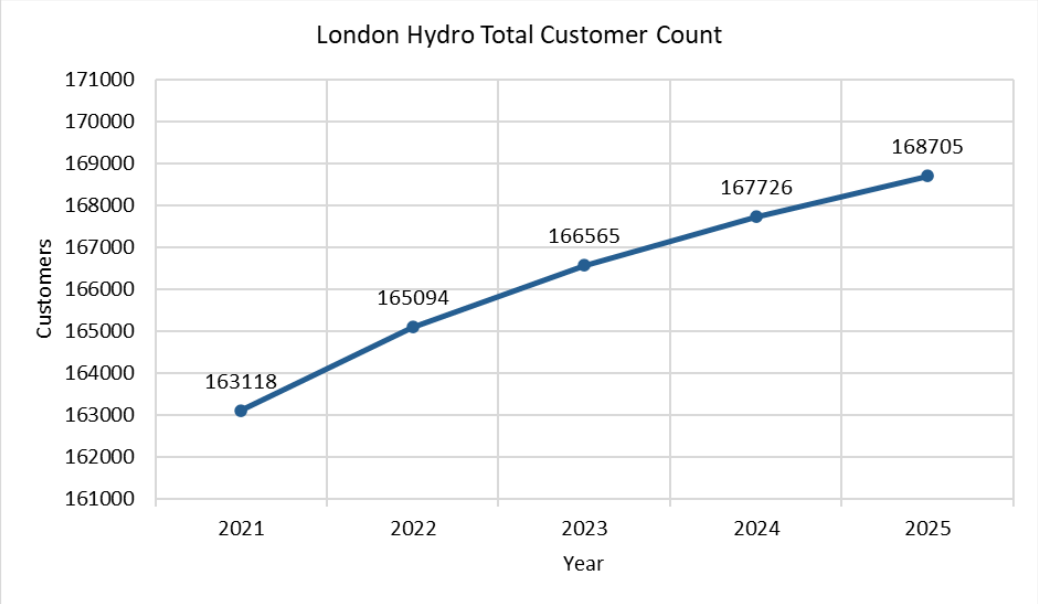


Figure: 49 London Hydro's Average Annual Customer Growth from 2021 to 2025

Customer counts are not a direct proxy for population, dwelling occupancy, or energy/peak impacts. Over the years 2021 to 2025, London Hydro's customer base increased by ~1.0% CAGR, while population increased by ~2.9% CAGR, implying a rising persons-per-customer trend. This divergence indicates that a material portion of population growth has been accommodated through increased occupancy within existing premises and/or multi-residential configurations with fewer metered accounts per resident (e.g., bulk-metering or institutional/residence-style loads). As a result, load growth can outpace customer growth, particularly for energy consumption and peak demand, even when the number of metered accounts grows modestly.

The corresponding system net peak demand over the past five years is shown in Figure 50.[29]

[29] The system load growth presented is the summer and winter net coincident peak demands for the City of London. Summer period is May-October and Winter period is January-April and November-December, inclusive.

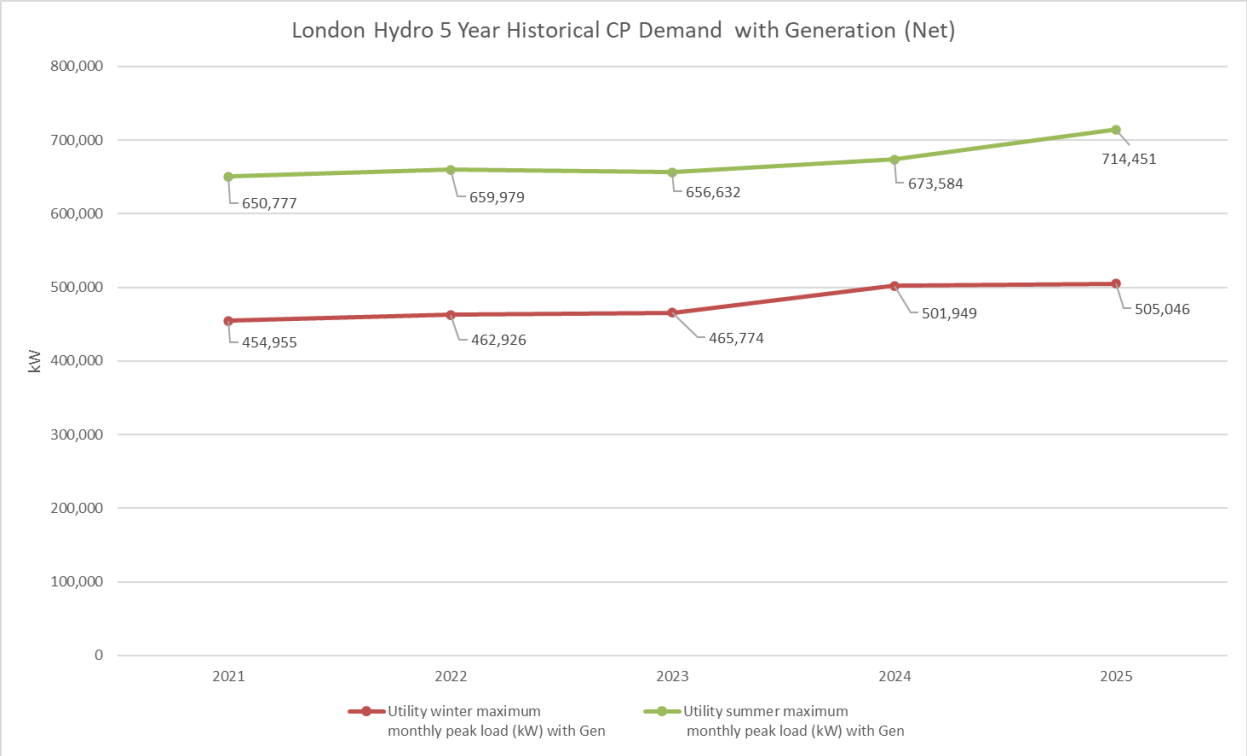


Figure: 50 London Hydro's Historical Load Growth from 2021 to 2025

London Hydro's annual system peak increased from 650,777 kW in 2021 to 714,450 kW in 2025, representing a net increase of approximately 63.7 MW (9.8%) over the period. This corresponds to a CAGR of approximately 2.4% per year, materially higher than the ~1.0% CAGR in customer growth, and broadly aligned with the ~2.9% CAGR in population growth observed over the same period.

The year-over-year pattern reflects modest growth between 2021 and 2024, generally within a range of approximately 1% to 3%, with a temporary decline in 2023 (-0.5%) reflecting weather normalization and typical system variability, followed by a notable increase in 2025 (6.1%). The 2025 step-change suggests the combined influence of continued demographic expansion, increased housing intensification, continued adoption of electrification technologies, and weather-driven peak conditions.

Overall, peak demand growth over this period has more closely tracked population growth than customer growth. The divergence between population and customer trends reflects ongoing intensification within the service territory, including increased occupancy per dwelling and a greater share of growth occurring in multi-residential apartment developments. These forms of development increase the number of residents served per metered account and concentrate load behind fewer service points. As a result, load

intensity per customer has increased, particularly during coincident peak conditions. Accordingly, peak demand growth is more closely correlated with demographic and housing-type dynamics than with customer count.

London Hydro distribution is served by seven Hydro One owned transformer stations. The normal weather corrected gross station demand for the historical period at each station is shown in Table 45. This table depicts only London Hydro's feeders servicing the demand in the City of London and excludes the Hydro One's feeders at Buchanan TS, Highbury TS, Clarke TS, and Wonderland TS.

Table 45 Historical Normal Weather Corrected Gross Station demand versus Station LTRs, excluding Hydro One owned feeders

Transformer Station	Historical Normal Weather Corrected Gross Station Demand at London Area Coincident Peak (MW)						Capacity LTR[30] (MW)	Utilization (%)
	2020	2021	2022	2023	2024	2025		
Buchanan TS	170	158	139	145	156	158	174	91%
Clarke TS	93	101	99	99	107	108	110	99%
Highbury TS	66	67	72	63	63	64	85	75%
Nelson TS	37	40	57	41	71	73	113	65%
Talbot TS T1/T2	105	115	121	110	121	123	114	108%
Talbot TS T3/T4	153	179	161	152	165	167	162	104%
Wonderland TS	98	74	85	89	89	90	122	74%

[30] Normal Supply Capacity is defined as the summer 10-day Limited Time Rating (LTR) of the station; this is the technical capacity rating for equipment used in planning and operational assessments..

When evaluating capacity utilization of transformer stations, the cumulative demand of Hydro One and London Hydro must be considered. The total demand at the station is depicted in Table 46 accounting for both London Hydro and Hydro One's feeders.

Table 46 Historical Normal Weather Corrected Gross Station demand versus Station LTRs, including Hydro One owned feeders [31]

Transformer Station	Historical Normal Weather Corrected Gross Station Demand at London Area Coincident Peak (MW)						Capacity LTR (MW)	Utilization (%)
	2020	2021	2022	2023	2024	2025		
Buchanan TS	193	179	150	167	179	181	174	104%
Clarke TS	108	117	116	115	125	127	110	116%
Highbury TS	73	73	80	71	72	73	85	86%
Nelson TS	37	40	57	41	71	73	113	65%
Talbot TS T1/T2	105	115	121	110	121	123	114	108%
Talbot TS T3/T4	153	179	161	152	165	167	162	104%
Wonderland TS	107	84	96	100	96	98	122	80%

As can be seen, normal weather corrected gross demand at Buchanan TS, Clarke TS, and both Talbot Stations exceed 90% of their respective normal supply capacity. Section 5.3.2c.3 delves deeper into forecasted load growth, the need and timing for new station supply capacity.

[31] Hydro One owns one feeder at each of the following stations: Buchanan TS, Clarke TS, Highbury TS, and Wonderland TS

5.3.2c.2 Feeder Capacity & Utilization

London Hydro distributes power at three primary distribution voltage levels: 27.6 kV, 8.32 kV, and 4.16 kV. The 8.32 kV system serves the city's outer rural areas, while the 4.16 kV system is a legacy network currently being converted to 27.6 kV and gradually will be phased out. Accordingly, this discussion focuses on the capacity and utilization of the primary 27.6 kV feeders.

From the seven Hydro One owned transformer stations, there are 58 feeders in-service with the potential to build-out two more feeders. Due to the interconnected nature of the 27.6kV system sourced from different transformer stations and the dynamic nature of the grid, London Hydro performs an extensive analysis at the coincident system peak demand for the City of London to avoid double counting demand on feeders that are abnormally configured. Once the peak demand hour is established, London Hydro's evaluation determines a "true feeder peak demand" that corrects for any load added or subtracted from a feeder due to planned or unplanned reconfigurations. Table 47 summarizes London Hydro's 27.6kV feeders based on 2024 peak demand, capacity[32], and utilization.

Table 47 London Hydro Feeders Comparing 2024's Coincident Peak to Utilization

Transformer Station	Feeder	2024 Coincident Peak (MW)	Capacity (MW)	Utilization (%)
Buchanan	19M22	7.5	18	42%
Buchanan	19M23	16.4	18	91%
Buchanan	19M24	10.8	18	60%
Buchanan	19M25	19.0	18	105%
Buchanan	19M26	12.1	18	67%
Buchanan	19M27	10.1	18	56%

[32] Typical Feeder planning capacity is based on 20MVA @ 90% PF, or, 18MW. Except 13M27 and 13M28, that supply the downtown ring, in a parallel configuration (N-1 design), have individual or combined capacity of 14MW.

Transformer Station	Feeder	2024 Coincident Peak (MW)	Capacity (MW)	Utilization (%)
Buchanan	19M28	13.9	18	77%
Buchanan	19M29	5.3	18	30%
Buchanan	19M30	10.2	18	57%
Buchanan	19M37	4.3	18	24%
Buchanan	19M38	11.8	18	66%
Clarke	70M1	9.3	18	52%
Clarke	70M3	18.9	18	105%
Clarke	70M4	13.8	18	76%
Clarke	70M5	10.3	18	57%
Clarke	70M6	6.9	18	38%
Clarke	70M7	13.6	18	76%
Clarke	70M8	10.8	18	60%
Highbury	4M12	4.3	18	24%
Highbury	4M13	7.0	18	39%
Highbury	4M14	13.3	18	74%
Highbury	4M15	12.8	18	71%
Highbury	4M16	6.8	18	38%
Highbury	4M17	6.0	18	33%

Transformer Station	Feeder	2024 Coincident Peak (MW)	Capacity (MW)	Utilization (%)
Highbury	4M18	3.3	18	18%
Nelson	13M21	11.8	18	66%
Nelson	13M22	16.6	18	92%
Nelson	13M23	11.8	18	65%
Nelson	13M24	15.3	18	85%
Nelson	13M25 (future)	0.0	18	0%
Nelson	13M26	-13.3	18	0%[33]
Nelson	13M27	5.3	14	38%
Nelson	13M28	3.4	14	24%
Talbot	26M11	14.9	18	83%
Talbot	26M12	15.2	18	84%
Talbot	26M13	17.6	18	98%
Talbot	26M14	14.0	18	78%
Talbot	26M21	14.1	18	78%
Talbot	26M22	12.2	18	68%
Talbot	26M23	12.3	18	68%

[33] This feeder was exporting power at the time of the system coincident peak. Accordingly, based on the feeder planning demand level of 18 MW 'load', a utilization value of 0% was assigned.

Transformer Station	Feeder	2024 Coincident Peak (MW)	Capacity (MW)	Utilization (%)
Talbot	26M25	12.2	18	68%
Talbot	26M41	14.0	18	78%
Talbot	26M42	21.1	18	117%
Talbot	26M43 (future)	0.0	18	0%
Talbot	26M46	16.3	18	90%
Talbot	26M47	14.6	18	81%
Talbot	26M48	11.4	18	63%
Talbot	26M51	5.5	18	31%
Talbot	26M52	5.2	18	29%
Talbot	26M53	10.7	18	60%
Talbot	26M54	13.6	18	76%
Talbot	26M55	14.0	18	78%
Talbot	26M56	22.6	18	125%
Wonderland	32M1	7.6	18	42%
Wonderland	32M3	10.9	18	61%
Wonderland	32M4	10.3	18	57%
Wonderland	32M5	18.1	18	101%
Wonderland	32M6	11.8	18	66%

Transformer Station	Feeder	2024 Coincident Peak (MW)	Capacity (MW)	Utilization (%)
Wonderland	32M7	9.7	18	54%
Wonderland	32M8	10.8	18	60%

Table 48 Distribution Feeder Utilization Levels Classified by Peak Demand as a Percentage of Normal Supply Capacity [34]

Utilization Criteria	Number of Feeders	% of Total Feeders
Less than 50%	17	28%
50% - 90%	34	57%
Greater than 90%	9	15%

As can be seen, there are several feeders approaching or exceeding their normal supply capacity. To ensure the reliability and resiliency of the grid, London Hydro monitors annually projected load growth and evaluates the need for reconfiguration to balance loads using existing available capacity on other feeders, the need to build out additional feeder supply capacity, or opportunities to leverage eDSM and DERs to supply excess short-term demand.

5.3.2c.3 Forecasted Load Growth

London Hydro's process for forecasting load growth, previously outlined in Section 5.3.1.1f Planning for Future Capacity Needs, incorporates municipal projections for residential, commercial, and industrial development, growth plans from large and key account customers, and anticipated adoption of electric vehicles and heat pumps. This information forms the basis of the normal weather load forecast projections to 2044 for the City of London.

[34] 100% utilization represents the feeder's planning level; when exceeded, a feeder(s) study is typically initiated.

In accordance with the OEB's Load Forecast Guideline for Ontario[35], London Hydro developed three load growth scenarios – Low, Reference, and High – to account for uncertainty in how future demand may materialize (Figure 51). The resulting forecast yields compound annual growth rates (CAGR) of 1.2%, 2.2%, and 3.2% for the Low, Reference, and High scenarios, respectively.

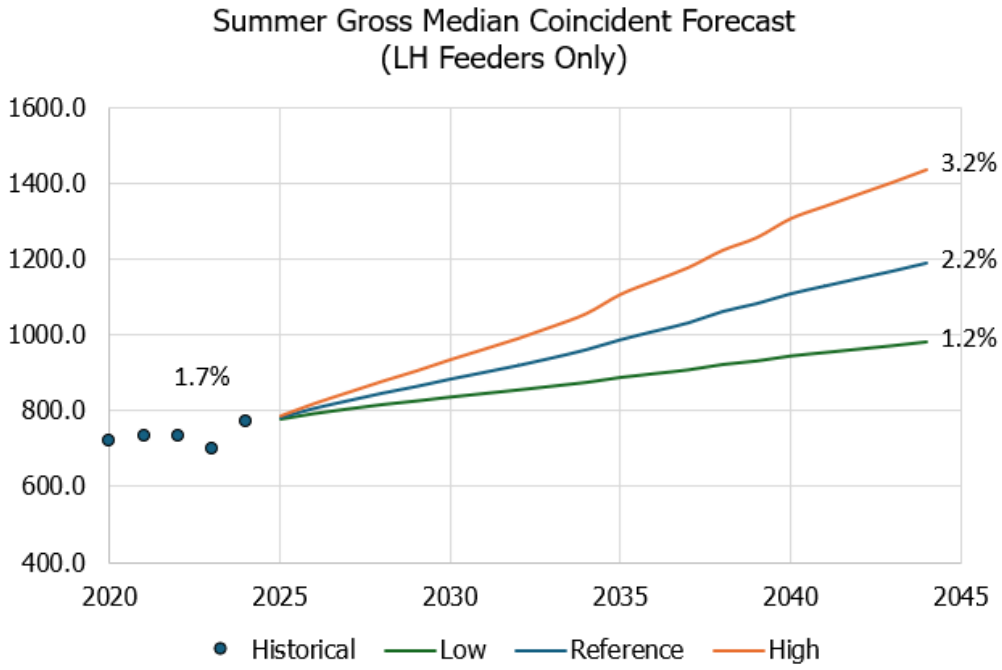


Figure: 51 London Hydro Summer Gross Normal Weather Coincident Forecast

As part of the Regional Planning Technical Working Group (TWG) activities conducted during the Integrated Regional Resource Planning (IRRP) phase led by the IESO, a net coincident summer demand forecast – adjusted for extreme-weather conditions – was developed. This forecast incorporates gross load projections from London Hydro and Hydro One, as well as the IESO's eDSM and generation assumptions. Table 49 presents a 20-year outlook, with the near-, mid-, and long-term forecast milestone years highlighted using corresponding colours (Orange, Blue, and Green, respectively).

[35] IESO Regional Electricity Planning - London Area, "Demand Forecast Methodology" document, along with other published reports, may be found in IESO's website: https://ieso.ca/Sector-Participants/Engagement-Initiatives/Engagements/Regional-Electricity-Planning-London-Area

Table 49 Stations "reference" net coincident demand (in MW) projections with extreme weather applied

Transformer Station	LDCs	LTR	Summer REFERENCE: Net Extreme Weather Station Peak Demand Forecast, Coincident to London Region (MW)										
			2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2044
Buchanan TS	London Hydro, Hydro One, ERTH Power	174	180	181	185	190	194	204	209	213	219	224	295
Clarke TS	London Hydro, Hydro One	110	134	135	140	144	145	146	147	148	150	151	176
Highbury TS	London Hydro, Hydro One	85	73	73	74	75	76	77	78	79	80	81	100
Nelson TS	London Hydro	113	62	63	64	65	67	68	70	71	73	74	106
Talbot DESN1 T1&T2 TS	London Hydro	114	133	141	143	144	145	147	149	151	153	156	197
Talbot DESN2 T3&T4 TS	London Hydro	162	169	176	177	178	178	179	180	181	183	185	227
Wonderland TS	London Hydro, Hydro One	122	104	106	109	111	112	113	115	117	119	121	154
All Stations		879	855	876	892	907	917	935	947	961	977	995	1256

Presented differently, Table 50 shows each station's projected supply capacity surplus (green) or deficit (red) under the Low, Reference, and High forecast scenarios for the key milestone years to understand the timing of the need for supply capacity.

Table 50 Station Capacity Needs using Coincident Peak (CP) net data and extreme weather corrected

Station	LTR [MW]	Year of Need in CP Ref	Station Capacity Need (MW) - CP Data Used								
			Near (2029)			Mid (2034)			Long (2044)		
			Low	Ref	High	Low	Ref	High	Low	Ref	High
Buchanan TS	174	2025	-10	-21	-36	-17	-51	-91	-47	-121	-218
Clarke TS	110	2025	-29	-35	-41	-30	-42	-53	-42	-67	-90
Highbury TS	85	2037	12	9	7	10	4	-3	1	-15	-32
Nelson TS	113	N/A	49	46	43	47	38	29	30	6	-42
Talbot DESN1 T1&T2 TS	114	2025	-24	-32	-39	-26	-43	-59	-43	-84	-122
Talbot DESN2 T3&T4 TS	162	2025	-9	-17	-25	-7	-24	-40	-24	-65	-103
Wonderland TS	122	N/A	14	10	0	12	1	-22	-3	-31	-85
All Stations	879	2026	4	-39	-91	-12	-116	-238	-129	-377	-692

The map (Figure 52) spatially illustrates the available supply capacity by Transformer Station service-area for the mid-term year 2034. This projection is based on the IESO's IRRP forecast for 2034, using the following criteria: summer season, reference scenario, coincident peak, net demand, and extreme-weather adjustment.

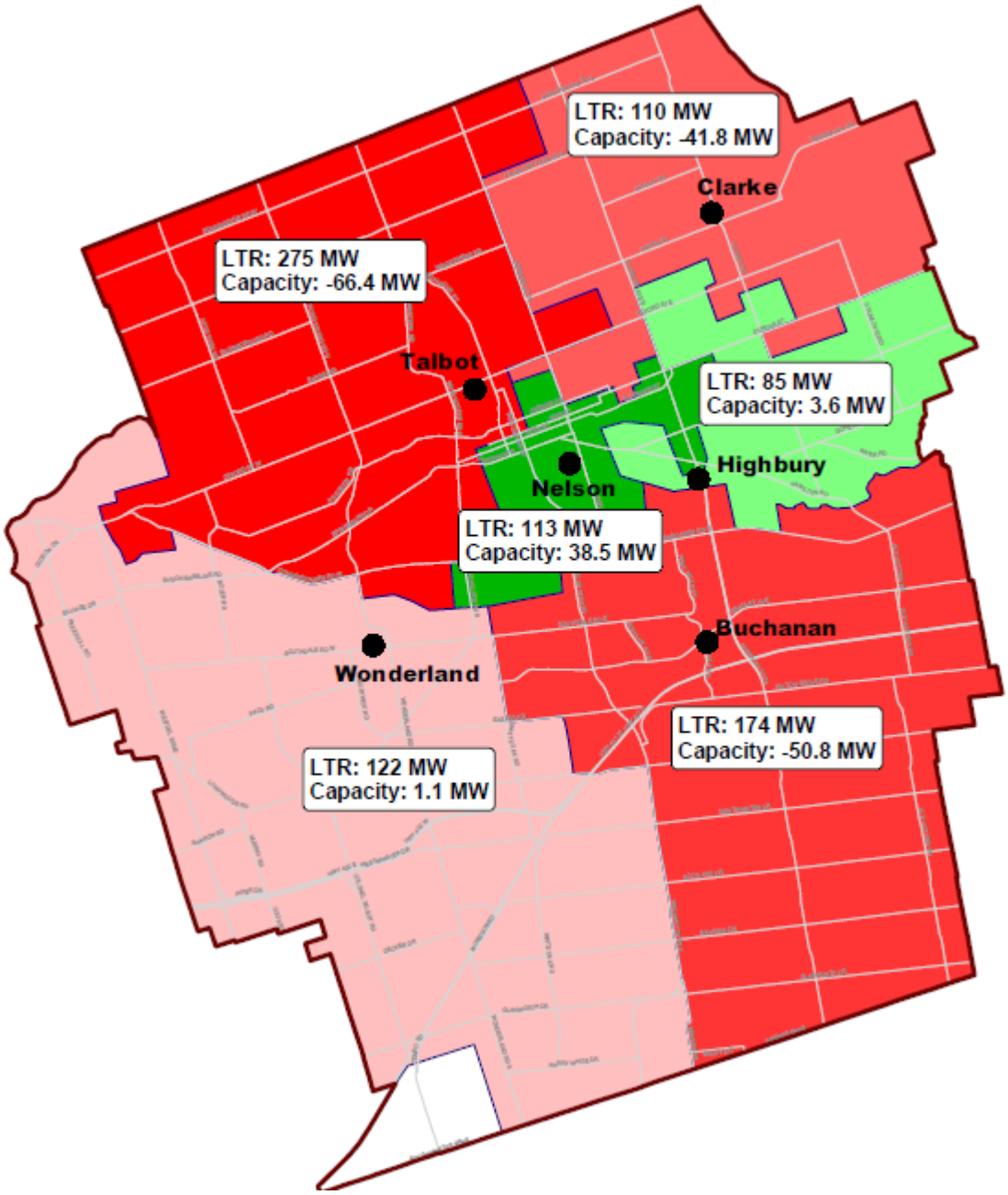


Figure: 52 Projected available supply capacity across Transformer Station service areas in 2034 ,[36]

[36] "LTR" represents planned capacity rating. Capacity shown as variance (+/- MW) from LTR — red exceeds rating, green is within rating. Note: the two Talbot stations are combined.

Station capacity assessments typically rely on non-coincident peak (NCP) load forecasts. The NCP for a station represents the highest demand recorded at that specific station, regardless of whether it coincides with the regional or system-wide peak. Based on a review of historical data, NCP demand has generally been observed to be approximately 4–8% higher than coincident peak (CP) demand. This approach ensures system reliability by confirming that station equipment can accommodate the maximum anticipated load at any given time.

For comparison with the CP forecasts presented above, Table 51 summarizes the station's projected NCP supply capacity surplus (green) or deficit (red) under the Low, Reference, and High forecast scenarios for the key milestone years.

Table 51 Station Capacity Needs using Non-Coincident Peak (NCP) net data and extreme weather corrected

Station	LTR [MW]	Year of Need in NCP Ref	Station Capacity Need (MW) - NCP Data Used								
			Near (2029)			Mid (2034)			Long (2044)		
			Low	Ref	High	Low	Ref	High	Low	Ref	High
Buchanan TS	174	2025	-7	-18	-32	-14	-47	-85	-42	-114	-209
Clarke TS	110	2025	-26	-32	-38	-27	-38	-49	-39	-62	-86
Highbury TS	85	2038	14	12	9	13	7	0	5	-11	-28
Nelson TS	113	2042	45	42	38	42	34	24	24	0	-51
Talbot DESN1 T1&T2 TS	114	2025	-39	-48	-56	-42	-61	-79	-63	-108	-150
Talbot DESN2 T3&T4 TS	162	2025	-18	-27	-35	-17	-35	-52	-36	-79	-118
Wonderland TS	122	2027	-2	-6	-17	-6	-18	-43	-24	-56	-117
All Stations	879	2025	-32	-76	-131	-50	-158	-285	-174	-431	-758

Forecast Load Growth Summary

Over the next ten years, London Hydro is projected to experience a load growth of 165 MW[37], exceeding the total system's planned capacity by 142 MW, or 16% of the existing LTR. The areas with the greatest exceedances are Talbot TS, serving the northwest, and Buchanan TS, serving the southeast. These results indicate that London Hydro will require two transformer stations with an LTR of 120 MVA or greater within the next decade, with one station initiated immediately to ensure it is in service by 2031.

[37] Based on Net CP and extreme-weather corrected projections

5.3.2d Supporting Assets

In addition to its core distribution infrastructure, London Hydro owns and operates a range of supporting assets that enable the safe and efficient delivery of electricity services. These include Fleet, Facilities, Metering, and Information Technology (IT) systems. While these assets are categorized as “General Plant” in the capital plan, they are managed within the same asset management framework described in Section 5.3.

This section introduces the asset categories that support grid operations, but are not part of the electrical network.

5.3.2d.1 Vehicle Fleet

London Hydro’s fleet and rolling stock assets are critical enablers of field operations, system maintenance, and emergency restoration activities. The fleet supports safe, reliable, and efficient delivery of electricity services across the company’s service territory and forms an integral component of the company’s General Plant investment category.

London Hydro owns and operates 183 vehicles, trailers, and specialty-powered equipment, which together form the Fleet asset group. A summary of these assets by vehicle type is provided in Table 52.

Table 52 Fleet/Rolling Stock Inventory

Equipment Type	# in Fleet (2026)
Pickup Truck	48
Large Vehicles	31
Attachments	29
Utility / Pole Trailers	22
SUVs and Cars	17
Maintenance Vans	14
Cutaway Van	6

Equipment Type	# in Fleet (2026)
Forklift and Stackers	5
Puller / Tensioners	3
Pallet Trucks	3
Chippers	2
Backhoes	2
Mini Excavator	1
Total:	183

The fleet includes:

- Large vehicles (Classes 6-8), such as bucket trucks and radial boom derrick (RBD) trucks used for overhead line construction and maintenance,
- Attachments include hydraulic bucket boom arms, digger derricks, backhoes etc.,
- Crane trucks (Class 8) for pole and transformer installation,
- Light-duty vehicles (pickup trucks, vans, SUVs) for field inspections, service calls, and supervisory functions,
- Trailers for equipment and material transport,
- Specialty-powered equipment, including line tensioners and cable winches, and
- Small motorized tools, such as chainsaws, gas drills, and pumps.

Fleet operations are managed through a dedicated Fleet Department, consisting of three certified mechanics, one lead mechanic, one supervisor, one administrative assistant, and one part-time utility helper, supported by qualified external service providers for specialized maintenance and inspection work. This hybrid delivery model ensures cost-effective service, flexibility for emergency response, and timely completion of repairs.

Fleet utilization and maintenance data – including mileage, engine hours, fuel consumption, and repair costs – are captured electronically by individual units through a software Fleet management system (Fleetio). The data are summarized annually to monitor cost trends, identify potential performance issues, and inform replacement planning decisions.

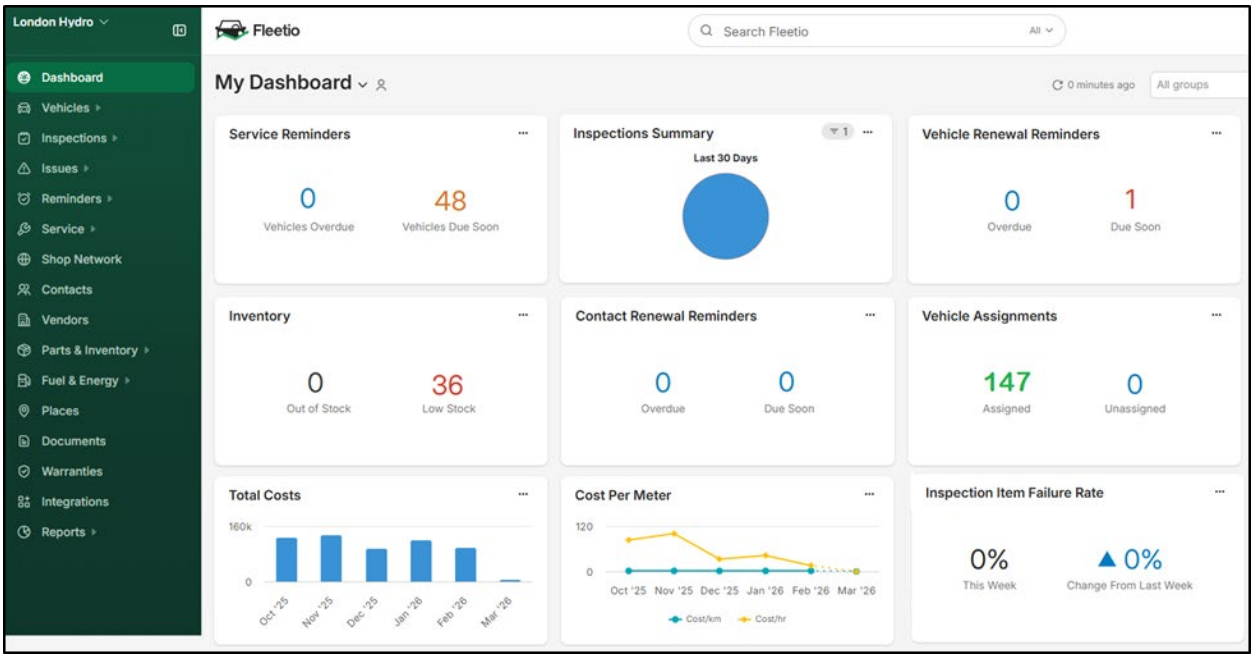


Figure: 53 Fleetio – Fleet Maintenance System Dashboard

These operational insights enable London Hydro to make data-driven decisions regarding maintenance, refurbishment, or replacement, ensuring fleet reliability and cost optimization.

London Hydro has a Fleet Maintenance Statement (See Appendix M) that ensures compliance with subsection 107. (1) of the Highway Traffic Act. London Hydro's policy specifies that every vehicle be inspected every 182 days +/- 30 Days. Also, every C.V.O.R. vehicle shall receive a "C" (PMCVI) Annual Inspection every 365 Days +/- 30 Days, as mandated by Ontario Regulation 611. The policy ensures that all preventative maintenance schedules per vehicle and equipment type category are defined.

When purchasing vehicles, beyond meeting operational needs London Hydro strives to realize fleet operations that are more efficient through technological investments and operational practices. It is also advantageous where possible to reduce fuel consumption and in turn GHG emissions. Fleet emissions are estimated to be 8,272 t of GHG over the next 11 years. London Hydro has recently adjusted the vehicle purchasing process to include total cost of ownership that allows for the fuel cost benefits of

electric vehicles to be fairly considered. There is no additional value assigned to the carbon emissions, but removes a barrier to fully consider the total cost of electric vehicles when making purchasing decisions. Today, the technological maturity of large vehicles (i.e. Bucket Trucks) is not yet at a level that supports London Hydro's investment. However, as the technology, supply chain, and industry adoption progress, these solutions will be considered in due course.

London Hydro's fleet has a mix of electrified vehicles including five hybrid, 7 plug-in hybrid and 5 fully electric battery vehicles. These are supported by 18 electric vehicle charging stations. It is estimated that through this electrification, 2,590 litres of fuel was avoided. These electric vehicles are a mix of smaller maintenance vans, SUVs and one pickup truck. London Hydro is still evaluating emerging electric vehicles and understands that there are limitations that will need to be addressed before widespread adoption of electric vehicles. For example, low outdoor temperature can reduce range by 30% and utility outfitted work trucks have electric equipment tools, storage, batteries/inverters and hydraulic pumps that will also lower vehicle range if operating off the same batteries.

5.3.2d.2 Facilities

London Hydro's facilities provide essential support for day-to-day operations, housing administrative, operational, engineering, customer service, and logistics functions, as well as key storage, fleet, and materials-handling areas. These assets form an integral part of the company's General Plant investment category and are managed under the same asset management framework as its distribution system assets.

London Hydro currently operates from one primary facility located at 111 Horton Street in London, together with 40 municipal substations (both outdoor and building-style) situated across the City. The company also maintains portions of 13 customer vaults and transformer enclosures that house a combination of London Hydro–owned and customer-owned equipment.

The 111 Horton Street complex consists of four buildings with a total gross area of 194,363 square feet.

- The two oldest buildings (constructed before 1960) accommodate the Engineering, Planning, Logistics, and Materials Management departments.
- A third building, constructed in 1981, houses the Operations, Fleet, and Facilities departments.
- A fourth building, constructed in 1987, contains the Customer Service, Health Safety & Environment, Information Technology, Finance, Corporate Communications, Human Resources, and Executive offices.

In total, the site supports more than 300 full- time employees, plus contracted IT personnel. While London Hydro owns the buildings, the land beneath the complex is leased from the City of London. The company also leases land for vehicle parking and material and pole storage. Additional equipment storage is provided by equipment suppliers. Under the lease terms, London Hydro is responsible for all maintenance, security, and remediation of these properties.

Facilities are regularly inspected by both internal staff and third-party experts to ensure they remain safe, functional, and compliant with applicable codes and standards. Critical systems such as elevators and HVAC units are subject to preventive maintenance and planned replacement based on condition and age.



Figure: 54 111 Horton St. Building Site Map with Elevations

Site Constraints and Ongoing Challenges

The land at 111 Horton Street borders the South Branch of the Thames River and is directly affected by municipal planning initiatives, notably the City's "Back to the River" project under the Thames Valley Corridor Plan. This initiative, if implemented, will reclaim approximately three acres of London Hydro's site for public use. While the project has been on hold since 2019, the City's Parks and Recreation Division's interest in acquiring the land for bike path expansion and public parking increases the uncertainty of the future use of the south and west edges of the property.

In 2025, London Hydro and the City of London renewed lease discussions for the use of 111 Horton Street and 84 Horton Street (additional staff parking) that provides some additional certainty for retaining use on the majority of the current location.

Flooding of the Thames River is a foreseeable risk for London Hydro and the City of London. Historically, the major floods in the upper Thames watershed have occurred from January to April; however, flooding is possible at any time of the year. The number of flood events is increasing both in numbers and severity (March 1977, September 1986, July 2000, April 2008, December 2008, and February 2018). The 2018 Flood resulted in approx. $100k of damage to stored office furniture and furnishings, and required the temporary relocation of fleet vehicles and equipment inventory to higher ground (City-owned and privately-owned parking lots).

The Upper Thames River Conservation Authority (UTRCA) may issue media releases and flood bulletins during a flood event. The UTRCA operates the Flood Control Structures including the Fanshawe Dam, Pittock Dam, and Wildwood Dam and related reservoirs. They have an online website that shows Flood / Low water status information.



Figure: 55 Photo from 2018 Flood

London Hydro has a documented plan in place in the event of a flood that involves shutting off gas and diesel fuel pumps, removal of leaking oil transformers and other equipment to a special containment area and de-energizing oil-water separators to ensure no spilled oil enters the Thames River.

As London Hydro's facilities are on flood plain, it becomes a barrier to building new infrastructure on site. This not only includes buildings, but shelving, racking and other storage solutions to increase utilization of the site for materials management purposes.

Accessibility and Office Renewal

London Hydro has incorporated AODA (Accessibility for Ontarians with Disabilities Act) compliance upgrades into both its Capital and O&M budgets.

- Capital expenditures address new construction or major renovations to improve accessibility;
- O&M funding addresses repairs or retrofits of existing structures to maintain compliance.

While relatively straightforward in the newer 1980s buildings, upgrades in the two older pre-1960 buildings are significantly more complex and costly, making AODA compliance a factor behind the company's investigation into potentially new or alternative facilities.

The company has also undertaken an office modernization initiative to replace aging 25-year-old steelcase furniture with ergonomically designed, height-adjustable, and acoustically improved workstations. The program began in 2016 and will be completed by 2028, improving employee safety and comfort, while reducing maintenance costs and spare-parts inventory.

Fuel Storage and Supply Systems

A reliable fuel supply is critical to sustaining fleet operations and emergency response. London Hydro's current on-site fuel system was refreshed in 2022 to be TSSA compliant. The project replaced underground single-wall tanks and obsolete pumps with above ground tanks to ensure continued compliance and reliability of emergency fueling operations.

Security Systems

London Hydro is in the process of extending the current modern security system used at 111 Horton Street. Through cellular communications and owned fiber (if available), card swipe access, and security video camera feeds, alarms are sent to London Hydro's centralized security servers. From these servers, security staff are dispatched and can then connect with the local police as appropriate. London Hydro plans to upgrade all substation security systems to modern digital technology by 2031, ensuring reliable surveillance, improved asset protection, and enhanced worker safety.

5.3.2d.3 Metering

London Hydro's metering assets measure and record customer energy usage for billing, settlement, and system management. The company's metering portfolio includes smart meters (AMI), interval meters (MIST) and advanced power quality meters across all customer classes. The portfolio also supports communication and data-management infrastructure. As of December 2025, London Hydro has 169,144 revenue meters in service. Table 53 summarizes the number of customers by overall class.

Table 53 Meter counts by customer class

Customer Class	Quantity	%
Residential	154,071	91
GS < 50 kW, incl. FIT	13,524	8
GS > 50 kW	1,540	1
Large User	2	< 1
Co-Generation	7	< 1
Total	169,144	

In addition to retail metering, London Hydro maintains multiple wholesale metering points located at Hydro One transformer stations and other embedded distribution locations. London Hydro maintains six retail meter points connected to Hydro One Distribution.

For residential and small general service customers, smart meters were deployed between 2009 and 2011. The AMI system consists of nine tower gateway base stations (TGB), with associated radio towers, and a wireless backhaul network transmitting data to London Hydro's centralized head-end system.

Metering installations for larger general service and large-use customers include voltage and current transformers (PTs and CTs), as well as, dedicated telecommunication devices for remote data collection.

The metering system's communication backbone is being modernized to integrate with the broader Engineering & Operations communications strategy, ensuring consistency with the company's overall grid modernization roadmap. This work is primarily driven by the renewal of legacy TGB communication equipment, with core head-end upgrades expected to be substantially completed by 2027. By this stage, the majority of legacy TGB infrastructure will have been replaced, improving system reliability, maintainability, and integration capability. Beyond this initial renewal phase, ongoing enhancements to the Radio Network Infrastructure (RNI) are anticipated, including the addition of new TGBs to support evolving system needs. These incremental expansions will be undertaken as part of the AMI system

renewal program, ensuring the communications backbone remains scalable and capable of supporting future grid modernization objectives.

Metering data also supports a range of operational activities and systems. For example, during a system or service outage, “last gasp” outage notifications are transmitted from smart meters to London Hydro’s Outage Management System. This capability enables London Hydro to identify and respond to outages in near real time, often before customers report a loss of service, allowing crews to be dispatched promptly and improving overall restoration response.

More complex meters are also used to monitor power quality through the distribution system. These are usually installed at larger customer sites or distributed energy resources (DERs) such as solar or battery energy storage systems (BESS). Power quality meters provide valuable insight into determining problem areas of voltage, power factor, harmonics and other electrical characteristics. Power quality insights are captured in near real-time, as they are tied into SCADA and other software systems for active monitoring and analyzing.

All metering assets (meters and instrument transformers) are managed through London Hydro’s customer information system (CIS) and are a regulatory requirement. The assets are categorized based on the asset type, model, features, seal year and expiry, etc. The CIS supports London Hydro in delivering effective asset lifecycle management, configuration management and accurate billing.

5.3.2d.4 Information Technology

London Hydro’s IT assets provide the digital foundation for utility operations, supporting the Company’s workforce, service providers, and core business functions. The portfolio includes physical hardware (e.g., servers and endpoints), software (commercial and custom-based applications), and cybersecurity.

For planning and governance purposes, London Hydro organizes its major systems in its IT landscape into four functional domains to support lifecycle planning, risk identification, and portfolio prioritization.

1. **Customer Solutions** provide the digital interface for customer engagement, offering self-service capabilities and communication channels. This features targeted portals for customers, property managers, and builders, as well as the Green Button platform for standardized data exchange. Integrated contact centre solutions and interactive voice response (IVR) systems further support seamless customer service interactions.

2. **Utility Operations** houses the core transactional systems essential for daily utility management, including the "Meter-to-Cash" cycle and workforce administration. Key applications include the CIS/CRM for billing, ERP for financial and supply chain management, outage management system (OMS) and mobile workforce coordination. It also supports human capital functions through systems for payroll, time and attendance, and employee lifecycle management.

3. **Data Management** serves as the foundational data layer. This domain is responsible for the ingestion, storage, and visualization of grid and corporate data. It includes the Smart Metering Network (AMI) and Meter Data Management (MDM) systems for collecting meter data, geographic information system (GIS) and data warehousing platforms (relational, non-relational, and cloud compute) that drive business intelligence, customer engagement solutions and analytics.

4. **IT Operations** is focused on the security and stability of the technology environment. This domain includes tools for managing the IT lifecycle, support desk and defending the enterprise. It encompasses platforms for Security Information and Event Management (SIEM), vulnerability scanning, and identity management, as well as suites for workforce collaboration, project management, and quality assurance to ensure efficient and secure delivery of IT services and related support.

London Hydro's IT asset portfolio includes hardware (infrastructure and endpoints), software (operational, enterprise and customer engagement applications), and cybersecurity platforms. For IT asset planning and control, London Hydro manages these assets as asset pools with applicable standards, lifecycle triggers, and renewal practices that are aligned to operational criticality, vendor supportability, cybersecurity requirements, and total cost of ownership.

Table 54 Hardware Asset Pools

Hardware Asset Category	Description	Purpose
Core network	Connectivity assets, including routers, switches, wireless infrastructure, and security appliances that link offices, substations, and field environments.	The connectivity backbone across corporate, operational, and field environments. It is treated as high criticality because failures can disrupt communications, cybersecurity controls, and access to core business systems.

Hardware Asset Category	Description	Purpose
Compute and storage	Server, virtualization, and storage infrastructure that hosts applications, data platforms, and related services.	The hosting and storage foundation for business and operational applications. London Hydro's approach reflects a balance between on-premise infrastructure and cloud services based on supportability, resilience, security, and lifecycle value.
End user computing	Workstations, laptops, ruggedized field devices, mobile phones, and related peripherals used by office and field staff.	To equip employees and field crews with standardized, secure devices required for service delivery. This pool is managed to balance usability and productivity with cybersecurity, supportability, and consistent device lifecycle management.

Table 55 Software Asset Pools

Software Category	Description	Applications example
Mission Critical	Systems where failure materially impacts public safety, grid operation, revenue enablement and reporting. The applications are assigned the highest service expectations and prioritized for sustainment and supportability.	ERP (JD Edwards) CIS (SAP) OMS (Hexagon) Metering Infrastructure Contact Centre (Genesis IVR)
Business Critical	Systems that support essential corporate functions with defined recovery objectives, but that do not typically present immediate system safety or revenue risk during short outages.	GIS HRIS (SAP Success Factors) Workforce Time and Attendance ULTRA

Software Category	Description	Applications example
Departmental Applications	Systems that support specialized business functions or domain-specific operational needs within particular teams or user groups. These applications are maintained where they provide necessary functionality, analytical capability, or operational support that is not otherwise provided through enterprise platforms.	CYME GeoTab Spidacalc

Applications may be implemented on-premise, cloud-hosted, or SaaS. London Hydro evaluates on-premise versus cloud options using criteria including business criticality, data and cybersecurity considerations, vendor maintenance windows, operational flexibility (e.g., maintenance scheduling), ability to scale up or down, disaster recovery, monitoring of utilization, and total cost of ownership.

London Hydro also manages cybersecurity assets to support the protection, monitoring, and recovery needs of its IT environment. These assets are organized for lifecycle and investment planning purposes and are mapped to the OCSF outcomes of Identify, Protect, Detect, Respond, and Recover.

Details on London Hydro's asset strategies and standards for the key IT asset pools can be found in Appendix F, IT Asset Management Framework (ITAM).

5.3.3 Asset Lifecycle Optimization Policies and Practices

London Hydro applies a comprehensive lifecycle optimization framework to ensure that system renewal investments are prudent, cost-effective, and aligned with customer expectations for reliability and safety. The framework integrates asset condition information, field inspection results, risk analysis, maintenance practices, and long-term system planning. It is built upon well-established enterprise-wide procedures documented in EI-31 (Appendix E) and is supported by the Asset Sustainment Plan (ASP, Appendix C) and Asset Management Plan (AMP, Appendix B). Together, these documents provide the foundation for a structured, repeatable, and transparent approach to managing assets from installation through end of life.

5.3.3a Lifecycle Management Framework

London Hydro's lifecycle management framework can be grouped into four core stages that are applied consistently across all major asset classes – overhead, underground, station, and secondary systems. These stages are:

1. Planning
2. Operation and Maintenance
3. Refurbishment or Replacement
4. Disposal and Continuous Improvement

These stages form an integrated decision-making cycle. Rather than treating renewal decisions as isolated events, London Hydro manages asset health, risk, performance, and capacity requirements holistically over decades of service life.

1. Planning – Building a Long-Term View of Asset Needs

The planning stage combines condition data, age demographics, inspection cycles, failure history, material type, and operational performance. Each major asset category has defined sustainment strategies, updated through the ASP and informed by the comprehensive ACA, which is undertaken on a five-year cycle, to dictate inspection intervals, expected failure modes, intervention options, and renewal pacing. Detailed tables summarizing these criteria for overhead, underground, and station assets are provided in Section 5.3.3b.

Planning activities consider:

- **Asset health, age and material trends** (e.g., the presence of older #6 copper conductors or legacy PILC cable).
- **Field inspection results** (e.g., infrared scans, resistograph pole tests, oil sampling results).
- **Capacity requirements** (including anticipated load growth, operational flexibility, and voltage-conversion plans).
- **Geographic drivers** (such as road widenings, subdivision rebuilds, and third-party construction).

- **Environmental and safety requirements** (including handling of lead-based PILC cable and PCB considerations where applicable).

- **Future work bundling opportunities**, ensuring efficiency (e.g., replacing PILC cable when adjacent civil work occurs).

Long-term planning reduces the risk that refurbishment investments become prematurely obsolete. For instance, when pad-mounted transformers or station assets are candidates for refurbishment, London Hydro verifies that future loading and voltage-conversion plans do not necessitate earlier-than-expected replacement. This prevents unnecessary capital costs and aligns with the OEB expectation that assets not be renewed prematurely due to overlooked capacity needs.

2. Operation and Maintenance – Extending Useful Life Through Evidence-Based Practices

London Hydro's maintenance practices are deliberately designed to extend asset life and minimize the need for capital replacement. Field crews use standardized inspection forms through Mobile Link, with all data centralized in GIS for trend analysis. Regular O&M activities include:

- **Three-year inspection cycles** for most overhead line equipment (poles, crossarms, insulators, transformers, switches, overhead conductors).

- **Annual or semi-annual inspection and testing** for station transformers, network transformers, and network protectors.

- **Infrared (IR) scanning** across major components to detect hot spots prior to failure.

- **Oil testing programs** for substation and network transformers, enabling identification of internal deterioration early in the lifecycle.

- **Tree trimming on a three-year (or four-year) cycle** for overhead circuits, reducing tree contact and improving safety and reliability performance.

This extensive O&M regime keeps assets operating safely and reliably well into their service life. For example, most overhead distribution assets – including crossarms, insulators, and conductors – operate under a "run-to-failure with monitored risk" model, which is cost-effective because field repairs can be executed quickly and economically. Station assets, conversely, receive preventive maintenance to ensure their critical functions remain intact, recognizing their high consequence of failure.

Annual O&M budgets are informed by historical cost and activity levels, adjusted for known condition trends documented in the ASP. This ensures O&M spending is disciplined, traceable, and matched to demonstrated needs.

3. Refurbishment or Replacement – Selecting the Option with the Highest Lifecycle Value

London Hydro consistently explores refurbishment ahead of replacement wherever it is technically feasible and does not compromise safety. Asset-specific assessment factors guide the determination of the most cost-effective lifecycle approach for each asset class:

- **Transformers** (overhead, pad-mounted, station): units removed from service are tested and sorted into scrap/repair/refurbish categories based on oil condition, bushing integrity, physical deterioration, and feasibility of refurbishment.
- **Switchgear**: air-insulated units are replaced when condition or obsolescence warrants, while solid-dielectric units are maintained as long as they remain safe and operable.
- **Underground cable**: polymeric cable renewal decisions incorporate dielectric testing data, failure history, and the SPOORE analytical framework (safety, performance, operability, outage, risk, environment).
- **Wood poles**: Resistograph testing results determine whether a pole is replaced or scheduled for re-inspection within a one- to five-year interval, based on the severity of the measured deterioration.
- **Station assets**: transformers and breakers are maintained indefinitely unless condition, voltage-conversion plans, or risk scores justify replacement.
- **Maintenance Holes and Vaults**: Maintenance holes and vaults are visually inspected on a three-year and one-year cycle, respectively. In addition, for structures that are at least 20 years of age, they are subject to a third-party structural condition assessment. Inspection and test results determine re-inspection intervals and trigger targeted remedial work to extend service life where appropriate.

These practices demonstrate that replacement projects are only triggered when refurbishment or continued operation is no longer cost-effective or safe. The approach respects OEB expectations that distributors must justify renewal investments and demonstrate cost discipline through alternatives analysis.

4. Disposal and Continuous Improvement – Using Field Experience to Strengthen Future Decisions

London Hydro views disposal not simply as the end of an asset's lifecycle, but as an input into improving future decisions. Returned, failed, or retired assets are inspected to determine root causes of deterioration, refurbishment viability, and reasons for obsolescence. This feedback loop:

- Improves sustainment strategies in the ASP and AMP,
- Refines inspection intervals,
- Enhances asset failure prediction,
- Improves materials and design standards (e.g., moving away from materials with known early-life failure modes), and
- Enhances inventory practices for refurbished units.

The migration of inspection records, test results, and maintenance histories into GIS significantly strengthens data-driven planning and continuous improvement.

5.3.3b Asset Lifecycle Optimization Practice Summary

Tables 56, 57, 58 and 59 summarize asset type, inspection cycle, maintenance program, assessment factors (used to determine if an asset is repaired, replaced or refurbished), and the sustainment strategy for each asset class.

Overhead Distribution System Assets

Table 56 Overhead Distribution Asset Lifecycle Optimization Practice Summary

Asset	Inspection Cycle	Maintenance Program	Assessment Factors	Sustainment Strategy
Poles	General - Once every 3 years Detailed - Maximum once every 5 years (assets 20+ years old)	Wood poles tested after 20 years in service and retested based on findings[38]	Visual check of condition, resistograph pole test results, age	Replace poor condition poles based on test results
Crossarms	Once every 3 years	None – run to failure	Visual check of condition, pole fire risk (27.6 kV circuits)	Proactively replace "at risk" installations
Insulators	Once every 3 years	Infrared scanning, otherwise run to failure	Circuit type, "suspect insulators,"[39] hot spots	Identify and proactively replace "suspect insulators"

[38] The retest period is adjusted based on findings but at least once every 5 years. See Section 5.3.2b.1 for details.

[39] London Hydro continues to identify groups of insulators by manufacturer and date range that are known to be prone to premature failure. The exact locations of these insulators are not known, but they are replaced when identified during inspections.

Asset	Inspection Cycle	Maintenance Program	Assessment Factors	Sustainment Strategy
Transformers	Once every 3 years	Infrared scanning, otherwise run to failure	Oil leaks, rusting, cracked bushings, hot spots	Reactively replace failed or poor condition units[40]
Switches	Once every 3 years	Infrared scanning, gang-operated load break switches maintenance every 5 years, otherwise run to failure[41]	Operability, frequency of use, hot spots	Reactively replace or repair failed or poor condition units
Conductors	Once every 3 years	Tree trimming on a 3-year cycle[42], infrared scanning[43], repair indefinitely	Electrical load, excessive sag, #6 copper, hot spots	Proactively replace #6 copper, repair hot spots, replace open secondary during rebuilds

[40] Transformers are also replaced as part of other planned projects. Used units are inspected and then either scrapped, repaired, refurbished or returned to inventory depending on condition.

[41] For motorized switches with batteries, batteries are proactively replaced every 6 years.

[42] London Hydro uses a 3-year cycle (central areas) and 4-year (peripheral areas) combined cycle.

[43] Overhead conductors are not specifically targeted during the infrared scanning process, but hot spots are occasionally identified at splice locations, taps and connections to insulators.

Underground Distribution System Assets

Table 57 Underground Distribution Asset Lifecycle Optimization Practice Summary

Asset	Inspection Cycle	Maintenance Program	Assessment Factors	Sustainment Strategy
Primary cable	Terminations once every 3 years[44]	Terminations – infrared scanning,[45] otherwise run to failure	Age, insulation type, voltage, utilization, dielectric testing	Replacement based on condition, testing and SPOORE analysis for polymeric cable; planned replacement of PILC[46]

[44] Cable terminations (terminators, elbows) are the only visible portions of primary cable that can be inspected.

[45] Cable terminations are scanned as part of riser pole scans, switchgear scans and transformer scans.

[46] PILC (Paper Insulated Lead Covered) cable is being phased out as it is reaching end of life as it poses environmental concern; it is difficult to work with, and lead is a designated substance that requires special handling and disposal procedures.

Asset	Inspection Cycle	Maintenance Program	Assessment Factors	Sustainment Strategy
Pad mounted Transformers	Once every 3 years, or more frequently based on inspection result[47]	Infrared scanning, otherwise run to failure	Oil leaks, rusting, cracked bushings, hot spots, placement, access	Reactively replace failed or poor condition units[48]
Pad mounted Switchgear	Every year	Infrared scanning	Insulating medium, voltage level	Replace air-insulated units based on condition and number of customers; maintain solid dielectric units
Network Transformers	Every 6 months – 1 year	Oil tests every 2 years, infrared scanning every year	Insulating oil type, oil leaks, rusting, cracked bushings, hot spots, placement, access	Maintain or refurbish
Network Protectors	Every 6 months – 1 year	Testing and calibrating every 5 years as necessary, infrared scanning every year	Rusting, hot spots, ability to work safely	Maintain or refurbish

[47] Pad mounted transformers older than 35 years are inspected every two years, and transformers suspected of potential leakage are reinspected annually.

[48] Transformers are also replaced as part of other planned projects. Used units are inspected and then either scrapped, repaired, refurbished or returned to inventory depending on condition.

Asset	Inspection Cycle	Maintenance Program	Assessment Factors	Sustainment Strategy
Ducts, Vaults, Maintenance holes	Every 3 years minimum[49]	Detailed review by civil engineer every 5 years minimum, or as needed, repair as needed to extend life as long as possible	Cracks, exposed rebar, water ingress, utilization, ability to work safely	Repair, maintain, refurbish as long as possible[50]

Distribution Station Assets

Table 58 Distribution Station Asset Lifecycle Optimization Practice Summary

Asset	Inspection Cycle	Maintenance Program	Assessment Factors	Sustainment Strategy
Transformers	Monthly for outdoor, quarterly for indoor	Infrared scanning and annual oil tests	Oil leaks, rusting, cracked bushings, hot spots, future voltage conversion plans, oil test results	Repair and maintain indefinitely; replace failed or poor condition units with spares[51]

[49] Most vaults and maintenance holes are inspected more frequently as part of the inspection of other components such as network transformers, junctions, etc. Network vaults are inspected twice a year and cleaned every year.

[50] In some cases, replacing with new may be the best alternative considering other factors such as the need for increased capacity, City work in vicinity, extent of deterioration, etc.

[51] Several substations have been eliminated and more are expected to be decommissioned over the next 5-10 years due to voltage conversions. When substation transformers are removed from service, they are thoroughly inspected and tested, and the best units are kept in inventory as spares.

Asset	Inspection Cycle	Maintenance Program	Assessment Factors	Sustainment Strategy
Switchgear / Breakers	Monthly for outdoor, quarterly for indoor	Infrared scanning every year, annual oil tests, preventative maintenance every four years	Oil leaks, rusting, cracked bushings, hot spots, future voltage conversion plans, maintainability, oil test results	Repair, maintain, or refurbish indefinitely; replace failed or poor condition units with spares[52]
Switches	Monthly	Infrared scanning every year, preventative maintenance every four years	Rusting, cracked bushings, hot spots, future voltage conversion plans, maintainability	Repair and maintain to extend life; replace at end of life
Relays	Monthly for outdoor, quarterly for indoor	Functional testing and preventative maintenance every four years	Test results, obsolescence, compatibility	Repair and maintain to extend life; replace at end of life or due to obsolescence
Batteries	Monthly for outdoor, quarterly for indoor	On-line monitoring (where available), testing every three years	Leaks, corrosion, hot spots, test results	Maintain then replace based on condition

[52] Similar to substation transformers, the best switchgear units are kept as spares when substations are eliminated.

Asset	Inspection Cycle	Maintenance Program	Assessment Factors	Sustainment Strategy
Buildings	Monthly for outdoor, quarterly for indoor, detailed structural inspection annually	Repair and maintain as needed (e.g., re-paint, seal cracks, replace lights, fans, heaters, etc.)	Security, structural integrity, future voltage conversion plans	Repair and maintain indefinitely

Secondary Connection Assets (Asset Sustainment Plan – Sections 17)

Table 59 Secondary Connection Asset Lifecycle Optimization Practice Summary

Asset	Inspection Cycle	Maintenance Program	Assessment Factors	Sustainment Strategy
Residential Secondaries	none	Tree trimming for overhead secondary bus, otherwise run to failure	Open wire secondary bus, number of faults	Repair up to two faults per service, then replace; replace open wire secondary when adding new or upgraded services
Pedestals	None – ad hoc inspections during other field work (e.g. service upgrades)	Replace with new if coming across defective pedestals while doing field work	damaged insulators, Inoperable mechanical connections, Insecure enclosure locking mechanism (corrosion/degradation, faults)	Repair, if possible; replace when necessary or as part of larger rebuild

Asset	Inspection Cycle	Maintenance Program	Assessment Factors	Sustainment Strategy
Network	Every 6 months (as part of vault inspection)	Infrared scanning	Loading, fault history	Repair, if possible; replace when necessary or as part of larger rebuild

Annual O&M budgets for each asset category are created by reviewing historical trends regarding the amount of work and costs, and adjusting for expected changes as noted in the Asset Sustainment Plan. The ASP creates an asset sustainment strategy for each asset category providing guidance to Engineering and Operations regarding the pacing of replacements, which is affected by the inspection, maintenance and testing results.

5.3.3c Risk Management

Risk management is deeply integrated into London Hydro's lifecycle decision-making. EI-31 Step 7 (Appendix E) establishes a standardized methodology for identifying, assessing, and mitigating asset-related risks, ensuring that renewal investments are justified by evidence and aligned with the utility's commitment to reliability, safety, environmental stewardship, and cost-effectiveness.

Asset-Level Risk Assessment During Inspections and Maintenance

Every inspection cycle includes a risk assessment that evaluates:

- Likelihood of failure (based on condition, age, and previous maintenance records where applicable),
- Consequences of failure (reliability, safety, environment),
- Urgency of required intervention, and
- Potential impacts on customer service, including duration and frequency of outages.

Data collected from inspections and maintenance are analyzed to identify trends and to support both near-term capital prioritization and long-term lifecycle planning. Assets that pose imminent risk receive immediate action. Assets not requiring urgent work are recorded, scored, and fed into renewal forecasts. This systematic approach ensures that risks are addressed in a prioritized and cost-effective manner.

Project-Level Risk Assessment and the Analytical Ranking Model

At the project level, London Hydro employs the Analytical Ranking Model described in EI-31 (Appendix E), which assigns weighted scores to each capital project based on:

- Safety (35%)
- Reliability (25%)
- Environment (15%)
- Capacity (15%)
- Efficiency (10%)

This model ensures:

- Objectivity in prioritization (reducing subjective bias),
- Transparency in decision-making,
- Alignment between project selection and outcomes valued by customers, and
- Clear visibility into which projects can be deferred if capital budgets must be adjusted.

Projects are reviewed and ranked by experienced engineers and managers who are not involved in preparing the projects themselves, ensuring objectivity and impartiality. The ranking provides a defensible basis for sequencing work, managing budget envelopes, and demonstrating prudence.

Figure 56 shows the relative ranking of the projects proposed for 2026[53]. Additional details regarding the ranking of each project are included with the material investment project sheets in Appendix A1. It should be noted that projects with a score of "0" were intentionally omitted from the ranking process, as they are governed exclusively by essential safety obligations that supersede all other criteria.

[53] Certain projects do not receive a ranking because their implementation is in response to third party requests or are needed for the continuous operation of the system (System Operating Centre functionality).

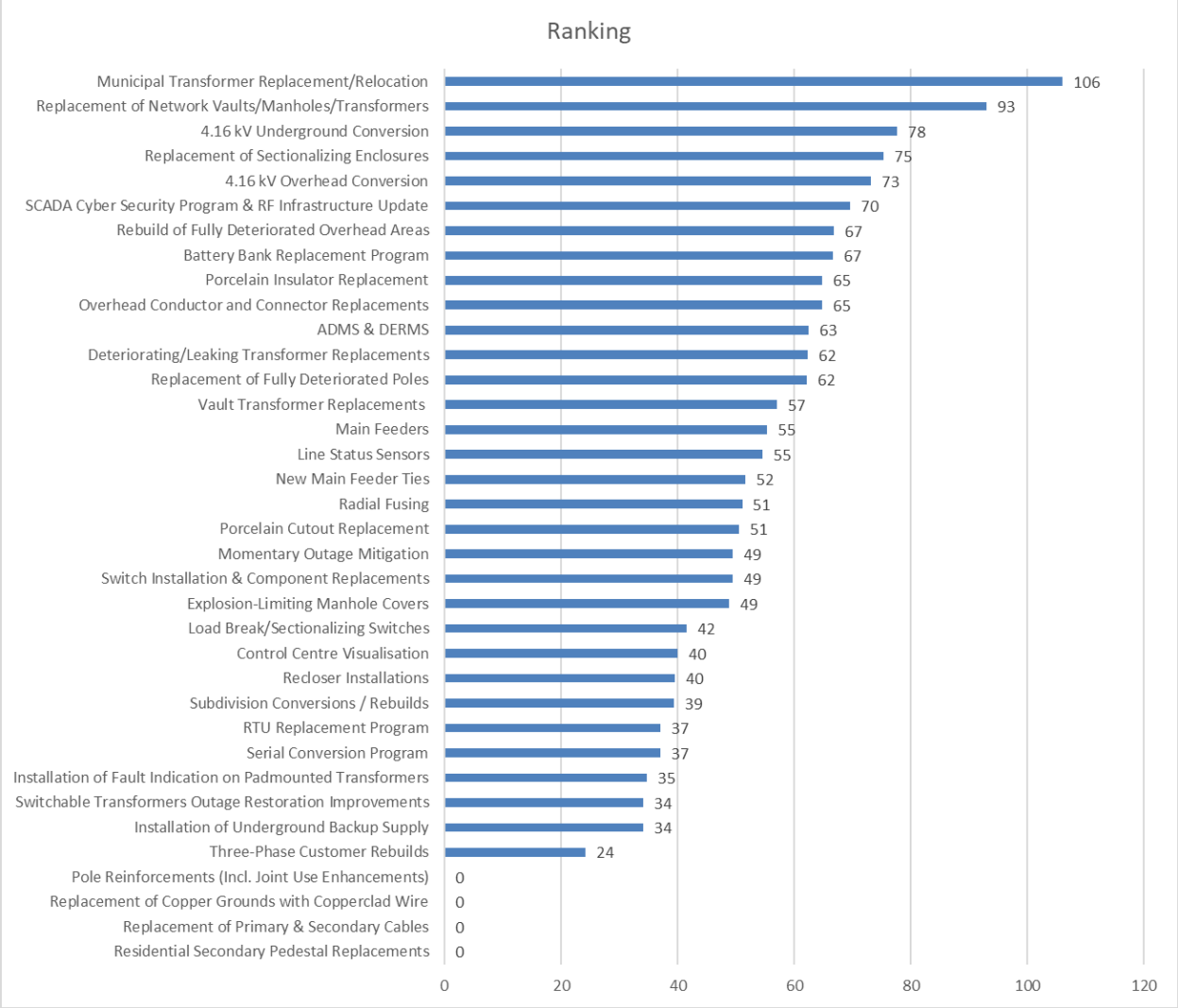


Figure: 56 Ranking of 2026 Capital Projects

Risk of Proceeding vs. Not Proceeding

London Hydro evaluates each major capital project through a balanced assessment of the risks associated with both undertaking and deferring the investment. Proceeding prematurely may result in unnecessary capital commitments and higher costs to customers, while delaying action may leave deteriorated assets in service, increasing the likelihood of outages, safety concerns, environmental incidents, and escalating future remediation costs. By explicitly considering the implications of both pathways, London Hydro ensures that system renewal decisions are grounded in a prudent, customer-focused evaluation of cost, risk, and long-term system needs.

Capacity-Related Risks and Avoiding Premature Renewal

A key component of lifecycle planning is ensuring refurbished assets remain adequate for future load. London Hydro explicitly incorporates load forecasting and system planning inputs when determining whether to refurbish or replace an asset. This prevents the need for early rework and ensures assets remain right-sized for their intended service horizon.

5.3.3d Continuous Improvement and Enhancements

London Hydro is committed to ongoing improvement of its AM policies, tools, and practices. Since the previous filing, London Hydro has strengthened its lifecycle optimization and risk-management practices by:

- Implementing resistograph pole testing, improving reliability of condition assessments,
- Expanding use of GIS as a central repository for inspections and maintenance data,
- Implementing Engineered Intelligence's ENGIN™ platform to establish a unified, data-driven asset management framework that improves risk assessment, enhances investment prioritization, and strengthens the defensibility of renewal decisions through transparent, grid-aware analytics, and
- Aligning London Hydro's underground inspection practices with best industry practices as reported by CEATI.

These enhancements further support the OEB's expectation that distributors demonstrate continuous improvement in asset management. These initiatives reinforce a culture of learning and adaptability, and align London Hydro with emerging utility best practice in asset management.

London Hydro's lifecycle optimization policies and practices are robust, data-driven, and fully aligned with OEB expectations for prudent, risk-based, and cost-effective system renewal. The utility's practices ensure that assets are maintained to the end of their useful life wherever feasible, and that replacement investments are made only when justified by condition, risk, or future capacity needs. The result is a disciplined, transparent, and customer-focused approach to managing the distribution system.

5.3.3e Supporting Asset Lifecycle Optimization Policies and Practices

Lifecycle management practices for supporting assets follow the same principles of risk-based decision-making and optimization applied to distribution system assets. Each asset category is governed by its respective policy and renewal strategy as summarized in Table 60.

Table 60 Summary of Asset Sustainment Plan for Other Assets (e.g., SCADA)

Asset	Inspection Cycle	Maintenance Program	Assessment Factors	Sustainment Strategy
Fleet	Daily operator vehicle inspections and CVOR, monthly and annual detailed inspections	Regular maintenance as recommended by manufacturer; repair or replace minor parts	Total operating cost, reliability, maintainability, functionality, performance, and utilization.	Repair and maintain to extend life; replace when overall assessment is poor, safe operation compromised, or a critical component fails.
Facilities	Daily, Weekly, Monthly, Annual scheduled inspections. Issue tracking.	Regular maintenance as recommended by component manufacturer; repair or replace minor parts. Regulatory (i.e. TSSA) driven inspections.	Total operating cost, reliability, maintainability, functionality, performance, and utilization.	Repair and maintain structures indefinitely; replace components such as furniture, HVAC, as needed.
Metering	Active monitoring	Meter testing based on Measurement Canada requirements, additional testing and verification for interval meters: whenever meter is exchanged, the PT/CT compartment is accessed, or any wiring is changed.	Test results, technical obsolescence, overall installation performance.	Replace when obsolete or fails performance requirements

5.3.3e.1 Fleet Lifecycle Optimization Policies and Practices

Fleet lifecycle management follows the same risk-based, cost-optimized approach applied to London Hydro's distribution system assets. A comprehensive Fleet Replacement and Maintenance Model defines the repair, replace, and deferral criteria for all vehicle and equipment classes.

This model balances safety, reliability, and cost effectiveness by determining the optimal economic life for each category of fleet assets.

Table 61 Fleet Replacement Schedules

Vehicle Type	Budgeted Replacement Cycle
Large Vehicles (Class 6-8, e.g., Bucket Trucks, RBD Trucks)	12 years
Crane Trucks (Class 8)	15 years
Light-Duty Vehicles (Pickups, Vans, SUVs)	10 years (previously 8)
Trailers	20 years
Specialty Equipment (Line Tensioners, Cable Winches)	15 years
Small Motorized Tools (Chainsaws, Drills, Pumps)	Run to failure

Replacement intervals are reviewed annually against cost performance, usage, and safety risk. Vehicles may be deferred beyond their planned replacement year where condition and performance remain acceptable or accelerated where conditions or accidents necessitate. Prior to deferral, each unit undergoes an inspection to verify continued compliance with Ministry of Transportation (MTO) standards and London Hydro's internal safety requirements.

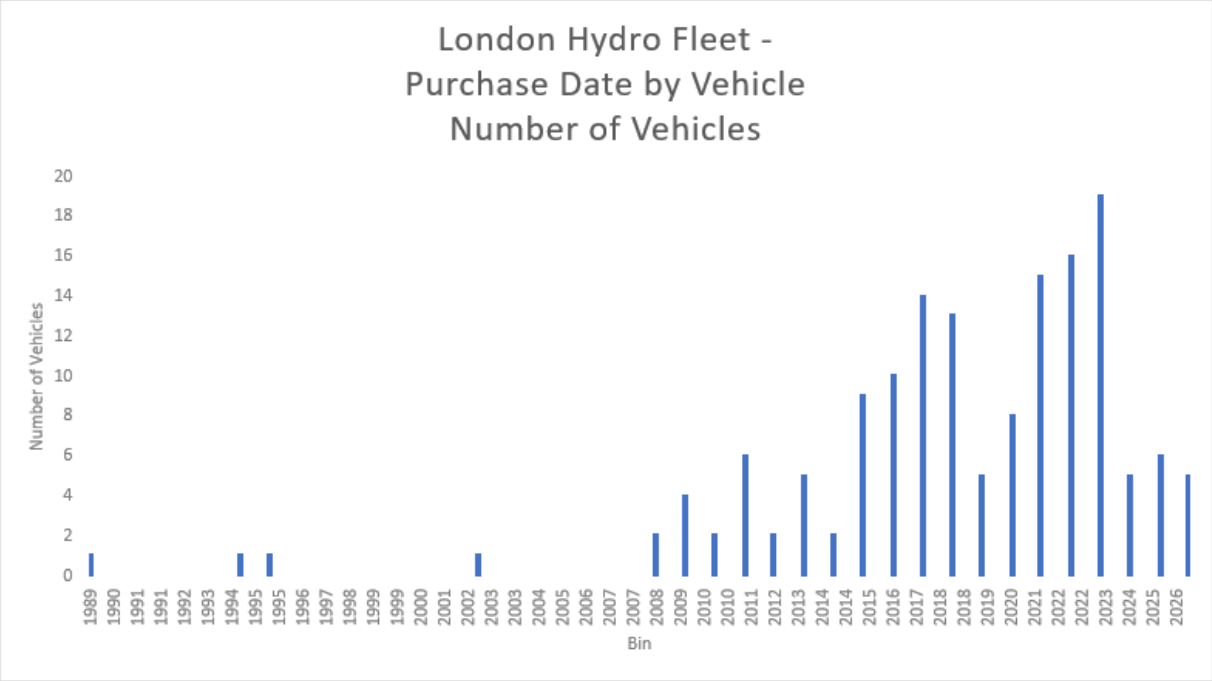


Figure: 57 Histogram of Fleet Age

Fleet Evaluation Process

When a vehicle approaches its scheduled replacement year, the Fleet Supervisor conducts a comprehensive assessment of:

- Mileage, engine hours, and age relative to service category averages,
- Maintenance cost trends, with vehicles flagged for replacement when costs exceed 20% of vehicle value for two consecutive years,
- Safety and compliance with MTO legislation and third-party engineering evaluations,
- Resale value and impact on total cost of ownership, and
- Operational suitability and departmental feedback on performance needs.

If cost, safety, and performance criteria support life extension, the vehicle remains in service and is re-evaluated in the next budget cycle. This disciplined approach allows London Hydro to extend asset life beyond depreciation periods where justified, thereby reducing capital spending without compromising

operational reliability. Ultimately, the company applies an economic cost estimate to determine the replacement priority and timing by assessing cumulative ownership and maintenance costs against resale value. This analysis is complemented by consultation with end-user departments to ensure any replacement improves functionality, safety, or efficiency.

Senior management reviews fleet performance and replacement schedules annually to confirm alignment with operational priorities and available budget. The resulting prioritized list of replacements is incorporated into the upcoming capital budget cycle, with specific projects documented in the Fleet Material Investment Project Sheets (see Appendix A1).

Continuous Improvement

London Hydro continues to strengthen its Fleet Asset Management practices by:

- Expanding the use of telematics for monitoring fuel consumption and performance, and
- Exploring right-sizing opportunities and adoption of electric and hybrid vehicles to reduce greenhouse-gas emissions.

These initiatives ensure the Fleet remains safe, reliable, and cost-effective, while supporting broader corporate and public-policy objectives related to efficiency and environmental performance.

5.3.3e.2 Facilities Lifecycle Optimization Policies and Practices

London Hydro's approach to managing its facilities emphasizes long-term optimization, regulatory compliance, and adaptability to evolving operational needs. The facilities lifecycle strategy encompasses condition-based maintenance, periodic upgrades, and strategic planning for potential relocation or expansion.

Maintenance and Renewal Practices

Buildings are inspected on a scheduled basis, with maintenance and renewal priorities established based on:

- Structural and mechanical condition,
- Regulatory compliance (e.g., building code, AODA, fire protection),
- Functional adequacy for operational requirements, and
- Health, safety, and environmental considerations.

Critical systems such as HVAC, elevators, and electrical distribution are subject to regular preventive maintenance, with replacement decisions based on age, reliability history, and cost-effectiveness. The Facilities Department coordinates these activities in collaboration with external contractors and subject matter experts.

Strategic Facility Planning

Recognizing the risks and limitations of the existing 111 Horton Street site and the uncertainty associated with the City's Back to the River initiative, London Hydro engaged three independent consultants to evaluate facility options and develop long-term strategies for a secondary site for material and vehicle storage, a base for operational deployments, and for eventual operations and support personnel:

Remote Operations Assessment, identified operational constraints and recommended investigating a secondary operations centre to improve resilience and flexibility.[54]

Proposal for Two Separate Operations Facilities, provided high-level requirements and budget estimates for property acquisition and construction.[55]

Facility Needs Assessment (Appendix L), determined the need for new storage and maintenance spaces to meet immediate operational demands and plan for long-term growth.

The Facility Needs Assessment concluded that a 21-acre site would be required for a complementary second operations centre to support the majority of London Hydro's field operations and material storage. This has informed the planning process resulting in London Hydro planning for estimated costs of $79,791,000. This includes land acquisition, site preparation, phased building construction and contingencies. London Hydro has not yet finalized timing for this investment, pending further discussion with the City and consideration of post-pandemic workplace trends (e.g., ventilation standards, remote work, occupancy density).

[54] Verve Consulting Report, "Remote Operations Assessment", (2020), Filed in 2021 Cost of Service Application, Appendix Q of the DSP.

[55] Canning Consulting Report, "Property and Facility Purchase in London", (2020), Filed in 2021 Cost of Service Application, Appendix R of the DSP.



Figure: 58 AI Generated Conceptual Rendering of a Utility Operations Centre

Accessibility and Modernization

AODA compliance and workplace modernization are integral to London Hydro's facilities lifecycle plan. Accessibility upgrades are coordinated with major renovations or replacements to maximize cost efficiency, while ergonomic improvements (e.g., sit/stand desks, noise reduction measures) are implemented through phased renewal projects. This ensures that each reinvestment aligns with health, safety, and accessibility objectives.

Risk Mitigation and Continuous Improvement

The company's facilities management process includes risk mitigation measures for operational continuity, security, and environmental compliance.

London Hydro continues to:

- Monitor City-led planning initiatives to manage site access and land-availability risks,
- Implement facility hardening and security upgrades to prevent vandalism and theft,

- Integrate energy efficiency and sustainability measures into building systems where feasible, and
- Maintain a phased approach to facility renewal to align with available capital funding and minimize disruption to operations.

Customer feedback obtained through the DSP engagement process demonstrated strong support for these efforts – 84% of respondents supported such capital investments. This reinforces customer acceptance of prudent facility planning and lifecycle management.[56]

5.3.3e.3 Metering Lifecycle Optimization Policies and Practices

London Hydro's metering lifecycle management strategy is guided by Measurement Canada regulations, OEB codes, and internal asset management standards. The strategy ensures that all meters, instrument transformers, and communication components remain accurate, compliant, and cost-effective throughout their service lives.

Maintenance, Verification, and Replacement Practices

Revenue meters are verified periodically as required by Measurement Canada to confirm accuracy and functionality.

Instrument transformers require less-frequent verification; however, older oil-filled units are identified for replacement as they reach end-of-life or as opportunities arise during related customer substation upgrades. London Hydro currently has replaced the majority of their oil-filled instrument transformers; the remaining few will be replaced as the opportunity arises.

London Hydro has a program to upgrade 2.5-element metering installations to more accurate 3-element configurations, improving accuracy and alignment with current Measurement Canada standards.

To maintain technological currency and support evolving operational requirements, London Hydro is proactively upgrading legacy and end-of-life AMI components. This ongoing initiative enhances the meter-to-headend communication path by addressing legacy components. These improvements provide the increased bandwidth, reliability, and cybersecurity necessary to sustain robust system visibility.

[56] Refer to Exhibit 1 for the most recent Customer Engagement Survey (2026). Refer to Appendix A of London Hydro's 2021 DSP for the previous Customer Engagement Survey (EB-2021-0041).

Recognizing that a significant portion of London Hydro's first-generation smart meters are approaching 15 years in service, the utility engaged an external consultant in late 2025 to undertake a comprehensive AMI and meter refresh assessment. This assessment evaluated the current state of AMI infrastructure; identified technology, process, and lifecycle gaps. It also clarified London Hydro's near and long-term functional requirements for metering and AMI systems. As well, the consultant conducted an industry scan and developed preliminary cost estimates to inform future investment decisions and ensure that the forthcoming AMI refresh initiative is prudent, evidence-based, and aligned with sector best practices.

Telecommunication and Data Systems

Meter data retrieval relies on communication infrastructure with shorter lifecycles than the meters themselves. London Hydro monitors these components separately and coordinates replacements under the AMI refresh program. The AMI refresh program ensures data accuracy and continuity of service, while aligning these upgrades with the company's broader modernization and cybersecurity initiatives. The infrastructure consists of communication networking equipment such as switches and routers, transceiver gateway base stations, cellular routers and ethernet gateways, and other devices that allow data retrieval.

Continuous Improvement

London Hydro continually explores opportunities to enhance metering efficiency and functionality, including:

- Evaluating remote-disconnect and reconnect capabilities for select customer classes,
- Assessing next-generation AMI technologies for improved interoperability and cybersecurity,
- Investigating data-driven use cases such as power-quality monitoring and voltage optimization,
- Tighter integration of AMI capabilities into a new Advanced Distribution Management System (ADMS) that can provide realistic load flow models for operational planning, load forecast, voltage heat maps and day-ahead market opportunities, and
- Coordinating AMI upgrades with broader Distribution Automation and DER Integration initiatives (2028 and beyond).

These initiatives ensure the metering program remains forward-looking, compliant with regulatory standards, and aligned with customer and system-planning needs.

5.3.3e.4 Information Technology

London Hydro manages IT assets through a defined lifecycle that includes planning, developing or acquiring, integrating, maintaining or upgrading, and retiring assets. This lifecycle approach helps ensure that IT assets remain secure, supportable, and fit for purpose over time. It also provides a consistent basis to identify lifecycle needs, assess risk, and determine when assets should be refreshed, upgraded, or retired.



Figure: 59 IT Asset Lifecycle Management

London Hydro applies a fit-for-purpose ITAM approach that reflects the shorter lifecycles and different risk characteristics of IT assets compared to traditional grid infrastructure. The framework is designed to be practical and scalable, with progressive improvement over the planning horizon.

The ITAM framework is designed to achieve four objectives:

1. Reliability: maintain availability of utility-critical systems to minimize operational disruption and customer impacts.

2. Cost predictability: apply defined lifecycle refresh practices to reduce unmanaged obsolescence and smooth expenditure requirements where feasible.

3. Compliance and supportability: maintain assets in a vendor-supported state and reduce exposure to unpatchable vulnerabilities.

4. Prudence: demonstrate that expenditures are linked to defined lifecycle triggers, service needs, or risk mitigation.

To achieve these objectives, London Hydro structures ITAM around four core components: Lifecycle Strategy, Governance, Investment Categorization, and Continuous Improvement.

Table 62 ITAM Framework Components

ITAM Framework component	Description
Lifecycle Strategy	IT Assets are managed through five stages: Plan (Business Case), Acquire (Procurement), Integration (Configuration/Testing), Operate/Maintain (Patching/Monitoring), and Dispose (Secure Decommissioning)
Governance and Oversight	IT asset decisions are integrated into the corporate governance structure: – Board of Directors / Risk Committee: reviews top enterprise risks (including IT) and approves the high-level ERM framework. – Executive Leadership Team: acts as the steering body for major IT capital investments, reviewing business cases and ensuring alignment with corporate strategy. – IT Management: Responsible for the daily execution and operations.
Investment Portfolio Categorization	IT investments are classified into three distinct portfolios: 1. Sustainment and Compliance - non-discretionary investments required to maintain current operations and security. 2. System Enhancements - discretionary investments that improve efficiency or capabilities. 3. Strategic - discretionary investments that fundamentally change business models

ITAM Framework component	Description
Continuous Improvement	London Hydro treats IT asset management as an ongoing cycle of monitoring, evaluation, and improvement. Performance, risks, costs, lifecycle outcomes, and changing business requirements are regularly reviewed to identify opportunities to improve IT asset performance and management practices. Lessons learned and performance measures inform adjustments to policies, investment priorities, and lifecycle strategies, with ITAM practices continually evolving to support business needs and manage risk.

London Hydro applies standard approaches and lifecycle management practices for hardware assets from acquisition through decommissioning to reduce operational complexity, manage OM&A, and maintain a consistent cyber posture for systems supporting customer service and grid operations. These practices are reviewed periodically and are informed by vendor specifications (including support windows), incident experience, and industry good practice.

For each of the three categories of assets, hardware, software and cybersecurity, there are specific criteria:

- Standards that each asset must achieve,
- Performance and Risks that are evaluated, and
- Lifecycle Management using a risk-based approach

Refer to the IT Asset Management Framework (ITAM) in Appendix F for details related to IT initiatives in this DSP.

5.3.4 System Capability Assessment for Renewable Energy Generation and Distributed Energy Resources

London Hydro's distribution system is supplied by seven Hydro One–owned transformer stations. The system operates predominantly at 27.6 kV, with a limited number of remaining 4.16 kV pockets that are in the process of being converted to 27.6 kV as part of London Hydro's long-term voltage conversion strategy. Overall, there are significant areas of London Hydro's distribution system that have insufficient hosting capacity due to transformer station constraints to accommodate new generation and DER

connections. These constraints are summarized in Table 63, which identifies existing hosting limitations on the 27.6 kV system.

Table 63 Distribution System Constraints by Transformer Station and Feeder

Station	BUS	Feeder	Available Hosting Capacity [kW] (Inverter Based)		Restriction	# of Connected DER Customers
			Exporting	Non-Exporting		
BUCHANNAN	B	19M23, M25, M27, M29, M37	12,276			22
	Y	19M22, M24, M26, M28, M30, M38	0		TSC Limits reached for Short Circuit Capacity	23
HIGHBURY	J/Y	4M13	14,000	21,042		14
		4M15, M17, M12, M14, M16, M18	19,000			74
TALBOT DESN1	B/Y	26M21, M22, M23, M25, M11, M12, M13, M14	10		Nearing TSC for Short Circuit Capacity Restricted to Micro Generation Connections only	39

Station	BUS	Feeder	Available Hosting Capacity [kW] (Inverter Based)		Restriction	# of Connected DER Customers
			Exporting	Non-Exporting		
TALBOT DESN2	J1/J2	26M46	14,000	28,700		11
		26M47, M48, M41, M42, M43	19,000			30
	Q1/Q2	26M51, M52, M54, M55, M56	6,911			52
		26M53	0		London Hydro Feeder Limit reached	5
WONDERLAND	B/Y	32M1, M3, M5, M7, M4, M6, M8	8,890			102
NELSON	B/Q	13M21, M23, M25, M27, M22, M24, M26, M28	0		TSC Limits reached for Short Circuit Capacity	51
CLARKE	B/Y	70M1	11,000	48,481		19
		70M3	18,325			17

Station	BUS	Feeder	Available Hosting Capacity [kW] (Inverter Based)		Restriction	# of Connected DER Customers
			Exporting	Non-Exporting		
		70M5, M7, M4, M6, M8	19,000			71

To address identified hosting capacity constraints at existing Hydro One owned transformer stations and support customer adoption of DERs, London Hydro is pursuing a three-pronged strategy that combines targeted capital investments, ongoing collaboration with Hydro One, and future deployment of advanced operational technologies. In parallel, London Hydro's planned municipal transformer station (MTS) in the southeast service area will provide a step-change increase in system capacity and operational flexibility. The addition of this new supply point will alleviate existing constraints on upstream transformer stations and associated feeders, creating additional headroom for DER integration across the distribution system.

1. DER-Enabling Station Enhancements (Bus-Tie Reactors)

London Hydro has proposed capital contributions in this DSP to coordinate with Hydro One on the installation of bus-tie reactors at one constrained transformer station, followed by the initiation of similar work at a second station. These reactors reduce short-circuit contributions from the transmission system and increase the amount of DER capacity that can be safely hosted on the 27.6 kV distribution network without exceeding equipment ratings or compromising system protection performance. This approach represents a coordinated solution with Hydro One that leverages existing infrastructure and incrementally expands the system's ability to accommodate renewable generation and other DER technologies.

2. Re-Evaluation of DER Capacity at Restricted Transformer Stations

London Hydro also intends to work jointly with Hydro One to re-assess DER hosting limits at restricted stations – specifically Nelson TS and Buchanan TS (Y Bus) – with an emphasis on opportunities to connect micro-generation (≤ 10 kW). Micro-generation typically has minimal impact on short-circuit levels and system protection, and historical hosting studies may include conservative safety margins that no longer reflect actual system conditions.

Hydro One has already permitted additional micro-generation connections at another previously restricted station (Talbot TS DESN 1) based on updated analysis. London Hydro expects that similar review processes may unlock additional capacity for small DERs at other constrained stations within its service area.

3. Flexible Hosting Capacity Enabled by ADMS/DERMS

The third strategic initiative involves exploring flexible hosting capacity arrangements that leverage London Hydro's planned implementation of Advanced Distribution Management System (ADMS) and Distributed Energy Resource Management System (DERMS) technologies. DERMS is essential to provide the oversight, control, and real-time operational visibility required to safely coordinate DER behaviour and maximize feeder utilization.

Under a flexible hosting approach, London Hydro is able to:

- evaluate the generating behaviour of larger DERs currently connected to restricted feeders,
- identify unused allocated capacity at times when those DERs are not generating (e.g., during infrequent peak-shaving events),
- use DERMS to actively manage, monitor, and – where appropriate – dispatch/permit DERs, and
- offer additional connection capacity to new DER proponents using this available headroom.

This strategy is intended to move the utility toward near full utilization of feeder hosting capacity, rather than relying solely on static connection limits set by the existing contributions of large generators that may only be connected a few days per year for activities such as "peak shaving". Over time, this approach will support expanded DER integration, align with emerging regulatory directions related to non-wires solutions and flexible hosting, and improve customer access to distributed generation opportunities.

5.3.5 Non-Wires Solutions to Address System Needs

The OEB's Non-Wires Solutions Guidelines for Electricity Distributors (the NWS Guidelines) provide guidance on the role of non-wires solutions in distribution system planning and their treatment in rate applications. These guidelines require distributors to incorporate consideration of NWS into their planning processes and to assess whether NWS may represent a viable alternative to traditional infrastructure investments. Complementing the NWS Guidelines, the OEB's Benefit-Cost Analysis Framework (the "BCA Framework") establishes the methodology for assessing the economic feasibility of NWS and traditional

infrastructure solutions. The BCA Framework supports the comparison of NWS, traditional poles-and-wires infrastructure, and combinations of the two to determine the preferred approach for addressing an identified system need. Application of the BCA Framework is mandatory where the projected capital cost of the proposed solution to an electricity system need exceeds $2 million, excluding general plant investments.

London Hydro has incorporated NWS consideration into its distribution system planning process. As part of this process, potential NWS options – such as energy efficiency, demand response, distributed energy resources (DERs), and energy storage – are considered, where applicable, as part of the evaluation of system needs and potential solutions. The level of assessment is proportionate to the nature, scale, timing, and complexity of the identified need.

The applicability of NWS depends on the underlying driver of the investment. London Hydro's capital program addresses a broad range of system needs, including asset renewal, reliability improvement, resiliency, operational flexibility, customer connections, and system capacity. For many projects, particularly those involving end-of-life asset replacement, system renewal, automation, protection upgrades, reliability improvements, or customer connections, the fundamental need extends beyond capacity alone and therefore cannot be addressed or deferred through an NWS. Accordingly, NWS evaluations are principally focused on projects where the primary driver is the provision or deferral of electrical capacity.

Consistent with the OEB's requirements, London Hydro undertakes a review of NWS applicability for investments exceeding the OEB's $2 million threshold (excluding general plant). This review forms part of the overall investment evaluation process and is documented within the applicable material investment sheet and/or Business Strategy Documents contained in Appendix A.

The proposed Municipal Transformer Station (MTS-1) serving the southeast portion of London Hydro's service territory provides an example of this evaluation process. MTS-1 was identified in response to sustained customer growth and development, increasing electrification, and diminishing available transformation capacity within the southeast supply area. As part of the planning process, which included a third party consultant[57] with extensive experience in grid capacity planning, London Hydro considered whether non-wires alternatives, including demand response, DERs, and energy storage, could reasonably defer the need for additional transformation capacity. The assessment concluded that the forecasted magnitude and long-term duration of the anticipated load growth exceeded the capability of

[57] Refer to Appendix A2-1 “MTS-1 Municipal Transformer Station Business Study”, Section 3.3, page 11.

currently available NWS technologies to provide sufficient, firm, and reliable capacity. Furthermore, MTS-1 is intended not only to increase supply capacity, but also to improve operational flexibility and reliability, provide additional system resilience and redundancy, support continued economic development and customer growth, and increase hosting capacity for future DER integration. Collectively, these broader system objectives cannot be achieved through NWS alone. Accordingly, the proposed Municipal Transformer Station remains the necessary long-term solution.

London Hydro has also undertaken practical evaluations of NWS technologies beyond individual project assessments. In early 2025, London Hydro partnered with a third-party consultant to develop and submit a proposal under Natural Resources Canada's Smart Renewables and Electrification Pathways (SREP) program to install two Battery Energy Storage Systems (BESS) on feeders supplied from Wonderland Transformer Station. The objective of the project was to evaluate whether strategically located battery storage could defer the need for a conventional transformer station expansion. The associated benefit-cost analysis demonstrated that, with significant external funding through the SREP program, the BESS alternative could provide a more cost-effective solution than traditional infrastructure. However, the analysis also demonstrated that the economic viability of the project was highly sensitive to grant funding. With external funding levels below approximately 50 percent of project costs, the benefits were not sufficient, resulting in the conventional wires solution becoming the preferred alternative. This assessment provided valuable insight into the circumstances under which battery storage may represent a viable distribution planning alternative.

Additional confirmation of London Hydro's assessment of NWSs has been provided through regional planning activities. As part of the Integrated Regional Resource Plan (IRRP), the IESO evaluated non-wires alternatives for addressing the regional capacity needs within London Hydro's service area. The regional screening concluded that non-wires alternatives were not suitable for meeting the identified supply needs due to the near-term timing of the constraints and the long-term magnitude of the forecasted demand growth. These findings independently reinforce London Hydro's conclusion that conventional infrastructure remains the appropriate solution for the system needs identified in this Distribution System Plan.

Although no distribution rate-funded NWS projects are proposed within the 2027–2031 DSP, London Hydro views NWS as an increasingly important component of future distribution system planning and continues to actively explore opportunities to expand their application where appropriate.

To support this objective, London Hydro has implemented a 1 MVA Battery Energy Storage System (BESS) microgrid within a residential subdivision as a proof-of-concept project. This initiative, completed

as part of a collaboration with two local developers along with funding from NRCAN, is providing valuable experience in the planning, design, protection, operational integration, and maintenance of distribution-connected battery storage. Once operational, the project will also provide practical information regarding the effectiveness of battery storage in supporting distribution system needs and will help inform future evaluations of NWS opportunities.

Similarly, as discussed in Section 5.2.2.2, London Hydro has included REG investments to install bus-tie reactors at two municipal transformer stations. While these are conventional infrastructure investments, they are intended to increase hosting capacity and establish the system conditions necessary to facilitate greater penetration of customer-connected DERs and other non-wires solutions in the future. These investments demonstrate that consideration of NWS extends beyond individual project evaluations and includes enabling infrastructure that supports the long-term evolution of the distribution system.

London Hydro also continues to monitor pilot projects and NWS initiatives undertaken by other Ontario electricity distributors, including GrandBridge Energy, together with industry developments, emerging technologies, and lessons learned through regional planning initiatives. These experiences will continue to inform London Hydro's planning methodologies and future evaluations of NWS opportunities.

Looking forward, London Hydro will continue refining its NWS evaluation process as part of its integrated distribution system planning activities. Opportunities for NWS deployment are expected to increase as energy storage technologies mature, distributed energy resources become more prevalent, advanced distribution management capabilities are implemented, and customer participation in demand-side programs expands. While the system needs identified during the 2027–2031 planning period continue to require conventional infrastructure solutions, London Hydro expects non-wires solutions to become an increasingly important complement to traditional distribution investments where they can provide cost-effective, reliable, and sustainable benefits for customers.

5.3.6 Climate Vulnerability Assessment and System Hardening

London Hydro’s approach to vulnerability assessment and system hardening reflects years of iterative learning, refinement, and continuous improvement. Historical outage performance, lessons learned from high-impact weather events, and forward-looking considerations – such as climate change, electrification, and evolving customer expectations – are routinely analyzed to understand where the distribution system is most vulnerable and how these vulnerabilities change over time. As a result, London Hydro’s reliability and resilience strategy is dynamic, evidence-based, and aligned with prudent utility practice.

With the introduction of the Ontario Energy Board's new VASH framework, London Hydro is building upon existing planning and resiliency assessment processes to incorporate the OEB's evolving regulatory expectations. London Hydro's most recent grid resiliency assessment, completed in 2023 (Appendix G), evaluated distribution system performance during storm events, including Major Event Days, to identify key system vulnerabilities and potential measures to improve grid resiliency. For purposes of this DSP, this assessment, together with the supporting analysis and discussion presented in this section, forms the basis of London Hydro's best-efforts custom climate vulnerability assessment. The assessment documents the methodology, climate perils and vulnerabilities considered, supporting information, assessment results, and resulting considerations for system resiliency and hardening. Looking forward, London Hydro will continue to evolve its vulnerability assessment process and incorporate applicable elements of the OEB's VASH framework and toolkit in future assessment cycles to further strengthen the consistency, transparency, and prioritization of climate vulnerability and resiliency considerations.

Across successive reviews, two dominant vulnerabilities consistently emerge: wood poles and vegetation (trees). Wood poles represent one of the largest asset classes on London Hydro's system – approximately 30,000 structures – and their exposure to wind loading, ice accretion, and attached equipment makes them a critical factor in system resiliency. Vegetation (trees), while not owned by the utility, has proven to be an increasingly significant contributor to outages, particularly in a region known as "The Forest City," where weakened trees and large overhanging limbs can cause extensive damage during storms. Recent events, including the May 2022 Derecho storm and the December 2025 freezing rain storm, have reinforced the importance of considering climate change risks as part of long-term system planning.

London Hydro's system-hardening strategy incorporates both direct and indirect mitigation measures. Direct mitigation aims to reduce the probability of outage-causing events, such as enhanced pole design, selective tree removal, conductor upgrades, and targeted undergrounding. Indirect mitigation focuses on reducing the severity or duration of outages when they occur, supported by improvements in automation, operational readiness, emergency management, and restoration processes. These approaches are complementary and reflect the reality that, while some hazards can be prevented, others must be managed effectively to minimize customer impacts. Moreover, London Hydro's routine system renewal initiatives – and even third-party projects such as the City of London's Rapid Transit program – can yield system-hardening benefits when they trigger the relocation or replacement of aging distribution assets.

Direct System Hardening Measures

Wood pole resiliency has been a particular focus of engineering modernization efforts. In 2017, London Hydro adopted advanced structural design methodologies using non-linear analysis consistent with CSA C22.3 No. 1-15. This approach incorporates wind speed and direction, ice loading, pole condition, equipment weight, and conductor tension to ensure that newly installed structures meet modern resiliency expectations. As industry standards evolve and climate conditions shift, these methodologies are updated accordingly. Where work is performed on existing structures, these enhanced design principles are applied where feasible, with priority given to poles supporting heavy equipment or serving large customer groups. Condition assessment results from the ACA also support the identification of deteriorated or high-risk poles for replacement or reinforcement. London Hydro's future VASH cycles will incorporate the OEB's vulnerability assessment toolkit, alongside London Hydro's condition-based pole health index. These inputs will further enhance the ENGIN asset management platform by integrating vulnerability and condition data, enabling a more holistic and data-driven understanding of this asset class.

Vegetation represents the second major vulnerability affecting grid resiliency. London Hydro's initial system-wide vegetation assessment in 2017 identified the need for a more risk-targeted approach to vegetation management, emphasizing increased attention on higher-risk areas to support long-term system hardening against tree damage during significant severe-weather events. A subsequent 2023 grid resiliency study[58] confirmed that, although traditional vegetation management reduces encroachment-related outages, climate change is contributing to more severe and less predictable forms of tree failure. These failures often involved aged trees with no visible signs of decay or trees that had developed cumulative structural weaknesses after multiple storms. In some instances, such weakened trees failed even on non-storm days or during minor weather conditions, underscoring their diminished structural integrity.

Between 2017 and 2025, weather-related outages, primarily vegetation-driven, accounted for roughly 40% of London Hydro's annual total SAIDI including Major Event Days, double the proportion observed during 2009-2016 period (see Figure 60). In extreme years, such as 2022 with the May 2022 Derecho Storm, weather-related SAIDI reached as high as 70%.

[58] Appendix G, Grid Resiliency Report – Storm Day Analysis and Major Event Day Review, 2023

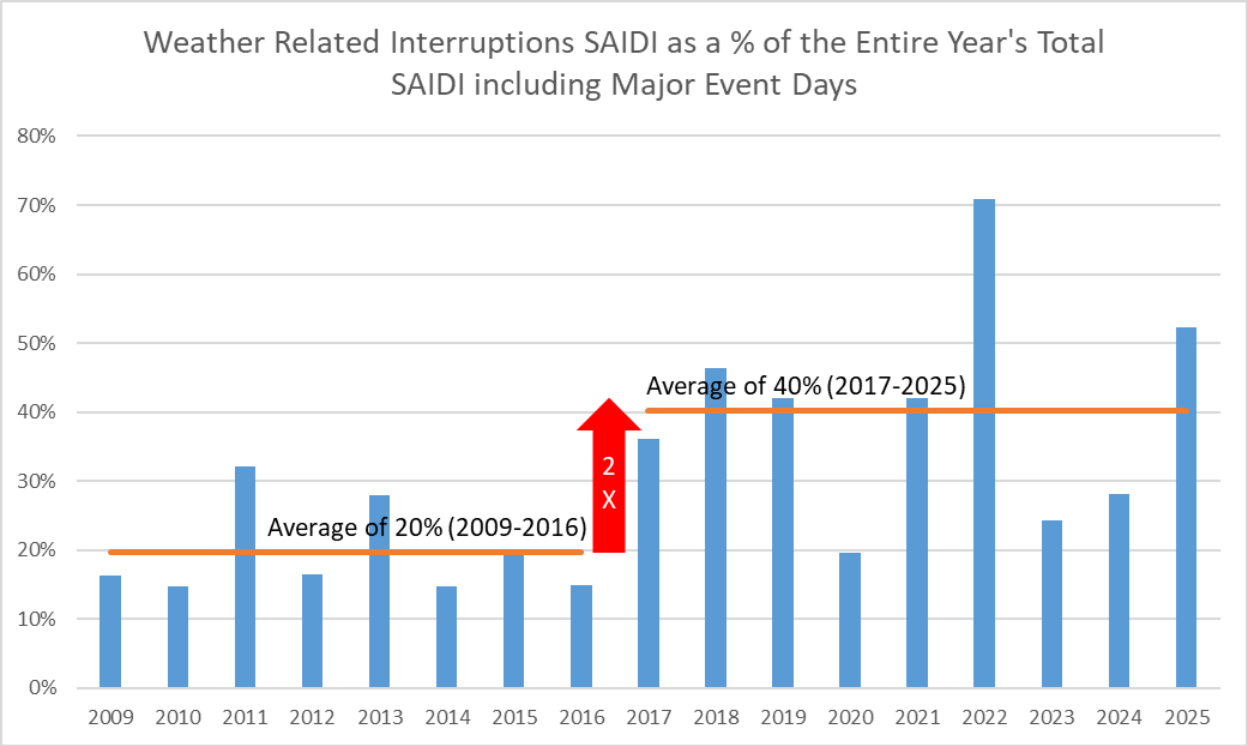


Figure: 60 Weather Related Interruption impact on Reliability (SAIDI)

These types of tree failures have a pronounced impact on grid resiliency. During widespread storm events, multiple tree-related interruptions can result in prolonged outage durations due to the extensive cleanup and infrastructure repairs required. Avoiding such failures is essential to maintaining a hardened distribution system capable of withstanding worsening weather conditions. In recognition of their growing impact, London Hydro is implementing a multi-pronged, risk-based approach to identify and proactively address potential at-risk locations.

To proactively identify tree-related risks, London Hydro has expanded its overhead system audits to include the identification of large overhanging limbs and hazard trees. To improve detection accuracy, London Hydro is implementing a satellite-imagery-based vegetation analytics solution from AiDASH, which supports the identification of encroachment, decaying or weakened trees, and emerging vegetation-related risks. This enhanced visibility is particularly valuable in years with heavy precipitation or repeated storm cycles, where accelerated tree growth or accumulated structural stress may not be externally visible.

Once high-risk locations are identified, London Hydro applies a range of mitigation strategies tailored to the nature of the vulnerability. Examples of the strategies include additional tree trimming and installing insulated conductors (Hendrix system) in dense vegetation corridors to reduce outages caused by small to medium limb strikes. While effective at mitigating encroachment-related interruptions, this solution may not fully prevent outages resulting from large overhanging branches or uprooted trees that fail during severe weather events. Selective tree removal may be warranted where structural failure risk is high. In certain cases, targeted undergrounding – most feasible when coordinated with municipal or third-party works, or when deteriorated backyard assets are due for replacement – can provide significant resilience benefits by eliminating exposure to wind and tree-fall hazards. Although undergrounding is inherently costly, coordination opportunities and the elimination of vegetation maintenance requirements, can improve its economic viability. Accordingly, London Hydro evaluates undergrounding on a case-by-case basis where it is technically and financially appropriate. Where repeated failures indicate broader structural vulnerability, overhead rebuilds are considered. The selection of mitigation strategies balances risk reduction, cost, feasibility, and opportunities for coordination with third parties to optimize long-term outcomes.

Indirect System Hardening Measures

In addition to direct system-hardening measures, London Hydro implements several complementary initiatives that enhance overall grid resiliency. These indirect measures help reduce the impact of vulnerability events when they occur, either by limiting the number of customers affected or by shortening outage duration. Such initiatives are essential for meeting near-term reliability needs while supporting long-term system resilience. For example, the installation of automated devices increases operational flexibility and system visibility, enabling faster fault isolation and restoration, which strengthens both reliability and resiliency outcomes.

Operational readiness measures also play a critical role in supporting timely and effective response during high-impact events. London Hydro maintains a strong state of preparedness through regular safety meetings, annual emergency response training and mock exercises, joint Emergency Operations Centre (EOC) drills with the City, enhanced inventory management practices, and mutual-assistance arrangements such as Ontario Mutual Assistance Group (OnMAG). Grid automation investments – including reclosers, ADMS, and fault-location tools – further improve situational awareness and enable more precise and accelerated restoration. Strengthened field damage-assessment processes additionally improve efficiency during widespread storm events by supporting better coordination and prioritization of repair activities.

Combined, these direct and indirect measures have contributed to London Hydro's strong performance during past severe weather events. During the May 2022 Derecho storm, the most significant weather event in recent history, London Hydro restored power to 90% of the 57,000 affected customers within eight hours despite widespread system damage. This outcome reflects the combined value of targeted system hardening, improved analytics, and refined emergency response protocols.

Pre-Assessment and System Hardening Investment Options

On a best-efforts basis, London Hydro conducted a pre-assessment of the vulnerability assessment results identified in the 2023 Grid Resiliency study to determine whether additional system-hardening investments were technically and economically warranted. This pre-assessment considered the identified climate vulnerabilities in the context of London Hydro's existing vegetation management, asset management, reliability, resiliency, and capital planning processes, including planned investments that already address or mitigate the identified vulnerabilities.

The pre-assessment did not identify incremental system-hardening investments whose primary driver is climate vulnerability. Rather, London Hydro's capital plan includes investments that are primarily justified by established system needs – including asset condition, reliability, safety, capacity, and grid modernization – but that also provide system-hardening and climate-resiliency benefits. Examples include:

- **Subdivision rebuilds:** Replacement of deteriorated legacy 4.16 kV rear-lot overhead infrastructure with 27.6 kV front-lot underground infrastructure, which addresses asset condition and reliability needs while reducing exposure to overhead hazards, including tree contact and severe weather (Projects B9 and G5, Appendix A1 – Material Investment Sheets).
- **Overhead system renewal and hardening:** Rebuilding deteriorated overhead infrastructure, including strengthening critical overhead infrastructure and piloting secondary breakaway conductors designed to reduce the risk of live secondary conductors being brought down by falling trees. These measures are incorporated into asset-condition-driven renewal while also improving system resiliency and public safety (Project G3, Appendix A1 – Material Investment Sheets).
- **Grid modernization and automation:** Installation of automated reclosers and Early Fault Detection (EFD) technology to improve system visibility, identify emerging faults, isolate affected portions of the distribution system, and reduce the extent and duration of customer interruptions, including those associated with severe weather events (Project H1 and H5, Appendix A1 – Material Investment Sheets).

Accordingly, London Hydro's approach integrates climate resiliency and system-hardening considerations into its established needs-based investment planning and prioritization processes, where appropriate, rather than establishing a separate portfolio of climate-driven investments where existing or planned investments already address the identified vulnerabilities. This approach is consistent with customer feedback indicating general satisfaction with current reliability and emphasizing the importance of affordability, supporting a balanced approach that maintains system performance, addresses identified system vulnerabilities, and avoids incremental expenditures where additional investment is not demonstrated to be warranted.

Based on this pre-assessment, London Hydro did not identify economically plausible incremental system-hardening investments requiring a VASH-specific benefit-cost analysis. Accordingly, no VASH benefit-cost analysis was undertaken for this DSP. Investments that provide system-hardening or climate-resiliency benefits were evaluated and prioritized through London Hydro's established capital investment planning processes based on their underlying system needs and expected benefits.

Future Enhancements and Integration with Capital Planning

Looking ahead, London Hydro will continue to refine its vulnerability and resiliency planning by integrating updated climate projections, condition assessment results, insights from the OEB's VASH toolkit, satellite-based vegetation analytics, and evolving engineering standards. These continuous improvements ensure that London Hydro's distribution system is planned, operated, and maintained in a manner that supports long-term resilience and sustained reliability for customers.

The insights gained through London Hydro's vulnerability assessment and system hardening activities play a critical role in shaping the utility's broader planning framework. As vulnerabilities such as aging overhead infrastructure, structurally weakened trees, and climate-driven weather impacts are identified and reassessed over time, these findings are integrated into the prioritization of renewal, reinforcement, and modernization investments. This aligns capital planning with emerging risks and programs addressing pole replacements, conductor hardening, targeted undergrounding, vegetation-related mitigation, and increased automation are paced and prioritized based on their contribution to long-term system reliability and resilience. In this way, the VASH process directly supports the development of London Hydro's capital expenditure plan described in Section 5.4, ensuring that future investments reflect asset condition and performance trends, as well as, the growing need to strengthen the distribution system's ability to withstand and recover from increasingly severe weather events.

5.4 Capital Expenditure Plan

This section outlines London Hydro's proposed capital expenditures over the 2027–2031 planning horizon. It includes system-related investments, general plant expenditures, and associated system O&M costs required to ensure the safe, reliable, and cost-effective operation of the distribution network.

The capital expenditure plan reflects the outcome of the structured, integrated planning process described in Section 5.2.2 and asset management process described in section 5.3. Investment decisions are grounded in system performance analysis, asset condition assessments, load and demand forecasts, and risk-based prioritization. Each proposed investment is supported, fully or in part, by evidence derived from this framework, ensuring that capital allocations are prudent, justified, and aligned with both short- and long-term system needs.

In alignment with regulatory expectations, this section presents both historical and forecasted capital expenditures. Historical trends provide context for understanding the evolution of system needs, demonstrate how past initiatives influence current priorities, and establish a foundation for evaluating expenditure pacing. Forecasted investments are categorized, explained, and linked to specific drivers to demonstrate how they address identified system requirements, support customer needs, and align with corporate objectives, asset management strategies, and reliability performance goals.

5.4.1 Capital Expenditure Summary

The capital expenditure summary provides an overview of London Hydro's ten-year investment plan. Historical data (2022–2026) and forecasted expenditures (2027–2031) are presented in Table 64 and Table 65, respectively, and have been submitted as OEB Appendix 2-AB. In accordance with the OEB Chapter 5 Filing Requirements, all projects are grouped into four distinct investment categories: System Access, System Renewal, System Service and General Plant.

Table 64 Capital Expenditure Summary - Historical 2022 to 2026

Historical (previous plan & actual)															
Category	2022			2023			2024			2025			2026		
	Plan*	Actual	Var %	Plan	Actual	Var %	Plan	Actual	Var %	Plan	Actual	Var %	Plan	Bridge	Var %
	$'000		%	$'000		%	$'000		%	$'000		%	$'000		%
System Access	17,987	13,465	-25.14%	13,705	15,425	12.55%	14,191	18,186	28.15%	12,056	15,766	30.77%	12,197	18,753	53.76%
System Renewal	17,493	19,392	10.86%	15,514	17,977	15.88%	15,670	19,299	23.16%	15,825	23,704	49.79%	15,984	25,597	60.14%
System Service	1,135	1,277	12.51%	858	1,386	61.54%	867	1,914	120.76%	874	1,661	90.05%	882	1,996	126.25%
General Plant	15,935	12,247	-23.14%	20,667	14,548	-29.61%	9,402	16,248	72.81%	9,583	20,262	111.44%	9,057	23,876	163.62%
Other	(500)	(25)	-95.00%	-	1,506	0.00%	-	488	0.00%	-	1,357	0.00%	-	-	0.00%
Total	**52,050**	**46,356**	**-10.94%**	**50,744**	**50,842**	**0.19%**	**40,130**	**56,135**	**39.88%**	**38,338**	**62,750**	**63.67%**	**38,120**	**70,222**	**84.22%**
Capital Contributions	(4,558)	(3,886)	-14.74%	(4,859)	(6,606)	35.95%	(4,789)	(6,327)	32.12%	(4,768)	(6,194)	29.91%	(4,774)	(5,627)	17.87%
Net Capital Expenditures	**47,492**	**42,470**	**-10.57%**	**45,885**	**44,236**	**-3.59%**	**35,341**	**49,808**	**40.93%**	**33,570**	**56,556**	**68.47%**	**33,346**	**64,595**	**93.71%**
Construction Work in Progress	**n/a**	**4,294**	**-**	**n/a**	**10,441**	**-**	**n/a**	**8,728**	**-**	**n/a**	**10,341**	**-**	**n/a**	**13,234**	**-**
System O&M	*20,155*	*21,715*	*7.74%*	*21,251*	*21,239*	*-0.06%*	*21,676*	*20,860*	*-3.76%*	*22,109*	*23,098*	*4.47%*	*22,551*	*25,003*	*10.87%*

**2022 is based on Final Settlement*

Table 65 Capital Expenditure Summary - Forecast 2027 to 2031

Forecast (planned)					
Category	2027	2028	2029	2030	2031
	$'000	$'000	$'000	$'000	$'000
System Access	13,644	19,941	20,473	21,209	21,983
System Renewal	33,183	37,164	37,520	36,921	39,047
System Service	22,517	13,990	21,995	23,950	18,742
General Plant	12,733	19,962	24,740	19,663	30,600
Other	-	-	-	-	-
Total	**82,077**	**91,057**	**104,729**	**101,742**	**110,372**
Capital Contributions	(4,436)	(3,967)	(4,281)	(4,463)	(4,569)
Net Capital Expenditures	**77,641**	**87,090**	**100,448**	**97,279**	**105,803**
Construction Work in Progress	**16,008**	**6,759**	**26,583**	**20,339**	**(67,332)**
System O&M	*27,927*	*30,224*	*32,566*	*34,967*	*39,605*

Net capital expenditures represent total annual spending. Projects that are incomplete at year-end remain in Construction Work-in-Progress ("CWIP"), as identified in the tables above. For capital expenditures with a lifecycle exceeding one year, balances remain in CWIP until completion. Financing costs directly attributable to the construction or acquisition of qualifying assets are capitalized as part of that asset's cost. For additional details, please refer to London Hydro's Capitalization Policy in Exhibit 2, Appendix 2-3.

The 'Other' line above contains "Inventory held for capital projects", which represents spending on capital-related inventory items that have been purchased but not yet assigned to a specific capital job, and

therefore remain in CWIP at the end of each year. For formatting purposes, this line is included within the System Renewal Investment Category within Appendix 2-AB.

London Hydro confirms that the capital expenditure plan includes no spending on non-distribution activities, consistent with OEB requirements and the principle of ratepayer protection. Furthermore, the capital plans do not materially impact O&M costs.

Table 66 provides additional detail regarding the specific project categories included within each overarching investment category. The project category highlights the primary driver or asset type associated with the work, offering a more granular view of London Hydro's planned expenditures. This breakdown aligns directly with OEB Appendix 2-AA requirements, ensuring transparency into how capital is allocated across various systems and operational needs.

Table 66 Capital Expenditure Summary by Project Category

CAPITAL PROJECTS TABLE - 2022 TO 2031										
Projects	2022	2023	2024	2025	2026 Bridge Year	2027 Test Year	2028	2029	2030	2031
	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)
System Access										
City Works Projects	1,979	4,248	4,997	1,056	4,703	2,633	5,098	5,286	5,482	5,685
Developer Works Projects	10,942	9,846	11,680	12,450	12,146	8,978	9,311	9,655	10,013	10,383
Meters & Devices	544	1,331	1,509	2,260	1,600	1,706	1,198	1,246	1,270	1,307
Advanced Metering & Infrastructure Refresh	-	-	-	1	304	327	4,334	4,285	4,444	4,608
System Access Gross Expenditures	**13,465**	**15,425**	**18,186**	**15,766**	**18,753**	**13,644**	**19,941**	**20,473**	**21,209**	**21,983**
System Access Capital Contributions	3,886	6,606	6,327	6,194	5,627	4,436	3,967	4,281	4,463	4,569
Sub-Total	**9,579**	**8,819**	**11,859**	**9,572**	**13,126**	**9,208**	**15,974**	**16,192**	**16,746**	**17,414**
System Renewal										
Substation Rebuilds	45	219	26	38	26	153	158	164	170	177
Subdivision Rebuilds	10,507	10,633	9,758	15,500	16,558	21,243	22,493	24,781	25,046	26,973
Main Feeders	2,061	176	506	52	480	2,050	2,605	2,383	1,193	327
City Works Projects	1,224	1,262	727	347	400	-	-	-	-	-
Downtown Core Supply	1,268	1,083	1,283	1,543	2,285	2,809	3,920	3,567	3,642	4,447
Overhead Line Work	4,287	4,605	6,999	6,223	5,848	6,928	7,988	6,625	6,869	7,124
System Renewal Gross Expenditures	**19,392**	**17,977**	**19,299**	**23,704**	**25,597**	**33,183**	**37,164**	**37,520**	**36,921**	**39,047**
System Renewal Capital Contributions	-	-	-	-	-	-	-	-	-	-
Sub-Total	**19,392**	**17,977**	**19,299**	**23,704**	**25,597**	**33,183**	**37,164**	**37,520**	**36,921**	**39,047**
System Service										
Transformer Station	-	-	-	19	2	14,906	9,190	17,791	19,291	15,820
Subdivision Rebuilds	188	340	209	14	350	394	413	428	444	461
Overhead Line Work	0	30	17	39	120	72	74	77	80	83
SCADA and Control Room	1,089	1,017	1,688	1,590	1,525	7,146	4,313	3,698	4,136	2,378
System Service Gross Expenditures	**1,277**	**1,386**	**1,914**	**1,661**	**1,996**	**22,517**	**13,990**	**21,995**	**23,950**	**18,742**
System Service Capital Contributions	-	-	-	-	-	-	-	-	-	-
Sub-Total	**1,277**	**1,386**	**1,914**	**1,661**	**1,996**	**22,517**	**13,990**	**21,995**	**23,950**	**18,742**
General Plant										
Meters & Devices	-	-	-	22	30	-	-	-	-	-
Wholesale Metering	-	-	796	(92)	-	-	-	-	-	-
Capital Contribution to Transformer Station	-	-	-	-	900	1,000	2,595	2,703	1,000	2,595
Land, Buildings and Equipment	2,112	1,777	1,144	6,475	2,589	2,989	3,063	3,176	3,466	3,594
London Hydro Operations Centre	-	-	-	-	14,296	599	5,842	6,089	6,346	15,635
Vehicles & Major Equipment	1,292	1,484	1,557	1,822	2,294	2,445	3,462	3,773	3,851	3,776
Hardware / Software	665	639	658	1,196	1,046	1,467	1,121	1,178	1,236	1,296
Application Development	4,636	4,294	3,996	4,352	4,913	4,233	3,879	7,823	3,764	3,704
CIS Refresh	3,541	6,355	8,095	6,488	(2,191)	-	-	-	-	-
General Plant Gross Expenditures	**12,247**	**14,548**	**16,248**	**20,262**	**23,876**	**12,733**	**19,962**	**24,740**	**19,663**	**30,600**
General Plant Capital Contributions	-	-	-	-	-	-	-	-	-	-
Sub-Total	**12,247**	**14,548**	**16,248**	**20,262**	**23,876**	**12,733**	**19,962**	**24,740**	**19,663**	**30,600**
Miscellaneous	(25)	1,506	488	1,357	-	-	-	-	-	-
Total	**42,469**	**44,237**	**49,807**	**56,556**	**64,596**	**77,641**	**87,090**	**100,448**	**97,279**	**105,803**
Less Renewable Generation Facility Assets and Other Non-Rate-Regulated Utility Assets ***(input as negative)***	-	-	-	-	-	-	-	-	-	-
Total	**42,469**	**44,237**	**49,807**	**56,556**	**64,596**	**77,641**	**87,090**	**100,448**	**97,279**	**105,803**

5.4.1.1 Analysis of Capital Expenditure for the Historical Period

This section presents an analysis of London Hydro's capital expenditure performance over the historical period, with a focus on explaining variances by investment category. Actual capital spending and completed work volumes are compared against the OEB-approved or planned amounts from London Hydro's previous Cost of Service application and Distribution System Plan (DSP). Where variances materially deviate from historical trends, London Hydro provides detailed explanations to clarify the underlying drivers and contextual factors.

As identified in Section 5.4.1, Table 67 includes a category labelled "Other," which reflects changes in inventory balances. In response to supply chain disruptions precipitated by COVID-19, London Hydro increased inventory holdings for capital-related materials to ensure timely customer connections and maintain readiness to respond to equipment failures arising from end-of-life conditions, third-party damage, or storm events. Inventory is reclassified to the appropriate OEB capital category at the time materials are issued and charged to specific projects.

Table 67 Historical Capital Expenditure (2022-2026)

CAPITAL SPENDING VARIANCE ANALYSIS ACTUAL VS PLAN 2022 TO 2026																		
Annual Spending Details by Investment Category	2022			2023			2024			2025			2026			2022-2026		
	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)
	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)
System Access	17,987	13,465	(4,522)	13,705	15,425	1,720	14,191	18,186	3,994	12,056	15,766	3,710	12,197	18,753	6,557	70,136	81,595	11,459
System Renewal	17,493	19,392	1,899	15,514	17,977	2,463	15,670	19,299	3,629	15,825	23,704	7,879	15,984	25,597	9,613	80,486	105,969	25,483
System Service	1,135	1,277	142	858	1,386	528	867	1,914	1,047	874	1,661	787	882	1,996	1,114	4,616	8,234	3,618
General Plant	15,935	12,247	(3,688)	20,667	14,548	(6,119)	9,402	16,248	6,846	9,583	20,262	10,679	9,057	23,876	14,819	64,644	87,181	22,537
Other	(500)	(25)	475	-	1,506	1,506	-	488	488	-	1,357	1,357	-	-	-	(500)	3,327	3,827
	52,050	**46,355**	**(5,695)**	**50,744**	**50,843**	**99**	**40,130**	**56,135**	**16,004**	**38,338**	**62,750**	**24,412**	**38,120**	**70,223**	**32,103**	**219,382**	**286,306**	**66,924**
Capital contributions	(4,558)	(3,886)	672	(4,859)	(6,606)	(1,747)	(4,789)	(6,327)	(1,538)	(4,768)	(6,194)	(1,426)	(4,774)	(5,627)	(853)	(23,748)	(28,641)	(4,893)
Total	**47,492**	**42,469**	**(5,023)**	**45,885**	**44,237**	**(1,648)**	**35,341**	**49,807**	**14,466**	**33,570**	**56,556**	**22,986**	**33,346**	**64,596**	**31,250**	**195,634**	**257,665**	**62,031**

As shown in Table 67, over the five-year period from 2022 to 2026, the expected spending will exceed Net Planned spending by $62 million (32%). The primary driver of this is higher than expected inflation impacting material and purchased services, amount of customer driven work (System Access), asset replacements (System Renewal) and General Plant. A more detailed analysis is provided in Tables 68, 69, 70, and 71.

London Hydro's last DSP submission was prepared in 2020 for the 2022–2026 period. Significant inflationary pressures emerged between 2021 and 2025, resulting in sharp price increases across all major distribution asset categories, as illustrated in Figures 61 and 62 for poles and padmounted transformers. These increases substantially raised the cost of inventory, purchased services, and labour,

placing considerable pressure on London Hydro's capital investment programs.[59] Refer to Exhibit 1 Section 1.11 for additional information on Inflationary Impacts.

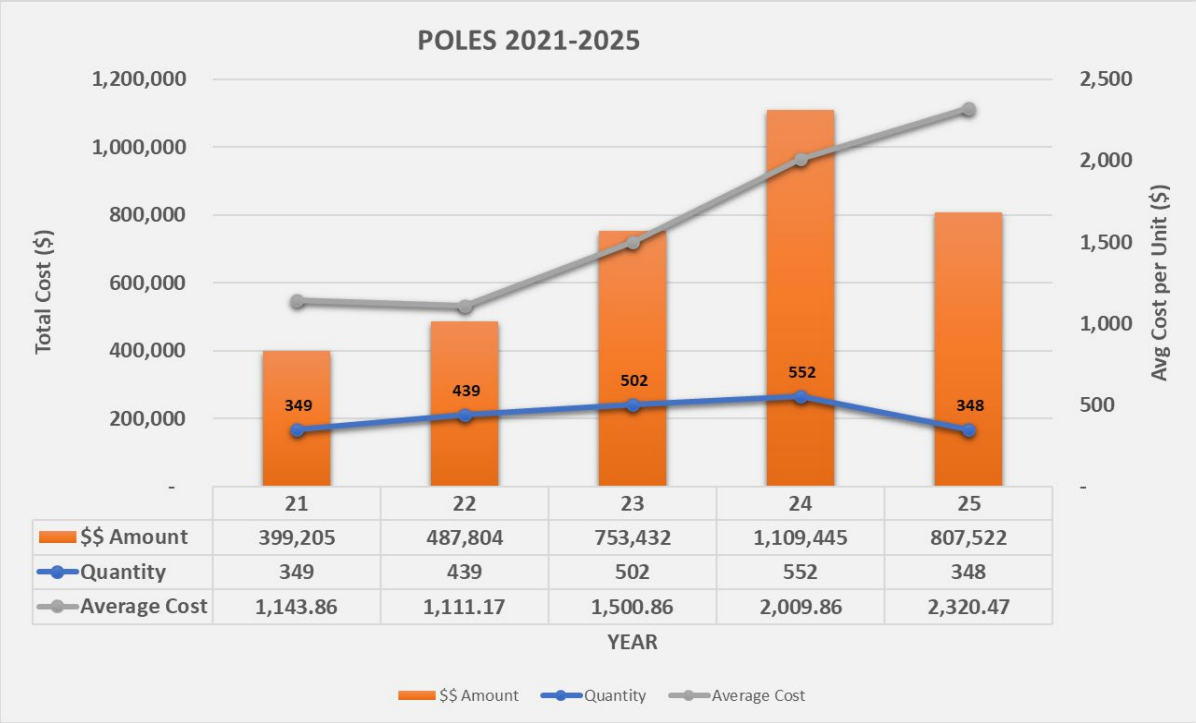


Figure: 61 Inflationary Impact on the Average Cost of Poles from 2021-2025

[59] Additional information regarding impact of inflation is found in Exhibit 1 Section 1.11



Figure: 62 Inflationary Impact on the Average Cost of Padmounted Transformers (TEs) from 2021-2025

At the same time, supply and demand constraints contributed to both higher material costs and significant volatility in inventory lead times. In response, London Hydro reviewed and strengthened its procurement strategies, optimized project resourcing, and adjusted scheduling practices. Through these measures, London Hydro was able to navigate the rapid economic changes, mitigate potential delays, and continue advancing its strategic priorities.

System Access

Table 68 Historical Capital Expenditure and Variance Summary for System Access (2022-2026)

CAPITAL SPENDING VARIANCE ANALYSIS ACTUAL VS PLAN 2022 TO 2026																		
	2022			2023			2024			2025			2026			2022-2026 Total		
Annual Spending Details by Investment Category	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)
	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)
System Access																		
City Works Projects	7,655	1,979	(5,676)	4,392	4,248	(144)	4,717	4,997	280	2,879	1,056	(1,823)	2,894	4,703	1,809	22,537	16,983	(5,554)
Developer Works Projects	8,633	10,942	2,309	7,891	9,846	1,955	7,975	11,680	3,705	8,058	12,450	4,392	8,142	12,146	4,004	40,699	57,064	16,365
Transformer Station Meters & Devices	1,699	544	(1,155)	1,422	1,331	(91)	1,499	1,509	9	1,119	2,260	1,141	1,160	1,600	440	6,900	7,244	344
Advanced Metering & Infrastructure Refresh	-	-	-	-	-	-	-	-	-	-	1	1	-	304	304	-	305	305
Total System Access	**17,987**	**13,465**	**(4,522)**	**13,705**	**15,425**	**1,720**	**14,191**	**18,186**	**3,994**	**12,056**	**15,766**	**3,710**	**12,197**	**18,753**	**6,557**	**70,136**	**81,595**	**11,459**
Capital contributions related to System Access	(4,558)	(3,886)	672	(4,859)	(6,606)	(1,747)	(4,789)	(6,327)	(1,538)	(4,768)	(6,194)	(1,426)	(4,774)	(5,627)	(853)	(23,748)	(28,641)	(4,893)
Total System Access net of Capital Contributions	**13,429**	**9,579**	**(3,850)**	**8,846**	**8,819**	**(27)**	**9,402**	**11,859**	**2,456**	**7,288**	**9,572**	**2,283**	**7,423**	**13,126**	**5,704**	**46,388**	**52,954**	**6,566**

Table 68 outlines the variance between actual and planned System Access expenditures for the historical period (2022 – 2026). Over this timeframe, actual net System Access capital expenditures exceeded the approved plan by $6.6 million, or 14%.

The primary drivers of this variance are detailed below:

- **Developer Works Projects ($11.5 million net variance):** Developer Works Projects include developer-driven system expansions to supply new developments and the installation of single family, and multi-housing (primarily townhomes and condominiums) residential underground distribution systems, and commercial connections. Gross expenditures in this category exceed plan by $16.4 million, due to unprecedented residential expansions and commercial connections. This gross variance was partially offset by an additional $4.9 million in capital contributions, resulting in a net variance of $11.5 million. These non-discretionary investments are driven entirely by the pace of external economic development, and regional growth and as a result annual spending is largely dependent on the pace and timing of residential, commercial and industrial development. In 2026, a significant increase in Developer Works projects is as a result of a significant expansion for City of London's south-east industrial park (Innovation Park, Phase 5).

- **City Works Projects (-$5.6 million net variance):** City Works Projects primarily involve relocating infrastructure at the request of the City of London to accommodate roadway modifications and rapid transit initiatives. Expenditures were $5.6 million below plan due to City reduced scope, shifting municipal construction schedules, and deferred transit project timelines

managed by the City. Deferred municipal projects were subsequently incorporated into future years, including one project moving to the 2027-2031 period.

In 2022, Actual spending was lower than planned primarily due to delays and a reduced scope of rapid transit projects with the City of London resulting from City-driven schedule changes and COVID-19 restrictions; however, this variance was partially offset by increased spending on subdivision builds and commercial connections.

In 2023, this variance was driven by higher expenditures associated with increased customer demand for new connections and service upgrades, unplanned primary expansions, and higher material costs.

In 2024, this variance was primarily driven by higher expenditures associated with increased customer demand for new connections and service upgrades. In addition, stronger-than-anticipated developer and subdivision activity, including a significant increase in apartment construction, resulted in a higher volume of customer-driven projects. These factors, combined with higher material costs, contributed to spending exceeding planned levels.

In 2025, this variance was driven by lower-than-planned spending on City and rapid transit projects due to project delays and reductions in scope. This was partially offset by significantly higher spending on commercial connections, driven by several large multi-building developments and major customer connections. In addition, larger transformer requirements for commercial connections, together with higher material costs, contributed to spending exceeding planned levels.

In 2026, this variance was primarily driven by a significant pole relocation program undertaken in coordination with Hydro One, the City of London's ongoing expansion of Innovation Park, and anticipated growth in housing development activity and related service demand through 2026. In addition, higher material costs contributed to spending exceeding planned levels.

System Renewal

Table 69 Historical Capital Expenditure and Variance Summary for System Renewal (2022-2026)

CAPITAL SPENDING VARIANCE ANALYSIS ACTUAL VS PLAN 2022 TO 2026																2022-2026 Total		
	2022			2023			2024			2025			2026					
Annual Spending Details by Investment Category	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)
	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)
System Renewal																		
Substation Rebuilds	15	45	30	111	219	108	112	26	(86)	113	38	(75)	114	26	(88)	465	354	(111)
Subdivision Rebuilds	8,272	10,507	2,235	6,515	10,633	4,118	6,581	9,758	3,177	6,646	15,500	8,854	6,713	16,558	9,845	34,727	62,955	28,228
Main Feeders	1,785	2,061	276	1,717	176	(1,541)	1,734	506	(1,228)	1,751	52	(1,699)	1,769	480	(1,289)	8,756	3,276	(5,480)
City Works Projects	-	1,224	1,224	-	1,262	1,262	-	727	727	-	347	347	-	400	400	-	3,960	3,960
Downtown Core Supply	2,131	1,268	(863)	1,616	1,083	(533)	1,632	1,283	(349)	1,648	1,543	(105)	1,665	2,285	621	8,692	7,463	(1,229)
Overhead Line Work	5,290	4,287	(1,003)	5,555	4,605	(950)	5,611	6,999	1,388	5,667	6,223	556	5,724	5,848	124	27,847	27,961	115
Total System Renewal	17,493	19,392	1,899	15,514	17,977	2,463	15,670	19,299	3,629	15,825	23,704	7,879	15,984	25,597	9,613	80,486	105,969	25,483

Table 69 outlines the variance between actual and planned System Renewal expenditures for the historical period (2022 – 2026). Over this timeframe, actual System Renewal capital expenditures exceeded the approved plan by $25.5 million, or 32%.

The primary drivers of this variance are detailed below:

- **Subdivision Rebuilds ($28.2 million variance):** The material overspend in this category was driven by the acceleration of aging underground and overhead distribution infrastructure. To mitigate increasing asset failure risks and maintain system reliability, these investments have been prioritized based on the results of London Hydro's Asset Condition Assessment (discussed in Section 5.3.2b.2 – Underground Infrastructure). This approach is supported by the historical reliability analysis presented in Section 5.2.3.2b.2 – Historical Interruption Cause Statistics, which identifies Equipment Failure as the leading contributor to both the total number of customer interruptions and total customer-hours of interruption. As noted in Appendix A (project sheets for Subdivision Rebuilds), beginning in 2026, London Hydro increased the average annual km replacement to 35km. Additionally, the material overspend was driven by higher unit costs resulting from COVID-19–related price volatility, which impacted major asset components including primary cables and distribution transformers.

- **Main Feeders and Downtown Core Supply (-$6.7 million combined variance):** Spending in these categories was lower than planned due to three primary factors. First, supply chain disruptions during the historical period resulted in extended procurement lead times for major electrical equipment, requiring the deferral of certain feeder projects. Second, a portion of the planned expenditures in these categories was isolated and reallocated to a newly created project

category (City Works - Rapid Transit ("RT") Coordination) to improve tracking transparency, as detailed below. Third, certain projects, including main feeder expansions, were deferred to manage the overall capital budget envelope.

- **City Works - Rapid Transit Coordination ($4.0M variance):** During the historical period, London Hydro established this distinct category to isolate and precisely track non-discretionary infrastructure rehabilitation executed in coordination with the City of London's RT initiatives. These projects address situations where transit construction indirectly conflicts with London Hydro infrastructure, or where associated system alterations reduce operational flexibility and could adversely affect system reliability. Coordinating this work with the City allows London Hydro to address required rehabilitation and restore or preserve system functionality while taking advantage of construction already occurring within the affected corridors. Creating a dedicated category ensures clear visibility into investments whose timelines are strictly dictated by the City of London. Completing these renewals concurrently with major transit corridor construction represents a prudent, lowest-total-cost execution strategy, avoiding the higher costs, duplication of civil work, and additional customer and community disruption that could result from undertaking the work independently after road and transit improvements are complete.

In 2022, this variance was primarily driven by higher unit costs arising from COVID-19–related price volatility affecting major asset components, including primary cables, distribution transformers, poles, and switches. In addition, an increased volume of unplanned emergency replacements—such as deteriorated transformers and broken poles—was required, driven by underlying asset condition issues as well as damage caused by severe weather events, motor vehicle incidents, and other external factors.

In 2023, this variance was primarily driven by higher subdivision rebuild costs resulting from increases in cable and conduit prices, as well as elevated general contractor labour rates. In addition, unexpected underground infrastructure conflicts encountered during subdivision rebuild work orders contributed to additional mobilization and construction effort. Further increases were driven by higher material costs combined with a greater volume of defective or deteriorated transformers and elevated pole replacement activity.

In 2024,this variance was primarily driven by higher unit costs resulting from COVID-19–related price volatility affecting major asset components, including primary cables, distribution transformers, poles, and switches. In addition, increased material costs combined with a higher volume of deteriorated poles requiring replacement contributed to the variance. Further increases were driven by higher costs associated with replacing defective and deteriorated transformers.

In 2025, this variance was driven by significant increases in subdivision rebuild unit costs, including higher cost per kilometre and a greater-than-planned volume of drilling activity, with cost pressures primarily attributable to rising material prices, wage escalation, and higher contractor rates. In addition, numerous running-line conflicts with Bell Canada and Imperial Oil during subdivision rebuild projects resulted in additional mobilization and construction effort, contributing to costs exceeding plan. The variance was further increased by approximately $800,000 in unplanned expenditures related to copper theft incidents, as well as two 2025 weather events that caused unplanned damage to the distribution system.

In 2026, this variance is primarily driven by significant increases in subdivision rebuild unit costs, including a higher cost per kilometre and a greater volume of drilling activity than planned. These cost pressures are largely attributable to rising material prices, wage escalation, and higher contractor rates. In addition, London Hydro's expansion of its planned underground cable rebuild program to target an average 35 km further increased overall project expenditures.

System Service

Table 70 Historical Capital Expenditure and Variance Summary for System Service (2022-2026)

CAPITAL SPENDING VARIANCE ANALYSIS ACTUAL VS PLAN 2022 TO 2026																		
Annual Spending Details by Investment Category	2022			2023			2024			2025			2026			2022-2026 Total		
	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)
	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)
System Service																		
Substation Rebuilds																		
Transformer Station	-	-	-				-	-	-	-	19	19	-	2	2	-	21	21
Subdivision Rebuilds	115	188	73	50	340	290	50	209	159	50	14	(36)	50	350	300	315	1,101	786
Overhead Line Work	-	0	0	-	30	30	-	17	17	-	39	39	-	120	120	-	205	205
SCADA and Control Room	1,020	1,089	69	808	1,017	209	817	1,688	871	824	1,590	766	832	1,525	692	4,301	6,908	2,607
Total System Service	**1,135**	**1,277**	**142**	**858**	**1,386**	**528**	**867**	**1,914**	**1,047**	**874**	**1,661**	**787**	**882**	**1,996**	**1,114**	**4,616**	**8,234**	**3,618**

Table 70 outlines the variance between actual and planned System Service expenditures for the historical period (2022 – 2026). Over this timeframe, actual System Service capital expenditures exceeded the approved plan by $3.6 million, or 78%.

The primary drivers of this material variance are detailed below:

- **Subdivision Rebuilds ($0.8 million variance):** Subdivision rebuilds and targeted overhead line enhancements represent a relatively modest portion of System Service spending, but they play a critical role in improving localized reliability and power quality. These investments focus on specific operational needs, including the installation of backup feeder ties to enhance load-

transfer flexibility, deployment of fault indicators on pad-mounted transformers and cable routes to accelerate fault location.

- **SCADA and Control Room ($2.6 million variance):** SCADA and Control Room expenditures are investments that support enhanced operational monitoring, system automation, cybersecurity and outage response capabilities, and reflect London Hydro's continued modernization of its distribution system. The main drivers behind this variance are related to:

  - Reservoir Park Communication Tower Replacement: Engineering assessments determined that the existing legacy tower lacked the structural capacity to support modern antenna loads and failed to meet current safety thresholds under the CSA S37 standard. To mitigate structural failure risks and support distribution automation, London Hydro initiated the replacement of the structure with a new 200-foot (60-meter) tower, an updated communication shelter, a dedicated electrical service, and an enhanced security compound. This project was executed as a strategic collaboration with the City of London to co-locate municipal emergency communications (Fire and Police), optimizing public infrastructure utilization. Expenditures for this critical asset safety replacement are captured in the 2025 and 2026 actuals.

  - Emergency Overhead Switch and Recloser Replacements: Capital spending was further impacted by an unexpected volume of emergency replacements. These reactive replacements were nondiscretionary and were required immediately to maintain localized grid isolation capabilities, protect system assets, and preserve public and worker safety. London Hydro generally planned for 3 overhead switch and recloser replacements over the five-year DSP period. However, in the years 2022 through to 2025, there were a total of 12 emergency replacements.

In 2022, this variance was driven by an increase in the fault indicator replacement program. In addition, planned work for two recloser replacements was exceeded, as four units were completed in 2022 due to two unexpected equipment failures.

In 2023, this variance was primarily driven by the unplanned replacement of underground backup equipment and load centres, with load centre costs exceeding expectations due to higher-than-normal pricing and limited availability. In addition, planned work for two recloser replacements was exceeded, as four units were completed in 2023 due to two unexpected equipment failures.

In 2024, this variance was primarily driven by the replacement of aging SCADA radios. In addition, the fault indicator replacement program was increased, contributing to higher expenditures. Planned work for two recloser replacements was also exceeded, as six units were completed in 2024 due to four unexpected equipment failures, along with the implementation of a recloser cabinet project.

In 2025, as discussed above, this variance was driven by the unplanned Reservoir Park communication tower replacement, beginning in 2025 and extending to 2026.

In 2026, this variance is primarily driven by the final portion of construction costs for the new Reservoir Park communication tower. In addition, increased investment in momentary outage mitigation initiatives, enhancements to backup supply infrastructure, and the continued replacement of recloser cabinets increased overall expenditures beyond plan.

General Plant

Table 71 Historical Capital Expenditure and Variance Summary for General Plant (2022-2026)

CAPITAL SPENDING VARIANCE ANALYSIS ACTUAL VS PLAN 2022 TO 2026																			
Annual Spending Details by Investment Category	2022			2023			2024			2025			2026			2022-2026		
	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)	Plan	Actual	Var $ Incr/(Decr)
	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)	($000's)
General Plant																		
Meters & Devices	-	-	-	-	-	-	-	-	-	-	22	22	-	30	30	-	52	52
Wholesale Metering Capital Contribution to Transformer Station	-	-	-	-	-	-	-	796	796	-	(92)	(92)	-	-	-	-	704	704
Land, Buildings and Equipment	2,781	2,112	(669)	2,719	1,777	(942)	2,547	1,144	(1,403)	2,755	6,475	3,720	2,199	2,589	390	13,001	14,097	1,096
London Hydro Operations Centre	-	-	-	-	-	-	-	-	-	-	-	-	-	14,296	14,296	-	14,296	14,296
Vehicles & Major Equipment	1,450	1,292	(158)	1,448	1,484	36	1,455	1,557	102	1,428	1,822	394	1,458	2,294	836	7,239	8,449	1,210
Hardware / Software	829	665	(164)	800	639	(161)	800	658	(142)	800	1,196	396	800	1,046	246	4,029	4,204	175
Application Development	4,375	4,636	261	4,200	4,294	94	4,600	3,996	(604)	4,600	4,352	(248)	4,600	4,913	313	22,375	22,192	(183)
CIS Refresh	6,500	3,541	(2,959)	11,500	6,355	(5,145)	-	8,095	8,095	-	6,488	6,488	-	(2,191)	(2,191)	18,000	22,288	4,288
Total General Plant	**15,935**	**12,247**	**(3,688)**	**20,667**	**14,548**	**(6,119)**	**9,402**	**16,248**	**6,846**	**9,583**	**20,262**	**10,679**	**9,057**	**23,876**	**14,819**	**64,644**	**87,181**	**22,537**

Table 71 outlines the variance between actual and planned General Plant expenditures for the historical period (2022 – 2026). Over this timeframe, actual General Plant capital expenditures exceeded the approved plan by $22.5 million, or 35%.

The primary drivers of this material variance are detailed below:

- **Customer Information System ("CIS") Refresh ($4.3 million variance):** As project execution progressed, additional investment was required to address system integration activities, additional customization, testing, and internal resources arising from the project's

complexity. Although spending for this project is reflected within the historical period, it has been excluded from rate base. For additional information regarding the CIS Refresh project, refer to Exhibit 2 Section 7.

- **London Hydro Operations Centre Facility ($14.3 million variance):** The $14.3 million variance is attributable to the purchase of land for a second operations facility proposed in 2026. While the specific capital costs were not budgeted within the 2022–2026 DSP period due to unknown scope and timing at the time of filing, London Hydro had identified the long-term necessity of a new operations centre within its previous DSP. This requirement became a priority as compounding space constraints and the urgent need for a modernized, resilient emergency response base escalated. Although spending for this project is reflected within the historical period, it has been excluded from rate base.

- **Land, Buildings & Equipment ($1.1 million variance):** The primary driver for this variance is a non-cash accounting adjustment resulting from a right-of-use ("ROU") asset remeasurement, in accordance with IFRS standards. The leased land for London Hydro's main office and operations buildings is recognized as an ROU asset. In 2025, the annual lease payments were adjusted based on a third-party market value assessment. Consequently, both the ROU asset value and the corresponding lease liability were remeasured.

In 2022, this overall variance is primarily attributable to delays with the CIS Refresh project as a result of challenges faced with greater-than-expected turnover of both internal staff and contracted labour, each of which was difficult to replace due to a shortage of specialized SAP skills in the labour market. Additionally, the variance in Land, Building and Equipment is primarily due to decreased procurement of office furniture and equipment, as planned office refurbishments were put on hold due to widespread work-from-home arrangements during the pandemic.

In 2023, the variance is related to the CIS refresh project as labour market challenges persisted.

In 2024, this variance is primarily attributable to the continuation of the CIS Refresh project, reflecting a timing shift of expenditures that were delayed in prior years. Additionally, unplanned contributions were made to Hydro One for the mandatory replacement of wholesale metering points containing Polychlorinated Biphenyls at the Clarke Transformer Station.

In 2025, as discussed above, the lease payments were adjusted resulting in a change in value. Additional variances are driven by the CIS Refresh project, primarily due to the timing impact of prior-year project delays (as previously noted) and ongoing execution challenges.

In 2026, $14.3 million of the overall variance is attributable to the proposed purchase of land for a second operations facility, discussed above. Additional variances include Vehicles and Major Equipment, reflecting the increased cost for the necessary replacement of large vehicles within London Hydro's fleet, as well as an unanticipated capital contribution true-up payment to Hydro One for the Nelson Transformer Station. The renegotiated contract with the System Integrator for the CIS Refresh project included a pricing adjustment mechanism dependent upon deliverables. At the time of submission of the Cost of Service Application, London Hydro has assumed those mechanisms will result in a negative variance of $2.191 million in 2026 for the CIS Refresh project.

DSP Asset Replacement Progress Summary

The Asset Summary Table 72 compares the actual asset replacements to the 'Flagged For Action' (FFA) quantities based on Kinectrics' Asset Condition Assessment, which was completed in 2020 using data from 2019. The FFA Plan for each asset category outlines the number of assets that may need attention or action each year. Potential actions include replacement, refurbishment, further testing, or monitoring. In all cases, the number of assets inspected exceeded the FFA guidelines. In some cases, more assets were replaced than indicated by the FFA due to criteria from the Asset Management Plan, equipment failures, or third-party needs (e.g., City Works or Developer Works). In other instances, fewer assets were replaced than the FFA suggested, typically because the assets were assessed and found not to require replacement.

Table 72 Comparison of 2019 ACA Planned and Actual Asset Replacements Over the Historical Period

Major Assets	2019 Planned FFA	Actual ACA-Targeted Replacements[60]	Actual Other Replacements[61]	Actual Total Replacements	Comments
Pole & Pad Mounted Transformers	730	688	1256	1,944	Variance driven by subdivision Upgrades, 4kV rebuild programs, and City-initiated projects
Vault & Network Transformers & Protectors	15	16	6	22	6 units removed after large customer demolished building, eliminating service need
Pad Mounted Switchgear	10	10	12	22	Mix of replacements and removals from planned upgrades and

[60] Actual ACA-Targeted Replacements represent 2022–2025 actual replacements and 2026 forecast replacements that align with the intent of the 2019 ACA FFA plan, including condition-based and emergency replacements (e.g., transformer failures and inspection-driven replacements).
[61] Actual Other Replacements represent assets replaced as part of third-party driven projects or concomitant capital projects (e.g., subdivision cable replacement projects where near end-of-life or legacy-design transformers are replaced concurrently to improve efficiency and optimize asset lifecycle management). Actual replacement totals include 2022–2025 actuals and 2026 forecast replacements.

Major Assets	2019 Planned FFA	Actual ACA-Targeted Replacements[60]	Actual Other Replacements[61]	Actual Total Replacements	Comments
					emergency jobs
Overhead Switch & Reclosers	3	22	3	25	Variance driven by 14 emergency replacements, 3 City-initiated projects, and 5 reliability improvement to address increasing switch failures
Hydro Poles	1,940	836	1,702	2,538	Variance primarily from City-initiated projects
Underground Cable	185	165	17	182	Annual average of 35km cable replacement, plus ~10km cable testing

Major Assets	2019 Planned FFA	Actual ACA-Targeted Replacements[60]	Actual Other Replacements[61]	Actual Total Replacements	Comments
Maintenance Holes & Vaults	65	5	42	47	~138 structural engineer inspections conducted annually and 31 maintenance holes refurbished

5.4.1.2 Analysis of Capital Expenditure for the Forecast Period

This section provides a comprehensive analysis of London Hydro's capital investment plan for the 2027-2031 DSP period, outlining the major cost drivers, investment objectives, and the relative allocation of capital across the OEB's prescribed categories. The forecast reflects both the ongoing core investment requirements necessary to maintain a safe and reliable distribution system and major strategic investment required to address long-term system adequacy, operational modernization, economic development, and evolving customer expectations. Capital forecasts have been developed using the OEB's approved 2026 inflation parameter of 3.7% for electricity distributors, applied consistently across the 2028–2031 period unless more specific, project-level cost inputs are available.

While this inflation parameter provides a consistent baseline for cost escalation, year-over-year variations in capital expenditures are primarily driven by changes in project scope, timing, and system needs. These variations reflect both increases associated with expanded program volumes, such as accelerated cable replacement driven by asset condition requirements, and decreases resulting from the completion or deferral of specific initiatives.

Table 73 and Figure 63 summarize total planned capital expenditures by OEB category over the DSP horizon. Over the 2027-2031 period, London Hydro is forecasting $490.0 million in gross capital investment, offset by $21.7 million in capital contributions, resulting in net capital expenditures of $468.3 million. Total net capital expenditure grows at a cumulative average growth rate (CAGR) of 8.3%,

reflecting the combined effect of ongoing renewal needs and major strategic projects. Category-specific CAGRs over the forecast period are as follows:

- System Access: 12.7%
- System Renewal: 4.2%
- System Service: -4.5%
- General Plant: 24.5%

Capital Spending Five Year Forecast - Summary

Table 73 Forecasted Capital Expenditures by OEB Categories 2027-2031

Category	2027 Plan $'000	2028 Plan $'000	2029 Plan $'000	2030 Plan $'000	2031 Plan $'000	5 Year Total $'000
System Access	13,644	19,941	20,473	21,209	21,983	97,250
System Renewal	33,183	37,164	37,520	36,921	39,047	183,834
System Service	22,517	13,990	21,995	23,950	18,742	101,194
General Plant	12,733	19,962	24,740	19,663	30,600	107,698
Total	82,077	91,057	104,729	101,742	110,372	489,977
Capital Contributions	(4,436)	(3,967)	(4,281)	(4,463)	(4,569)	(21,716)
Net Capital Expenditures	77,641	87,090	100,448	97,279	105,803	468,260

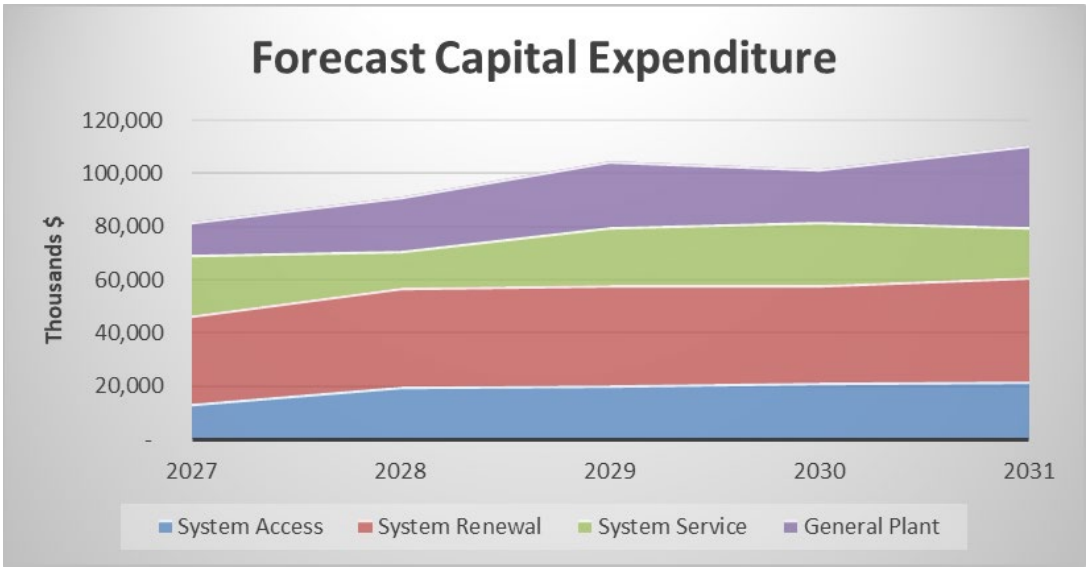


Figure: 63 Forecasted Capital Expenditures by OEB Categories 2027-2031

The relative distribution of investment across the OEB categories is presented in Table 74. System Renewal remains the largest investment category, reflecting London Hydro's continued focus on reliability, safety, and the replacement of deteriorated or end-of-life assets. On an inflation-adjusted basis, System Renewal spending remains generally stable, consistent with London Hydro's long-term asset replacement strategy designed to maintain a steady and predictable pace of renewal. Although still dominant, its relative proportion declines modestly over the forecast period as investments in other categories increase. System Access increases slightly after 2027, primarily due to City-led Rapid Transit corridor expansions resuming. System Service fluctuates related to ADMS/DERMS implementation and land acquisition for London Hydro's new municipal transformer station (MTS-1). General Plant fluctuates driven by the second Operations Centre and capital contributions to Hydro One for DER-enabling enhancements at two stations.

Capital Spending Five Year Forecast - Summary

Table 74 Relative Allocations between OEB Categories 2027-2031

Category	2027 Plan $'000	2028 Plan $'000	2029 Plan $'000	2030 Plan $'000	2031 Plan $'000	5 Year Total $'000
System Access	17%	22%	20%	21%	20%	20%
System Renewal	40%	41%	36%	36%	35%	37%
System Service	27%	15%	21%	24%	17%	21%
General Plant	16%	22%	24%	19%	28%	22%
Other	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%

A material share of the capital plan is attributable to major strategic investments that arise as part of the normal evolution of the distribution system in response to growth, regional supply needs, modernization requirements, and reliability objectives. These initiatives – ADMS/DERMS, AMI meter refresh, a new MTS, DER-enabling station bus-tie reactors, and a second Operations Centre – collectively represent approximately 31% of total capital spending over the DSP horizon.

London Hydro recognizes that such investments warrant clear justification. This DSP provides evidence demonstrating that each initiative is required within this planning period and is supported by documented system needs, regional planning assessments, compliance drivers, operational requirements, and consideration of feasible alternatives.

To illustrate the relative significance of the major strategic projects, Figures 64 and 65 present total capital investments by OEB category including, and excluding, the major strategic projects. This comparison shows that:

- 53% of total expenditures relate to ongoing system renewal and core distribution needs,
- 31% relate to the major strategic initiatives that address long-term system adequacy, reliability, and modernization, and

- 16% relate to customer-driven obligations.

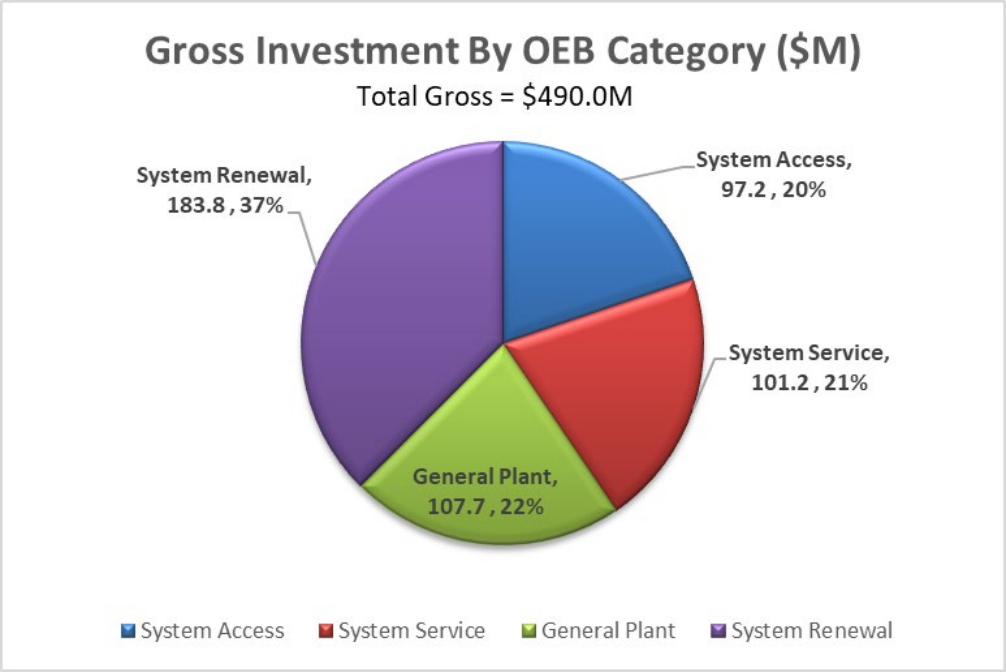


Figure: 64 Total Gross Investment by OEB Category

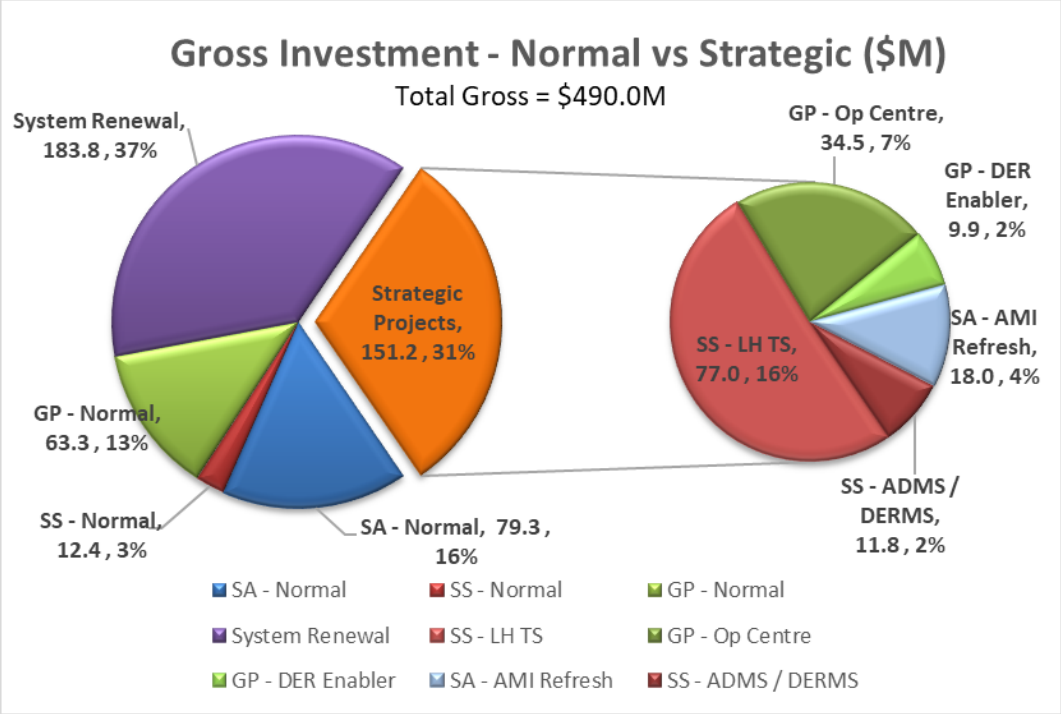


Figure: 65 Total Gross Investment by OEB Category with Strategic Investments Highlighted

Figure 66 presents annual capital expenditures by investment category, separating normal investments from strategic investments to provide greater clarity. This breakdown demonstrates that, while a limited number of major strategic projects elevate total expenditures in certain years, the capital spending forecast for normal projects remains focused on essential, recurring system needs aligned with prudent asset management and customer expectations.

Over the five-year period, total spending on normal projects is $338.7 million, reflecting an annual spending CAGR of approximately 4.5%. In comparison, total spending on major strategic projects is $151.2 million.

Through this transparent presentation, London Hydro aims to provide stakeholders and reviewers with clear visibility into the drivers of both normal and strategic capital expenditures, thereby supporting an informed assessment of the prudence, timing, and value of the proposed investment plan.

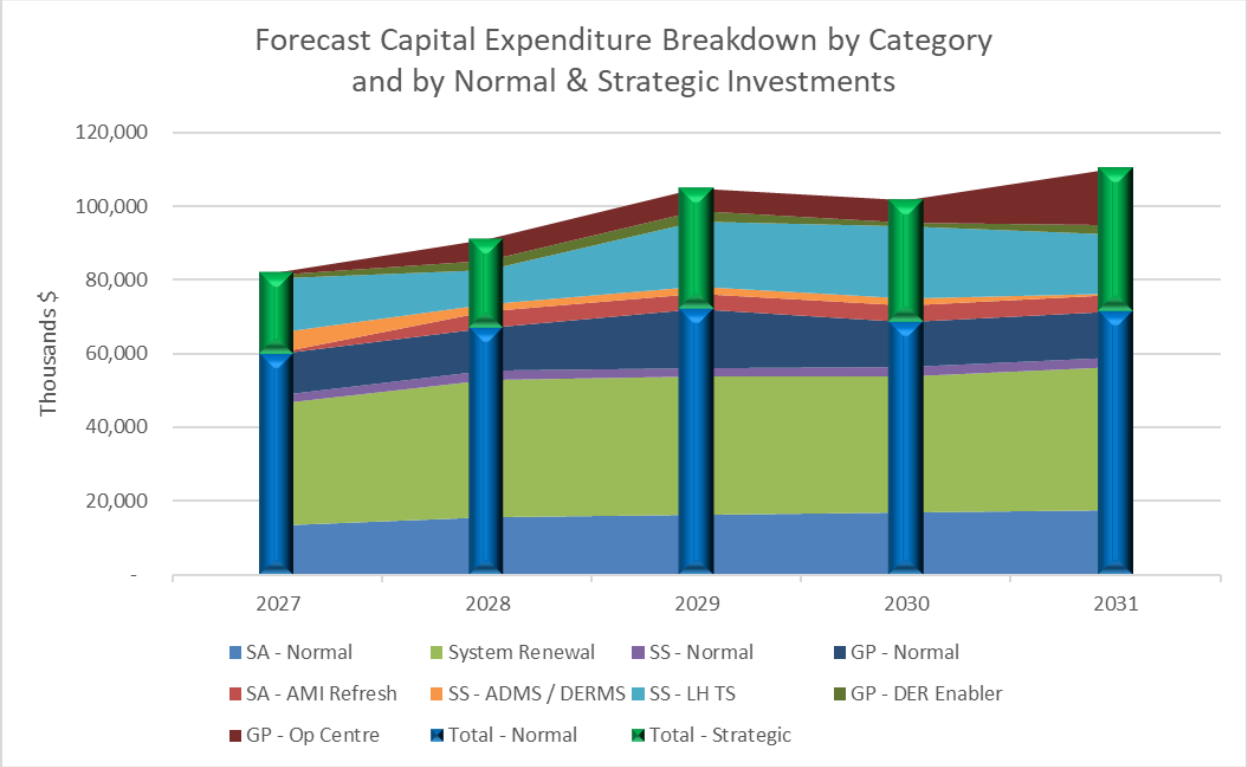


Figure: 66 Forecast Capital Expenditure Breakdown by Category and by Normal & Strategic Investments

London Hydro has taken deliberate steps to levelize capital expenditures over an approximately 10-year planning horizon (two successive DSP cycles) in order to accommodate major strategic investments, while continuing to fund essential grid renewal and customer-driven work. This approach moderates year-to-year spending variability, helps manage the pace of rate increases and reduce rate volatility for customers, and aligns investment timing with prudent asset lifecycle management.

For example, investments associated with the replacement of first-generation Advanced Metering Infrastructure (AMI) were originally planned to occur over a five-year period as the existing smart meter fleet approaches end of life. To moderate near-term capital pressures and better align with customer feedback on affordability, London Hydro has extended the meter replacement program over approximately ten years. The near-term program focuses on replacing meters reaching end-of-life, allowing the utility to address asset condition needs, while pacing the broader AMI modernization initiative.

Investments to increase system supply capacity are being coordinated with upstream Hydro One transformer station asset renewal programs where possible. By aligning local distribution capacity needs

with planned transmission station refurbishments or replacements, London Hydro can achieve capacity upgrades more efficiently and defer the need for additional standalone transformer stations. A key example is Clarke Transformer Station, where aging station assets will be replaced and the station capacity increased from approximately 120 MVA to approximately 190 MVA. This coordinated investment will provide additional supply capacity to support growth in the northeast portion of the City, and at the same time, provide load relief to support the future rebuilding of Talbot TS DESN 2 by Hydro One.

London Hydro has also actively managed the timing of investments related to the development of a second operations centre, taking into account operational requirements, competing capital priorities, and overall budget considerations. Originally planned for implementation in the 2024-2026 period, this investment was deferred to the 2027-2031 period to accommodate increased capital costs associated with core infrastructure and IT initiatives while considering the rate impacts on customers. The current plan phases the project over two rate periods, with initial investment commencing in 2027 and completion anticipated by 2033. This approach allows London Hydro to maintain operational readiness and balance near-term capital pressures.

Collectively, these measures demonstrate London Hydro's commitment to pacing major strategic investments in a manner that maintains system reliability and growth readiness while smoothing capital expenditures across planning cycles.

System Access

System Access investments enable London Hydro to meet customer-driven demand for new connections, accommodate municipal and transit projects requiring asset relocations, and maintain compliance with regulatory requirements related to metering and customer service. These expenditures are non-discretionary and largely driven by third-party activities or mandated obligations under the Distribution System Code (DSC) and applicable municipal agreements.

System Access projects are grouped into four major categories:

City Works: Projects completed to accommodate work initiated by the City of London, including road widenings, utility corridor reconstructions, streetscape improvements, and rapid transit expansions. These undertakings typically require London Hydro to relocate, replace, or reconfigure existing distribution assets. A portion of these costs is recoverable in accordance with municipal road authority regulations and has been accounted for within the overall forecast.

Developer Works: Projects associated with new residential and commercial development, including the installation or relocation of distribution assets required to serve growth areas. Consistent with Appendix B of the DSC, a portion of these costs is recovered from developers. The costs reported in this category reflect the gross capital investment profile.

Meters and Devices: Investments corresponding to new or upgraded customer connections, service upgrades, and associated metering equipment required to support customer growth.

Advanced Metering Infrastructure (AMI) Refresh: Projects to replace first-generation smart meters with second-generation devices as the current fleet reaches end-of-life.

SYSTEM ACCESS INVESTMENT TRENDS, DRIVERS, AND PROGRAM DETAILS

Capital Spending Five Year Forecast 2027 Plan To 2031 Plan

Table 75 System Access Forecast Spending

Annual Spending Details by Investment Category	2027 Plan $	2028 Plan $	2029 Plan $	2030 Plan $	2031 Plan $	5 Year Total $
City Works Projects	2,633,000	5,097,900	5,286,400	5,482,300	5,684,900	24,184,500
Developer Works Projects	8,978,200	9,310,800	9,655,400	10,012,600	10,383,100	48,340,100
Meters & Devices	1,706,000	1,198,100	1,246,000	1,269,800	1,307,100	6,727,000
Advanced Metering & Infrastructure Refresh	326,600	4,333,800	4,285,300	4,443,800	4,608,200	17,997,700
Total System Access	13,643,800	19,940,600	20,473,100	21,208,500	21,983,300	97,249,300

System Access spending has historically fluctuated in response to external factors such as municipal construction schedules, customer requests for new or upgraded services, and the timing of large development applications. This variability is expected to continue over the 2027 - 2031 period. System Access expenditures are essential to ensuring that London Hydro can meet customer connection obligations, accommodate mandated City and transit works, and maintain accurate and reliable metering infrastructure.

Across the forecast period, total System Access investments are projected to grow at a 12.7% average annual rate. The most notable increase occurs in 2028, driven primarily by (i) the commencement of

Phase 2 of the City's Rapid Transit program, which will require extensive distribution asset relocations, and (ii) the start of London Hydro's AMI meter refresh program, which begins transitioning aging first-generation meters to modernized smart metering technology. Following 2028, System Access growth stabilizes to approximately 3.3% annually.

By 2031, System Access investments are expected to represent roughly 20% of total annual capital expenditures, reflecting both continued customer growth and sustained municipal infrastructure activity.

Average annual spending by program during the forecast period is summarized below:

$4.8 million – City Works

$9.7 million – Developer Works

$1.3 million – Meters & Devices

$3.6 million – AMI Meter Refresh

The outlook for customer-driven development activity remains strong over the next five years, with steady growth forecasted in both residential and commercial sectors. Within the residential sector, the shift in development toward multi-unit housing over single family dwellings (as discussed in section 5.3.2c) is expected to continue. Developer Works volumes are expected to remain robust as the City continues to intensify urban development and expand build-ready lands.

London Hydro's existing AMI infrastructure was installed between 2009 and 2011. Nearly all first-generation meters are approaching end-of-life as they have reached or surpassed 15 years in service, which aligns with the typical recommended lifespan for electronic metering equipment. While the existing deployed meters have been operating well, failure rates have started to increase, and continued operation of aging metering assets risks legislative and regulatory non-compliance with metering accuracy requirements, reliability of customer billing, and overall meter-to-cash performance. Operating costs would also increase from increased dispatching of crews to replace failing meters. To address these risks, London Hydro will implement a levelized 10-year meter replacement program, ensuring a measured and cost-efficient transition to second-generation technology while maintaining regulatory compliance and supporting long-term customer service needs.

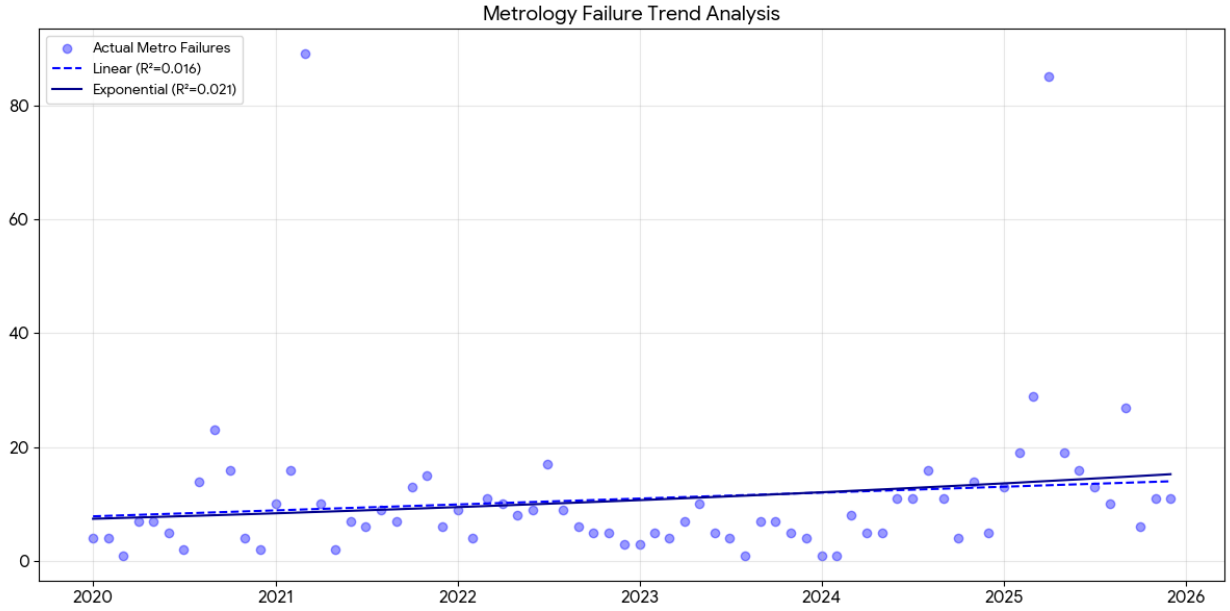


Figure: 67 Metrology Failure Trend Analysis

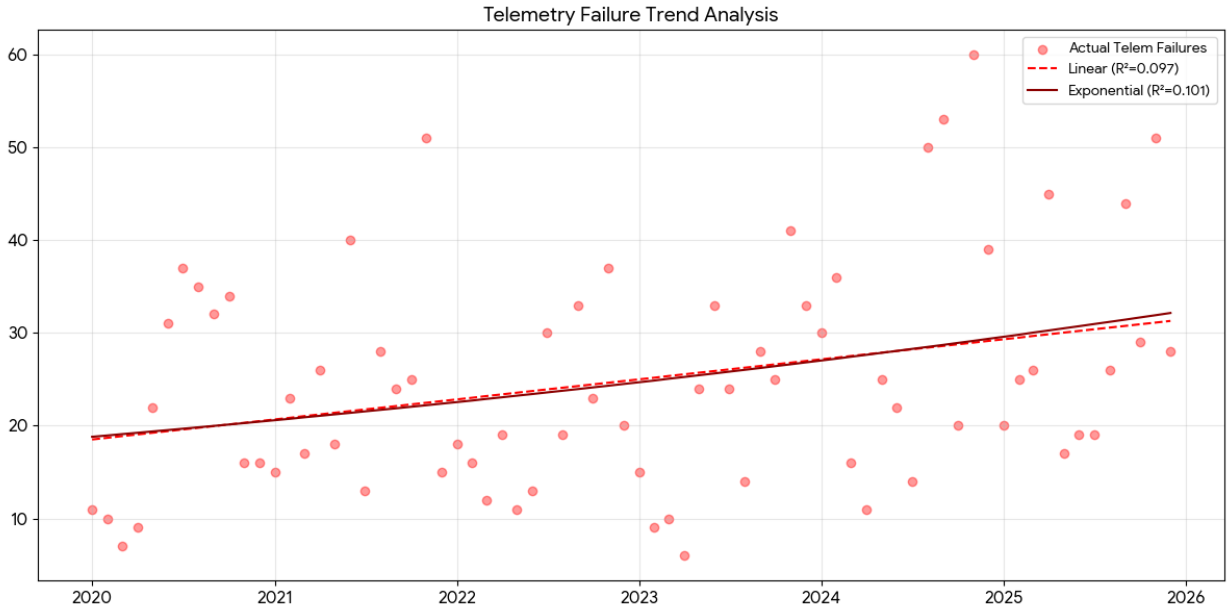


Figure: 68 Telemetry Failure Trend Analysis

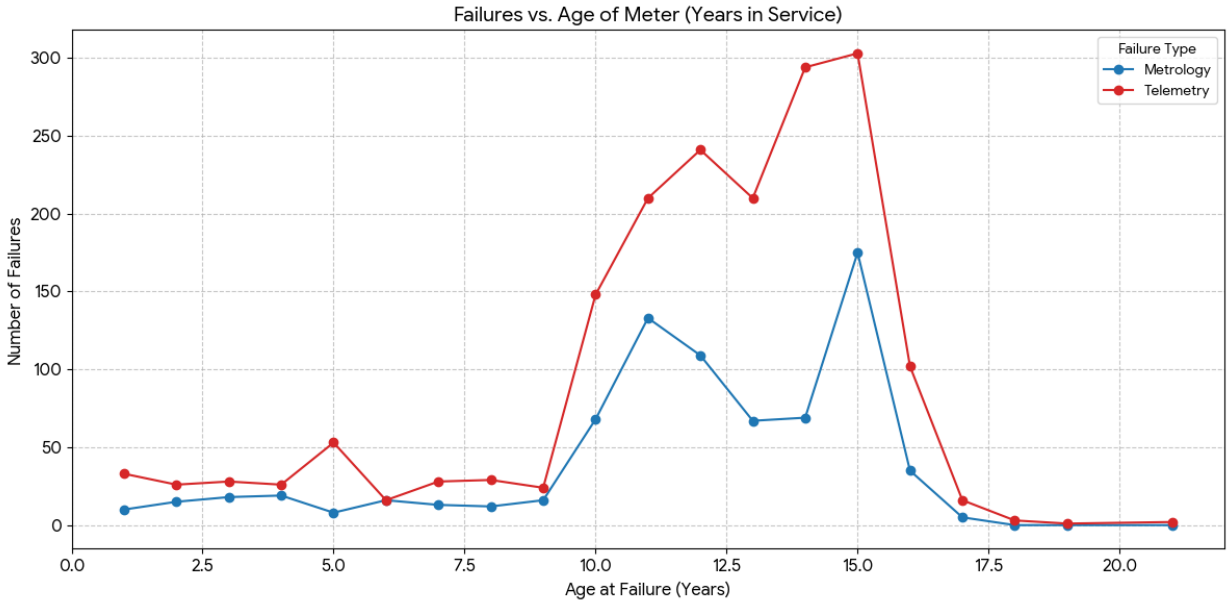


Figure: 69 Failures vs Age of Meter (Years in Service)

System Renewal

System Renewal investments focus on replacing or refurbishing deteriorated, end-of-life, or obsolete infrastructure to maintain the safety, reliability, and long-term sustainability of the distribution system. These investments are guided by London Hydro's condition-based and risk-informed asset management practices, supported by its Asset Sustainment Plan, Asset Condition Assessment, and system performance indicators. System Renewal expenditures are essential to mitigate safety, environmental, and reliability risks, reduce unplanned outages, and ensure that aging assets are replaced in an orderly and cost-effective manner.

As discussed in Section 5.2.1d, as the distribution system ages, increased System Renewal investment is required to manage deteriorating asset condition and increasing failure risk while sustaining historical equipment-failure-related reliability. To balance reliability and affordability, London Hydro is pursuing disciplined, risk-based renewal rather than accelerating asset replacement solely to achieve incremental reliability improvements.

System Renewal projects are grouped into five major categories:

Substation Rebuilds: Projects that extend the life of existing substations through targeted replacements or refurbishments of assets identified as being in poor condition or technically obsolete. These include

both minor components (e.g., battery banks, protection relays, RTUs) and major replacements such as substation power transformers. Investments support safe operation of remaining 4.16 kV infrastructure during the staged 4.16 kV-to-27.6 kV conversion program.

Subdivision Rebuilds: Projects that replace deteriorated assets within residential and commercial subdivisions that are contributing to recurring reliability issues. Typical scope includes the replacement of primary cable, switchgear, distribution transformers, secondary bus conductors, aging 4.16 kV rear-lot overhead assets, and deteriorated pedestals.

Main Feeders: Projects that address poor-condition assets and configuration limitations along main feeder routes, including reconductoring, underground egress cable replacement, feeder reconfiguration, balancing to enhance operational flexibility, replacement of supporting structures such as vaults, manholes or ducts and rebuilding circuits to support capacity, redundancy, and reliability.

Downtown Core Supply: Projects that refurbish or replace aging underground civil and electrical infrastructure serving the downtown core. Assets include maintenance holes, ducts, vaults, network transformers, underground switches, and cable systems that require renewal due to condition, safety risks, and structural deficiencies.

Overhead Line Work: Projects replacing overhead distribution assets outside of the main egress feeders, including poles, conductors, connectors, insulators, switches, and cutouts. These programs may involve targeted (surgical) replacements of specific degraded components or full line rebuilds based on condition and reliability needs.

SYSTEM RENEWAL INVESTMENT TRENDS

Capital Spending Five Year Forecast 2027 Plan To 2031 Plan

Table 76 System Renewal Forecast Spending

Annual Spending Details by Investment Category	2027 Plan $	2028 Plan $	2029 Plan $	2030 Plan/ $	2031 Plan $	5 Year Total $
Substation Rebuilds	152,600	158,200	164,100	170,200	176,500	821,600
Subdivision Rebuilds	21,243,300	22,493,300	24,781,300	25,045,700	26,972,500	120,536,100

Main Feeders	2,050,000	2,605,000	2,382,900	1,192,900	327,100	8,557,900
Downtown Core Supply	2,809,000	3,919,900	3,567,350	3,642,300	4,447,000	18,385,550
Overhead Line Work	6,927,700	7,987,700	6,624,500	6,869,400	7,123,600	35,532,900
Total System Renewal	33,182,600	37,164,100	37,520,150	36,920,500	39,046,700	183,834,050

System Renewal investments directly support the continued safety and reliability of the distribution system by addressing aging and deteriorated infrastructure. London Hydro employs an integrated asset management approach that combines reactive (failure- and inspection-triggered corrective actions) and proactive (condition- and risk informed) renewal strategies. Consistent with prudent utility practice, proactive renewal is more efficient, cost-effective, and less disruptive to customers than reactive emergency replacements, and mitigates a wide range of risks including environmental contamination, safety hazards, equipment failure, and exposure to escalating lifecycle costs associated with deferred replacement.

Across the 2027 - 2031 forecast period, System Renewal expenditures grow at an average annual rate of 4.2%. The single-year increase in 2028 reflects added scope across several programs to address the growing inventory of end-of-life assets. After 2028, the expenditure profile stabilizes to approximately 1.7% annual growth. System Renewal represents 41% of total capital spending in 2027, decreasing to 35% by 2031, as other major strategic initiatives ramp up during the same period.

Average annual spending by program is as follows:

$0.2 million – Substation Rebuilds

$24.1 million – Subdivision Rebuilds

$1.7 million – Main Feeders

$3.7 million – Downtown Core Supply

$7.1 million – Overhead Line Work

These levels reflect the scale of asset renewal required to maintain reliability, address aging infrastructure, and mitigate future investment backlogs.

As highlighted in Section 5.2.3, London Hydro's SAIDI and SAIFI metrics (excluding Major Events) demonstrate a relatively stable reliability trend over the historical period, with a modest deterioration observed in the most recent reporting year. Ongoing targeted renewal investments have continued to mitigate underlying deterioration and exposure to routine weather impacts, helping to stabilize performance over time. However, when Major Events are included, Equipment Design Related Outages (EDRO) contribute to increasing SAIDI-EDRO results, underscoring the need for continued, proactive infrastructure renewal.

Section 5.3.2 further demonstrates that a significant proportion of London Hydro's asset population is reaching or approaching end of life. Without sustained System Renewal investment, the backlog of deteriorated assets would increase, leading to higher failure rates, compromised safety, reduced reliability, and cost pressures associated with accelerated future reinforcements.

System Renewal investments therefore play a key role in:

- modernizing aging infrastructure to meet current standards;
- improving system resilience to severe weather events;
- maintaining equipment-related outages; and
- ensuring long-term capital planning remains levelized and manageable.

Substation Rebuilds

London Hydro continues to operate its legacy 4.16 kV system during the staged conversion to 27.6 kV. To ensure safety and reliability throughout this transition, substation rebuilds focus on condition-based renewal of batteries, relays, RTUs, and transformer assets. Transformer health is monitored through Dissolved Gas Analysis (DGA) and furan testing, enabling prioritization of refurbishment or replacement. In some cases, transformers decommissioned during station upgrades may be redeployed to replace poorly performing units. These investments prolong transformer life, defer larger capital work where feasible, and mitigate operational and environmental risks.

Subdivision Rebuilds

This program targets deteriorated cables, transformers, and padmount switchgear within subdivisions, with a central focus on aging XLPE cable. As noted in earlier sections, nearly 475 km of XLPE cable will be in very poor or poor health condition within the next five years, necessitating sustained replacement volumes. Failure of XLPE cable not only leads to localized outages, but can cause voltage sags across entire station buses, affecting sensitive industrial customers, which leads to operational losses, product spoilage, and equipment damage.

Investments also address transformers exhibiting oil leaks, corrosion, or other safety/environmental concerns. Additionally, aging 4.16 kV rear-lot overhead assets are being converted to front-lot underground configurations to improve reliability and eliminate access-related risks. These renewal activities collectively enhance reliability, reduce outages, and strengthen overall system resilience.

Main Feeders

Main Feeder investments address aging underground egress cables that perform poorly through condition testing, as well as reconductoring, feeder upgrades, and new circuit construction to improve operational flexibility, capacity, and redundancy. These initiatives support reliable supply to growing load pockets and ensure feeders can support each other during planned and unplanned outages.

Downtown Core Supply

The downtown system relies on an extensive network of underground civil structures and electrical components that require periodic renewal due to age, structural degradation, and safety risks. This program prioritizes replacements based on ACA findings and is paced according to AECOM's third-party structural assessments of remaining life. Work includes renewal of maintenance holes, ducts, vaults, network transformers, and protective devices. Investments in this program reduce safety risks for staff and the public while supporting the reliability of the City's highest-density commercial area.

Overhead Line Work

Overhead Line Work focuses on replacing deteriorated poles, conductors, connectors, insulators, switches, fused cutouts, and grounding systems. London Hydro uses a hybrid proactive/reactive approach informed by ACA data, inspection results, and reliability performance.

London Hydro's renewal programs continue to employ both surgical and area-based approaches to address deteriorated infrastructure. Surgical programs focus on individual assets identified through

condition assessments, such as poles flagged through the annual pole-testing program, while area-based programs target larger clusters of aging infrastructure, including the rebuilding of legacy 4.16 kV and older 27.6-kV overhead areas.

As part of its ongoing prioritization and pacing of investments, London Hydro has refined its strategy for 4.16 kV conversion work in this DSP period. Specifically, the utility has deferred a portion of front-lot 4.16 kV overhead conversions to concentrate resources on higher-risk rear-lot neighbourhoods, where access constraints, deteriorated plant, and heightened safety considerations present more immediate need and also addresses key vulnerability of severe weather impact. This targeted sequencing allows London Hydro to remain within its historical investment envelope for 4.16 kV rebuilds, while directing capital to the locations where customer reliability, safety, and long-term asset stewardship are most positively affected.

The program also improves resiliency by targeting heavily treed corridors susceptible to severe weather, as well as high-risk locations such as critical crossings and corner poles supporting multiple circuits. Reliability and safety are the primary drivers, with resiliency delivered as an overlapping benefit.

Additional focus areas include removal of non-standard automatic splices, deteriorated midspan connectors, porcelain and EPAC insulators prone to failure, and replacement of legacy porcelain fused cutouts to mitigate pole-fire risks. Restoration of grounding systems using copper-clad steel mitigates public-safety risks associated with stolen or compromised grounds.

System Service

System Service investments are aimed at improving the overall performance, flexibility, and operability of the distribution system. While System Renewal projects primarily address deteriorated or end-of-life assets, System Service focuses on enhancements that improve system reliability, power quality, operational efficiency, automation capability, and long-term system adequacy. These projects are essential to support evolving customer expectations, growing electrification, increasing DER penetration, and more frequent severe weather events.

System Service projects are grouped into five program areas:

Substation Rebuilds: This program includes upgrades that improve substation safety, reliability, and power quality, such as modernizing protection and control systems (relays, radios, communication devices). However, due to the ongoing elimination of several 4.16 kV stations through voltage conversion,

as the primary driver is renewal, no investment is planned in this category over the 2027–2031 forecast period.

Transformer Station (MTS Development): This new program category reflects investment in new supply capacity to address regional and local adequacy needs identified through load forecasting and confirmed during Regional Planning with Hydro One, the IESO, and neighbouring LDCs. The program includes land acquisition, engineering, and construction of London Hydro's first municipal transformer station (MTS-1) in the southeast area, as well as the initiation of MTS-2, located in the northwest area, later in the forecast period.

Subdivision Rebuilds: Projects that enhance reliability, power quality, and operability within subdivisions. These include installing backup feeder connections (looped supply), fault indicators, and sectionalizing equipment that reduces outage duration and operational effort during faults.

Overhead Line Work: Targeted reliability enhancements on overhead circuits, including installation of animal guards, wildlife protection devices, and power-quality-related upgrades. These low-cost interventions reduce momentary outages and improve customer experience.

SCADA and Control Room (Automation): Projects that expand the utility's automation, communication, and real-time operational capabilities. This category includes recloser installations, device radios, RTU upgrades (outside of substations), cybersecurity enhancements, SCADA system improvements, and major digital modernization initiatives such as ADMS and DERMS deployment.

System Service Investment Trends

Capital Spending Five Year Forecast 2027 Plan To 2031 Plan

Table 77 System Service Forecast Spending

Annual Spending Details by Investment Category	2027 Plan $	2028 Plan $	2029 Plan $	2030 Plan $	2031 Plan $	5 Year Total $
Transformer Station	14,905,500	9,189,700	17,791,400	19,290,600	15,820,150	76,997,350
Subdivision Rebuilds	393,800	412,800	428,100	444,000	460,500	2,139,200
Overhead Line Work	71,700	74,400	77,100	80,000	83,000	386,200

Annual Spending Details by Investment Category	2027 Plan $	2028 Plan $	2029 Plan $	2030 Plan $	2031 Plan $	5 Year Total $
SCADA and Control Room	7,146,300	4,313,200	3,698,450	4,135,600	2,378,400	21,671,950
Total System Service	22,517,300	13,990,100	21,995,050	23,950,200	18,742,050	101,194,700

Over the 2027–2031 forecast period, System Service investments decreased at an average annual rate of 4.5%, reflecting the completion of major digital modernization initiatives and the pacing of MTS development. Expenditures fluctuate in the near term due to land acquisition and ADMS/DERMS deployment, but decrease steadily by 2031. As a proportion of total capital spending, System Service declines from 28% in 2027 to 17% in 2031.

Average annual spending by program is as follows:

$15.4 million – Transformer Station

$0.4 million – Subdivision Rebuilds

$0.1 million – Overhead Line Work

$4.3 million – SCADA and Control Room

These levels reflect the combination of one-time system adequacy projects (new MTS) and ongoing reliability, automation, and operational performance enhancements.

DRIVERS AND PROGRAM DETAILS

Transformer Station (MTS) Development

Regional Planning conducted jointly with Hydro One and the IESO has identified emerging transformation and supply capacity constraints in critical parts of London Hydro's service territory. These needs reflect sustained load growth driven by residential and industrial development, and electrification trends. To ensure long-term adequacy, maintain redundancy during contingency events, and support future customer growth, London Hydro must proceed with the development of its first municipal transformer station.

London Hydro plans to acquire the site for MTS-1 in the southeast in 2027, with the station targeted to enter service in 2031 following detailed design, environmental assessments, regulatory approvals, and construction. In parallel, early-stage planning for MTS-2 in the northwest is already underway as part of Regional Planning, reflecting existing supply constraints in that area and the extended timelines required to complete system studies, environmental assessments, routing, and right-of-way acquisition. Land acquisition for MTS-2 is currently targeted for 2031 to support timely development as need is confirmed. MTS-2 is expected to require upstream transmission expansion, which may necessitate a CCRA.

These planned investments are directly aligned with OEB expectations for prudent, evidence-based capacity planning and reflect the outcomes of the regional planning process undertaken with the IESO and Hydro One. Regional technical studies, load forecasts, and contingency analyses identify municipal transformer station development as an appropriate long-term solution to emerging supply constraints, supporting continued growth and development within the service territory. These investments also advance the OEB's mandate to facilitate and support economic growth by ensuring the timely availability of reliable electrical capacity to meet expanding customer and community needs.

Alternatives such as feeder reconfiguration, demand management, and non-wires solutions were considered; however, given the pace of load growth and the lead time required to complete an Environmental Assessment, detailed design, and construction of a new municipal transformer station, these alternatives are not expected to reasonably defer the station's in-service timing. While such measures may provide incremental or localized benefits, they do not sufficiently address the sustained capacity and reliability needs identified through the planning process. NWAs and eDSM are continuing to be evaluated for application on constrained feeders to provide targeted relief; however, their aggregate impact is not expected to defer the broader system capacity requirement addressed by the new station. Refer to Appendix A2-1 "MTS-1 Municipal Transformer Station Business Study" for more information.

Subdivision Rebuilds and Overhead Line Work

Subdivision rebuilds and targeted overhead line enhancements represent a relatively modest portion of System Service spending, but they play a critical role in improving localized reliability and power quality. These investments focus on specific operational needs, including the installation of backup feeder ties to enhance load-transfer flexibility, deployment of fault indicators on pad-mounted transformers and cable routes to accelerate fault location, installation of animal guards and wildlife-mitigation devices to reduce momentary interruptions, and targeted upgrades to support the power-quality requirements of sensitive commercial and industrial customers.

Though small in scale, these initiatives deliver measurable benefits by reducing outage duration, minimizing service disruptions, and improving voltage stability for customers. Collectively, they contribute meaningfully to enhanced customer experience, stronger local reliability performance, and a more resilient distribution system.

SCADA and Control Room (Automation)

This program advances a comprehensive suite of automation and digital modernization initiatives designed to enhance system visibility, controllability, situational awareness, and restoration performance. Key components include the installation of new reclosers to improve sectionalizing capability, upgrades to remote terminal units (RTUs) across distribution assets, modernization of SCADA communications including radio and tower infrastructure, deployment of power quality meters and sensors, and cybersecurity enhancements aligned with industry best practice and emerging threats.

A major driver within this category is the replacement of London Hydro's legacy Outage Management System (OMS) with a modern Advanced Distribution Management System (ADMS) that will support future Distributed Energy Resource Management System (DERMS) functionality. The cost of these systems combined is $11.8 million. This transition is necessary as growing levels of distributed energy resources, electric vehicles, and other electrified loads – combined with increasing frequency and severity of storms – require a more flexible, responsive, and data-rich operational platform. The legacy OMS cannot support the advanced capabilities needed for real-time analytics, DER coordination, or modern grid-restoration strategies. Refer to Appendix A2-2 "ADMS/DERMS Business Case - Advanced Technology for Operational Modernization" for more information.

Deployment Plan (2027–2031)

London Hydro will initiate the ADMS/DERMS program in 2027 with deployment of the core ADMS platform, integration with GIS and SCADA systems, and establishment of an integrated OMS within the ADMS environment. Activities during 2027–2028 will focus on system testing, model validation, staff training, and migration from the legacy OMS. From 2028 to 2031, London Hydro expects to introduce advanced ADMS and DERMS modules enabling enhanced switching and restoration, improved voltage and power-quality management, DER coordination, and real-time analytic tools to support operational decision-making.

Expected Outcomes

These investments will enhance outage prediction and restoration efficiency, improve coordination of field-crew dispatch, strengthen cyber resilience, and materially increase London Hydro's capability to manage DER integration and electrification-driven load. As the ADMS/DERMS platform matures and foundational systems are commissioned, annual capital spending in this program is expected to decline to more historical levels by the end of the DSP period.

General Plant

General Plant investments support the facilities, fleet, tools, technology systems, and shared corporate resources necessary for London Hydro to operate and maintain its distribution system safely, efficiently, and in compliance with regulatory requirements. These assets, while not directly part of the electrical grid, form the foundational infrastructure that enables field crews, engineering teams, system operators, customer service representatives, and corporate staff to perform their functions effectively. General Plant spending also includes capital contributions to Hydro One for system enhancements that improve both load and DER hosting capacity and support customer needs.

General Plant projects are grouped into six major categories:

Capital Contributions to Transformer Stations: Payments made to Hydro One to support upgrades or enhancements at Hydro One owned transformer stations serving London Hydro's system. These contributions include DER-enabling investments such as station bus-tie reactors that increase hosting capacity and support non-wires solutions.

Land, Buildings, and Equipment: Investments in London Hydro's administrative offices, operations buildings, storage facilities, and substation buildings. This includes upgrades to HVAC, electrical systems, plumbing, lighting, accessibility improvements (AODA compliance where possible), and modernization of workspaces to support a growing and evolving workforce. Workforce equipment such as tools, ergonomic workstations, diagnostic equipment, and facilities infrastructure is replaced when obsolete, unsafe, unreliable, or uneconomical to repair. New assets are added as the workforce grows.

London Hydro Operations Centre: A dedicated category in this DSP reflects the need for a second Operations Centre, including storage and operations support facilities. This investment is required to address space constraints and environmental challenges at the existing site, and operational needs arising from system growth, fleet expansion, additional inventory, and increased construction activity.

Vehicles & Major Equipment: Replacement and addition of fleet vehicles and heavy equipment (e.g., bucket trucks, backhoes). These assets are essential for construction, maintenance, outage response, and emergency restoration. Replacements are made when vehicles become unsafe, unreliable, or too costly to maintain. Additional fleet vehicles and equipment are also needed to maintain pace with supporting growing capital and operating needs aligned with supporting the growing customer base.

Hardware / Software: Information Technology (IT) investments to modernize and replace aging hardware, servers, storage systems, cybersecurity infrastructure, and standard software platforms used across the organization.

Application Development: Development or enhancement of enterprise systems and applications used to support regulatory compliance, asset management, engineering design, customer service, project tracking, and other corporate functions. This also includes system upgrades necessary to integrate with other digital tools and improve internal efficiency. These applications serve both internal customers (other London Hydro departments) and external customers.

General Plant Investment Trends

Capital Spending Five Year Forecast 2027 Plan To 2031 Plan

Table 78 General Plant Forecast Spending

Annual Spending Details by Investment Category	2027 Plan $	2028 Plan $	2029 Plan $	2030 Plan $	2031 Plan $	5 Year Total $
Capital Contribution to Transformer Station	1,000,000	2,595,000	2,703,000	1,000,000	2,595,000	9,893,000
Land, Buildings and Equipment	2,989,300	3,063,000	3,176,100	3,465,600	3,593,900	16,287,900
London Hydro Second Operations Centre	598,500	5,841,500	6,088,600	6,346,200	15,634,500	34,509,300
Vehicles & Major Equipment	2,445,000	3,462,300	3,772,600	3,851,100	3,776,200	17,307,200
Hardware / Software	1,466,900	1,121,200	1,177,500	1,235,900	1,296,400	6,297,900
Application Development	4,233,100	3,878,800	7,822,500	3,764,100	3,703,600	23,402,100

Annual Spending Details by Investment Category	2027 Plan $	2028 Plan $	2029 Plan $	2030 Plan $	2031 Plan $	5 Year Total $
Total General Plant	12,732,800	19,961,800	24,740,300	19,662,900	30,599,600	107,697,400

Over the 2027–2031 period, General Plant expenditures are forecast to grow at a 24.5% average annual rate. General Plant represents 16% of total capital spending in 2027, increasing to 28% by 2031 as major strategic initiatives of Bus Tie Reactors and the second Operations Centre progress.

Average annual spending by category is as follows:

$2.0 million – Capital Contributions to Transformer Stations

$3.3 million – Land, Buildings, and Equipment

$6.9 million – London Hydro Second Operations Centre

$3.4 million – Vehicles & Major Equipment

$1.3 million – Hardware / Software

$4.7 million – Application Development

These values reflect both ongoing fleet and facilities replacements, IT initiatives, and a small number of major strategic projects that address long-term operational needs.

DRIVERS AND PROGRAM DETAILS

London Hydro Second Operations Centre

The primary driver of General Plant spending over the forecast period is the development of a second Operations Centre, a major strategic project that is required to address critical operational constraints and deliver long-term improvements in safety, response capability, and system resiliency. The existing operations facility faces significant constraints that limit efficient equipment storage, impede workflow, and reduce the effectiveness of day-to-day construction and maintenance activities. Refer to Appendix A2-3 “Second Operations Facility Implementation Strategy” for more information.

At the time of this submission, London Hydro is still generating and evaluating alternative options for meeting its land and facilities needs. This could include options such as leasing an existing facility, purchasing and re-developing an existing facility, or purchasing vacant land and developing buildings. Each phase may include some level of implementation, rework, improvements, and sharing with other organizations to utilize any unused space. The budget London Hydro set accounts for purchasing land and developing buildings - a buy-build scenario. This is one of the many scenarios being considered. In this buy-build scenario, the timing of the completed project is assumed to be early in the next rebasing period. London Hydro is providing information about this project ahead of the alternative generation phase and has included budgetary plans before making a final determination on the type of solution.

There are a variety of drivers for this project. Overall growth for capital programs and operations have increased the size of the organization. Additionally, supply chain reliability and equipment lead times have needed to be addressed through carrying more inventory. Customers expect London Hydro to be responsive to their schedules and to meet regulatory timeline requirements. 2025 saw London Hydro carrying the largest volume of inventory in its history. While recent investments – building, office workstation renovations and additional material racking and storage solutions – have been made to make the most of existing facilities, it is not enough to keep up with current and future growth needs.

There are also additional challenges and vulnerabilities of the existing location. These include the risk of flooding, security and theft, space maneuverability constraints for large vehicles (i.e., supply trailers, utility bucket trucks with pole trailers) and ability to reach the borders of London Hydro’s service territory quickly and efficiently.



Figure: 70 Outdoor Fleet Parking

The current buildings were designed to store vehicles inside heated vehicle bays to extend vehicle lifecycle and ensure they are available and responsive to quick deployment. As the fleet has grown over the years, several vehicles are now stored outside that accelerates the degradation of hydraulic cabling, which has caused accelerated failures and requires additional inspections and maintenance.

London Hydro's material yard is located within a floodplain, creating two key challenges: (1) exposure to flooding risk, and (2) restrictions on further site development, limiting ability to increase utilization and operational capacity through additional buildings and storage racking.

Economic pressures in London, combined with the high market value of metals such as copper and aluminum, have increased the risk of theft and vandalism involving London Hydro assets, including both installed equipment and materials held in inventory. The proximity of homeless encampments along the Thames River to London Hydro's storage yard presents an additional and ongoing security concern. In response to these risks, London Hydro has strengthened its security posture through enhanced physical security measures, monitoring, and related security activities.

The City of London recently replaced the Victoria bridge on Ridout Street, adjacent to London Hydro's facility. This replacement bridge was built at a higher elevation than the previous structure to

accommodate higher river water levels. The resulting change in road grade has reduced accessibility through the west Gate 4, making material and equipment deliveries more difficult. In addition, an existing delivery and loading dock was rendered inaccessible by the installation of a concrete barrier and can no longer be effectively used for receiving deliveries or materials. See Figure 71.



Figure: 71 London Hydro's stores building after grading from Victoria Bridge

London Hydro's location within the downtown core further exacerbates these challenges, as response times are routinely impacted by traffic congestion, including delays associated with both vehicular traffic and rail crossings. In addition, the site is subject to escalating environmental and safety risks, including vulnerability to localized flooding, which can restrict site accessibility, disrupt operations, and impair London Hydro's ability to respond effectively during storm and emergency events.

Consultation with field staff and management has demonstrated broad support for the development of an alternative operations centre. A second operations centre would receive poles, transformers, wire spools and other equipment to replenish internal and contracted field crews. In many cases, the new proposed operations centre would enable field crews to report to the facility more efficiently, reducing travel through congested downtown areas and supporting improved response times and customer service. A thorough

study of optimal possible locations for a new operations centre was performed and resulted in locations that were close to major transportation routes, e.g., 400 series highways and Veteran's Memorial Parkway.

Depending on the timeline and solution, the departments and workgroups that will operate from and/or relocate will need to be determined. Initially, materials management and overhead line departments will be prime candidates for realizing benefits of an alternate site. Over time, other departments such as Fleet Maintenance, Electrical Underground Services, Electric Meter and the System Operating Centre may relocate operations. It is expected that Station Maintenance, Protection and Control and Administrative and Technical office staff (i.e., IT, Finance, Communications, Human Resources, Executive, Engineering) will remain operating from 111 Horton Street.

A new additional operations centre is required to provide modern, fit-for-purpose facilities capable of supporting London Hydro's growing workforce, expanded fleet requirements, and increasing construction activity driven by load growth (requiring a higher level and greater variety of inventory), electrification, and system renewal programs. Its design will facilitate improved mobilization, more efficient dispatch of field crews, and faster response times during emergency and storm events. The facility will also strengthen the utility's long-term operational resiliency, ensuring that London Hydro can continue to deliver safe, reliable service as system complexity and customer needs evolve.

The Operations Centre is therefore an enabling investment that supports, rather than substitutes for, London Hydro's broader capital programs. Completing the facility in advance of increasing capital activity will provide the operational and materials management capacity needed to efficiently deliver planned system expansion, renewal, and modernization investments.

DER-Enabling Contributions to Hydro One

London Hydro plans to provide a capital contribution to Hydro One for the installation of DER-enabling bus-tie reactors at two constrained transformer stations within its service area. These devices are required to increase DER hosting capacity, support future enhanced conservation and demand-side management (eDSM) and non-wires solution opportunities.

These planned contributions reflect London Hydro's continued participation in the Regional Planning process and align with OEB expectations that distributors support cost-effective, regionally coordinated grid-modernization investments where system benefits are shared among multiple parties.

Information Technology and Digital Infrastructure

London Hydro's Information Technology ("IT") investments are fundamental to maintaining the reliability, security, and performance of the digital systems that support the utility's operational, customer-service, engineering, and regulatory functions. These investments are primarily driven by the critical need to replace aging hardware and software that have reached end-of-life, as well as the requirement to integrate with modern grid platforms such as ADMS, DERMS, and advanced enterprise project-tracking tools. By maintaining a modern digital infrastructure, London Hydro ensures workforce productivity and ongoing compatibility with evolving industry standards and vendor-supported technologies. These initiatives collectively reduce cybersecurity and data-integrity risks, providing the necessary foundation for broader grid-modernization and digital-transformation objectives.

The IT Capital Spending is presented in the "Hardware/Software" and "Application Development" lines of Table 78. Within the supporting project sheets, Application Development expenditures are further broken out into Compliance and Sustainment, and System Enhancements.

Hardware/Software: To support day-to-day business operations and maintain a secure technology environment, London Hydro invests annually in the lifecycle refresh and targeted expansion of its core IT hardware and software. This program is essential for mitigating the risks associated with end-of-life infrastructure, which can lead to technology obsolescence and decreased workplace productivity. By proactively refreshing these assets, London Hydro ensures that its IT infrastructure remains supportable and resilient, strengthening the utility's overall cybersecurity posture while providing the reliable tools necessary for field and office staff to meet operational requirements.

Applications Development (Compliance and Sustainment): These investments ensure that London Hydro's digital environment maintains continuous adherence to evolving regulatory mandates and vendor-supported lifecycles. This initiative prioritizes the maintenance and upgrading of systems as required by software and hardware providers, ensuring the utility retains access to essential support services, critical updates, and security patches. Primary focusses for the 2026–2027 period are the reinforcement of cybersecurity capabilities to remain in full alignment with the OEB's Cyber Security Framework and lifecycle management of London Hydro's existing data and integration pipeline. Key activities include the phased rollout of a "zero-trust" architecture, the application of critical system upgrades, and upgrades to reduce operational complexity of customer facing systems. These efforts are fundamental to maintaining system reliability and data integrity, particularly as regulatory requirements become more deeply integrated with customer service delivery and choice.

Applications Development (IT New Capabilities): focuses on the development of new system capabilities to support improved operational effectiveness and strategic objectives. Investments in this area will include development of data management and analytical capabilities in addition to enhancements of London Hydro's mobile field worker tools. These enhancements are driven by the increasing need for timely and accurate information to support business operations, effective retirement of legacy applications and increased responsiveness to field conditions, ensuring London Hydro's operational systems are efficient, integrated, and capable of supporting a modern grid.

In addition to the capital expenditures identified with this DSP, London Hydro's forecast OM&A includes increased costs associated with the strategic use of cloud-based computing services. Cloud solutions are implemented selectively where they provide demonstrable advantages in security and cost-efficiency relative to traditional on-premise alternatives. To ensure fiscal responsibility and operational alignment, all cloud-based initiatives are governed by the IT Asset Management Framework (the same as all capital IT investments), which establishes standardized processes for the entire lifecycle of the asset, ensuring that these investments provide long-term sustainability and support reliable, compliant utility operations.

Fleet and Facilities

Investments in vehicles, major equipment, and facility upgrades address ongoing operational requirements and support the safe, reliable delivery of service. These expenditures are driven by the need to replace aging and unreliable fleet and heavy equipment, reduce maintenance costs and downtime, and ensure the safe operation of field crews. They also include upgrades to buildings and site infrastructure that are approaching end of life, as well as renovations required to accommodate workforce growth and increased equipment inventory needs associated with system growth, renewal and electrification.

Collectively, these investments maintain operational readiness, enhance efficiency, and ensure that construction and maintenance activities can be carried out safely, effectively, and on schedule.

5.4.1.3 Analysis of Capital Expenditure Historical vs Forecast Period

This section compares London Hydro's forecasted capital expenditures for 2027 - 2031 to historical spending from 2022 - 2026, highlighting shifts in investment levels, major drivers of change, and how evolving system needs have influenced the capital plan. All capital projects and programs are categorized according to the OEB's prescribed investment categories to ensure consistency, transparency, and comparability across the historical and forecast periods.

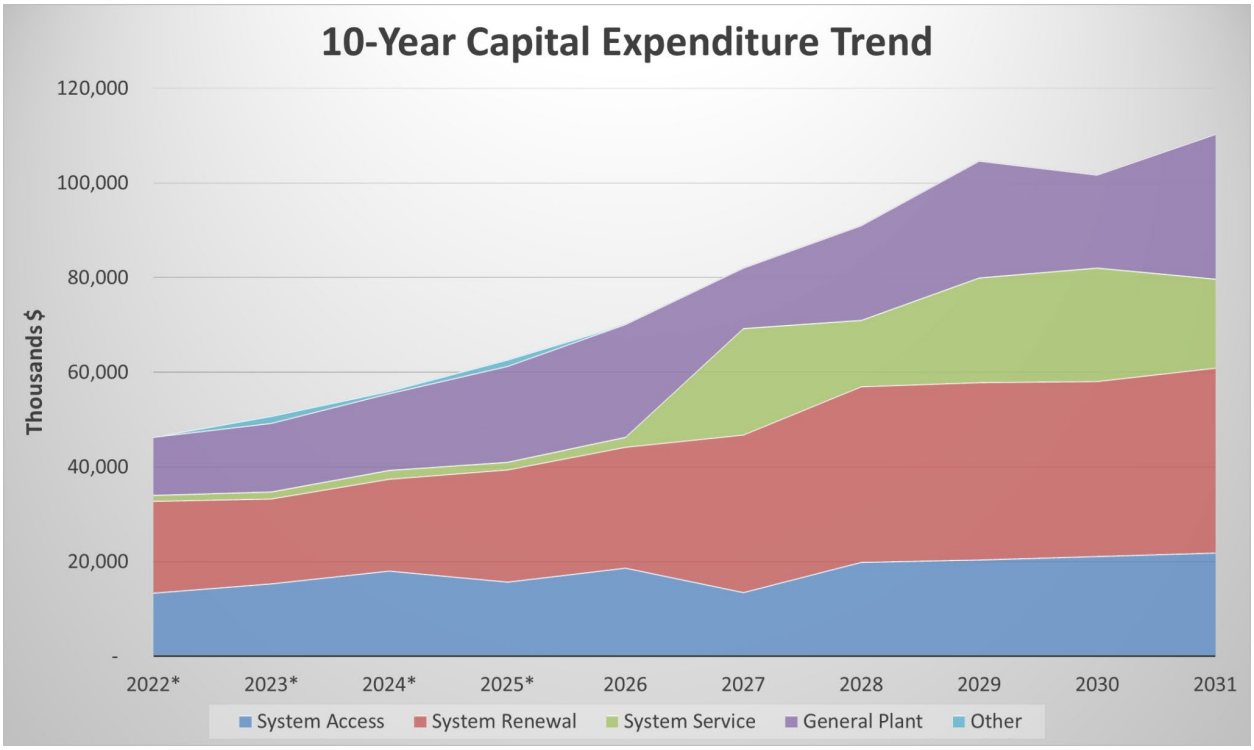


Figure: 72 London Hydro 10-Year Gross Capital Expenditure Trend

Figure 72 illustrates that gross capital spending is projected to increase from $46.4 million in 2022 to $110.4 million in 2031, representing an overall increase of approximately 138%. This growth is not indicative of a permanent structural shift in underlying capital needs; rather, a significant portion of the increase is attributable to major strategic investments that occur periodically based on long-term system growth, adequacy requirements, grid modernization needs, and reliability objectives.

These key initiatives – ADMS/DERMS, AMI meter refresh, London Hydro's Municipal Transformer Station, DER-enabling station bus-tie reactors, and a second Operations Centre – represent $39.0 million of the total 2031 capital requirement alone.

To provide transparency around the true trajectory of recurring capital needs, London Hydro separated these strategic projects from its core capital program. Excluding these strategic investments, the core capital plan grows from $46.4 million in 2022 to $71.4 million in 2031, in gross terms, an increase of approximately 54% over the 10-year period. This trend reflects:

- ongoing system renewal needs identified in the 2024 ACA,

- incremental investments to improve reliability and resiliency,
- growth in customer-driven work volumes,
- higher material costs due to inflation and supply disruptions, and
- prudent modernization of operational systems and tools.

These underlying investments are recurring, foundational components of London Hydro's prudent system planning approach and are consistent with historical asset management practices.

System Access

The following graph illustrates annual System Access expenditures across the historical (2022–2026) and forecast (2027–2031) periods.

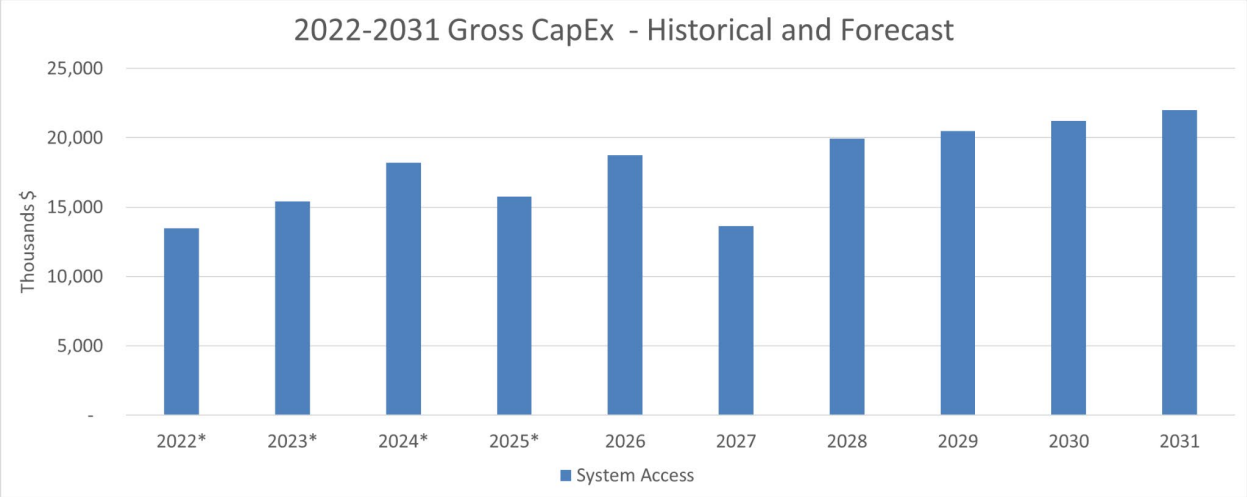


Figure: 73 Annual System Access Expenditures across Historical and Forecast

* 2022-2025 are based on actual expenditures, and 2026-2031 are projected/forecasted expenditures

Average annual System Access spending increases from approximately $16.3 million in the historical period to $19.5 million in the forecast period – an increase of roughly $3 million. This incremental growth is primarily driven by the initiation of the AMI meter refresh, which replaces London Hydro's aging first-generation smart meters that are now reaching end of life.

The observed increase reflects the need to maintain accurate, reliable metering infrastructure and comply with regulatory requirements, while underlying customer-driven connection activity and City-initiated relocation work remain generally consistent with historical levels.

System Renewal

The following graph presents annual System Renewal expenditures over the historical (2022–2026) and forecast (2027–2031) periods.

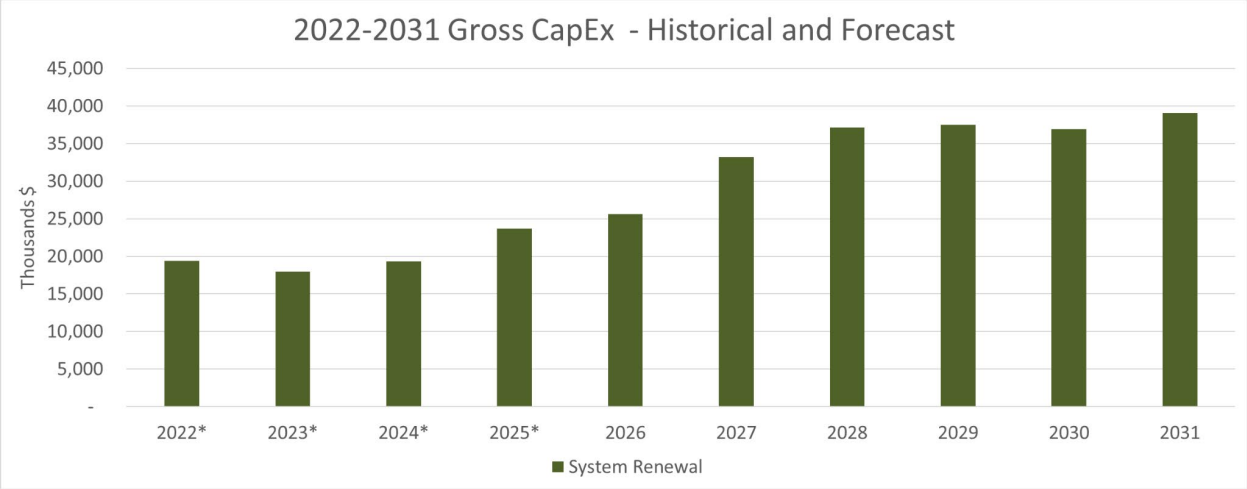


Figure: 74 Annual System Renewal Expenditures across Historical and Forecast

* 2022-2025 are based on actual expenditures, and 2026-2031 are projected/forecasted expenditures

Average annual System Renewal spending increases from $21.9 million historically to $36.8 million in the forecast period – an increase of approximately $15.5 million. This rise is driven primarily by the Subdivision Rebuilds program, which increases by $12.5 million. Of this increase, roughly 80% reflects the need to replace aging underground infrastructure in residential and commercial subdivisions, while the remaining 20% supports the rebuilding and conversion of deteriorated 4.16 kV rear-lot overhead assets to more reliable front-yard underground configurations.

Additional contributors include a $1.2 million increase associated with the Main Feeders program and a $1.7 million increase for Downtown Core Supply infrastructure renewal. Through careful prioritization and pacing, London Hydro limited the increase in Overhead Line Work to approximately $0.7 million annually by deferring front-lot 4.16 kV overhead conversions and focusing on the higher-priority rear-lot neighbourhoods identified in this DSP.

Overall, the increase in System Renewal spending reflects the condition-based needs identified in the 2024 ACA and London Hydro's strategy to proactively address deteriorated infrastructure, mitigate future reliability risks, and prevent the backlog of end-of-life assets from growing.

System Service

The following graph illustrates annual System Service expenditures over the historical (2022–2026) and forecast (2027–2031) periods.

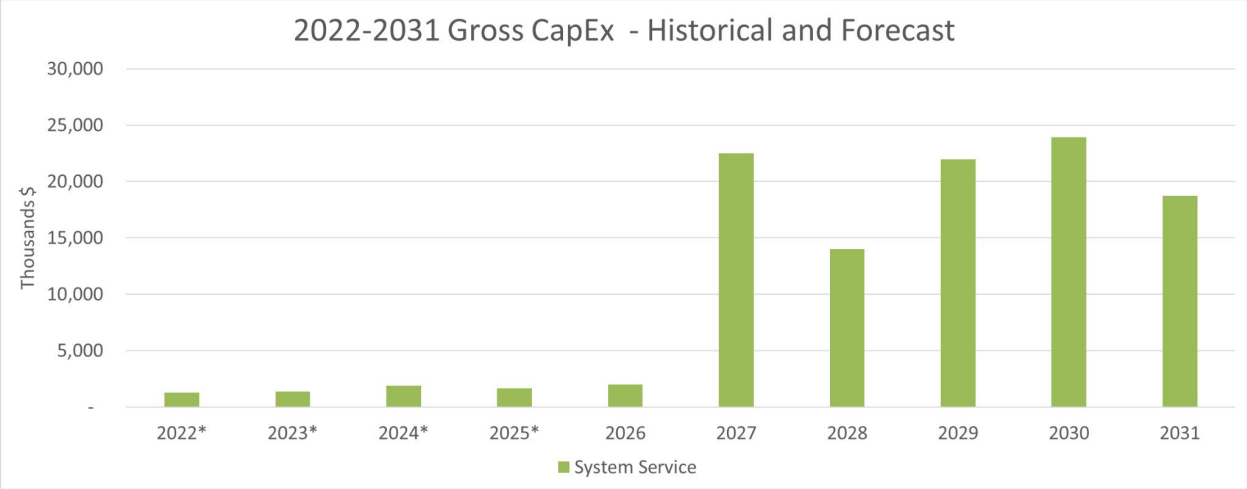


Figure: 75 Annual System Service Expenditures across Historical and Forecast

* 2022-2025 are based on actual expenditures, and 2026-2031 are projected/forecasted expenditures

Average annual System Service spending increases from approximately $1.7 million historically to $20.2 million in the forecast period – an increase of roughly $18.6 million. This significant change is driven primarily by the introduction of the Transformer Station program, which contributes an average of $15.4 million annually to address emerging supply capacity needs. These investments support the development of London Hydro's first municipal transformer station and ensure that the utility can meet forecasted load growth and maintain reliable supply to existing customers.

A further $2.4 million increase arises from the SCADA and Control Room program, reflecting the transition to a modern ADMS and DERMS platform. This digital modernization initiative enhances integration between SCADA and outage management systems, improves fault location and restoration capability, strengthens DER coordination, and supports regulatory objectives related to flexible hosting capacity and

DER integration. These upgrades will enable London Hydro to accommodate growing electrification and distributed energy resources while improving overall system reliability and customer experience.

General Plant

The following graph presents annual General Plant expenditures across the historical (2022–2026) and forecast (2027–2031) periods.

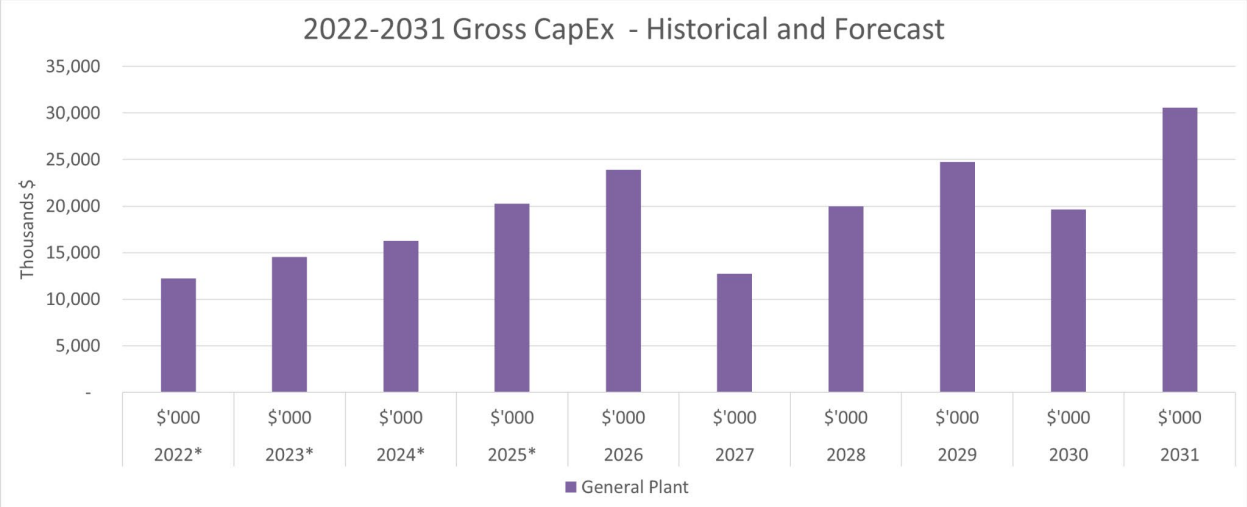


Figure: 76 Annual General Plant Expenditures across Historical and Forecast

* 2022-2025 are based on actual expenditures, and 2026-2031 are projected/forecasted expenditures

Average annual General Plant spending increases from $17.4 million historically to $21.5 million in the forecast period—an increase of approximately $4.1 million. This change is driven primarily by two targeted investments: the development of London Hydro's second Operations Centre, required to address space, functionality, and environmental constraints at the existing facility; and capital contributions to Hydro One for DER-enabling enhancements at two transformer stations, which will expand hosting capacity, support municipal energy objectives, and enable fuller utilization of load supply capacity at constrained stations.

To accommodate these new investments within a prudent and manageable capital envelope, London Hydro achieved offsetting savings by reprioritizing and deferring several lower-priority initiatives. As a result, the increase in General Plant spending reflects a carefully paced expansion of facility and grid-supporting infrastructure aligned with long-term operational needs.

5.4.1.4 Summary of Modifications to Typical Capital Programs

London Hydro has not made substantive changes to its typical Capital Programs since the last DSP; however, it has strengthened several program strategies to better mitigate emerging reliability and power quality risks—particularly those associated with underground primary cable failures. Consistent with its asset management policies, London Hydro continues to optimize asset life where technically feasible, coordinate with third parties to reduce duplication of work, and consolidate project scopes to maximize value from each replacement or refurbishment cycle.

A key modification since the previous DSP is the refinement of the Underground Primary Cable Replacement Program to include the proactive replacement of single-phase radial feeder sections. Historically, the proactive program focused on large single-phase subdivisions constructed in looped configurations, while single-phase radials were generally addressed reactively following a failure. This approach was adequate when failure rates were lower; however, updated ACA results and long-term condition assessments indicate that approximately 475 km of XLPE cable are expected to reach very poor or poor health condition over the next five years. As this cable population continues to age, single-phase radials have demonstrated increasing vulnerability to repeat failures.

Under the previous approach, an initial radial cable failure would typically be repaired through a splice, temporarily restoring service, but would often lead to additional failures weeks or months later. In some cases, the radial segment required three or four reactive repairs before eventual replacement. While these individual events may not materially affect system-level SAIDI and SAIFI metrics, they have a direct adverse impact on the customers served by the radial, and they create indirect impacts for other customers supplied from the same transformer-station bus due to switching operations and localized voltage disturbances. Repeated reactive failures also carry higher unit costs, increase safety and operational risks associated with emergency work, and impose reputational harm due to recurring interruptions experienced by the same customers.

To address these issues, London Hydro has updated its program criteria to proactively replace deteriorated single-phase radial segments based on condition, failure history, and/or risk indicators. This modification aligns the program with risk-based asset management principles, enhances overall customer experience, and reduces long-term costs by avoiding multiple reactive interventions while improving power quality and local reliability.

5.4.1.5 Capital Expenditure Impact to System O&M Costs

London Hydro's capital investments, particularly those focused on replacing aging and deteriorated infrastructure, are expected to have a generally positive and stabilizing effect on future O&M costs. Proactive renewal reduces the likelihood of unplanned asset failures, thereby lowering emergency response requirements, minimizing reactive maintenance activities, and mitigating associated cost pressures. At the same time, the increased sophistication of modern assets, and London Hydro's focus on optimizing lifecycle value for customers, will require staff to develop enhanced technical skillsets and utilize advanced asset management tools. These incremental requirements will place upward pressure on certain O&M activities.

On balance, the net effect of these opposing influences is expected to result in overall O&M costs remaining stable over the forecast period.

London Hydro does not have any capital projects, historical or forecasted, that are explicitly designed to reduce O&M spending. However, as noted in Section 5.3.1.1(b), "efficiency" is one of the key criteria used to evaluate and prioritize capital projects. Many investments, particularly those involving proactive asset replacement, are expected to reduce future maintenance effort and reactive repair work, even if such savings cannot be precisely quantified at this stage. Conversely, a reduction in capital expenditures related to asset replacement would be expected to place upward pressure on OM&A spending, as aging infrastructure would require more frequent maintenance, corrective interventions, and emergency response. Overall, London Hydro anticipates that future O&M spending will remain broadly consistent with historical levels, subject to normal inflationary adjustments.

5.4.2 Justifying Capital Expenditures

London Hydro's proposed 2027–2031 capital plan is intended to maintain a safe, reliable, resilient, and cost-effective electricity distribution system while supporting future growth, electrification, modernization, and economic development. The proposed investments reflect a comprehensive assessment of current and future system needs and support the strategic outcomes identified throughout this Distribution System Plan.

This section provides the rationale supporting London Hydro's proposed capital expenditures as a whole. While individual project needs, alternatives analyses, and investment justifications are provided throughout this Distribution System Plan and within the Material Investment Sheets, this section explains

how the overall capital program was developed and how it delivers value to customers. Specifically, this section describes:

- How the proposed capital plan delivers value to customers and supports London Hydro's strategic objectives;
- How capital investment needs were identified across the distribution system;
- How capital expenditures were optimized, prioritized, and paced to balance system needs with affordability;
- How the overall capital budget envelope was developed;
- How London Hydro is incorporating technological advancements and cost-effective innovative solutions into its investment plans; and
- How long-term capital expenditures, investment timing, and associated rate impacts were considered in developing the proposed plan.

5.4.2a Delivering Value to Customers

The primary objective of London Hydro's capital plan is to deliver long-term value to customers by maintaining a safe, reliable, resilient, and cost-effective electricity distribution system while preparing for future growth, electrification, and evolving customer expectations. The proposed capital expenditures balance customers' current and future needs by investing in infrastructure, technology, and operational capabilities at the appropriate time to maintain system performance, manage risk, and support the continued economic development of the City of London.

The proposed capital plan directly supports the DSP objectives identified in Section 5.2.1 and reflects the asset management, system planning, and customer engagement activities undertaken throughout the development of this Distribution System Plan.

Customer value is delivered through a balanced portfolio of investments that:

- Maintain asset health through the renewal and replacement of aging infrastructure;
- Maintain reliability and improve resiliency to reduce the impacts of equipment failures and severe weather events;
- Support customer growth and new connections through timely infrastructure investments;
- Increase system capacity and flexibility to accommodate electrification, distributed energy resources, and economic development;
- Modernize utility operations through investments in technology and grid automation; and

- Balance infrastructure needs with affordability through the optimization and pacing of investments.

The proposed capital expenditures provide benefits through both ongoing infrastructure renewal programs and strategic investments. Renewal programs reduce the risk of asset failures, improve safety, and preserve the performance of critical distribution assets. Strategic investments such as Municipal Transformer Station No. 1 (MTS-1), a second Operations Centre, the Advanced Distribution Management System (ADMS), the AMI meter replacement program, and bus-tie reactors address longer-term capacity, operational, modernization, and resiliency requirements while supporting future customer needs.

Customer engagement activities described in Section 5.2.2a.1 further demonstrate the value of the proposed investments. Customers strongly supported London Hydro's overall plan with majority supporting increased spending in replacing and repairing equipment, investing in technology, and a second Operations Centre. The proposed capital plan reflects these priorities and demonstrates alignment between customer expectations and London Hydro's investment strategy.

Many of the proposed investments are expected to provide benefits over several decades through reduced operational risk, increased system flexibility, improved outage response capabilities, enhanced hosting capacity, and the avoidance of more costly future interventions. By proactively addressing infrastructure needs and future capacity requirements, London Hydro is helping ensure the continued delivery of safe, reliable, and cost-effective service while supporting the long-term growth and prosperity of its service territory.

The proposed capital plan delivers value to customers through a balanced portfolio of investments that support London Hydro's strategic outcomes. Table 79 summarizes how the major investment categories contribute to customer value and long-term system performance. Additional details regarding specific investments and associated benefits are provided throughout this Distribution System Plan and within the Material Investment Sheets.

Table 79 How the Proposed Capital Plan Delivers Value to Customers

Strategic Outcome	Representative Investments	Customer Benefit
Asset Health	Asset renewal programs such as underground cable replacement, overhead system renewal, transformer replacement, and 4kV conversion programs.	Reduced asset failure risk, improved safety, and sustained system performance
Reliability & Resiliency	Distribution automation, ADMS, remote Operations Centre, targeted asset renewal and reliability improvement programs	Improved reliability, outage response, operational flexibility, and resilience to severe weather events
Growth & Connections	Distribution system expansions, customer connection infrastructure, MTS-1	Timely customer connections and support for growth and economic development
Capacity & Grid Readiness	MTS-1, bus-tie reactors, feeder reinforcements, DERMS foundation	Increased supply capacity, electrification readiness, distributed energy resource integration, and economic development support
Modernization & Innovation	ADMS, AMI meter replacement program, grid automation, ENGIN Asset Health and Geospatial Planner, Ai-Dash pilot and other emerging technology initiatives	Improved operational efficiency, enhanced asset management, better system visibility, improved outage response and customer service capabilities
Customer Value & Affordability	Investment optimization, prioritization, pacing, lifecycle extension strategies, portfolio management, governance oversight	Balanced investment levels, moderated rate impacts, and prudent stewardship of customer funds

5.4.2b Identification of Capital Investment Needs

The identification of capital investment needs is a fundamental component of London Hydro's asset management and system planning framework. Investment needs are identified through the ongoing assessment of asset condition, reliability performance (including climate change impacts), customer

growth, system capacity requirements, operational needs, regulatory obligations, and long-term strategic objectives. This integrated approach helps ensure that capital expenditures are based on demonstrable needs and aligned with the delivery of safe, reliable, resilient, and cost-effective electricity service.

A significant portion of the proposed capital expenditures are associated with the renewal and replacement of aging infrastructure (i.e. System Renewal). As discussed in Sections 5.3.1.1a and 5.3.2, renewal needs are identified through asset condition assessments, maintenance activities, inspections, testing programs, engineering evaluations, and asset health analysis. Asset-specific investment requirements are determined using condition-based, risk-based, and lifecycle-based assessments that consider factors such as asset age, condition, performance history, failure risk, safety considerations, maintenance requirements, and consequence of failure.

Reliability performance and system resiliency are also important drivers of capital investment needs. London Hydro continuously monitors system performance and analyzes outage data to identify recurring reliability concerns (including impacts due to climate change), asset failure trends, operational constraints, and opportunities for improvement. Capital investments are identified where infrastructure renewal, system reinforcement, automation, or operational enhancements can effectively reduce risk and improve reliability performance for customers discussed in Section 5.2.3.2b.

Customer growth, electrification, and changing load patterns are additional drivers of investment requirements. As discussed in Section 5.3.2c, London Hydro continually assesses existing and forecasted supply capacity requirements at the distribution, transformer station, and feeder levels. Population growth, residential and commercial development, industrial expansion, transportation electrification, and emerging technologies influence both the timing and location of infrastructure investments. These assessments help identify future constraints and inform investments required to maintain adequate supply capacity, accommodate customer connections, and support economic development throughout the service territory.

The identification of capital investment needs also considers longer-term distribution and transmission system requirements. Through participation in regional planning activities with Hydro One, the Independent Electricity System Operator (IESO), and neighbouring electricity distributors, the regional planning technical working group identifies emerging system constraints, future supply requirements, and opportunities for coordinated infrastructure planning. In parallel, engagement with City of London, major customers, developers, and other stakeholders provides insight into future growth plans, development activity, electrification trends, and evolving customer needs. These activities help inform both near-term and long-term infrastructure requirements and have contributed to the identification of strategic investments

such as Municipal Transformer Station No. 1 (MTS-1), bus-tie reactors, a second Operations Centre, and other initiatives required to support future growth, reliability, resiliency, and grid modernization.

Capital investment needs are also identified through evaluations of operational facilities and supporting infrastructure required to safely and effectively operate the distribution system. As discussed in the facilities planning sections of this DSP (Sections 5.3.2d.2 and 5.3.3e.2), London Hydro's existing operations site faces increasing challenges related to facility limitations, operational efficiency, site constraints, and long-term resiliency including impacts due to climate change. The need for a second Operations Centre was identified through a strategic evaluation of current and future operational requirements and will support field operations, emergency response, fleet and equipment management, workforce growth, and business continuity. The facility will provide the operational foundation necessary to support the continued maintenance, operation, and expansion of the distribution system, and improve organizational resiliency and preparedness for future customer and system needs.

Together, these inputs provide a comprehensive understanding of current and future infrastructure requirements across the distribution system. By integrating asset management information, reliability performance (including climate change impacts), supply capacity assessments, regional planning activities, operational requirements, stakeholder input, and customer priorities, London Hydro is able to identify and prioritize investments needed to support the continued delivery of safe, reliable, resilient, and cost-effective service.

5.4.2c Optimization, Prioritization and Pacing of Capital Expenditures

While the identification of capital investment needs is a critical component of the planning process, not all identified needs automatically result in capital expenditures. London Hydro employs a structured process to optimize, prioritize, and pace investments to ensure that proposed expenditures deliver value to customers while balancing reliability, resiliency, growth, modernization, risk management, and affordability objectives.

Asset condition and risk information are key inputs to the optimization and prioritization process discussed in Section 5.3.1.1b. London Hydro utilizes inspection and testing programs to assess asset condition identified in Section 5.3.2b, while the ENGIN Asset Health and Geospatial Planner integrates this information to support asset health assessments, Flagged for Action (FFA) analysis, consequence of failure evaluations, and the identification of future investment requirements. Together, these tools support data-driven decision-making regarding asset renewal timing and help prioritize investments that provide the greatest reduction in system risk.

An important component of optimization is maximizing the value obtained from existing assets. Where condition assessments indicate acceptable performance and manageable risk, assets may remain in service beyond their average expected service life. This approach avoids premature replacement, directs capital expenditures toward higher-priority needs, and supports customer affordability. Conversely, where asset condition, reliability performance, safety considerations, or operational risks indicate that continued service is no longer prudent, replacement or rehabilitation is planned accordingly.

Capital expenditures are further prioritized based on their contribution toward safety, reliability, resiliency, the environment, capacity, and efficiency. Investments addressing significant safety risks, supply capacity constraints, critical asset condition concerns, operational resiliency requirements, strategic objectives, or regulatory obligations are assigned a higher priority. This prioritization framework helps ensure that available capital resources are directed toward projects that provide the greatest overall benefit to customers and the distribution system.

Optimization principles are applied to both infrastructure renewal programs and strategic investments. Major projects such as Municipal Transformer Station No. 1 (MTS-1), the second Operations Centre, the Advanced Distribution Management System (ADMS), bus-tie reactors, and the AMI meter replacement program undergo alternatives assessments, and timing evaluations to confirm their need, scope, sequencing, and alignment with long-term system requirements. These reviews help ensure that strategic investments are appropriately sized and timed to maximize customer value.

Affordability considerations are incorporated through pacing strategies that balance infrastructure needs with long-term customer impacts. Where practical, investments are staged, sequenced, or deferred to align expenditures with system requirements while avoiding unnecessary rate pressure on customers. Examples include the previous deferral of the remote operations centre, staged implementation of bus-tie reactor installations, the extension of the AMI meter replacement program over a longer implementation horizon, and the coordination of major supply and capacity investments with anticipated customer growth and system requirements. Similarly, utilizing a levelized 10-year FFA asset replacement program helps distribute renewal expenditures more evenly over time, reducing the potential for future replacement backlogs and supporting a more sustainable long-term capital investment profile. These decisions allow London Hydro to continue progressing toward its long-term strategic objectives while moderating annual capital expenditure requirements.

Optimization and pacing considerations are applied not only to individual projects but also across the capital portfolio as a whole. London Hydro evaluates the interaction between projects, resource requirements, operational constraints, implementation schedules, and customer impacts to ensure that

the overall capital program remains achievable, efficient, and aligned with organizational priorities. This portfolio-level review helps identify opportunities to coordinate projects, reduce duplication of effort, leverage operational efficiencies, and maximize the value of capital investments.

Proposed investments are subject to review through London Hydro's governance processes, including Executive Management oversight, to ensure that investment decisions appropriately balance risk, customer value, operational requirements, strategic objectives, and affordability considerations. This review process provides an additional level of challenge and accountability and helps ensure prudent stewardship of customer funds.

Through this process, identified needs are transformed into a prioritized and achievable capital program. By evaluating alternatives, assessing risk, maximizing the use of existing assets, and carefully pacing expenditures, London Hydro is able to balance infrastructure requirements with customer affordability while continuing to support reliability, resiliency, growth, and modernization objectives.

5.4.2d Development of the Capital Budget Envelope

London Hydro's capital budget envelope was developed through an iterative and evidence-based planning process that balances identified infrastructure needs, customer priorities, strategic objectives, implementation capacity, risk management considerations, and affordability. The resulting plan reflects not only the investments required to maintain and modernize the distribution system, but also the disciplined review and challenge processes used to determine the appropriate level and timing of capital expenditures.

The capital budget development process begins with the investment needs identified through asset management, system planning, reliability assessments, supply capacity evaluations, operational requirements, and strategic planning activities discussed throughout this Distribution System Plan. These needs form the foundation upon which the capital plan is developed.

Following the identification of investment needs, London Hydro applies the optimization, prioritization, and pacing processes discussed in Section 5.4.2c to develop a portfolio of candidate investments. Proposed projects are evaluated collectively to ensure alignment with corporate strategic objectives, customer priorities, implementation capacity, operational requirements, and long-term system requirements. This portfolio-level review helps ensure that the capital plan functions as an integrated investment program rather than a collection of individual projects.

Customer engagement results and stakeholder feedback also inform the development of the capital budget envelope. As discussed in Section 5.2.2a.1, customers consistently identified safety and reliability

as key priorities. These priorities were considered throughout the development of the proposed capital plan and helped confirm alignment between customer expectations and London Hydro's investment strategy.

Historical investment levels, forecasted system requirements, and long-term asset management needs are also considered during capital plan development. While historical capital expenditures provide important context, future investment requirements are increasingly influenced by factors such as aging infrastructure, population growth, customer development activity, electrification, supply capacity constraints, technology requirements, and grid modernization initiatives. Consequently, the proposed capital plan reflects both the need to sustain existing infrastructure and the need to prepare the distribution system for future operating conditions and customer expectations.

As part of the planning process, London Hydro initially developed a draft Capital Plan to address the full range of identified investment needs and opportunities across the planning period, including additional investments intended to accelerate asset renewal, increase system capacity, enhance resiliency, and advance modernization initiatives.

Recognizing the importance of affordability and long-term rate impacts, London Hydro undertook additional review and challenge processes to assess the timing, prioritization, and pacing of investments included within the draft Capital Plan. Through management review, projects were challenged to confirm their necessity, timing, scope, and alignment with customer priorities and strategic objectives. This review resulted in the deferral, staging, scope adjustment, or removal of approximately $130 million of capital expenditures from the draft Capital Plan. These changes were intended to better align investment timing with system requirements, implementation capacity, and customer affordability considerations while preserving the core objectives of the capital program.

The resulting Proposed Capital Plan represents London Hydro's recommended capital budget envelope for the 2027–2031 period. The proposed plan maintains investments necessary to address critical asset renewal requirements, support customer growth, increase system capacity, improve resiliency, modernize utility operations, and maintain safe and reliable service, while moderating the overall pace of investment to balance affordability considerations and long-term customer impacts.

The proposed capital budget envelope reflects a deliberate balance between competing objectives. Investing less would increase the risk of asset failures, capacity constraints, operational limitations, and deferred modernization. It could also result in a growing backlog of infrastructure renewal needs, requiring more significant capital investments over a shorter period in future years and potentially placing greater pressure on future customer rates. Conversely, accelerating all identified investments would increase

near-term customer rate impacts and implementation pressures without necessarily delivering proportionate customer benefits at the appropriate time. The proposed plan represents London Hydro's assessment of the appropriate balance between system needs, customer value, affordability, and the long-term sustainability of the distribution system.

The proposed capital budget envelope reflects the culmination of London Hydro's asset management, system planning, customer engagement, optimization, and governance processes. It incorporates identified infrastructure needs, affordability considerations, customer priorities, and long-term strategic objectives to establish a practical and achievable capital program for the 2027–2031 period. The resulting plan balances the need to maintain and modernize the distribution system with the responsibility to manage customer rate impacts and deliver long-term value.

5.4.2e Technology, Innovation and Modernization

The electricity sector continues to evolve in response to electrification, distributed energy resources, increasing customer expectations, technology requirements, and the growing complexity of operating modern distribution systems. To meet these challenges, London Hydro incorporates cost-effective technologies and innovative solutions that improve reliability, resiliency, operational efficiency, and customer service while supporting the long-term sustainability of the distribution system.

The proposed capital plan includes several key modernization initiatives intended to strengthen operational capabilities and prepare the distribution system for future needs. These include the implementation of an Advanced Distribution Management System (ADMS), modernization of grid automation and technology, continued enhancements to Supervisory Control and Data Acquisition (SCADA) systems, and the phased replacement of Advanced Metering Infrastructure (AMI) meters. Together, these initiatives improve system visibility, outage management capabilities, operational decision-making, data availability, and overall distribution system resiliency.

The proposed investments also establish a foundation for future grid flexibility and distributed energy resource integration. Investments in ADMS, communications infrastructure, and related technologies provide capabilities that can support future Distributed Energy Resource Management System (DERMS) functionality and help accommodate increasing levels of electrification and distributed energy resources across the service territory.

Innovation is also reflected in London Hydro's approach to asset management, reliability improvement, and infrastructure planning. Examples include advanced asset condition assessment technologies,

enhanced cable testing programs, grid automation, remote monitoring, power quality monitoring, and data analytics that support proactive decision-making and improved lifecycle management. London Hydro is also evaluating emerging technologies to improve vegetation management practices, including the use of satellite imagery and artificial intelligence-based analytics through pilot initiatives such as AiDash[62]. These technologies have the potential to improve the identification of vegetation-related risks, support more targeted maintenance activities, and proactively address one of the leading causes of customer interruptions, while strengthening the distribution system's resilience to increasingly frequent and severe weather events associated with climate change.

By improving visibility into asset condition, system performance, and operational risks, these technologies support more informed investment decisions and help direct capital expenditures toward areas of greatest need and highest customer value. They also provide opportunities to improve reliability outcomes, enhance operational efficiency, extend asset life where appropriate, and reduce long-term lifecycle costs.

The proposed modernization and technology investments demonstrate London Hydro's commitment to keeping pace with technological change while maintaining a practical and customer-focused approach to innovation. By adopting technologies that provide measurable benefits and support long-term system needs, London Hydro is enhancing its ability to manage an increasingly complex electricity system while maintaining a prudent balance between modernization, customer value, and affordability.

5.4.2f Long-Term Capital Expenditures and Rate Impacts

The proposed capital plan includes both ongoing infrastructure renewal programs and several significant strategic investments required to support the long-term needs of London Hydro's customers and distribution system. As a result, annual capital expenditures vary throughout the 2027–2031 planning period. These variations primarily reflect the timing of major projects, supply capacity requirements, facility needs, technology deployments, and customer growth rather than changes in planning philosophy or investment priorities.

Infrastructure investment is inherently cyclical, particularly when major facilities, supply capacity projects, and modernization initiatives are required. While London Hydro seeks to maintain a stable and predictable capital program wherever practical, certain strategic investments must proceed when system conditions, customer growth, operational requirements, or asset risks warrant action. Consequently,

[62] AiDASH is an AI and satellite-powered platform that enables utility companies to remotely monitor grid risks and optimize vegetation management.

periods of higher capital expenditure are expected throughout the planning horizon and reflect the timing of investments intended to provide benefits over multiple decades.

The most significant contributors to the capital spending profile during the 2027–2031 period include Municipal Transformer Station No. 1 (MTS-1), the second Operations Centre, the Advanced Distribution Management System (ADMS), the Advanced Metering Infrastructure (AMI) meter replacement program, and bus-tie reactor installations. Additional information regarding these investments is provided in the applicable Material Investment Sheets and supporting sections of this Distribution System Plan.

Although these investments contribute to periods of higher annual capital expenditures, they address needs that cannot be effectively managed through incremental or short-term solutions. MTS-1 is required to provide supply capacity for a growing City and its customers, the second Operations Centre addresses long-term operational resiliency and facility requirements, and modernization initiatives such as ADMS and AMI establish foundational capabilities needed to support the future operation of the distribution system and regulatory obligations. The benefits of these investments are expected to extend well beyond the five-year planning period and support the continued delivery of safe, reliable, and cost-effective service for decades.

Recognizing the importance of affordability and long-term rate impacts, London Hydro has incorporated investment pacing and levelization considerations throughout the development of the proposed capital plan. As discussed in Sections 5.4.2c and 5.4.2d, opportunities to stage, sequence, coordinate, or defer investments were evaluated where practical and prudent. Examples include the previous deferral of the remote operations centre, staged implementation of bus-tie reactor installations, the extension of the AMI meter replacement program over a longer implementation horizon, and the review of timing and scope associated with major strategic projects. These measures help moderate annual capital expenditure requirements while continuing to address critical infrastructure and operational needs.

London Hydro also recognizes that deferring necessary investments may reduce short-term expenditures but can increase long-term costs and risks to customers. Delayed infrastructure renewal can increase the likelihood of asset failures, emergency repairs, operational inefficiencies, and customer interruptions. Similarly, postponing capacity, resiliency, modernization, or facility investments may constrain future growth opportunities, reduce operational flexibility, and increase the cost of future interventions. The proposed capital plan therefore seeks to balance short-term affordability considerations with the long-term interests of customers and the sustainability of the distribution system.

The proposed capital plan was developed with a long-term perspective that considers both current and future customers while supporting continued economic development throughout the service territory. Strategic investments are timed to align with anticipated system needs, customer growth, electrification, and economic development opportunities, while renewal investments are targeted to address infrastructure risks before they become more costly or disruptive to manage. By maintaining adequate system capacity, operational resiliency, and infrastructure readiness, the proposed capital plan supports continued residential, commercial, industrial, and institutional growth while reducing the risk that deferred investments could constrain future development opportunities, limit electrification initiatives, or hinder economic growth within the City of London.

The proposed capital plan reflects a deliberate balance between infrastructure renewal, growth, modernization, resiliency, and affordability. While certain years exhibit higher capital expenditures due to the timing of strategic projects, London Hydro has actively managed the pace of investment to moderate rate impacts while continuing to address critical system needs. The resulting plan represents a prudent long-term investment strategy that balances current affordability with the investments required to maintain a safe, reliable, resilient, and future-ready distribution system.

5.4.2g Summary Justification of Capital Expenditures

Through the processes described in this section, London Hydro has developed a capital plan that balances asset renewal, reliability, resiliency, growth, modernization, economic development, and affordability considerations. The proposed capital budget envelope reflects a disciplined and evidence-based approach that incorporates asset management information, reliability performance, supply capacity assessments, customer engagement, regional planning activities, technological innovation, and governance oversight. By identifying investment needs, evaluating alternatives, optimizing and pacing expenditures, and carefully considering long-term customer impacts, London Hydro has established a practical and achievable capital program for the 2027–2031 period. The resulting plan provides a roadmap for maintaining and enhancing the distribution system while delivering long-term value to current and future customers.

5.4.2.1 Material Investments

This section presents London Hydro's material capital investments for the Bridge Year (2026), Test Year (2027), and the 2028-2031 DSP period, supported by detailed project-level documentation. Collectively, these investments address a broad range of distribution system needs, including asset renewal, customer growth and system access obligations, reliability and resiliency improvements, operational effectiveness,

system modernization, and general plant requirements. The Asset Management Plan (Appendix B) provides additional context for the 2026-2027 distribution system capital program, describing how investments are evaluated and prioritized using a risk-informed asset management framework based on five core criteria: reliability, safety, environmental impact, capacity, and operational efficiency. While the AMP supports the planning and justification of core distribution system investments, it does not encompass General Plant investments, which are addressed separately within this DSP.

Material Investment (Project) Sheets have been prepared for all capital projects in accordance with the expectations outlined in OEB Chapter 5, Section 5.4.2.1, and provide supporting information on need, scope, alternatives considered, and cost for investments required over the 2026-2031 period. Project Sheets for all System Access, System Renewal, System Service, and General Plant investments are provided in Appendix A1.

The prioritization of distribution system investments for 2026 is further informed by the risk-based framework described in Section 5.3.3c (Risk Management section which includes a graph that shows the relative ranking of all the proposed projects). Table 80 summarizes the material projects for 2026 and 2027, including annual budget amounts and cross-references to the corresponding Project Sheet.

Table 80 Capital Spending Forecast 2026-2027

Investment Category	2026 $	2027 $	Project #
System Access			
City Works Projects			
City Initiated Relocations	2,756,000	2,177,000	D1
COL Transit Relocations	1,947,000	456,000	D2
Developer Works Projects			
Expansions and Relocations	4,086,800	516,000	E1
Residential Secondary Service Upgrades	613,000	643,700	E2
Residential Underground Expansions	3,035,600	3,187,300	E3

Investment Category	2026 $	2027 $	Project #
Multi-Family Residential Expansions	1,648,000	1,730,000	E4
Commercial Distribution	2,763,000	2,901,200	E5
Meters & Devices			
Metering and Install	985,000	1,075,000	M1-M4
Primary Metering	130,000	130,000	M1-M4
AMI Communications Renewal	485,000	501,000	M1-M4
Advanced Metering & Infrastructure Refresh	303,800	326,600	MMM
Total System Access	18,753,200	13,643,800	
System Renewal			
Substation Rebuilds			
Battery Bank Replacements	26,300	27,600	A2
Municipal Transformer Station	-	125,000	A6
Subdivision Rebuilds			
Subdivision Rehabilitation	12,114,000	13,454,000	B2
Replacement of Sectionalizing Enclosures	168,000	352,800	B3
Deteriorating/Leaking Transformer Replacements	1,470,000	1,720,000	B4
Secondary Pedestal Replacements	210,000	220,500	B5
Vault Transformer Replacements	225,000	-	B6
4.16kV Conversions	1,384,000	3,691,000	B9

Investment Category	2026 $	2027 $	Project #
Switchable Transformer Outage Restoration	200,000	210,000	B11
3 Phase Customer Rebuilds	787,000	1,595,000	B12
Main Feeders			
Feeder Extensions, Enhancements and Replacements	30,000	900,000	C1
New Main Feeder Ties	450,000	1,150,000	C4
City Works Projects			
Co-ordinated Replacements	400,000	-	D3
Downtown Core Supply			
Vaults, Maintenance Holes Transformers	1,110,000	1,580,000	F1
Primary & Secondary Cable Replacement	1,075,000	1,124,000	F2
Explosion-Limiting Maintenance Hole Covers	100,000	105,000	F4
Overhead Line Work			
Deteriorating Pole Replacements	2,115,000	2,047,500	G1
Rebuild Fully Depreciated Overhead Areas	1,127,000	2,570,000	G3
4.16kV OH Conversions	1,750,000	1,250,000	G5
OH Conductor & Connector Replacements	52,500	55,200	G6/G7/G8/G12/G14
Porcelain Insulator Replacements	-	55,200	G6/G7/G8/G12/G14
Copper Clad Steel Grounds	120,750	126,800	G6/G7/G8/G12/G14
Switch Installation & Component Replacements	500,000	525,000	G9

Investment Category	2026 $	2027 $	Project #
Pole Reinforcements	131,300	137,800	G10
Load Break & Sectionalized Switchgear	51,250	53,800	G13
Porcelain Cut Outs	-	53,800	G6/G7/G8/G12/G14
Radial Fusing	-	52,600	G15
Total System Renewal	25,597,100	33,182,600	
System Service			
Transformer Station			
South East Transformer Station	1,900	14,905,500	AA
Subdivision Rebuilds			
Installation of Underground Backup Supply	150,000	183,800	B7
Fault Indicator Installation	200,000	210,000	B8
Overhead Line Work			
Momentary Outage Mitigation	119,500	71,700	G6/G7/G8/G12/G14
SCADA and Control Room			
Recloser Installations	415,000	820,000	H1
SCADA Enhancements	1,109,500	610,700	H2/H3/H4/H5
Control Centre - Consoles and Digital Devices	-	250,000	H7
Advanced Distribution Management System	-	5,465,600	H14
Total System Service	1,995,900	22,517,300	

Investment Category	2026 $	2027 $	Project #
General Plant			
Meters & Devices			
Measurement and Test Equipment	30,000	-	M1-M4
Capital Contributions to Transformer Stations	899,700	1,000,000	CC
Land, Buildings and Equipment	2,588,500	2,989,300	Q/R
London Hydro Second Operations Centre	14,296,100	598,500	RR
Vehicles & Major Equipment	2,294,000	2,445,000	N/O
Hardware / Software	1,046,400	1,466,900	V1
Application Development	4,913,000	4,233,100	W1/W2
CIS Refresh[63]	(2,191,300)	-	
Total General Plant	23,876,400	12,732,800	
Total Gross - All Categories	**70,222,600**	**82,076,500**	
Capital contributions	**-5,627,000**	**-4,436,000**	
Total Net - All Categories	**64,595,600**	**77,640,500**	

[63] For additional information regarding the CIS Refresh project, refer to Exhibit 2 Section 7.

London Hydro

APPENDIX A1

Material Investment (Project) Sheets

London Hydro

System Access

Capital Project Summary Sheet: System Access

Project Number:	D1
Project Name:	City of London (Road Authority) Relocations
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	Mobility Master Plan (July 2025) - https://london.ca/living-london/roads-sidewalks-transportation/mobility-master-plan Infrastructure Replacement List 2026-2027, City of London
Project Overview:	These projects involve the relocation of London Hydro infrastructure within the road allowance, initiated by the City of London and the Ministry of Transportation to accommodate planned modifications to roadways and highways. The increase from 6.5 million dollars to 11.7 million dollars reflects a major shift in London's infrastructure delivery. While past spending covered routine maintenance, the forecast period aligns with the City's new Mobility Master Plan, which features a much higher volume of complex Road Authority projects. The upcoming schedule demands accelerated, large scale road expansions and capacity upgrades, such as the Sunningdale Road West widening, the Kilally Infrastructure Project, and the Bradley Avenue Extension. To manage this workload, the City is bundling utility upgrades into comprehensive neighborhood renewals. Because these multi-year schedules shift over time, a forecast based on historical trends adjusted for this higher baseline volume provides the most reliable outlook of relocations needed for 2026 to 2031. The terms governing these relocations are mandated by the provincial Public Service Works on Highways Act. Under this legislation, London Hydro Inc. is legally obligated to modify or relocate its assets to accommodate public improvements within a specified timeframe. The Act also outlines cost apportionment, which typically permits London Hydro to recover 50% of the labor, labor saving equipment, and external contract costs from the initiating Road Authority.
Risks/Factors that Affect Timing & Mitigation	Availability of resources to match timing dictated by the City of London; mitigation plan is close co-ordination with the City to ensure schedules are compatible; some projects may require new infrastructure to be designed, ordered, constructed; mitigation plan is to work with the City to commit to projects at least one year in advance to provide ample lead time for planning.

Capital Project Summary Sheet: System Access

Project Number: D1

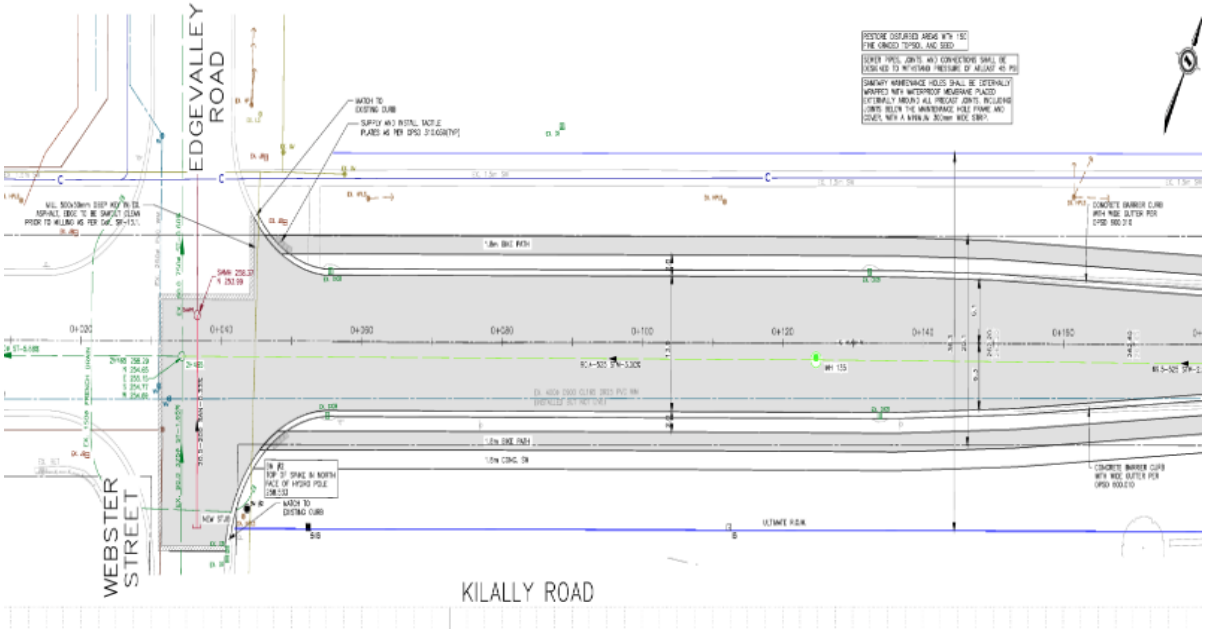
Project Name: City of London (Road Authority) Relocations

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Co-ordination	**Historical & Forecast Project Costs**				
Other Drivers:	Safety			**Gross Cost**	**Recoveries**	**Net Cost**
	Customer Value	**Historical Years**	**2022**	$238,538	$(161,499)	$77,038
	Econ. Dev.		**2023**	$2,153,255	$(409,659)	$1,743,597
	Reliability		**2024**	$3,427,827	$(1,928,929)	$1,498,899
Alternatives Considered:			**2025**	$1,462,306	$(1,045,777)	$416,529
		(bridge yr)	**2026**	$4,240,000	$(1,484,000)	$2,756,000
		Forecast Years	**2027**	$3,350,000	$(1,173,000)	$2,177,000
			2028	$3,474,000	$(1,215,900)	$2,258,100
No alternatives are permitted for a System Access project.			**2029**	$3,602,500	$(1,260,900)	$2,341,600
			2030	$3,735,800	$(1,307,500)	$2,428,300
			2031	$3,874,000	$(1,355,900)	$2,518,100
LH Project Driver:	COL	**Total Historical Costs**		**$11,521,926**	**$(5,029,864)**	**$6,492,062**
LH Section #	133	**Total Forecast Costs**		**$18,036,300**	**$(6,313,200)**	**$11,723,100**

ADDITIONAL PROJECT INFORMATION

Relocation Plan Killaly Rd.



London Hydro

Capital Project Summary Sheet: System Access

Project Number:	D1
Project Name:	City of London (Road Authority) Relocations
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Past projects have demonstrated it is most efficient to build new infrastructure at the new location, rather than attempt relocating the existing infrastructure; this results in renewed infrastructure which will be more reliable.
Safety	Renewed infrastructure and new design standards improve the safety of the distribution system.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Bringing the systems to current standards allows an opportunity to desing the system for growth and allocating space and circuitry for the introduction of automated devices.
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Access

Project Number: D1

Project Name: City of London (Road Authority) Relocations

Timing: January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	City of London driven projects and Developer driven projects are excluded from Ranking as they are projects that must be executed.
Safety:	
Environment:	
Capacity:	
Efficiency:	

Blended Health Index Derating Project Ranking	N/A
Final Project Score	N/A

PROJECT REVIEW AND APPROVAL	
Prepared By:	Gelber Vargas, P.Eng. Director Design Engineering
Approved By:	Allan Van Damme, P.Eng. CPA, CMA V.P. Engineering & Construction

Capital Project Summary Sheet: System Access

Project Number:	D2
Project Name:	City of London Works RT Works
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	Planned 2022 Projects impacting LH (2019), City of London 2019 Transportation Development Charge - Background Study, City of London (February 20, 2019) 2030 Transportation Master Plan - SmartMoves (May 2013) Transit Projects Business Cases: Adelaide St. Underpass, Southdale-Boler Notice of Commencement (2014) Transit Projects Business Cases: BRT (Downtown Loop, Wellington Gateway, East London Link) 2030 Transportation Master Plan: Transit Priority Stategy for BRT 2012 The Way Ahead: London BRT Business Case Report 2013 Multi Year Budget Plan City of London 2020-2030 Mobility Master Plan (July 2025)
Project Overview:	This project involves the relocation of London Hydro Infrastructure located on the road allowance. These relocations are initiated by the Road Authority (City of London) and are necessary in order to accommodate transit modifications to the roadway. The terms and conditions under which these relocations occur are specified in the Public Service Works on Highways Act (PSWHA) enacted by the Provincial Government. The Act gives a Road Authority the power to ensure that all operating corporations entitled to the use of the road allowance cooperate with the Road Authority to execute any required modifications to the profile of the road allowance in a timely manner. The Act states that an Operating Corporation (London Hydro Inc.) must modify or relocate their plant on the road allowance to accommodate the Road Authority's improvements or alterations within a specified time period. The Act also outlines the mechanism for the apportionment of costs for these required works. Typically the Operating Corporation is permitted to recover 50% of the labour, vehicle, and contract costs from the Road Authority. In 2019, the City of London was awarded $227.3 million in Provincial and Federal funding to use towards 10 Transit Projects between 2020-2026 (and since extended to 2027). Three out of the ten approved projects are routes for the Bus Rapid Transit (BRT) development. Under this budget item there will be substantial costs associated with Engineering Design to relocate London Hydro infrastructure during these years. These transit projects are beyond the typical road widening scopes; therefore, London Hydro negotiated cost recoveries in excess of the what's permited under the PSWHA.
Risks/Factors that Affect Timing & Mitigation	Availability of resources to match timing dictated by the City of London; mitigation plan is close co-ordination with the City to ensure schedules are compatible; some projects may require new infrastructure to be designed, ordered, constructed; mitigation plan is to push the City to commit to projects at least one year in advance to provide ample lead time for planning.

Capital Project Summary Sheet: System Access

Project Number: D2

Project Name: City of London Works RT Works

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Co-ordination	**Historical & Forecast Project Costs**				
Other Drivers:	Econ. Dev.			**Gross Cost**	**Recoveries**	**Net Cost**
	Customer Value	**Historical Years**	**2022**	$2,652,829	$(750,788)	$1,902,041
	Reliability		**2023**	$3,200,746	$(696,385)	$2,504,361
			2024	$4,461,004	$(963,241)	$3,497,763
Alternatives Considered:			**2025**	$2,458,346	$(1,818,781)	$639,565
In most cases there are no alternatives; if possible, design alternatives that reduce impact to utility plant are considered.		(bridge yr)	**2026**	$3,245,000	$(1,298,000)	$1,947,000
		Forecast Years	**2027**	$760,000	$(304,000)	$456,000
			2028	$4,733,000	$(1,893,200)	$2,839,800
			2029	$4,908,000	$(1,963,200)	$2,944,800
			2030	$5,090,000	$(2,036,000)	$3,054,000
			2031	$5,278,000	$(2,111,200)	$3,166,800
LH Project Driver:	COL	**Total Historical Costs**		**$16,017,925**	**$(5,527,195)**	**$10,490,730**
LH Section #	133	**Total Forecast Costs**		**$20,769,000**	**$(8,307,600)**	**$12,461,400**

Capital Project Summary Sheet: System Access

Project Number:	D2
Project Name:	City of London Works RT Works
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION

The Provincial and Federal Governments are investing in the construction, expansion, and improvement of public transit infrastructures. The Investing in Canada Infrastructure Program (ICIP) is one way the governments are delivering funding to communities for these transit projects. The City of London is also funding a portion of the costs to expand some scope to include upgrades and replacement of City of London utilities (i.e. storm, sewer, water).

The City of London is following a multi-year plan to complete the transit projects by end of 2027 to qualify for the ICIP funding. The 2026 and 2027 budget for this section is estimated to address utility relocations to accommodate the following transit plans, which are outlined in the latest online links below:

Wellington Gateway Corridor (South corridor)
- Segment 2 Phase 2A: Wellington Rd. between Baseline Rd. and Wilkins St. The bulk of this work will be completed in 2026 with some carryover into 2027.
- Segment 2 Phase Bii: Wellington Rd. between Bond St. and Baseline Rd. This work will be done in 2026.
- Segment 2 Phase Bi: Wellington Rd. between Watson St. and Bond St. This work will be done in 2027.
- All of the above works will conclude the entire construction of the Wellington Gateway Corridor.
- getinvolved.london.ca/wellingtongateway

East London Link Corridor (East corridor)
- For 2026, continuation and completion of Segment 4: Oxford St. between Highbury Ave. and Second St. which started in 2025.
- Segment 3A East: Dundas ST. between McCormick Blvd. and Highbury Ave. The bulk of this work will be completed in 2026 with some carryover into 2027.
- All of the above works will conclude the entire construction of the East London Link Corridor.
- getinvolved.london.ca/eastlondonlink

North and West Corridors
- It is anticipated early design will commence in 2026 and detailed design will continue into 2027 for the next stages of rapid transit with anticipated construction to start in 2028.
- https://london.ca/living-london/roads-sidewalks-transportation/mobility-master-plan

The reduction in expenditures reflects the winding down of The City of London's initial rapid transit phase (East and South corridors), which concludes at the end of 2027.

Spending is expected to increase again in 2028 when The City of London initiates the second phase of rapid transit, which will commence the construction of the North and West corridors.

London Hydro

Capital Project Summary Sheet: System Access

Project Number:	D2
Project Name:	City of London Works RT Works
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Past projects have demonstrated it is most efficient to build new infrastructure at the new location, rather than attempt relocating the existing infrastructure; this results in newer infrastructure which will be more reliable.
Safety	Renewed infrastructure and new design standards improve the safety of the distribution system.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Access

Project Number: D2

Project Name: City of London Works RT Works

Timing: January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	City of London driven projects and Developer driven projects are excluded from Ranking as they are projects that must be executed.
Safety:	
Environment:	
Capacity:	
Efficiency:	

Blended Health Index Derating Project Ranking	N/A
Final Project Score	N/A

PROJECT REVIEW AND APPROVAL	
Prepared By:	Rodney Doyle, P.Eng. Director of Lines & Construction
Approved By:	Allan Van Damme, P.Eng. CPA, CMA V.P. Engineering & Construction

Capital Project Summary Sheet: System Access

Project Number:	E1
Project Name:	Developer Driven Distribution Circuit Expansions and Relocations
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	London Hydro Conditions of Service (2026)
Project Overview:	This budget item includes extension of the existing medium voltage overhead and/or underground distribution system in order to accommodate new customer developments as they are added to London's service area. This budget item includes all costs associated with the construction of these extension projects. This item also includes the relocation of existing London Hydro plant for accommodating new developments within the city limits. These relocations are required when items such as new proposed driveways and turn lanes for new developments are in conflict with the existing London Hydro plant. This budget item includes all costs associated with the relocation. The proposed budget is based on current open inquiries by developers and third paties considering historical spending in the years when we were not constructing any large expansion projects. The current tentative projects between 2026 and 2031 are: Innovation Park Phase 5 - UG civil work within Phase 5 Innovation Park Phase 5 - OH backup Developer driven expansions Clarke TS M2 Towerline Relocation
Risks/Factors that Affect Timing & Mitigation	Availability of resources and material to match timing required by the developer; mitigation plan is close coordination with the developer and securing resources (internal or contract) and material to ensure completion.

Capital Project Summary Sheet: System Access

Project Number:	E1
Project Name:	Developer Driven Distribution Circuit Expansions and Relocations
Timing:	January 1, 2026 - December 31, 2031

Primary Driver:	Customer Value	**Historical & Forecast Project Costs**				
Other Drivers:	Econ. Dev.				**Gross Cost**	**Recoveries**	**Net Cost**
	Efficiency	**Historical Years**		**2022**	$981,318	$(195,024)	$786,294
				2023	$1,105,493	$(94,090)	$1,011,402
				2024	$1,146,536	$(452,750)	$693,787
Alternatives Considered:				**2025**	$1,717,138	$(300,653)	$1,416,485
			(bridge yr)	**2026**	$4,752,300	$(665,500)	$4,086,800
Customer development added to London Hydro's service area must be supplied with service upon request, so there are no alternatives.			**Forecast Years**	**2027**	$600,000	$(84,000)	$516,000
				2028	$622,200	$(87,100)	$535,100
				2029	$645,200	$(90,300)	$554,900
				2030	$669,100	$(93,700)	$575,400
				2031	$693,900	$(97,100)	$596,800
LH Project Driver:	DEV	**Total Historical Costs**			**$9,702,785**	**$(1,708,016)**	**$7,994,768**
LH Section #	131	**Total Forecast Costs**			**$3,230,400**	**$(452,200)**	**$2,778,200**

ADDITIONAL PROJECT INFORMATION

Innovation Park Expansion



Capital Project Summary Sheet: System Access

Project Number:	E1
Project Name:	Developer Driven Distribution Circuit Expansions and Relocations
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	With the economic growth expected in the City of London, new developments will be built requiring London Hydro to expand/relocate its overhead/underground infrastructure. This expansion/relocation will reinforce the distribution system and offers opportunities for reconfiguration and increased automation, which provide the customers with reliable power supply.
Safety	Not Applicable
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Provides backup supply to Innovation Park which results in a much more robust grid.
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Access

Project Number:	E1
Project Name:	Developer Driven Distribution Circuit Expansions and Relocations
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY

	Reliability	Safety	Environment	Capacity	Efficiency
Ranking Factors & Weighting	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	N/A	N/A	N/A	N/A	N/A

Ranking Rationale

Reliability:	City of London driven projects and Developer driven projects are excluded from Ranking as they are projects that must be executed.
Safety:	
Environment:	
Capacity:	
Efficiency:	

Blended Health Index Derating Project Ranking	N/A
Final Project Score	N/A

PROJECT REVIEW AND APPROVAL

Prepared By:	Gelber Vargas, P.Eng. Director Design Engineering
Approved By:	Allan Van Damme, P.Eng. CPA, CMA V.P. Engineering & Construction

Capital Project Summary Sheet: System Access

Project Number:	E2
Project Name:	Residential Secondary Service Upgrades
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	London Hydro Conditions of Service (2026): Service Upgrades - Residential (Sec.2.2.4 & Appendix B) Residential Customer Connections & Service Upgrades: https://www.oeb.ca/sites/default/files/OEB-Staff-Bulletin-Residential-Customer-Connections-20230824.pdf
Project Overview:	This budget item is for the replacement of existing overhead low voltage service conductors with larger capacity conductors. These connections are typically required when customers increase their electrical service demands. This budget item includes all costs associated with these basic service upgrades. For an upgrade to a service level higher than the basic connection, London Hydro may charge a reasonable fee for the portion of the upgrade beyond basic service. This project involves the replacement of overhead low voltage electrical services to residential dwellings. There is no charge from London Hydro to the customers for these upgrades as they are part of London Hydro's basic connection for overhead residential customers as defined in the Distribution System Code. These upgrades are initiated by customers that require an increase to their electrical service size. These requests may be due to issues such as the addition of new load in their home or due to an insurance company requiring the service to be upgraded to a minimal size and configuration. Refer to the OEB bulletin "Residential Customer Connections & Service Upgrades, August 24, 2023" for guidance provided by the OEB.
Risks/Factors that Affect Timing & Mitigation	Risks to completion are minimal. This project is part of a program that is successfully executed each year. The availability of resources (internal labour) is sufficient to complete this project.

Capital Project Summary Sheet: System Access

Project Number: E2

Project Name: Residential Secondary Service Upgrades

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Customer Value	**Historical & Forecast Project Costs**			
Other Drivers:	Econ. Dev.			**Cost**	
		Historical Years	**2022**	$651,630	
			2023	$651,986	
			2024	$781,208	
Alternatives Considered:			**2025**	$716,839	**Total Historical Costs**
The Distribution System Code requires every LDC to provide basic electric service to all residential customers. These upgrades are mandatory and they bring all installations up to current standards so there are no alternatives.		(bridge yr)	**2026**	$613,000	**$3,414,663**
		Forecast Years	**2027**	$643,700	**Total Forecast Costs**
			2028	$667,500	
			2029	$692,200	
			2030	$717,800	
			2031	$744,400	**$3,465,600**
LH Project Driver:	DEV	**LH Section #**			131

ADDITIONAL PROJECT INFORMATION

Mid span tap for residential service



London Hydro

Capital Project Summary Sheet: System Access

Project Number:	E2
Project Name:	Residential Secondary Service Upgrades
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Replacement of aged and undersized secondary services is supported by the Asset Sustainment Plan, which recommends that assets reaching end of life should be replaced before affecting reliability or jeopardizing safety.
Safety	Upgrading substandard or inadequate residential electric services contributes to overall improvements in safety.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Access

Project Number:	E2
Project Name:	Residential Secondary Service Upgrades
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	City of London driven projects and Developer driven projects are excluded from Ranking as they are projects that must be executed.
Safety:	
Environment:	
Capacity:	
Efficiency:	

Blended Health Index Derating Project Ranking	N/A
Final Project Score	N/A

PROJECT REVIEW AND APPROVAL	
Prepared By:	Omar Faqhruldin, P.Eng. Manager Design Engineering
Reviewed By:	Gelber Vargas, P.Eng. Director Design Engineering
Approved By:	Allan Van Damme, P.Eng. CPA, CMA V.P. Engineering & Construction

London Hydro

Capital Project Summary Sheet: System Access

Project Number:	E3
Project Name:	New Single Family Residential Underground Distribution
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION

Supporting Reference Material:

Housing Market Outlook - CMHC (Spring 2022)

London Hydro Conditions of Service (2026)

City of London Online Planning Maps (Accessed Oct. 2022)

City of London Housing Pledge (May 2026) Pledge to produce 47,000 new units by 2031

https://london.ca/business-development/more-homes

Project Overview:

This item involves the installation of single family residential underground distribution systems to provide service as needed to developers.

It is noted that market conditions can create large fluctuations in expenditures from year to year. This item is solely dependent on market conditions. This section will contain several different projects of varying magnitude depending on customer requirements.

Risks/Factors that Affect Timing & Mitigation

Resource availability to match customer's requested service date is the biggest risk to completion. Mitigation plan includes close co-ordination between engineering and operations staff to determine the projects that need to be completed by external resources and secure the external resources (contractor) well in advance of the requested project start date.

Primary Driver: Customer Value

Other Drivers: Econ. Dev.

Alternatives Considered:

There are no alternatives as these installations are in response to Developers under System Access.

LH Project Driver: DEV

LH Section # 142

Historical & Forecast Project Costs

		Gross Cost	Recoveries	Net Cost
Historical Years	2022	$6,479,634	$(1,422,128)	$5,057,506
	2023	$2,579,133	$(562,399)	$2,016,735
	2024	$3,269,855	$(625,232)	$2,644,623
(bridge yr)	2025	$1,752,985	$(275,052)	$1,477,933
	2026	$4,464,100	$(1,428,500)	$3,035,600
Forecast Years	2027	$4,687,300	$(1,500,000)	$3,187,300
	2028	$4,860,700	$(1,555,400)	$3,305,300
	2029	$5,040,600	$(1,613,000)	$3,427,600
	2030	$5,227,100	$(1,672,700)	$3,554,400
	2031	$5,420,500	$(1,734,600)	$3,685,900
Total Historical Costs		**$18,545,708**	**$(4,313,311)**	**$14,232,396**
Total Forecast Costs		**$25,236,200**	**$(8,075,700)**	**$17,160,500**

Capital Project Summary Sheet: System Access

Project Number:	E3
Project Name:	New Single Family Residential Underground Distribution
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION

Duct structures for installation of UG residential services



London Hydro

Capital Project Summary Sheet: System Access

Project Number:	E3
Project Name:	New Single Family Residential Underground Distribution
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	With the economic growth expected in the City of London, new developments will be built. London Hydro utilizes these opportunities to expand the underground distribution system infrastructure, reconfigure the system, and increase automation, which will provide the customers with reliable power supply.
Safety	There is no direct implication to safety as a result of this project.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

Capital Project Summary Sheet: System Access

Project Number:	E3
Project Name:	New Single Family Residential Underground Distribution
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY

	Reliability	Safety	Environment	Capacity	Efficiency
Ranking Factors & Weighting	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	N/A	N/A	N/A	N/A	N/A

Ranking Rationale

Reliability:	City of London driven projects and Developer driven projects are excluded from Ranking as they are projects that must be executed.
Safety:	
Environment:	
Capacity:	
Efficiency:	

Blended Health Index Derating Project Ranking	N/A
Final Project Score	N/A

PROJECT REVIEW AND APPROVAL

Prepared By:	Hans Schreff Director of Logistics
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

London Hydro

Capital Project Summary Sheet: System Access

Project Number: E4

Project Name: New Multi-Housing Underground Distribution

Timing: January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION

Supporting Reference Material:

Housing Market Outlook Reports (2025)

London Hydro Conditions of Service (2026)

City of London Housing Pledge (May 2026) Pledge to produce 47,000 new units by 2031

https://london.ca/business-development/more-homes

Project Overview:

This item involves the installation of multi-housing (primarily townhouses and condominiums) underground distribution systems to provide service as needed to developers.

This item is solely dependent on market conditions. This section will contain several different projects of varying magnitude depending on customer requirements.

Risks/Factors that Affect Timing & Mitigation

Resource availability to match customer's requested service date is the biggest risk to completion. Mitigation plan includes close co-ordination between engineering and operations staff to determine the projects that need to be completed by external resources and secure the external resources (contractor) well in advance of the requested project start date.

Primary Driver: Customer Value

Other Drivers: Econ. Dev.

Alternatives Considered:

There are no alternatives as these installations are in response to Developers under System Access.

LH Project Driver: DEV

LH Section # 143

Historical & Forecast Project Costs

		Gross Cost	Recoveries	Net Cost
Historical Years	2022	$1,271,974	$(158,432)	$1,113,542
	2023	$1,839,444	$(202,240)	$1,637,203
	2024	$3,243,182	$(418,370)	$2,824,812
	2025	$2,645,093	$(211,268)	$2,433,824
(bridge yr)	2026	$2,060,000	$(412,000)	$1,648,000
Forecast Years	2027	$2,163,000	$(433,000)	$1,730,000
	2028	$2,243,000	$(448,600)	$1,794,400
	2029	$2,326,000	$(465,200)	$1,860,800
	2030	$2,412,100	$(482,400)	$1,929,700
	2031	$2,501,300	$(500,300)	$2,001,000
Total Historical Costs		**$11,059,693**	**$(1,402,311)**	**$9,657,382**
Total Forecast Costs		**$11,645,400**	**$(2,329,500)**	**$9,315,900**

Capital Project Summary Sheet: System Access

Project Number:	E4
Project Name:	New Multi-Housing Underground Distribution
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION

Duct structures for installation of UG residential services



EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	With the economic growth expected in the City of London, new developments will be built. London Hydro utilizes these opportunities to expand the underground distribution system infrastructure, reconfigure the system, and increase automation, which will provide customers with reliable power supply.
Safety	There is no direct implication to safety as a result of this project.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Access

Project Number:	E4
Project Name:	New Multi-Housing Underground Distribution
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	City of London driven projects and Developer driven projects are excluded from Ranking as they are projects that must be executed.
Safety:	
Environment:	
Capacity:	
Efficiency:	

Blended Health Index Derating Project Ranking	N/A
Final Project Score	N/A

PROJECT REVIEW AND APPROVAL	
Prepared By:	Hans Schreff Director of Logistics
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

London Hydro

Capital Project Summary Sheet: System Access

Project Number:	E5
Project Name:	New Commercial Distribution Services
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION

Supporting Reference Material:	London Hydro Conditions of Service (2026) City of London: The London Plan (modified August 2025)
Project Overview:	This item is for the installation of commercial overhead and underground distribution systems to provide service as required by customers. This item is solely based on market conditions. This budget is based on past historical expenditure patterns and past history, City of London development forecasts, market reviews, and customer inquiries.
Risks/Factors that Affect Timing & Mitigation	Resource availability to match customers' requested service dates is the biggest risk to completion. Mitigation plan includes close co-ordination between engineering and operations staff to determine the projects that need to be completed by external resources and secure the external resources (contractor) well in advance of the requested project service date.

Primary Driver:	Customer Value	**Historical & Forecast Project Costs**			
Other Drivers:	Econ. Dev.			**Cost**	
		Historical Years	**2022**	$3,332,839	
			2023	$4,528,406	
			2024	$4,736,049	
Alternatives Considered:			**2025**	$6,404,488	**Total Historical Costs**
		(bridge yr)	**2026**	$2,763,000	**$21,764,782**
		Forecast Years	**2027**	$2,901,200	
There are no alternatives as these installations are in response to Developers to System Access.			**2028**	$3,008,500	
			2029	$3,119,900	
			2030	$3,235,300	**Total Forecast Costs**
			2031	$3,355,000	**$15,619,900**
LH Project Driver:	DEV	**LH Section #**			144

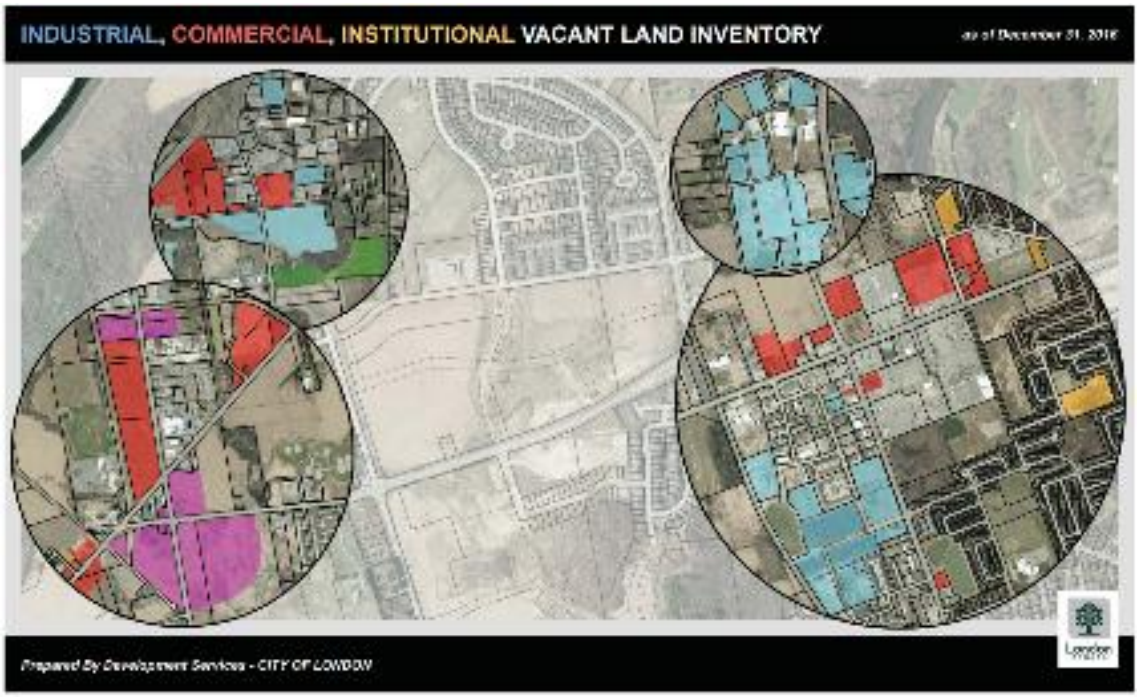
London Hydro

Capital Project Summary Sheet: System Access

Project Number:	E5
Project Name:	New Commercial Distribution Services
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION

City of London Development



London Hydro

Capital Project Summary Sheet: System Access

Project Number:	E5
Project Name:	New Commercial Distribution Services
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	With the economic growth expected in the City of London, new commercial and industrial projects will be developed requiring London Hydro to expand its overhead/underground infrastructure. This expansion will reinforce the distribution system and offers opportunities for reconfiguration and increased automation, which provide the customers with reliable power supply.
Safety	There is no direct implication to safety as a result of this project.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

Capital Project Summary Sheet: System Access

Project Number:	E5
Project Name:	New Commercial Distribution Services
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	City of London driven projects and Developer driven projects are excluded from Ranking as they are projects that must be executed.
Safety:	
Environment:	
Capacity:	
Efficiency:	

Blended Health Index Derating Project Ranking	N/A
Final Project Score	N/A

PROJECT REVIEW AND APPROVAL	
Prepared By:	Hans Schreff Director of Logistics
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Access

Project Number:	M1-M4
Project Name:	Metering
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	London Hydro's Strategic Plan: https://www.londonhydro.com/about-us/about-london-hydro/strategic-plan Risk Analysis: Vulnerabilities of Existing Meter Test Boards
Project Overview:	Metering is an ongoing capital project. The capital expenditure includes new meter installs and replacements as well as the communication head-end systems needed for the meter to cash process. M1: The scope includes all rate classifications, e.g. Residential, Small Commercial (GS<50), Interval Metering (GS>50) and Large Electricity users. The capital budget is largely customer and client driven. M2: London Hydro also has a program to remove any old oil-filled transformer metering units, with only a few remaining. Priority units have already been replaced with solid dielectric type installations. The remaining units are more embedded within customer switchgear and thus require more time and coordination than tanks replaced over the last decade. The capital spend is thus tapering to perform few replacements per year. M3: London Hydro is an accredited service provider under Measurement Canada S-A-01, and operates two meter validation consoles. This section will be used to capture the procurement and installation of a new test console to replace an end-of-life unit. M4: Communications equipment is required to send meter data back for billing and engineering purposes. London Hydro uses Sensus technologies for AMI, and handles the majority of meter communications. For Interval and Large Users, London Hydro uses various forms of communication mediums (cellular, analog phone, Ethernet, etc.) to retrieve meter data. These systems provide automated remote meter reading.
Risks/Factors that Affect Timing & Mitigation	Supply chain issues are still prevalent in the metering industry, therefore adequate supplies of meters and relevant equipment is required to ensure enough meters are available for new service connections, replacement and Measurement Canada requirements.

Capital Project Summary Sheet: System Access

Project Number: M1-M4

Project Name: Metering

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Customer Value			**Cost**	
	Efficiency	**Historical Years**	**2022**	$544,058	
	Econ. Dev.		**2023**	$1,331,231	
			2024	$1,508,581	
			2025	$2,281,363	**Total Historical Costs**
Alternatives Considered:		(bridge yr)	**2026**	$1,630,000	**$7,295,233**
A business case evaluated different pathways of AMI upgrades and replacement, i.e. stay with today's vendor/technology, or move to a mesh or cellular network architecture. It was determined that from capital and operational costs, the duplicative efforts of running simultaneous systems and the long timeline of transitioning to a new system would be more expensive and complicated than continuing to upgrade and refresh the existing AMI, while also replacing end-of-life equipment. There is no alternative to replacing or adding new devices such as instrument transformers, communication devices for meter reads and test consoles for meter accuracy verification. These capital investements are procured through a competitive purchasing process.		**Forecast Years**	**2027**	$1,706,000	
			2028	$1,198,100	
			2029	$1,246,000	
			2030	$1,269,800	**Total Forecast Costs**
			2031	$1,307,100	**$6,727,000**
LH Project Driver:	REL	**LH Section #**			M1-M4

London Hydro

Capital Project Summary Sheet: System Access

Project Number:	M1-M4
Project Name:	Metering
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION



Capital Project Summary Sheet: System Access

Project Number:	M1-M4
Project Name:	Metering
Timing:	January 1, 2026 - December 31, 2031

London Hydro is an authorized service provider (ASP) under Measurement Canada's S-A-01 and the Electricity & Gas Inspection Act. Electric Metering Department has been performing these services since 2001. Being an ASP enables London Hydro to complete in-house reverification of revenue meters, eliminating the risk of relying on outside vendors for reverification, which can potentially expose London Hydro to having expired seal meters in the field. Since London Hydro is capable of providing ASP services, they also provide services to other metering contractors, typically, other utilities and manufacturers. The revenue generated from these third parties are cost recoverable. Having fully functional and supported hardware, software and equipment to complete ASP services is crucial.

One of the test consoles that reverifies electricity meters is over 25 years old. Recent validation tests by Measurement Canada indicated the need to replace the test console, to reduce the risk of production. A new test console will replace this board and be installed and commissioned in the early 2026 timeframe.

London Hydro currently uses Sensus FlexNet advanced metering infrastructure (AMI) for meter-to-cash and other applications, e.g. OMS, outage notifications, etc. This project is used to invest in AMI upgrades to ensure robust AMI reliability and operation and accuracy of meter data. The investments allow for further expansion of services provided by London Hydro for customers.

In 2026, Electric Metering Department and AMI teams will be in the midst of a consultation process that will inform the future strategy for end-of-life meter replacement.

End-of-Life discontinued transceiver gateway basestation (TGB) equipment will be replaced in 2026 and 2027 to ensure continued service for the meter-to-cash process. Upgrade of three TGB locations with new supported hardware is planned.

London Hydro

Capital Project Summary Sheet: System Access

Project Number:	M1-M4
Project Name:	Metering
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Meter equipment costs are kept as low as possible through an open bid, competitive tender process. The project addresses technology obsolecense or existing equipment. New technology can provide an enhanced customer experience and access to more relevant data.
Safety	All meter supplies are approved by a reputable safety certification and/or engineering standard. Newer equipment is less prone to electrical failure.
Environmental Benefits	Replaced meters and related equipment are recycled where applicable or disposed of in accordance with London Hydro's environmental policies. AMI and interval communication system virtually eliminate the need to dispatch a truck for meter reads, reducing carbon emissions. Removal of oil-filled metering units prevents the possibility of oil spills.
Cyber-Security, Privacy	Communications security and privacy are considered in metering installations. Systems are regularly maintained, updated and monitored.
Grid Innovation	Regular updates to AMI infrastructure with new software and hardware provide added functionality and benefits for customers, billing, conservation initiatives and engineering analysis.
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

Capital Project Summary Sheet: System Access

Project Number: M1-M4

Project Name: Metering

Timing: January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	This project is not ranked because it is System Access.
Safety:	
Environment:	
Capacity:	
Efficiency:	

Blended Health Index Derating Project Ranking	N/A
Final Project Score	N/A

PROJECT REVIEW AND APPROVAL	
Prepared By:	Eric Cameron, P.Eng. Manager Eng Metering & Technical Services
Reviewed By:	Hassan El Madhoun, M.Eng. P.Eng. Director of Operations Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Access

Project Number:	MMM
Project Name:	AMI Refresh
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	London Hydro's Strategic Plan: https://www.londonhydro.com/about-us/about-london-hydro/strategic-plan
Project Overview:	London Hydro deployed its Advanced Metering Infrastructure (AMI) between 2009-2011. Since then, the system has been upgraded, expanded and maintained to optimize performance. The smart meters have mainly been used for meter-to-cash processes, load analysis and outage notifications/messages. As with any infrastructure, equipment eventually meets end-of-life. London Hydro must be able to maintain its regulatory obligations through reliable metering assets. The majority of metering assets have now reached 15 years, which is the recommended lifespan of electronic equipment. London Hydro will need to address the increasing failure rates of metering assets, meaning a plan should be put in place to replace the assets over a period of time. London Hydro has contracted a consultant to provide valuable insight into today's metering marketplace and offer recommendations to aid London Hydro in its near to long term vision of metering infrastructure and future system integrations. The deployment of new meters will also provide potential additional functionality and capabilities to improve operations activities such as connect/disconnect work through "Remote Disconnect," distributed energy resource management capabilities, power quality investigations. The meters will also provide improved engineering and customer data through additional alarms and load data.
Risks/Factors that Affect Timing & Mitigation	Supply chain issues are still prevalent in the metering industry, therefore adequate supplies of meters and relevant equipment is required to ensure enough meters are available for meter replacement. Asset management and history will be valuable indicators to determine priorities of the AMI Refresh project. The additional technology and data on the meters will also require modifications to IT-related infrastructure, and will include detailed and robust testing of these features before enabling them.

Capital Project Summary Sheet: System Access

Project Number: MMM

Project Name: AMI Refresh

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Customer Value			**Cost**	
	Efficiency	**Historical Years**	**2022**	$0	
	Econ. Dev.		**2023**	$0	
			2024	$0	
Alternatives Considered:			**2025**	$719	**Total Historical Costs**
		(bridge yr)	**2026**	$303,800	**$304,519**
There is not an alternative for addressing the aging and end-of-life metering infrastructure; this asset replacement will be required. A business case evaluated different pathways of AMI upgrades and replacement, i.e. stay with today's vendor/technology, or move to a mesh or cellular network architecture. It was determined that from capital and operational costs, the duplicative efforts of running simultaneous systems and the long timeline of transitioning to a new system would be more expensive and complicated than continuing to upgrade and refresh the existing AMI, while also replacing end-of-life equipment.		**Forecast Years**	**2027**	$326,600	
			2028	$4,333,800	
			2029	$4,285,300	
			2030	$4,443,800	**Total Forecast Costs**
			2031	$4,608,200	**$17,997,700**
LH Project Driver:	Infrastructure	**LH Section #**			MMM

Capital Project Summary Sheet: System Access

Project Number:	MMM
Project Name:	AMI Refresh
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION





Capital Project Summary Sheet: System Access

Project Number:	MMM
Project Name:	AMI Refresh
Timing:	January 1, 2026 - December 31, 2031

Due to the high volume of meters, the increased per unit cost of modern meter technology, and the majority of meters 15+ years old, London Hydro is anticipating a multi-year, staged rollout of meter replacements. The rate of replacement and type of meter technology will be determined based on further consultation and business need analysis.

There are several key stages to support AMI refresh and meter redeployment program:

* Create AMI refresh profile map and determine use cases and identify business gaps

* Create detailed AMI refresh business case

* Create transition plan for successful transition to modernized AMI infrastructure and integrations

* Support contract development and negotiations to ensure contractual obligations and performance goals are met

London Hydro is currently anticipating a 10-year meter refresh rollout to address end-of-life electronics and phase in new edge applications for improving operational excellence and customer service, while managing affordability. The expected volume of meters to be replaced every year is approximately 10% of the meter population per year, pending pricing agreements from the AMI vendor.

Section 5.3.2d.3, Metering of the DSP provides information on all metering related initiatives taking place to provide robust AMI infrastructure for the near and long term.

Section 5.3.3e.3, Metering Lifecycle Optimization Policies and Practices of the DSP provides information on metering maintenance, verification of meter performance (accuracy) and replacement practices.

Section 5.4.1.2, System Access of the DSP provides more details on the existing aging meters and increasing failure rates. London Hydro must take initiative now to prevent and/or reduce unexpected meter replacements due to age of electronic assets.

London Hydro

Capital Project Summary Sheet: System Access

Project Number:	MMM
Project Name:	AMI Refresh
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Meter equipment costs are kept as low as possible through an open bid, competitive tender process. The project addresses technology obsolecense or existing equipment. New technology can provide an enhanced customer experience and access to more relevant data.
Safety	All meter supplies are approved by a reputable safety certification and/or engineering standard. Newer equipment is less prone to electrical failure.
Environmental Benefits	Replaced meters and related equipment are recycled where applicable or disposed of in accordance with London Hydro's environmental policies. AMI and interval communication system virtually eliminate the need to dispatch a truck for meter reads, reducing carbon emissions.
Cyber-Security, Privacy	Communications security and privacy are considered in metering installations. Systems are regularly maintained, updated and monitored.
Grid Innovation	Regular updates to AMI infrastructure with new software and hardware provide added functionality and benefits for customers, billing, conservation initiatives and engineering analysis.
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Consultation is in progress to recommend path forward for refreshing AMI.

Capital Project Summary Sheet: System Access

Project Number: MMM

Project Name: AMI Refresh

Timing: January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	This project is not ranked because it is System Access.
Safety:	
Environment:	
Capacity:	
Efficiency:	

Blended Health Index Derating Project Ranking	N/A
Final Project Score	N/A

PROJECT REVIEW AND APPROVAL	
Prepared By:	Eric Cameron, P.Eng. Manager Eng Metering & Technical Services
Reviewed By:	Hassan El Madhoun, M.Eng. P.Eng. Director of Operations Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

London Hydro

System Renewal

Capital Project Summary Sheet: System Renewal

Project Number:	A2
Project Name:	Battery Bank Replacement Program
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	2024 Asset Condition Assessment (ACA) - December 2024 (Section 16 Appendix A) Asset Sustainment Plan: 2026 to 2035 - June 2025 (Section 16) 4.16 kV Conversion Progress Report 2025 Update - December 2025
Project Overview:	Battery banks are a critical component of substation infrastructure, providing the DC power supply required to operate protection and control equipment, including protective relays, circuit breakers, and communications equipment during the loss of AC power. Reliable battery performance is essential to ensure substations continue to operate safely and as designed under both normal and contingency conditions. As part of its long-term system modernization program, London Hydro has gradually decommissioned several legacy 4.16 kV substations over the past decade. Battery banks at substations that remain in service continue to play a critical role and must be maintained throughout the lifecycle of each station to ensure the ongoing reliability and safe operation of the distribution system. Battery performance degrades over time due to normal aging and service conditions. Deteriorated batteries increase the risk that protective relays and circuit breakers may not operate as intended during fault conditions, potentially resulting in delayed or failed fault clearing, unnecessary operation of upstream protection, equipment damage, and wider customer outages. To proactively manage this risk, battery banks are subject to annual inspections and condition assessments, including periodic capacity testing. Replacement requirements are determined based on asset age, test results, and observed condition, with projects prioritized according to annual condition assessment findings and asset criticality. Historically, London Hydro has replaced the battery banks at approximately one to three substations each year as they reach end of life or exhibit declining performance. This programmatic investment will continue throughout the DSP period to maintain the reliability and integrity of the substation protection and control systems, while minimizing the risk of battery-related failures.
Risks/Factors that Affect Timing & Mitigation	Risks to completion are minimal. This project is part of a program that has been successfully executed in each of the past ten years. The availability of resources (internal labour) is sufficient to complete this project.

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number: A2

Project Name: Battery Bank Replacement Program

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Safety			**Cost**	
		Historical Years	**2022**	$512	
			2023	$0	
			2024	$19,184	
Alternatives Considered:			**2025**	$20,854	**Total Historical Costs**
The alternative to defer this work was rejected, as the risk and cost of unplanned battery failures and potential protection system malfunctions outweigh the relatively modest cost of planned replacements.		(bridge yr)	**2026**	$26,300	**$66,850**
		Forecast Years	**2027**	$27,600	
			2028	$28,600	
			2029	$29,700	
			2030	$30,800	**Total Forecast Costs**
			2031	$31,900	**$148,600**
LH Project Driver:	REL	**LH Section #**			110

ADDITIONAL PROJECT INFORMATION

Battery Bank



London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	A2
Project Name:	Battery Bank Replacement Program
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Replacing end-of-life battery banks maintains the reliable operation of substation protection and control systems by ensuring uninterrupted DC power to protective relays, circuit breakers, and associated equipment during AC supply interruptions. This reduces the risk of protection system failures, minimizes the potential for widespread outages, and supports reliable service for customers.
Safety	Reliable battery banks ensure protective relays and circuit breakers operate as intended during fault conditions, enabling the timely isolation of electrical faults and reducing risks to the public, utility personnel, and electrical equipment.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to operate and maintain a safe and reliable distribution system by ensuring critical substation protection and control systems remain functional.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number: A2

Project Name: Battery Bank Replacement Program

Timing: January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	6	6	2	4	5

Ranking Rationale	
Reliability:	large impact, without functional batteries the breakers at the substation cannot operate
Safety:	large impact due to the need of isolating feeders in the event of a fault or energized line down
Environment:	moderate impact becuase they do not emit pollutants during normal failure modes
Capacity:	moderate impact since failure would remove a station from service jeopardizing capacity
Efficiency:	large impact since functional batteries enable remote monitoring and control

Blended Health Index Derating Project Ranking	75%
Final Project Score	67

PROJECT REVIEW AND APPROVAL	
Prepared By:	Adrian Lattanzio, P.Eng. Manager Eng System Planning
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Renewal

Project Number:	A6
Project Name:	Municipal Transformer Replacement/Relocation
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	2024 Asset Condition Assessment (ACA) - December 2024 (Sections 14 and 15 Appendix A) Asset Sustainment Plan: 2026 to 2035 - June 2025 (Sections 14 and 15) 4.16 kV Conversion Progress Report 2025 Update - December 2025
Project Overview:	Regular maintenance of municipal substation transformers is essential to ensure the continued reliability and safety of London Hydro's distribution system. These transformers are critical assets that regulate voltage levels and enable the efficient delivery of electricity to customers throughout the city. Over time, factors such as insulation aging, oil contamination, and thermal or mechanical stresses can degrade transformer performance and increase the risk of failure. London Hydro's proactive maintenance program includes activities such as, but not limited to, annual oil sampling and analysis, thermographic inspections, bushing assessments, and winding resistance testing. These measures help identify early signs of deterioration, allowing corrective actions to be taken before equipment reliability is compromised. Maintaining transformers in good operating condition reduces the likelihood of unplanned outages, minimizes repair and replacement costs, and supports the high level of service reliability expected by London Hydro's customers. Historically, London Hydro has replaced municipal substation transformers that demonstrated persistent signs of deterioration and presented an elevated risk of in-service failure. Where practical, reclaimed transformers from previously converted stations have been utilized to extend asset life and reduce capital expenditures, recognizing that power transformers are high-value assets with significant replacement costs. This approach has generated cost savings while ensuring substations remain fully functional and capable of meeting operational requirements. Although no transformer relocations were anticipated in 2025 or 2026, several municipal substation transformers will require ongoing maintenance in future years until voltage conversion projects are completed and the units can be retired from service. To address this need, a placeholder budget has been included in each of the next five years to account for potential reconditioning work. Such work may include oil degassing, oil reclamation, or other remedial measures, as annual oil testing and trends have identified several transformers to have declining oil quality, which are early indicators of deterioration.
Risks/Factors that Affect Timing & Mitigation	Risks to project completion are minimal, as sufficient internal labour resources are available to carry out the work. However, when involved, the condition and availability of egress ducts may present a potential risk, which could lead to scope expansion and increased project costs.

Capital Project Summary Sheet: System Renewal

Project Number:	A6
Project Name:	Municipal Transformer Replacement/Relocation
Timing:	January 1, 2026 - December 31, 2031

Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Safety			**Cost**	
	Environmental	**Historical Years**	**2022**	$32,715	
	Customer Value		**2023**	$218,687	
	Efficiency		**2024**	-$8,515	
Alternatives Considered:			**2025**	$0	**Total Historical Costs**
		(bridge yr)	**2026**	$0	**$242,888**
The alternative of continued maintenance and deferring replacement was rejected, as continued operation of deteriorated equipment would increase the risk of failure, reduce system performance and reliability, and increase safety and environmental risks.		**Forecast Years**	**2027**	$125,000	
			2028	$129,600	
			2029	$134,400	
			2030	$139,400	**Total Forecast Costs**
			2031	$144,600	**$673,000**
LH Project Driver:	REL	**LH Section #**			110

ADDITIONAL PROJECT INFORMATION

Substation Transformer



London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	A6
Project Name:	Municipal Transformer Replacement/Relocation
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Repurposing younger transformers in good condition to replace older transformers in poor health increases reliability and efficiency, thereby providing better customer value.
Safety	Removing aged and deteriorated substation transformers enhances safety for both the public and utility personnel.
Environmental Benefits	Environmental benefits include the removal of transformers in poor condition, which may have leaking bushings or could experience catastrophic failure, potentially causing significant environmental harm.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal and modernization of deteriorating legacy distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	A6
Project Name:	Municipal Transformer Replacement/Relocation
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	7	9	9	6	8

Ranking Rationale	
Reliability:	large impact since the transformer is required for the substation and has no backup
Safety:	extreme impact because of the safety concern associated with a potential explosion, or fire
Environment:	extreme impact because of the concern associated with a potential oil leak
Capacity:	large impact since failure would remove a station from service
Efficiency:	extreme impact because the substation enables feeder ties and optimal load flows

Blended Health Index Derating Project Ranking	75%
Final Project Score	106

PROJECT REVIEW AND APPROVAL	
Prepared By:	Cristina Terek, P.Eng. Senior Engineer Asset Management
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Renewal

Project Number:	B2
Project Name:	Subdivision Rebuilds
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	Cable Replacement Strategy Executive Summary - March 2023 2024 Asset Condition Assessment (ACA) - December 2024 (Section 6 Appendix A) Asset Sustainment Plan: 2026 to 2035 - June 2025 (Section 6) 2026 Distribution System Plan (DSP), Section 5.3.2b.2, Underground Infrastructure
Project Overview:	London Hydro's underground residential distribution system comprises medium-voltage cables, pad-mounted transformers, switchgear, and associated equipment that provide reliable electricity service to a significant portion of its customer base. As these assets age, deterioration of early-generation XLPE cable insulation and associated equipment increases the likelihood of cable failures, prolonged customer outages, and higher maintenance costs. This program supports London Hydro's lifecycle management strategy by proactively renewing deteriorated underground infrastructure before failures occur, thereby maintaining system reliability, operational flexibility, and public safety. The primary scope of this program is the replacement of medium-voltage XLPE underground cable that has reached or exceeded its expected service life and was identified as having a Poor or Very Poor Health Index through London Hydro's 2024 ACA – refer to DSP Section 5.3.2b.2 for asset information. Replacement cable utilizes modern tree-retardant XLPE (TR-XLPE) installed within a fully ducted system, providing improved reliability, extended asset life, and more cost-effective future maintenance and replacement. Subdivision rehabilitation projects also replace ancillary equipment where warranted, including deteriorated pad-mounted transformers, switchgear, and associated apparatus. New pad-mounted transformers are equipped with dual load-break switches that improve feeder sectionalizing capability, operational flexibility, and restoration times during planned or unplanned outages. Consistent with the lifecycle strategies outlined in the Asset Sustainment Plan, London Hydro plans to achieve its ACA Flag for Action objectives through the proactive replacement of approximately 35 km of deteriorated underground cable annually, supplemented by condition assessment testing of approximately 10 - 11 km of additional cable each year using Tan Delta diagnostics. While this program delivers the majority of targeted underground cable renewals, additional cable replacements are undertaken through the B12 – Three-Phase Customer Underground Cable Rebuild Program, as well as through other capital programs where underground assets are renewed in conjunction with broader system improvements, customer-driven work, or coordinated infrastructure projects. Subdivision rebuild candidates are reviewed and reprioritized annually to ensure capital investments remain aligned with the highest areas of risk. Prioritization is based on a weighted assessment that considers the quantity of Poor and Very Poor cable identified through the ACA, historical cable failure performance, Tan Delta condition testing results, and opportunities to improve system operability and safety through the replacement of obsolete non-switchable and live-front equipment. This risk-based approach ensures investments are directed to the subdivisions where they provide the greatest reliability and customer value while supporting the long-term sustainability of London Hydro's underground distribution system.

Capital Project Summary Sheet: System Renewal

Project Number: B2

Project Name: Subdivision Rebuilds

Timing: January 1, 2026 - December 31, 2031

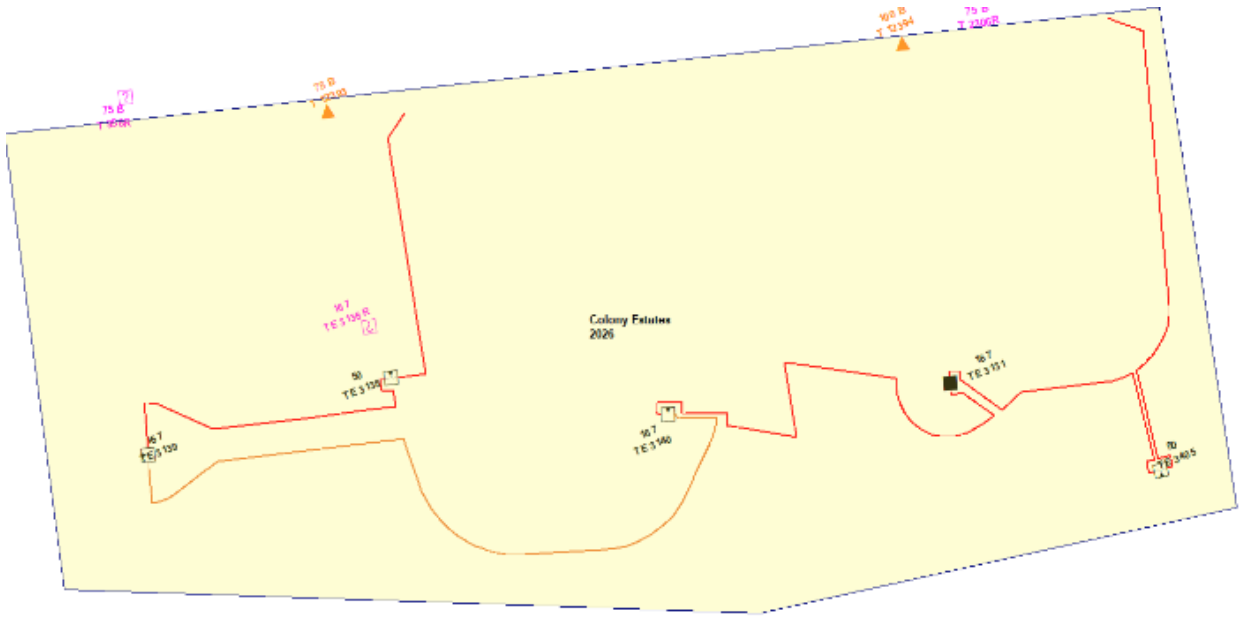
Risks/Factors that Affect Timing & Mitigation	The primary risks to project execution are the availability of internal and contractor resources, material procurement lead times, and coordination with other capital and third-party infrastructure projects. These risks are mitigated through proactive resource planning, the use of external engineering and construction support where appropriate, regular coordination between Engineering and Operations, integration with municipal and utility work programs, and early procurement of long-lead materials. Since 2021, material availability has become an increasing concern, making advance procurement and ongoing supplier engagement an important component of project delivery.			
Primary Driver:	Reliability	**Historical & Forecast Project Costs**		
Other Drivers:	Efficiency		**Cost**	
	Customer Value	**Historical Years**	**2022**	$6,895,351
			2023	$5,840,331
			2024	$7,730,104
Alternatives Considered:			**2025**	$13,093,414
Medium-voltage polymeric cable rejuvenation using silicone injection was considered as an alternative; however, it was rejected based on London Hydro's past experience with higher lifecycle costs, recurring post-treatment failures, and reduced manufacturer warranty support. Full cable replacement provides a more reliable, long-term asset management solution by renewing the infrastructure to current design standards, improving operational performance, and establishing a foundation to support future load growth and electrification.		(bridge yr)	**2026**	$12,114,000
				Total Historical Costs **$45,673,199**
		Forecast Years	**2027**	$13,454,000
			2028	$15,592,700
			2029	$16,169,600
			2030	$16,767,900
			2031	$18,388,300
				Total Forecast Costs **$80,372,500**
LH Project Driver:	REL	**LH Section #**		145

ADDITIONAL PROJECT INFORMATION

In 2026 there are 10 subdivisions planned for rebuild for a total of approximately 32 km of cable in section B2 (and 36 km combined with B12). Of this, approximately 29 km is very poor or poor (red and orange).

In 2027 there are 8 subdivisions planned for rebuild for a total of approximately 36 km of cable in section B2 (and 38 km with B12). Of this, approximately 34 km are very poor or poor.

A sample of subdivision identified for rebuild is depicted below with very poor and poor cables identified in red and orange colours.



Ducted cable installation



London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	B2
Project Name:	Subdivision Rebuilds
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	This program proactively replaces aging underground cables identified as high risk through London Hydro's Asset Condition Assessment, reducing the likelihood of cable failures and prolonged customer outages. Replacing direct-buried cable with modern TR-XLPE cable installed in fully ducted systems, together with switchable pad-mounted transformers where required, improves system reliability, operational flexibility, restoration capability, and long-term maintenance efficiency, delivering greater value to customers.
Safety	The project provides a modest improvement in safety by replacing deteriorated underground infrastructure and eliminating legacy live-front equipment where applicable, thereby reducing operational risks for field crews during switching, maintenance, and restoration activities.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal of deteriorated distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number: B2

Project Name: Subdivision Rebuilds

Timing: January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	6	2	1	4	4

Ranking Rationale	
Reliability:	large impact since cable faults usually can affect several hundreds of customers at once
Safety:	moderate impact as indirect impact to safety
Environment:	low impact as there is no consequence
Capacity:	moderate impact since failures would not greatly affect system capacity
Efficiency:	moderate impact since failure would affect the looped system effectively reducing back-feeding options during the fault

Blended Health Index Derating Project Ranking	85%
Final Project Score	39

PROJECT REVIEW AND APPROVAL	
Prepared By:	Cristina Terek, P.Eng. Senior Engineer Asset Management
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Renewal

Project Number:	B3
Project Name:	Replacement of Sectionalizing Enclosures
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	Report on Thomas&Betts Failures and Recommendations Going Forward - October 2019 2024 Asset Condition Assessment (ACA) - December 2024 (Section 5 Appendix A) Asset Sustainment Plan: 2026 to 2035 - June 2025 (Section 5)
Project	London Hydro operates approximately 180 distribution switchgear units (load centres and sectionalizing enclosures) throughout its underground distribution system - refer to DSP Section 5.3.2b.2 for asset information. These devices are critical components of looped distribution systems, providing sectionalizing capability that allows faulted sections to be isolated and healthy portions of the system to be restored from alternate supply paths. Failure of a switchgear unit can interrupt service to hundreds of customers and may result in extended outages until field switching can be completed and the affected equipment repaired or replaced. London Hydro has historically experienced reliability and asset-performance concerns with air-insulated sectionalizing enclosures (“SEs”) installed on its 27.6 kV distribution system. These legacy units were found to be inadequately rated for their application and susceptible to failure. In response, London Hydro implemented a long-term replacement program spanning approximately 20 years, under which air-insulated SEs were progressively eliminated or replaced with solid-dielectric load centres (“LCs”). Only two legacy air-insulated SEs remain in service. While the solid-dielectric LCs installed as replacements have generally demonstrated improved performance, premature failures have occurred in some units. Forensic investigations identified failure mechanisms including moisture ingress and internal bus failures. London Hydro has worked with equipment manufacturers to identify and address these issues and continues to monitor the performance of the installed population. Where failures occur, timely replacement may be necessary to restore service to affected customers, return the system to its normal operating configuration, and avoid prolonged operation with reduced switching flexibility or redundancy. Over the past five years, London Hydro has replaced approximately three sectionalizing enclosures/load centres per year. The proposed investment completes the proactive removal of the remaining legacy air-insulated SEs while maintaining an allowance for the replacement of solid-dielectric LCs that fail or demonstrate unacceptable performance. Based on historical experience, approximately one to two solid-dielectric units may require replacement annually. The remaining air-insulated units planned for replacement are SE 5296 in 2026 and SE 5543 in 2027. Thereafter, investment will primarily address failed or deteriorated solid-dielectric units based on observed condition and performance. This targeted approach avoids broad age-based replacement of the approximately 180-unit population and directs investment to assets presenting the greatest reliability and failure risk, consistent with London Hydro’s risk-based asset management and System Renewal strategy.

Capital Project Summary Sheet: System Renewal

Project Number:	B3
Project Name:	Replacement of Sectionalizing Enclosures
Timing:	January 1, 2026 - December 31, 2031

Risks/Factors that Affect Timing & Mitigation	Risks to project execution are considered low, as this work forms part of an established renewal program that London Hydro has successfully delivered for more than 15 years. Potential factors affecting timing include equipment availability and procurement lead times, coordination of planned outages and switching requirements, site conditions, and competing demands on internal or contractor resources. These risks are mitigated through advance material procurement, annual work planning and scheduling, and the use of qualified internal and contract resources.				
Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Safety			**Cost**	
	Customer Value	**Historical Years**	**2022**	$548,305	
			2023	$487,425	
			2024	$177,479	
Alternatives Considered:			**2025**	$119,815	**Total Historical Costs**
The alternative of continued maintenance and deferred replacement was rejected where equipment has failed, demonstrates unacceptable performance, or presents elevated reliability or safety risk, as repairs may not address the underlying failure mechanism. Accordingly, targeted replacement represents the prudent approach for the remaining legacy air-insulated units and for solid-dielectric units requiring replacement based on condition or performance.		(bridge yr)	**2026**	$168,000	**$1,501,023**
		Forecast Years	**2027**	$352,800	**Total Forecast Costs**
			2028	$365,900	
			2029	$379,400	
			2030	$393,400	
			2031	$408,000	**$1,899,500**
LH Project Driver:	REL	**LH Section #**			145

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	B3
Project Name:	Replacement of Sectionalizing Enclosures
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION

Air-insulated Switching Enclosure



Capital Project Summary Sheet: System Renewal

Project Number:	B3
Project Name:	Replacement of Sectionalizing Enclosures
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Replacement of the remaining legacy air-insulated sectionalizing enclosures ("SEs") and failed or poorly performing solid-dielectric load centres ("LCs") reduces equipment-failure risk and associated customer outages. Replacement also restores normal system configuration, switching flexibility, and redundancy following equipment failures, supporting reliable service to customers.
Safety	Replacement of the remaining air-insulated (live-front) SEs with solid-dielectric (dead-front) LCs reduces worker exposure to energized components and the risk of flashover. Replacement of failed or deteriorated equipment also mitigates equipment-related safety risks to employees and the public.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal of deteriorated distribution infrastructure.
CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	B3
Project Name:	Replacement of Sectionalizing Enclosures
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	7	8	3	4	8

Ranking Rationale	
Reliability:	large impact since switchgear failures usually can affect hundreds/thousands of customers at once
Safety:	extreme impact due to exposure to live parts, potential flashes, electric arc
Environment:	moderate impact since little influence on environment
Capacity:	moderate impact since failures would not greatly affect system capacity
Efficiency:	extreme impact as switchgear enables loop configuration and backfeed scenario that reduces outage duration

Blended Health Index Derating Project Ranking	85%
Final Project Score	75

PROJECT REVIEW AND APPROVAL	
Prepared By:	Cristina Terek, P.Eng. Senior Engineer Asset Management
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Capital Project Summary Sheet: System Renewal

Project Number:	B4
Project Name:	Deteriorating/Leaking Transformer Replacements
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	Inspection of Pad Mounted Transformers - March 2023 2024 Asset Condition Assessment (ACA) - December 2024 (Section 1 Appendix A) Asset Sustainment Plan: 2026 to 2035 - June 2025 (Section 1)
Project Overview:	Field staff at London Hydro inspect all distribution transformers (underground and overhead) on a three-year cycle in accordance with Ontario Energy Board requirements, to identify deteriorated, leaking, or defective units. These conditions are generally caused by aging equipment, degradation of sealing gaskets around the primary and secondary bushings, or corrosion of the lower cabinets due to exposure to salt from sidewalks in case of pad-mounted units. A four-point ranking scale was established in 2023 at London Hydro for the assessment of the oil leak severity, which creates a more objective action plan across all the inspection personnel. Supervisors also visit the site when the severity passes a certain threshold and determine the optimal plan for replacement or repair of the unit, thus maintaining the asset in service as long as it operates safely and reliably. Historically, London Hydro has replaced between 70 and 80 units annually but in recent years there has been an increase; the enhanced inspection and maintenance programs may lead to earlier replacements, preventing oil leaks from deteriorated units and reducing the risk of environmental incidents. London Hydro remains committed to environmental stewardship by investing in the proactive replacement of problematic transformers and allocating funding for units that have failed or require immediate replacement. This budget could replace up to 100 single-phase units and up to 25 three-phase units per year. These are units that have already failed in the field or simply need to be replaced due to imminent failure. Among the replacements, some very aged and deteriorated live-front transformers may also be removed from service and replaced with newer standard dual load-break switch distribution transformers. In addition, car accidents also require removal of units that are damaged in the field regardless of their condition, and this budget covers those circumstances as well.
Risks/Factors that Affect Timing & Mitigation	The primary risk to project completion is resource availability. When necessary, London Hydro supplements its workforce with contract resources to complete transformer replacements. Since transformer costs and lead times have become more unpredictable in the post-COVID environment, London Hydro mitigates potential delays through proactive planning and early procurement strategies.

Capital Project Summary Sheet: System Renewal

Project Number:	B4
Project Name:	Deteriorating/Leaking Transformer Replacements
Timing:	January 1, 2026 - December 31, 2031

Primary Driver:	Environmental	**Historical & Forecast Project Costs**			
Other Drivers:	Safety			**Cost**	
	Reliability	**Historical Years**	**2022**	$1,631,203	
			2023	$3,613,292	
			2024	$1,363,632	
Alternatives Considered:			**2025**	$2,045,378	**Total Historical Costs**
Allowing deteriorated transformers to operate until failure can lead to additional outages in subdivisions where other parts of the system have already seen reliability improvements, offseting a better performance for the customers. Therefore replacements are considered necessary over any other alternative.		(bridge yr)	**2026**	$1,470,000	**$10,123,505**
		Forecast Years	**2027**	$1,720,000	
			2028	$1,939,200	
			2029	$2,011,000	
			2030	$2,085,400	**Total Forecast Costs**
			2031	$2,162,600	**$9,918,200**
LH Project Driver:	SAF	**LH Section #**			145

ADDITIONAL PROJECT INFORMATION

Weeping oil in distribution pad-mounted transformers





Capital Project Summary Sheet: System Renewal

Project Number:	B4
Project Name:	Deteriorating/Leaking Transformer Replacements
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Reliability and customer satisfaction are naturally enhanced through the timely replacement of distribution transformers that are nearing failure or pose environmental risks. This approach aligns with the asset renewal strategy outlined in London Hydro's 10-Year Asset Sustainment Plan.
Safety	This initiative significantly enhances safety by replacing rusted transformer cabinets (see picture above) that may no longer be tamper-proof and could pose an electrical contact hazard to both the public and employees.
Environmental Benefits	Oil leaks from transformers have the potential to contaminate soil and nearby waterways, posing environmental risks. This project reflects a proactive approach to environmental protection and risk management.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal and modernization of deteriorating legacy distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	B4
Project Name:	Deteriorating/Leaking Transformer Replacements
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY

	Reliability	Safety	Environment	Capacity	Efficiency
Ranking Factors & Weighting	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	4	8	7	1	3

Ranking Rationale

Reliability:	moderate impact as one transformer failure usually affects only several customers
Safety:	extreme impact due to exposure to live parts, potential flashes, electric arc
Environment:	large impact due to potential oil leaks, rusting loosen gaskets, etc.
Capacity:	low impact since failure would not affect system capacity
Efficiency:	moderate impact as not much influence directly on system efficiency

Blended Health Index Derating Project Ranking	85%
Final Project Score	62

PROJECT REVIEW AND APPROVAL

Prepared By:	Cristina Terek, P.Eng. Senior Engineer Asset Management
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Capital Project Summary Sheet: System Renewal

Project Number:	B5
Project Name:	Residential Secondary Pedestal Replacements
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	Low Voltage Underground Conductor Risk Assessment and Asset Management Strategy - December 2024 Asset Sustainment Plan: 2026 to 2035 - June 2025 (Section 17)
Project Overview:	London Hydro owns a secondary underground distribution system (i.e low-voltage underground conductors) that includes over 1,600 low-voltage junction pedestals, primarily in residential areas. These pedestals, typically located in front or back yards, house low-voltage electrical connections that distribute power from a common bus cable to multiple service cables for several premises. Some of these units are 50–60 years old and considered at the end of their service life. The outdated metal enclosures are often corroded, and internal connections and barriers are beginning to fail, creating safety hazards. Many pedestals have never been accessed since their original installation, with issues only becoming apparent when staff perform secondary cable repairs or customer service upgrades due to electrification. This budget item funds the replacement of the most deteriorated pedestals with new, non-metallic units. Priority will be given to areas with a history of issues and to newly identified pedestals that pose safety risks. The project is guided by the Asset Sustainment Plan, which forecasts the future need for secondary system renewal. Historically, London Hydro's investment annually was in the range of $30,000 with 10-15 units replaced per year; however, increasingly number of units found close to failure revealed the need to increase the capital spending on this project. In the budgeted interval London Hydro plans to carry out pedestal replacements that will cover in the neighborhood of 50-100 units yearly.
Risks/Factors that Affect Timing & Mitigation	Deteriorated secondary pedestals are currently identified only when crews respond to power outages or customer service upgrades, rather than through a proactive replacement prioritization program. This reactive approach may leave potentially unsafe pedestals in service. Increasing the budget for this program in the near future could enable a greater number of necessary replacements to be completed.

Capital Project Summary Sheet: System Renewal

Project Number:	B5
Project Name:	Residential Secondary Pedestal Replacements
Timing:	January 1, 2026 - December 31, 2031

Primary Driver:	Safety	**Historical & Forecast Project Costs**			
Other Drivers:	Reliability			**Cost**	
	Customer Value	**Historical Years**	**2022**	$39,694	
			2023	$61,966	
			2024	$107,266	
Alternatives Considered: While allowing deteriorated pedestals to remain in service could extend their operational life, associated safety risks necessitate their replacement sooner rather than later. For this reason, no viable alternative was considered.			**2025**	$57,532	**Total Historical Costs**
		(bridge yr)	**2026**	$210,000	**$476,458**
		Forecast Years	**2027**	$220,500	
			2028	$228,700	
			2029	$237,200	
			2030	$246,000	**Total Forecast Costs**
			2031	$255,100	**$1,187,500**
LH Project Driver:	REL	**LH Section #**			145

ADDITIONAL PROJECT INFORMATION

Rusted residential pedestal



London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	B5
Project Name:	Residential Secondary Pedestal Replacements
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Pedestals are typically situated in the front or back yards of residential properties. Deteriorated units are often rusted, leaning, or partially dismantled, making them unsafe as electrical enclosures. Their failure can impact multiple households for extended periods, so replacing them helps prevent unplanned outages.
Safety	This initiative significantly enhances safety, as deteriorated pedestals can unintentionally expose live conductors to both staff and the public.
Environmental Benefits	While this program does not provide direct environmental benefits, the new plastic pedestals used to replace old metal units could be recycled.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal and modernization of deteriorating legacy distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	B5
Project Name:	Residential Secondary Pedestal Replacements
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY

	Reliability	Safety	Environment	Capacity	Efficiency
Ranking Factors & Weighting	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	N/A	N/A	N/A	N/A	N/A

Ranking Rationale

Reliability:	This project was not scored because it is mandated to be completed due to safety reasons. If secondary pedestals come apart or develop holes due to rusting, live exposed electrical connections can endanger the safety of the public
Safety:	
Environment:	
Capacity:	
Efficiency:	

Blended Health Index Derating Project Ranking	N/A
Final Project Score	N/A

PROJECT REVIEW AND APPROVAL

Prepared By:	Cristina Terek, P.Eng. Senior Engineer Asset Management
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Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Renewal

Project Number:	B9
Project Name:	4.16 kV UG Conversion
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	2024 Asset Condition Assessment (ACA) - December 2024 (Section 14 Appendix A) Asset Sustainment Plan: 2026 to 2035 - June 2025 (Section 14) 4.16 kV Conversion Progress Report 2025 Update - December 2025
Project Overview:	The 4.16 kV underground distribution system is a legacy voltage class that London Hydro is progressively converting to its standard 27.6 kV distribution voltage. The existing 4.16 kV system has limited capacity to accommodate load growth, higher electrical losses, reduced operational flexibility, and relies in part on aging municipal substations and distribution assets that require ongoing renewal. Conversion provides an opportunity to address deteriorated infrastructure while modernizing the distribution system, increasing capacity and operational flexibility, and supporting future customer growth. Conversion priorities are established using a coordinated, risk-based approach that considers asset age and condition, reliability and system performance, capacity requirements, operational flexibility, opportunities to retire aging substations, and coordination with municipal and other third-party projects. Priority areas currently include Zones D and G, together with select out-of-zone locations where asset condition, system needs, or coordination opportunities support earlier conversion. Proposed rebuilds also address deteriorating infrastructure identified through London Hydro's Asset Condition Assessment and Asset Sustainment Plan processes. In Zone G, the program will replace legacy 4.16 kV rear-lot overhead infrastructure with 27.6 kV front-lot underground infrastructure. While primarily driven by system renewal needs, this work provides an additional system-hardening and climate-resiliency benefit by reducing the distribution system's exposure to overhead hazards, including tree contact and severe weather. Historically, London Hydro has progressively converted several 4.16 kV underground areas and retired associated municipal substations, including Sub-25, Sub-17, and Sub-22. This approach reduces reliance on aging legacy infrastructure and avoids continued investment in assets that would ultimately become obsolete as the 4.16 kV system is retired. Long-term planning and coordinated conversion therefore reduce the risk of undertaking interim refurbishment or replacement work that could result in premature obsolescence. In 2026, conversion work will continue in Zone D, with particular emphasis on sub-zone D4, while work in Zone G will commence. The program will also include conversion of the area supplied by Sub-27, allowing end-of-life substation and associated 4.16 kV infrastructure to be decommissioned. In 2027, work will continue toward completion of the D4 conversions and advancement of Zone G. The planned work will also enable the retirement of an additional substation within the D4 area, with the specific substation selected based on asset age and condition, reliability performance, system configuration, and the sequencing of conversion work. Continued investment through 2028–2031 will progressively advance conversion of the remaining priority areas and support the long-term retirement of the 4.16 kV distribution system. The capital plan provides for a sustained average annual investment of approximately $3.5 million across the underground (Project B9) and overhead (Project G5) 4.16 kV conversion programs. The specific scope and sequencing of work will continue to be reviewed annually based on asset condition, reliability performance, system needs,

	coordination opportunities, and the overall capital investment envelope. This measured approach allows London Hydro to pace conversion in accordance with system priorities while maintaining progress toward retirement of legacy infrastructure. The program reduces the risk of failures associated with deteriorating assets, facilitates the retirement of aging substations, improves system capacity and operational flexibility, supports future load growth, and creates opportunities to coordinate renewal with municipal and third-party work to reduce lifecycle costs and customer disruption. Where legacy rear-lot overhead infrastructure is converted to front-lot underground infrastructure, the program also improves system resiliency by reducing exposure to vegetation and severe-weather-related hazards.
Risks/Factors that Affect Timing & Mitigation	The risk to project completion is low. Execution requires coordination and sequencing with the related overhead 4.16 kV conversion work under Project G5, as well as the availability of internal and contractor resources. These risks are mitigated through annual work planning, coordinated project scheduling, and early resource allocation. London Hydro has successfully executed the 4.16 kV conversion program for more than a decade and has established processes and access to sufficient internal and contracted resources to deliver the planned work.

Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Safety			**Cost**	
	Customer Value	**Historical Years**	**2022**	$1,002,815	
	Efficiency		**2023**	$206,025	
			2024	$119,342	
Alternatives Considered: The alternative of continued maintenance and deferring replacement was rejected, as continued operation of deteriorated equipment would increase the risk of failure, reduce system performance and reliability, and increase safety risks.			**2025**	$23,090	**Total Historical Costs**
		(bridge yr)	**2026**	$1,384,000	**$2,735,272**
		Forecast Years	**2027**	$3,691,000	**Total Forecast Costs**
			2028	$2,495,000	
			2029	$4,043,000	
			2030	$3,540,000	
			2031	$3,671,000	**$17,440,000**
LH Project Driver:	REL	**LH Section #**			145

Capital Project Summary Sheet: **System Renewal**

Project Number:	B9
Project Name:	4.16 kV UG Conversion
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION









London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	B9
Project Name:	4.16 kV UG Conversion
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Conversion of the legacy 4.16 kV system to 27.6 kV enables the coordinated retirement of aging substations and deteriorated distribution infrastructure while improving system capacity, reducing electrical losses, and increasing operational flexibility. Underground and overhead conversion work is coordinated by zone to achieve efficient system reconfiguration and maintain reliable service throughout the transition. Where rear-lot overhead infrastructure is converted to front-lot underground infrastructure, the project also improves system resiliency by reducing exposure to tree contact and severe-weather-related hazards.
Safety	Removal of high-voltage overhead infrastructure from residential rear lots improves safety for the public and utility personnel. Safety is further enhanced through the retirement of aging and legacy infrastructure, including installations with Positek fused transformers and open-bus configurations.
Environmental Benefits	Replacement of deteriorated pole-mounted transformers reduces the risk of insulating-oil releases. Conversion of overhead infrastructure to underground in applicable areas also reduces exposure to vegetation and severe-weather hazards.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal and modernization of deteriorating legacy distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	B9
Project Name:	4.16 kV UG Conversion
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY

	Reliability	Safety	Environment	Capacity	Efficiency
Ranking Factors & Weighting	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	7	7	5	5	9

Ranking Rationale

Reliability:	large impact because new assets installed are resulting in an improvement to reliability
Safety:	large impact because deteriorated equipment makes work unsafe
Environment:	large impact because of potentail oil leaks at old substation transformers
Capacity:	large impact because of positive influence to capacity
Efficiency:	extreme impact because system efficiency would increase greatly with higher distribution voltage

Blended Health Index Derating Project Ranking	85%
Final Project Score	78

PROJECT REVIEW AND APPROVAL

Prepared By:	Adrian Lattanzio, P.Eng. Manager Eng System Planning
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	B11
Project Name:	Switchable Transformers Outage Restoration Improvements
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	Non-Switchable Transformer Replacement Strategy - April 2021
Project Overview:	A multitude of underground residential subdivisions are still lacking switchable transformers. Without switchable pad-mounted transformers, isolating a fault (even with fault indicators installed on the circuit) may require multiple steps, extending outage times for customers who could otherwise be restored more quickly. In areas with older transformers that cannot be isolated individually, crews must de-energize entire transformer strings, from riser to open point, to isolate the faulted transformer or cable section before re-energizing the healthy portion of the circuit. This can cause power interruptions to customers that would not have been impacted otherwise if a switchable transformer was present, especially at open point locations. Modern switchable transformers feature two medium-voltage switches, allowing the unit to be isolated upstream, downstream, or fully removed from the loop before disconnecting the elbow terminations. This budget item focuses on replacing certain live-front or older non-switchable transformers that lack this capability. Installing more switchable pad-mounted transformers in subdivisions enables faster power restoration for some of the affected customers. Under this budget item, new transformers will specifically be installed in areas not currently slated for future subdivision rebuilds, but rather at dedicated locations to aid in sectionalizing subdivision loops for increased operational flexibility. Historically, London Hydro has replaced older non-switchable transformers with switchable units, typically 5-6 units per year. After pausing the program for two years due to higher expenses in other areas, this project will continue in future years at a more consistent and accelerated pace to enhance overall system reliability and outage restoration (up to 10-15 units per year).
Risks/Factors that Affect Timing & Mitigation	The primary risk to project completion is resource availability. When necessary, London Hydro supplements its workforce with contract resources to complete transformer replacements. Since transformer costs and lead times have become more unpredictable in the post-COVID environment, London Hydro mitigates potential delays through proactive planning and early procurement strategies.

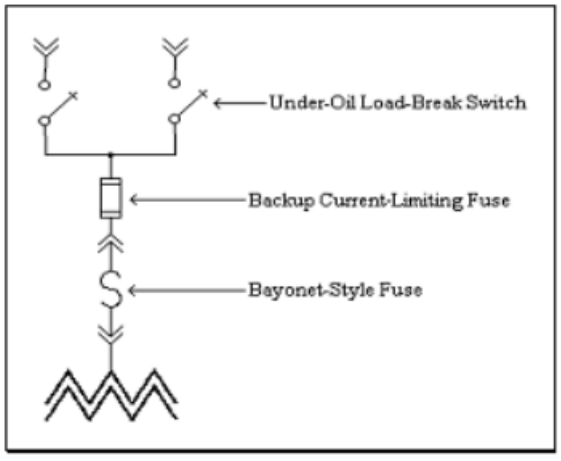
Capital Project Summary Sheet: System Renewal

Project Number:	B11
Project Name:	Switchable Transformers Outage Restoration Improvements
Timing:	January 1, 2026 - December 31, 2031

Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Efficiency			**Cost**	
	Customer Value	**Historical Years**	**2022**	$39,327	
	Safety		**2023**	$45,955	
			2024	$0	
Alternatives Considered:			**2025**	$0	**Total Historical Costs**
The alternative of continued maintenance and deferring replacement was rejected, as continued operation of deteriorated equipment would increase the risk of failure, reduce system performance and reliability, and increase safety risks.		(bridge yr)	**2026**	$200,000	**$285,282**
		Forecast Years	**2027**	$210,000	
			2028	$217,800	
			2029	$225,900	
			2030	$234,300	**Total Forecast Costs**
			2031	$243,000	**$1,131,000**
LH Project Driver:	REL	**LH Section #**			145

ADDITIONAL PROJECT INFORMATION

Internal Electrical Arrangement of Fusing and Switching Elements



London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	B11
Project Name:	Switchable Transformers Outage Restoration Improvements
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Combining fault indicators with switchable transformers in the underground distribution system enables shorter outages and minimizes customer impact.
Safety	Safety is improved by removing deteriorating or live-front units from service and replacing them with dead-front switchable transformers.
Environmental Benefits	While there are no direct environmental benefits, reduced troubleshooting time decreases truck operation, leading to lower gas emissions.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal and modernization of deteriorating legacy distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	B11
Project Name:	Switchable Transformers Outage Restoration Improvements
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY

	Reliability	Safety	Environment	Capacity	Efficiency
Ranking Factors & Weighting	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	4	1	1	4	8

Ranking Rationale

Reliability:	moderate impact since outages are of longer duration in the absence of fault indicators
Safety:	low impact because no consequence to safety
Environment:	low impact because no consequence to environment
Capacity:	moderate impact since lack of fault indicators would not greatly affect system capacity
Efficiency:	high impact because system efficiency would increase greatly with shorter troubleshooting times

Blended Health Index Derating Project Ranking	85%
Final Project Score	34

PROJECT REVIEW AND APPROVAL

Prepared By:	Cristina Terek, P.Eng. Senior Engineer Asset Management
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Renewal

Project Number:	B12
Project Name:	Three-Phase Customer Rebuilds
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	2024 Asset Condition Assessment (ACA) - December 2024 (Section 6 Appendix A) Asset Sustainment Plan: 2026 to 2035 - June 2025 (Section 6)
Project Overview:	In alignment with the asset management principles employed in residential subdivisions (Project B2), London Hydro needs to apply similar methodologies to three-phase underground cable supplies, typically feeding commercial and industrial customers or large residential apartments. This is especially important as London Hydro has been experiencing multiple outages on older three-phase underground cables and transformers. Lack of ducts in the aged three-phase system, which are typically also radially fed where no backup supply exists, lead to very long outage times (up to 10 hours or longer), because the fault needs to be located and repaired before re-energization. Furthermore, repeated failures that typically occur in at-risk aged systems means multiple prolonged outages for customer over subsequent years, until areas can be scheduled for a full rebuild. While such outages do not usually affect the overall reliability of the system due to the lower metered customer count, many times they affect a large number of people, such as an apartment building or a mall/plaza, or more significantly they affect businesses that must shutdown their operations due to the lack of power. The commercial customer segment is of great importance to the economics of the City of London, and London Hydro is shifting focus on the investments and capital resources necessary to also address aged or underperforming assets supplying these customers, compared to the previous years. This budget item covers polymeric cable replacement (and duct installation where necessary) for three-phase customers. Areas are prioritized based on historical cable failures, asset health index, and customer risks. Furthermore, to avoid prolonged unplanned interruptions in subsequent years, other aged assets (such as costly three-phase transformers) will also be coordinated for replacement. Historically, London Hydro aimed to replace 1.6 circuit-km of three-phase underground cablea annually; however, due to higher expenses in other underground rebuild areas, and increased costs of three-phase assets post-COVID, scope had been reduced significantly prior to 2026 to an average of 0.5 circuit-km in recent years. These projects have also proven to be far more expensive per km of rebuild due to the expense of relocating directional drilling equipment from one site to another very frequently. In order to purposely support the important commercial customer base, London Hydro will invest, over the next five years, sufficient funds to support an accelerated pace of underground rebuild for an estimated 1.5-2 circuit km per year. This will not only enhance overall customer reliability for three-phase customers but will address the backlog of aged three-phase systems that are already deteriorated.
Risks/Factors that Affect Timing & Mitigation	The primary risks to project execution are the availability of internal and contractor resources, material procurement lead times, and coordination with other capital and third-party infrastructure projects. These risks are mitigated through proactive resource planning, the use of external engineering and construction support where appropriate, regular coordination between Engineering and Operations, integration with municipal and utility work programs, and early procurement of long-lead materials. Since 2021, material availability has become an increasing concern, making advance procurement and ongoing supplier engagement an important component of project delivery.

Capital Project Summary Sheet: System Renewal

Project Number: B12

Project Name: Three-Phase Customer Rebuilds

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Customer Value			**Cost**	
		Historical Years	**2022**	$160,004	
			2023	$220,784	
			2024	$144,407	
Alternatives Considered:			**2025**	$108,497	**Total Historical Costs**
Do nothing, however, commercial customers usually supplied by radials have longer outages; most faults in the underground system are permanent and repairs can last extended periods of time, thereby justifying the project scope over the option of doing nothing.		(bridge yr)	**2026**	$787,000	**$1,420,692**
		Forecast Years	**2027**	$1,595,000	
			2028	$1,654,000	
			2029	$1,715,200	
			2030	$1,778,700	**Total Forecast Costs**
			2031	$1,844,500	**$8,587,400**
LH Project Driver:	REL	**LH Section #**			145

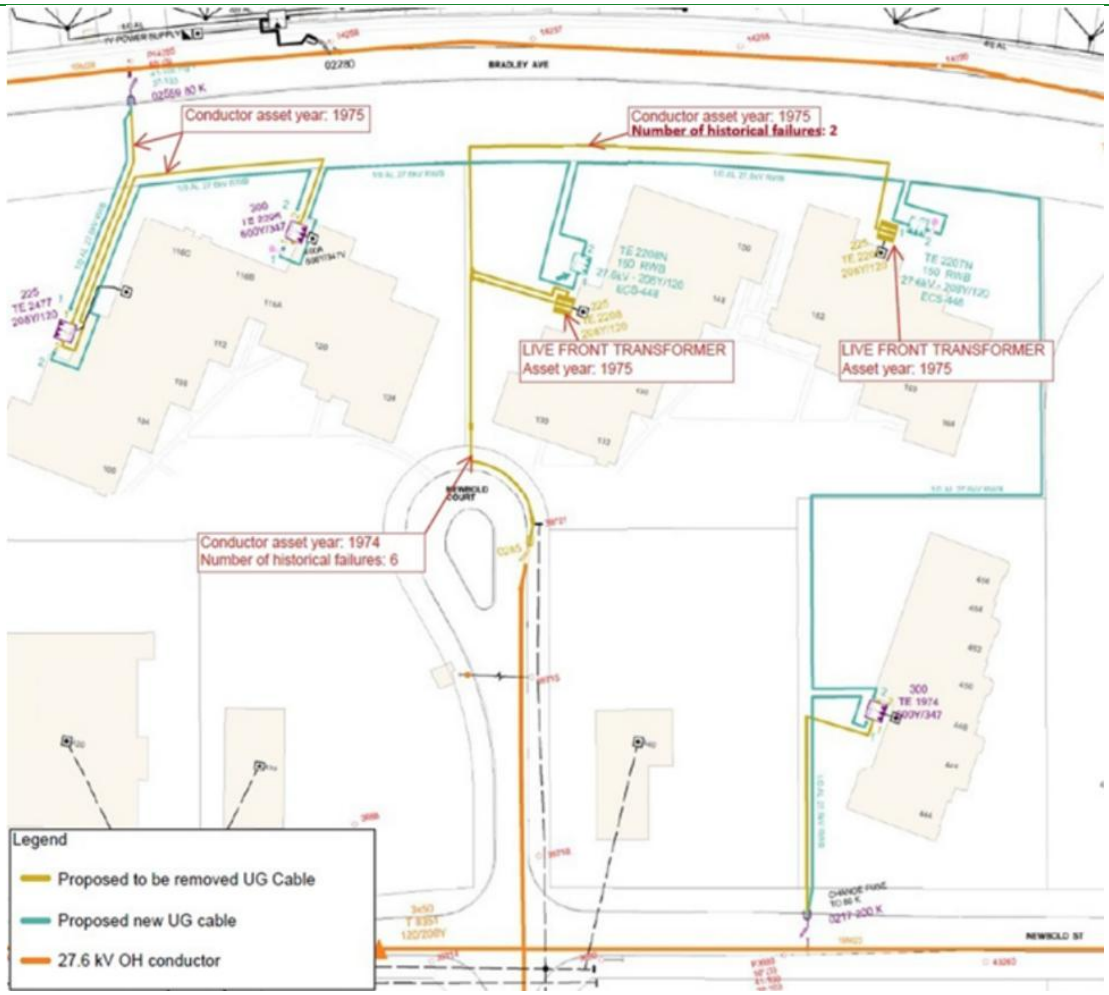
ADDITIONAL PROJECT INFORMATION

Ducted cable installation



Capital Project Summary Sheet: System Renewal

Project Number:	B12
Project Name:	Three-Phase Customer Rebuilds
Timing:	January 1, 2026 - December 31, 2031



The example project is of an existing underground three-phase electrical distribution system supplying several commercial properties. Assets in the area are past end-of-life, have experienced several failures in recent years, and also contain aged and deteriorated live-front assets. A rebuild in this area is imperative to improve customer reliability supplied by this system, given the prolonged outage durations experienced to-date with previous failures.

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	B12
Project Name:	Three-Phase Customer Rebuilds
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Asset renewal is achieved by replacing the old, deteriorated cable supplying commercial services. Also, by installing duct where the original cable was direct buried, the ducted systems will provide the opportunity for quicker power restoration in the future, by pulling new cable in the event of a permanent fault in the underground system, which takes longer to repair.
Safety	Not Applicable
Environmental Benefits	There is no direct environmental benefit. However, shorter power restoration reduces crew time spent in the field and hence, reduced emissions from operating trucks.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal and modernization of deteriorating legacy distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number: B12

Project Name: Three-Phase Customer Rebuilds

Timing: January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	4	1	1	1	4

Ranking Rationale	
Reliability:	moderate impact since reliability is usually not highly impacted from one customer outage
Safety:	low impact since there is no consequence
Environment:	low impact since there is no consequence
Capacity:	low impact since there is no consequence
Efficiency:	moderate impact because supply would be more efficient when ducted services present

Blended Health Index Derating Project Ranking	85%
Final Project Score	24

PROJECT REVIEW AND APPROVAL	
Prepared By:	Ali Juma, P.Eng. Manager Eng System Reliability
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Renewal

Project Number:	C1
Project Name:	Main Feeders
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	2023 System Planning Report - Load Growth Study 2024 London Area Needs Assessment (Hydro One) 2025 London Area Scoping Assessment Outcome Report (IESO) 2026 Distribution System Plan (DSP), Section 5.3.2c, Supply Capacity and Utilization
Project Overview	Historically, capital investment in this asset category has focused primarily on the replacement of station egress and main feeder underground cables based on asset condition, reliability performance, and risk. This investment strategy will continue throughout the planning period. Using the results of ongoing inspections, condition assessments, and asset health evaluations, London Hydro will continue to proactively identify, prioritize, and replace deteriorated station egress and main feeder cables before failure. These investments improve system reliability, reduce the risk of feeder-wide outages, and minimize customer service interruptions while extending the service life of critical distribution infrastructure. In addition to these asset renewal requirements, projected customer growth and increasing electricity demand across London Hydro's service territory require the construction of two new 27.6 kV distribution feeders utilizing the remaining spare breaker positions at Talbot TS and Nelson TS. As discussed in Section 5.3.2c of the 2026 Distribution System Plan (DSP), continued load growth is increasing feeder and station utilization and driving the need for additional feeder capacity to maintain reliable service. The new feeders will enhance system capacity, grid resiliency, operational flexibility, and reliability by distributing customer load across a greater number of feeders, improving utilization of available station capacity, and increasing feeder interconnections. These investments will enable greater load transfers between feeders during planned maintenance, equipment failures, and other contingency events, thereby reducing customer outage impacts and supporting future system growth. Detailed planning and engineering design for the two new feeders is scheduled for 2026 and 2027, with construction anticipated over the 2028 to 2029 period.
Risks/Factors that Affect Timing & Mitigation	Key risks that could significantly impact this project include unknown underground conditions, such as collapsed ducts, unforeseen City of London projects, and coordination challenges with CPR. Should these issues arise, alternative routes will need to be reassessed.

Capital Project Summary Sheet: System Renewal

Project Number: C1

Project Name: Main Feeders

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Customer Value			**Cost**	
	Econ. Dev.	**Historical Years**	**2022**	$646,972	
	Safety		**2023**	$83,678	
			2024	$506,566	
Alternatives Considered:			**2025**	$32,466	**Total Historical Costs**
The alternative of not constructing the new feeders was rejected because it would increase risks to electricity supply capacity and system reliability, while limiiting future economic development.		(bridge yr)	**2026**	$30,000	**$1,299,681**
		Forecast Years	**2027**	$900,000	
			2028	$2,105,000	
			2029	$2,182,900	
			2030	$112,900	**Total Forecast Costs**
			2031	$117,100	**$5,417,900**
LH Project Driver:	RNF	LH Section #			140

ADDITIONAL PROJECT INFORMATION

N/A

EVALUATION CRITERIA AND INFORMATION

Efficiency, Customer Value, Reliability	The construction of new main distribution feeders increases system capacity, improves feeder load balancing, enhances operational flexibility, and strengthens grid resiliency by enabling greater load transfers during planned maintenance and contingency events. These investments reduce the likelihood and impact of customer outages while supporting projected customer growth. Replacement of deteriorated station egress and main feeder cables further improves reliability by reducing the risk of cable failures, minimizing prolonged outages, and avoiding higher emergency repair costs through planned asset renewal.
Safety	Replacement of aging underground cables reduces the risk of asset failures and improves the safety of field personnel by decreasing the likelihood of emergency repairs and unplanned work on deteriorated infrastructure. Overall, the project provides a modest improvement to worker and public safety.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable

Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	Supports London Hydro's statutory obligation to provide safe, reliable, and adequate electricity service by maintaining critical distribution infrastructure and providing sufficient feeder capacity to accommodate customer growth and new customer connections. These investments also support continued economic development by ensuring the distribution system can reliably serve future residential, commercial, and industrial growth.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Non-Wires Solutions (NWS) were considered but are not a viable alternative for this project. The primary drivers are the replacement of deteriorated station egress and main feeder cables to address asset condition and reliability risks, together with the construction of new distribution feeders to provide permanent system capacity, operational flexibility, and support projected customer growth. NWS cannot replace deteriorated infrastructure or provide the permanent feeder capacity and network configuration required to maintain reliable service and accommodate future load growth. Accordingly, traditional wires-based investments represent the appropriate and prudent solution.
BCA Pre-assessment	Not Applicable. As NWS was determined during the preliminary screening to be technically unsuitable for addressing the underlying asset renewal, reliability, and permanent capacity requirements, a BCA was not warranted.

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	C1
Project Name:	Main Feeders
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY

	Reliability	Safety	Environment	Capacity	Efficiency
Ranking Factors & Weighting	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	8	2	1	10	9

Ranking Rationale

Reliability:	extreme impact since equipment faults on the main circuit can affect several thousand customers. Additional feeders improve system resilience by enhancing feeder diversity and transfer capability, thereby reducing outage duration
Safety:	moderate impact as a safety consequence
Environment:	low impact as there is no consequence
Capacity:	extreme impact since main feeders enable load balancing and transfer capability for better utilization of feeder and station available capacity
Efficiency:	extreme impact since it maintains operational flexibilty with diversity of ties and improved station balance

Blended Health Index Derating Project Ranking	95%
Final Project Score	55

PROJECT REVIEW AND APPROVAL

Prepared By:	Adrian Lattanzio, P.Eng. Manager Eng System Planning
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Renewal

Project Number:	C4
Project Name:	New Main Feeder Ties
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	2023 System Planning Report - Load Growth Study 2024 London Area Needs Assessment (Hydro One) 2025 London Area Scoping Assessment Outcome Report (IESO) 2026 Distribution System Plan (DSP), Section 5.3.2c, Supply Capacity and Utilization
Project Overview:	Constructing distribution main feeder ties improves the reliability, resiliency, and operational flexibility of the electrical distribution system. By interconnecting feeders, these ties enable load transfers during outages, maintenance activities, or contingency events, reducing the number of affected customers and shortening outage durations. Feeder ties also enhance system balancing and optimize capacity utilization, supporting more efficient management of peak demand and network constraints. Overall, they strengthen the distribution network, facilitate faster service restoration, and improve the quality and reliability of service delivered to customers. Section 5.3.2c of the 2026 DSP provides details for available capacity and utilization at the stations and feeders. Historical budgets have varied in response to changing priorities, system resiliency requirements, and the need to effectively manage associated risks and financial constraints. Continuous monitoring of feeder reliability, performance, and growth trends within the municipality supports proactive planning and investment decisions in this area. However, planning requirements can also become reactive when faced with unforeseen municipal development, rapid load growth, or significant increases in demand from large customers. The following projects are currently planned for implementation between 2026 and 2031. Project timing, scope, sequencing, and execution priorities may be adjusted over the planning period in response to changing system needs, coordination opportunities, unforeseen circumstances, or other operational considerations. • Construct a feeder tie between 26M13 and 26M56 near the intersection of Sunningdale Road and Hyde Park Road. • Construct a feeder tie between 26M21 and 26M56 across the Medway River on Sunningdale Road, coordinated with the City of London's planned road widening project. • Phase 1 – Colonel Talbot Expansion: Upgrade an existing 8.32 kV feeder to 27.6 kV along Colonel Talbot Road between Highway 402 and Highway 401. • Phase 2 – Colonel Talbot Expansion: Upgrade an existing 8.32 kV feeder to 27.6 kV from White Oaks Road to Colonel Talbot Road to establish a feeder tie between 32M1 and 32M6. • Reconductor a section of the Adelaide Road feeder between Grenfell Drive and Sunningdale Road. • Construct a feeder tie between 26M12 and 70M4 near the intersection of Sunningdale Road and Highbury Avenue. • Complete additional ancillary feeder tie and reconductoring projects as required to support system reliability, operational flexibility, and capacity.

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	C4
Project Name:	New Main Feeder Ties
Timing:	January 1, 2026 - December 31, 2031

Risks/Factors that Affect Timing & Mitigation	Key project risks include unknown underground conditions, unforeseen City projects requiring coordination, and constraints associated with conservation authorities or environmentally sensitive areas that may require alternative routing.				
Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Customer Value			**Cost**	
	Econ. Dev.	**Historical Years**	**2022**	$1,392,567	
			2023	$81,102	
			2024	$74	
Alternatives Considered:			**2025**	$19,993	**Total Historical Costs**
The alternative of not constructing the feeder ties was rejected because it would increase risks to electricity supply capacity and system reliability, while limiting future economic development.		(bridge yr)	**2026**	$450,000	**$1,943,736**
		Forecast Years	**2027**	$1,150,000	
			2028	$500,000	
			2029	$200,000	
			2030	$1,080,000	**Total Forecast Costs**
			2031	$210,000	**$3,140,000**
LH Project Driver:	RNF	**LH Section #**			140

ADDITIONAL PROJECT INFORMATION

N/A

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	C4
Project Name:	New Main Feeder Ties
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Adding main feeder ties improves system reliability and customer value by reducing the risk of prolonged outages and increasing system capacity to support future economic development and municipal growth initiatives. Furthermore, the increased operational flexibility results in improved operational efficiency and system resilience.
Safety	Not Applicable
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Non-Wires Solutions (NWS) are not suitable for this type of project, as the primary project drivers are system reliability and capacity. These objectives require permanent infrastructure upgrades that NWS cannot adequately provide.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number: C4

Project Name: New Main Feeder Ties

Timing: January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY

	Reliability	Safety	Environment	Capacity	Efficiency
Ranking Factors & Weighting	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	8	1	1	10	9

Ranking Rationale

Reliability:	extreme impact since equipment failure on the main circuit can affect thousands of customers and ties enable reduction in outage duration due to enhanced feeder transfer capability
Safety:	low impact as there is no consequence
Environment:	low impact as there is no consequence
Capacity:	extreme impact since feeder ties enable load balancing and feeder transfer capability for better utilization of feeder and station available capacity
Efficiency:	extreme impact since it maintains operational flexibilty with diversity of ties and improved station balance

Blended Health Index Derating Project Ranking	95%
Final Project Score	52

PROJECT REVIEW AND APPROVAL

Prepared By:	Adrian Lattanzio, P.Eng. Manager Eng System Planning
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Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Renewal

Project Number:	F1
Project Name:	Replacement of Network Vaults, Manholes, Transformers
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	2024 Asset Condition Assessment (ACA) - December 2024 (Section 7 Appendix A) Asset Sustainment Plan: 2026 to 2035 - June 2025 (Section 7) Condition Assessment Report 2025 Maintenance Holes and Vault Chambers, AECOM - November 2025
Project Overview:	The 2024 Asset Condition assessment has identified a multitude of civil structures that reached or surpassed the Typical Useful Life (TUL) of 80 years of age, which was adopted based on best industry practice and empirical data. Also, many of these structures have a Health Index less than 50% (they are in the poor health category). AECOM, a local reputable structural engineering firm was contracted in 2025 to assess the condition of 66 maintenance holes and vaults that have surpassed a service life of 75 years. These structures were inspected and ranked for reconstruction/monitoring in accordance with multiple criteria: age, overall condition (based on the condition of their roof slab, walls and floors), notable localized deterioration, as well as structure type and location, with the ones in the major roadway elevating their ranking, as well as for very few masonry type structures. A comprehensive 10-year plan of replacement and monitoring was submitted to London Hydro that was addressing up to seven structures per year, and it was very front-loaded in expenditures. Given the costs and the complexity of these large projects, mostly located downtown with heavy traffic conditions, London Hydro and AECOM revisited the plan to come up with a reduced average annual expenditure and achieve the same number of structure replacements over the 10-year work plan, while balancing affordability and safety considerations. London Hydro is prepared to allocate the necessary resources to follow this plan, to ensure the assets renewal is carried out in a timely manner without compromising reliability or safety. The pace of civil structure reconstruction proposed by AECOM is higher than historical levels, and the increased funding proposed is required to achieve this plan. This project scope includes the design and installation of structural components such as concrete maintenance holes (MH), vaults (VT), roof slabs, and steel vault grating, along with the replacement of network transformers (NT), protectors, and other related electrical equipment. Secondary visual isolation switches will also be added on the spot network for improved safety.
Risks/Factors that Affect Timing & Mitigation	The primary risk to completion is resource availability. To mitigate this, engineering and operations teams will coordinate closely to identify projects requiring external support and secure contractor resources well in advance of project start dates.

Capital Project Summary Sheet: System Renewal

Project Number:	F1
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Primary Driver:	Safety	**Historical & Forecast Project Costs**			
Other Drivers:	Reliability			**Cost**	
	Efficiency	**Historical Years**	**2022**	$551,299	
			2023	$466,018	
			2024	$604,400	
Alternatives Considered:			**2025**	$398,746	**Total Historical Costs**
London Hydro engineers do not have in-house expertise regarding civil work. Civil engineering consultants have been contracted to advise on the state of this infrastructure and have made recommendations that need to be followed to ensure safety and reliability of the infrastructure.		(bridge yr)	**2026**	$1,110,000	**$3,130,463**
		Forecast Years	**2027**	$1,580,000	
			2028	$2,662,000	
			2029	$2,262,950	
			2030	$2,289,600	**Total Forecast Costs**
			2031	$3,044,300	**$11,838,850**
LH Project Driver:	SAF	**LH Section #**			141

Capital Project Summary Sheet: System Renewal

Project Number:	F1
Project Name:	Replacement of Network Vaults, Manholes, Transformers
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION

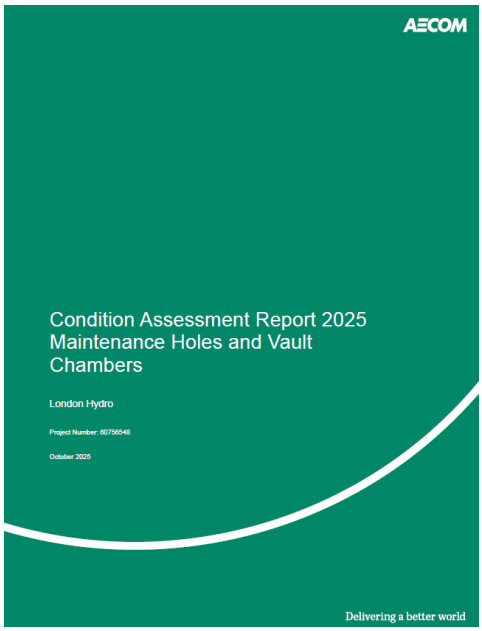


Table 3. Structure Rating System

RATING		DETAILED DESCRIPTION OF COMPONENT CONDITION
NUMERIC	GENERAL QUALITATIVE DESCRIPTION	
5	Excellent	• New (as constructed) condition.
4	Good	• The structure has been in service for several years. • Initial signs of defects may be visible. • Condition is acceptable and the element is functioning as intended. • Components can be upgraded to new condition with little effort. • No repairs required for the foreseeable future.
3	Fair	• Acceptable condition and components generally functioning as intended. • Signs of defects are visible. • Rehabilitation should be considered (medium priority repairs). • Ideal time to schedule repairs from an economic perspective.
2	Poor	• Some presence of distress or deterioration is evident. • Element is not functioning as intended. • High priority for rehabilitation or replacement of components. • Structure may require continued observation until work is completed.
1	Critical	• Severe defects are visible. • Risk of collapse and/or danger to public/network • Presence of distress or deterioration is evident. • A very high priority should be placed on rehabilitation or replacement. • Structure may require continued observation until work is completed.

In 2026, two maintenance holes - structure 434 (age 97) and 254 (age 96) - will be rebuilt, and NT 47 (age 25, but severely deteriorated due to environmental conditions) will be replaced.

In 2027, two maintenance holes - structure 599 (age 87) and 253 (age 96) and vault 07 (age 95) - will be rebuilt, NT 107 (age 36) will be replaced.

The following 4 years will see the reconstruction of an additional 20 manholes and a second vault, which work will prevent any structure to surpass 100 years of age, the absolute anticipated service life as defined by AECOM in their report.

MH 434 - Wall



MH 254 - Risers



Capital Project Summary Sheet: System Renewal

Project Number:	F1
Project Name:	Replacement of Network Vaults, Manholes, Transformers
Timing:	January 1, 2026 - December 31, 2031

MH 599 - Wall



MH 253 - Wall



Vault 07 - Wall



Vault 07 - Soffit



London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	F1
Project Name:	Replacement of Network Vaults, Manholes, Transformers
Timing:	January 1, 2026 - December 31, 2031

NT 47





AECOM's 10-Year Work Plan:

No.	Structure No.	Installed Date	Age (2025)	Depth (m)	Ring and Lid Overall Condition	Roof Slab Overall Condition	Wall Overall Condition	Floor Overall Condition	Structure Overall Condition	Any Severe Localized Defect (Y/N)	In Main Road or Intersection (Y/N)	Type of Wall (Concrete/ Masonry)	Rehab/ Replacement/ Monitor	Construction Cost
Year 1 Work Plan (2026)														
1	434	1928	97	2.6	4	5	2	3	3.5	No	Yes	Concrete	Replace	$407,000
2	254	1929	96	2.3	2	3	3	3	2.9	No	Yes	Concrete	Replace	$390,500
														$797,500
Year 2 Work Plan														
3	599	1938	87	1.8	3	4	2	3	3	Yes	Yes	Masonry	Replace	$363,000
4	253	1929	96	2.4	2	3	3	3	2.9	No	Yes	Concrete	Replace	$396,000
5	Vt. 7	1930	95	3.5	N/A	3	3	3	2.97	Yes	No	Concrete	Replace	$951,500
														$1,710,500
Year 3 Work Plan														
6	192	1936	89	2.2	2	3	2	3	2.5	No	No	Concrete	Replace	$385,000
7	266	1950	75	2.2	4	3	3	3	3.1	No	Yes	Masonry	Replace	$385,000
8	250	1929	96	0.8	3	3	3	3	3	No	Yes	Concrete	Replace	$308,000
9	252	1929	96	2.3	3	3	3	3	3	No	Yes	Concrete	Replace	$390,500
10	97	1930	95	2.2	2	4	3	3	3.3	No	No	Concrete	Replace	$385,000
11	Vt. 67	1935	90	2.66	N/A	3	3	3	2.97	No	No	Concrete	Replace	$905,300
														$2,948,800
Year 4 Work Plan														
12	194	1936	89	2.4	2	3	3	3	2.9	Yes	No	Concrete	Replace	$396,000
13	148	1939	86	2.1	2	3	3	3	2.9	Yes	Yes	Concrete	Replace	$379,500
14	470	1947	78	2.37	4	3	2	3	2.7	No	Yes	Concrete	Replace	$394,350
15	98	1950	75	2.2	3	4	3	3	3.4	No	No	Masonry	Replace	$385,000
16	251	1929	96	2.4	3	4	3	3	3.4	No	Yes	Concrete	Replace	$396,000
														$1,950,850
Year 5 Work Plan														
17	352	1930	95	2	5	4	2	3	3.2	No	No	Concrete	Replace	$374,000
18	337	1948	77	2.2	4	5	2	3	3.5	Yes	Yes	Concrete	Replace	$385,000
19	466	1929	96	2.35	4	4	3	3	3.5	No	No	Concrete	Replace	$393,750
20	500	1931	94	1.74	3	3	3	3	3	Yes	Yes	Concrete	Replace	$359,700
21	90	1930	95	2	4	3	3	3	3.1	No	No	Concrete	Replace	$374,000
														$1,885,950
Year 6 Work Plan														
22	390	1949	76	2.2	3	3	3	3	3	No	No	Concrete	Replace	$385,000
23	479	1941	84	4.5	3	3	3	3	3	Yes	Yes	Concrete	Replace	$511,500
24	273	1945	80	2.1	3	3	3	3	3	No	Yes	Concrete	Replace	$379,500
25	565	1947	78	2.2	3	3	3	3	3	No	No	Concrete	Replace	$385,000
26	389	1949	76	2.15	3	3	3	3	3	No	No	Concrete	Replace	$382,250
														$2,043,250

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	F1
Project Name:	Replacement of Network Vaults, Manholes, Transformers
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	The downtown duct and maintenance hole network system is being gradually reconfigured to meet changing load requirements. Network transformers are refurbished during vault work to enhance reliability or removed entirely when system efficiency improvements warrant it.
Safety	This project ensures that underground structures remain safe for workers performing maintenance and for pedestrians and vehicles traveling above them.
Environmental Benefits	Direct environmental benefits of this project include the removal of paper-insulated lead-covered (PILC) cables, which are obsolete and pose safety and environmental risks.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal and modernization of deteriorating legacy distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	F1
Project Name:	Replacement of Network Vaults, Manholes, Transformers
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY

	Reliability	Safety	Environment	Capacity	Efficiency
Ranking Factors & Weighting	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	9	10	6	5	5

Ranking Rationale

Reliability:	extreme impact because the secondary grid supplies downtown high-profile customers; multiple primary circuits and can impact many commercial customers and the normal system operation
Safety:	extreme impact because the integrity of the manhole and duct system is critical to system operation; also there is a high risk to public safety if structures collapsed
Environment:	large impact because of concern from network transformer potential oil leaks
Capacity:	large impact because the integrity of the grid provides vital capacity in the system
Efficiency:	large impact because efficiency is influenced by a reliable downtown grid

Blended Health Index Derating Project Ranking	85%
Final Project Score	93

PROJECT REVIEW AND APPROVAL

Prepared By:	Cristina Terek, P.Eng. Senior Engineer Asset Management
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
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Capital Project Summary Sheet: System Renewal

Project Number:	F2
Project Name:	Replacement of Primary & Secondary Cables
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	2024 Asset Condition Assessment (ACA) - December 2024 (Section 6 Appendix A) Asset Sustainment Plan: 2026 to 2035 - June 2025 (Sections 6 and 17)
Project Overview:	London Hydro operates over 2000 kilometers of underground primary cable within its distribution system, along with an extensive network of low-voltage residential secondary cables (aprox. 4000 km), including those in the downtown service area (main and service cables). While ongoing capital projects address cable assessment and replacement, some cables fail unexpectedly and must be replaced immediately. This project allocates funding only to support those urgent reactive replacements. In addition, when primary cables fail and are isolated for repair, London Hydro conducts comprehensive diagnostic testing using VLF Tan-Delta technique, to better assess the condition of the asset. If test results are acceptable, the repaired cable may be returned to service; however, poor test results or recurring faults in the same segment indicate the need for replacement to maintain system reliability. Although past budgets were sufficient to address necessary faulted cable scenarios and the number of cable faults has not significantly increased, incidents of copper theft are on the rise. Additional necessary funding has been included in the next DSP to also cover the replacement of increasingly stolen copper, bringing the forecasted costs above the historical ones. In the next five years, the program will focus on emergency primary cable replacements, reliability-driven primary cable replacements, secondary cable fault repairs, and copper theft remediation in manholes. What contributes to higher per unit costs is that the directional drilling process associated with these cable replacements is significantly more expensive than cable rebuild in large underground subdivisions, due to the relocation of the machinery very frequently with every fault site repair.
Risks/Factors that Affect Timing & Mitigation	Risks to project completion are minimal. An inventory of spare materials is maintained based on historical data, and labour resources are prioritized according to the operational risk posed by potential cable failures.

Capital Project Summary Sheet: System Renewal

Project Number: F2

Project Name: Replacement of Primary & Secondary Cables

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Efficiency			**Cost**	
		Historical Years	**2022**	$593,165	
			2023	$431,959	
			2024	$676,988	
Alternatives Considered:			**2025**	$1,142,010	**Total Historical Costs**
		(bridge yr)	**2026**	$1,075,000	**$3,919,121**
		Forecast Years	**2027**	$1,124,000	
			2028	$1,149,000	
The "do nothing" alternative was rejected due to the increased risk it would pose to supply reliability.			**2029**	$1,191,500	
			2030	$1,235,600	**Total Forecast Costs**
			2031	$1,281,300	**$5,981,400**
LH Project Driver:	REL	**LH Section #**			150

ADDITIONAL PROJECT INFORMATION

PILC cable failure



London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	F2
Project Name:	Replacement of Primary & Secondary Cables
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Replacing failed cables ensures that customers receive a reliable supply of electricity.
Safety	Not Applicable
Environmental Benefits	The failed cables being replaced often contain lead, whereas the new cables are lead-free.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal and modernization of deteriorating legacy distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	F2
Project Name:	Replacement of Primary & Secondary Cables
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	This project was not ranked because the expenditures are primarily allocated to repair faults that are required for the restoration of power.
Safety:	
Environment:	
Capacity:	
Efficiency:	

Blended Health Index Derating Project Ranking	N/A
Final Project Score	N/A

PROJECT REVIEW AND APPROVAL	
Prepared By:	Ali Juma, P.Eng. Manager Eng System Reliability
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Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Renewal

Project Number:	F4
Project Name:	Explosion-Limiting Maintenance Hole Covers
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	Explosion-Limiting Manhole Covers (F4) - Retrofit program
Project Overview:	Maintenance hole explosions are low-probability but high-impact events. The energy released during a major explosion can propel an 80-kilogram cast-iron manhole cover 15 meters or more. These incidents are typically caused by the ignition of combustible gases that accumulate in manholes due to overheated cable insulation or external sources such as natural gas leaks or discarded chemicals. In some cases, high-current electrical arcing can also trigger explosions even in the absence of combustible gases. To mitigate the potential impact of manhole explosions, London Hydro has, in recent years, installed specially designed manhole covers that allow for controlled pressure release in the event of an explosion. A specific type of explosion-limiting manhole cover, known as Swiveloc, was initially used for cover replacements. This was later followed by a newer design called Burrloc, which addressed issues related to the latching mechanism seizing which occurred under certain weather conditions. Potential maintenance hole explosions pose a significant safety risk to both vehicles and pedestrians, regardless of location. To date, London Hydro has installed over 300 explosion-limiting manhole covers, primarily in the downtown core where pedestrian and traffic volumes are the highest. These installations have successfully reduced the consequences of potential maintenance hole explosions and have demonstrated the effectiveness of the technology. The historical deployment focused on the highest-priority locations and established a foundation for broader implementation. The forecast investment reflects a transition from targeted deployment to a more comprehensive risk mitigation strategy across the distribution system. Future expenditures will support the replacement of the remaining maintenance hole covers in the downtown area and the progressive expansion of explosion-limiting covers throughout the city. This program will provide a more consistent level of public and worker safety across the network, reduce the potential consequences of maintenance hole explosions, and improve asset security by limiting unauthorized access to underground structures and reducing opportunities for copper theft. The increased investment is therefore driven by the broader scale of implementation required to extend these safety and security benefits across London Hydro’s maintenance hole network.
Risks/Factors that Affect Timing & Mitigation	The risks to project completion are minimal. A materials standard has been approved by the Standards department, and the installation of the new covers requires only a small amount of labour.

Capital Project Summary Sheet: System Renewal

Project Number: F4

Project Name: Explosion-Limiting Maintenance Hole Covers

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Safety	**Historical & Forecast Project Costs**			
				Cost	
		Historical Years	**2022**	$117,099	
			2023	$39,157	
			2024	$1,486	
Alternatives Considered:			**2025**	$0	**Total Historical Costs**
		(bridge yr)	**2026**	$100,000	**$257,742**
No alternative adequately addresses the inherent public safety risks posed by such installations.		**Forecast Years**	**2027**	$105,000	
			2028	$108,900	
			2029	$112,900	
			2030	$117,100	**Total Forecast Costs**
			2031	$121,400	**$565,300**
LH Project Driver:	SAF	**LH Section #**			150

ADDITIONAL PROJECT INFORMATION

Burrloc cover



London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	F4
Project Name:	Explosion-Limiting Maintenance Hole Covers
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Not Applicable
Safety	In the event of a maintenance hole explosion, public safety will be protected.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal and modernization of deteriorating legacy distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number: F4

Project Name: Explosion-Limiting Maintenance Hole Covers

Timing: January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	1	10	1	1	1

Ranking Rationale	
Reliability:	low impact because there is no consequence
Safety:	extreme impact because employee and public safety risks from explosions and covers being lifted are highly mitigated by the new covers
Environment:	low impact because there is no consequence
Capacity:	low impact because there is no consequence
Efficiency:	low impact because there is no consequence

Blended Health Index Derating Project Ranking	85%
Final Project Score	49

PROJECT REVIEW AND APPROVAL	
Prepared By:	Cristina Terek, P.Eng. Senior Engineer Asset Management
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Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Renewal

Project Number:	G1
Project Name:	Replacement of Fully Deteriorated Poles
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	2024 Asset Condition Assessment (ACA) - December 2024 (Section 13 Appendix A) Asset Sustainment Plan: 2026 to 2035 - June 2025 (Section 13) Field Validation of the New Resistograph Testing Technology for Pole Replacement Decisions - March 2025
Project Overview:	London Hydro's wood pole replacement program is a condition-based System Renewal investment intended to address poles that have deteriorated to the point where replacement is required to maintain the safety, reliability and structural integrity of the overhead distribution system. The 2024 Asset Condition Assessment (ACA) identified a long-term renewal requirement for the aging wood pole population and forecasts an average requirement of more than 500 pole replacements annually over the next 10 years. This proposed replacement rate aligns with the annual requirements across all sections to address the aging of the assets. London Hydro traditionally tests up to approximately 5,000 utility-owned wood poles annually. The testing program targets poles reaching established inspection milestones, including poles that have been in service for 20 years, as well as poles identified for reinspection based on previous testing results. Pole strength testing will continue in accordance with London Hydro's established inspection cycle. Consistent with CAN/CSA C22.3 No. 1, Overhead Systems, wood poles determined to have 60% or less of their original strength are reinforced or replaced. London Hydro applies this criterion, together with inspection and condition information, to prioritize poles for replacement. Since 2023, London Hydro has used resistograph testing to assess the internal condition of its wood poles. The resistograph measures resistance to penetration at multiple locations around the pole and provides a more detailed assessment of internal deterioration and decay than the previously used sound-and-bore methodology. Under the previous methodology, approximately 1% of tested poles were typically identified for replacement; resistograph testing has identified approximately 3% as requiring replacement. This improved condition information has resulted in a higher number of deteriorated poles being identified and has informed the increased investment included in the DSP. Approximately 3,000 poles were tested in 2025, with roughly 3% identified for replacement. Testing is expected to return to approximately 5,000 poles annually, which may result in a corresponding increase in the number of poles identified for replacement. The proposed DSP funding provides for the anticipated level of condition-based renewal while recognizing that actual replacement quantities will continue to be informed by inspection/testing results. Replacing structurally deteriorated poles reduces the likelihood of pole failures and associated outages, infrastructure damage, and risks to workers and the public. Renewal also provides an opportunity to replace legacy installations in accordance with current design and construction standards. While primarily driven by asset condition and safety, the program also contributes to overhead system resiliency by reducing vulnerability associated with weakened poles exposed to severe weather, including high winds, ice loading and tree-related impacts. These benefits support London Hydro's broader approach to vegetation-related and severe-weather hazard mitigation by progressively strengthening the overhead system through planned, condition-based renewal.

Capital Project Summary Sheet: System Renewal

Project Number:	G1
Project Name:	Replacement of Fully Deteriorated Poles
Timing:	January 1, 2026 - December 31, 2031

Risks/Factors that Affect Timing & Mitigation	Risks to project execution are considered low, as this work forms part of an established renewal program that London Hydro has successfully delivered each year. Potential factors affecting timing include equipment availability and procurement lead times, coordination of planned outages and switching requirements, site conditions, and competing demands on internal or contractor resources. These risks are mitigated through advance material procurement, annual work planning and scheduling, and the use of qualified internal and contract resources.

Capital Project Summary Sheet: System Renewal

Project Number: G1

Project Name: Replacement of Fully Deteriorated Poles

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Safety	**Historical & Forecast Project Costs**			
Other Drivers:	Reliability			**Cost**	
		Historical Years	**2022**	$882,580	
			2023	$1,422,638	
			2024	$2,681,359	
Alternatives Considered:			**2025**	$2,128,908	**Total Historical Costs**
		(bridge yr)	**2026**	$2,115,000	**$9,230,485**
The alternative of continued maintenance and deferring replacement was rejected, as continued operation of deteriorated equipment would increase the risk of failure, reduce system performance and reliability, and increase safety risks.		**Forecast Years**	**2027**	$2,047,500	
			2028	$2,123,300	
			2029	$2,201,900	
			2030	$2,283,300	**Total Forecast Costs**
			2031	$2,367,800	**$11,023,800**
LH Project Driver:	SAF	**LH Section #**			132

ADDITIONAL PROJECT INFORMATION

60-year old pole removed



Capital Project Summary Sheet: System Renewal

Project Number:	G1
Project Name:	Replacement of Fully Deteriorated Poles
Timing:	January 1, 2026 - December 31, 2031

Over the course of the next five years, this capital project is planned to fund the replacement of deteriorated poles in two categories:

1) Poles identified for replacement in the previous year testing program (i.e. poles tested in 2025 to be replaced in 2026)

2) Poles tested in the current year that require immediate replacement due to safety concerns, referred to as “danger poles” (i.e. poles tested in 2026 that require replacement in the same year)

Several poles have been cut after replacement as an experiment to validate the effectiveness of the resistograph testing method. The results and accompanying photos confirm that their replacement was necessary.

Utility Pole Testing with Resistograph Technology



New pole cross-sectional area



Examples of poles cut after replacement





London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G1
Project Name:	Replacement of Fully Deteriorated Poles
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	This project directly enhances system reliability. Replacing deteriorated poles protects valuable assets supported by the pole, such as transformers and switches, and reduces the risk of power outages, thereby providing added value to customers.
Safety	This program focuses on replacing fully deteriorated poles, which are at a high risk of failure, particularly during severe weather conditions, which could endanger public safety.
Environmental Benefits	Replacing deteriorated poles before failure helps eliminate the environmental risk of oil leaks that could occur if pole-mounted transformers were to fall to the ground.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal and modernization of deteriorating legacy distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G1
Project Name:	Replacement of Fully Deteriorated Poles
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	7	9	5	1	1

Ranking Rationale	
Reliability:	large impact because a broken pole can create a large scale outage
Safety:	extreme impact because public safety is at high risk when a rotten wood pole fails in-service
Environment:	large impact because of risk of an oil leak if a pole mounted transformer is installed on a pole that fails
Capacity:	low impact because there is no consequence
Efficiency:	low impact because there is no consequence

Blended Health Index Derating Project Ranking	95%
Final Project Score	62

PROJECT REVIEW AND APPROVAL	
Prepared By:	Cristina Terek, P.Eng. Senior Engineer Asset Management
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Renewal

Project Number:	G3
Project Name:	Rebuild of Fully Deteriorated Overhead Areas
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	2024 Asset Condition Assessment (ACA) - December 2024 (Section 13 Appendix A) Asset Sustainment Plan: 2026 to 2035 - June 2025 (Section 13) 2024 Quality of Supply Report (Section 6.2.3)
Project Overview:	The 2025 Asset Sustainment Plan (ASP) identified a growing population of overhead distribution assets that have reached poor or very poor condition, including deteriorated wood poles, aging distribution transformers (some approaching 70 years of service), and degraded pole-mounted equipment and attachments exhibiting recurring failure modes. Historical performance demonstrates that failures of overhead assets continue to be a significant contributor to customer interruptions, accounting for more than 10% of annual SAIDI and SAIFI (excluding Loss of Supply and Major Event Days). These failures also result in widespread voltage sags that can affect tens of thousands of customers supplied from the same transformer station, causing interruptions to sensitive customer equipment. Certain failure modes – including broken poles, pole fires, and downed energized conductors – also present significant public and worker safety risks. Historically, overhead renewal activities have primarily been undertaken on a localized basis, driven by inspection findings, customer reliability concerns, safety deficiencies, emergency failures, or isolated high-risk locations. While this targeted approach remains appropriate for scattered asset replacements, there are several areas where deteriorated assets are concentrated because they were constructed during the same period and have aged together. In these locations, an area-based rebuild provides a more efficient and effective solution than repeated individual replacements, allowing multiple deteriorated assets to be renewed simultaneously while restoring the system to current design standards. Accordingly, this program expands beyond traditional reactive replacements by implementing proactive, area-based reconstruction of fully deteriorated overhead distribution systems. Rebuilding these areas reduces the likelihood of recurring failures, improves reliability and operational efficiency, strengthens system resiliency, and enhances public and worker safety while minimizing the need for repeated customer outages associated with piecemeal asset replacement. In addition to area-based rebuilds, the program includes targeted resiliency initiatives that address emerging risks identified through asset condition assessments and historical outage analysis. The first initiative is a pilot installation of secondary breakaway conductors in selected locations. During severe weather events, fallen trees and branches can bring energized secondary conductors to the ground, creating significant public and worker safety hazards. The pilot will evaluate whether breakaway secondary conductors can reduce these risks while improving the resiliency of the secondary distribution system during major storm events. The second initiative focuses on strengthening critical overhead infrastructure where a single asset failure could result in widespread customer outages. These locations include river crossings, railway crossings, and multi-circuit corner poles where several feeders share common structures. Historical events – including vehicle collisions at critical

	structures – have demonstrated that failures at these locations can interrupt service to up to 10,000 customers and, in several cases, have contributed to Major Event Days. Targeted hardening of these critical structures will reduce the risk of high-impact outages while improving system resilience and public safety. Recent analysis indicates that deteriorated overhead equipment accounts for approximately half of all Equipment Failure-related SAIDI and SAIFI. In response to the emergence of new failure modes and the increasing occurrence of known failure modes, London Hydro expanded field inventory surveys to improve understanding of asset condition across the overhead system. Survey results from inspected areas, combined with historical failure data and asset condition assessments were used to identify priority renewal areas and estimate the extent of deterioration across the remaining system, supporting the development of this five-year investment program. This holistic, risk-based assessment enables an efficient area-based rebuild strategy that renews multiple deteriorated assets concurrently, maximizes construction efficiency, reduces future maintenance requirements, and delivers greater long-term value for customers. The program accelerates renewal activities during 2026 and 2027 to address the highest-risk overhead areas. By replacing aging infrastructure before widespread failures occur and rebuilding these areas to current standards, the program will improve reliability, strengthen system resiliency, enhance public and worker safety, and provide long-term value to customers through reduced outage frequency and duration.
Risks/Factors that Affect Timing & Mitigation	Risks to completion are low. This project is part of an established annual capital program that has been successfully executed in previous years. Potential risks, including contractor availability, material lead times, weather, and unforeseen field conditions, are mitigated through proactive planning, established procurement practices, and scheduling flexibility. Adequate internal and contractor resources are available to complete the project as planned.

<table>
<tr><td>Primary Driver:</td><td>Reliability</td><td colspan="3">Historical & Forecast Project Costs</td></tr>
<tr><td rowspan="4">Other Drivers:</td><td>Safety</td><td colspan="2"></td><td>Cost</td><td rowspan="2"></td></tr>
<tr><td>Customer Value</td><td rowspan="4">Historical Years

(bridge yr)</td><td>2022</td><td>$896,204</td></tr>
<tr><td></td><td>2023</td><td>$1,084,753</td><td rowspan="5">Total Historical Costs
$4,104,967</td></tr>
<tr><td></td><td>2024</td><td>$426,120</td></tr>
<tr><td colspan="2" rowspan="5">Alternatives Considered:

The alternative of deferring replacement was rejected, because continued operation of deteriorated equipment would increase the risk of failure, reduce system performance and reliability, and increase safety risks.</td><td>2025</td><td>$570,891</td></tr>
<tr><td>2026</td><td>$1,127,000</td></tr>
<tr><td rowspan="5">Forecast Years</td><td>2027</td><td>$2,570,000</td><td rowspan="5">Total Forecast Costs

$15,950,400</td></tr>
<tr><td>2028</td><td>$3,165,100</td></tr>
<tr><td>2029</td><td>$3,282,200</td></tr>
<tr><td>2030</td><td>$3,403,600</td></tr>
<tr><td>2031</td><td>$3,529,500</td></tr>
<tr><td>LH Project Driver:</td><td colspan="2">REL</td><td colspan="2">LH Section #</td><td>132</td></tr>
</table>

Capital Project Summary Sheet: **System Renewal**

Project Number:	G3
Project Name:	Rebuild of Fully Deteriorated Overhead Areas
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION

Porcelain insulator broken



Automatic splices

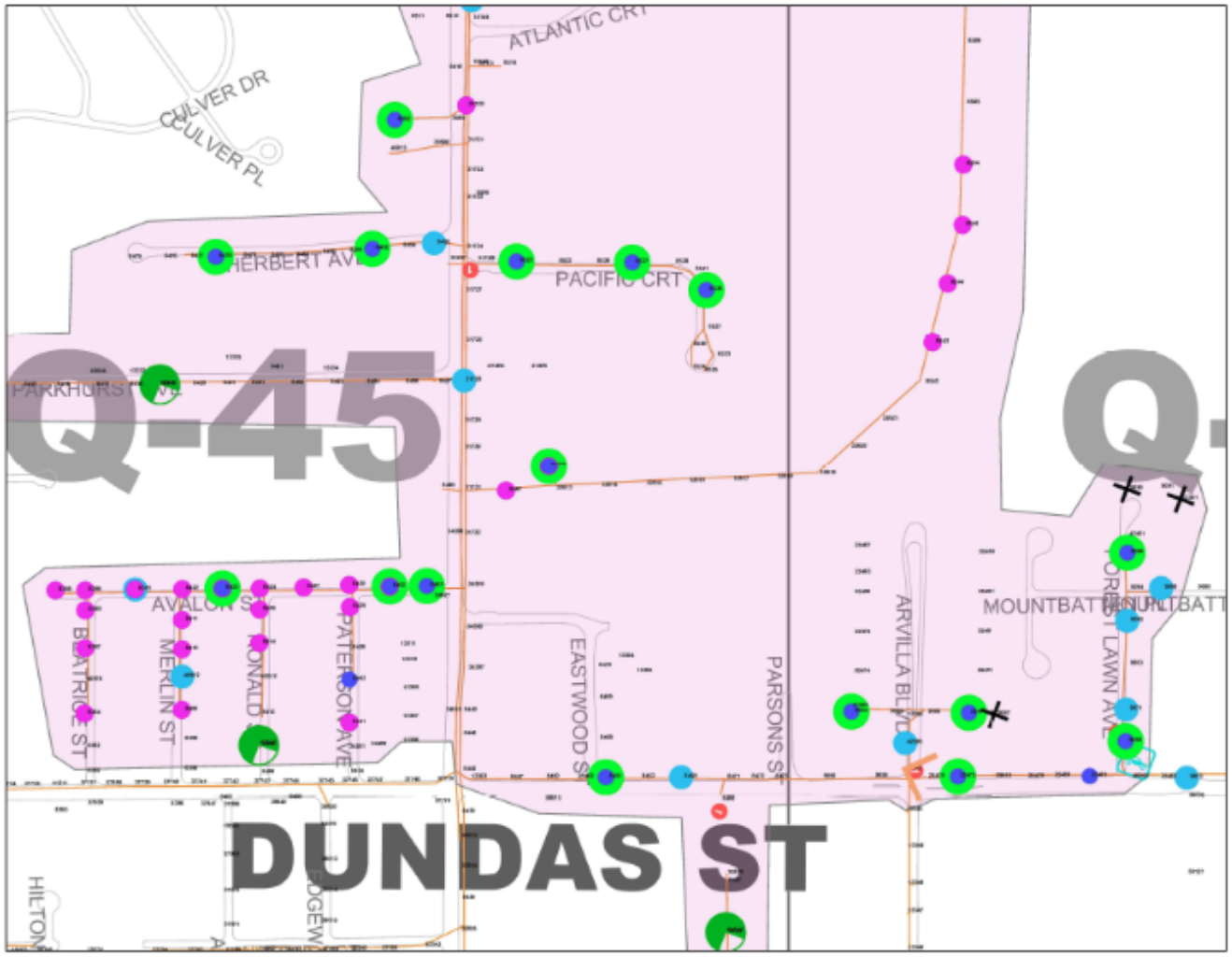


London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G3
Project Name:	Rebuild of Fully Deteriorated Overhead Areas
Timing:	January 1, 2026 - December 31, 2031

Below is an example of a deteriorated area that will be addressed using a strategically coordinated approach, based on the multiple asset deficiencies and historical incidents requiring rebuilds to improve customer and system reliability.



London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G3
Project Name:	Rebuild of Fully Deteriorated Overhead Areas
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Replacing deteriorated overhead infrastructure improves system reliability and resiliency by reducing the likelihood of equipment failures, minimizing customer interruptions and widespread voltage sags, and strengthening critical distribution assets. The area-based renewal approach also improves construction efficiency by replacing multiple at-risk assets simultaneously, reducing future maintenance requirements and repeated customer outages.
Safety	This project improves public and worker safety by proactively replacing deteriorated overhead infrastructure before failure. It reduces the risk of hazards associated with broken poles, downed energized conductors, pole fires, and other equipment failures, while strengthening critical structures and improving the system's resilience during severe weather events.
Environmental Benefits	Environmental benefits are limited but positive. Proactively replacing deteriorated poles and associated equipment reduces the risk of pole-mounted transformers falling and releasing insulating oil into the environment following structural failures.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal of deteriorated distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G3
Project Name:	Rebuild of Fully Deteriorated Overhead Areas
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	7	9	8	1	1

Ranking Rationale	
Reliability:	large impact because aged assets can impact reliability when a failure occurs
Safety:	extreme impact because public safety is at high risk if these deteriorated assets fail in service
Environment:	extreme impact because of oil leak risk if a pole mounted TX or the pole on which it is installed would fail
Capacity:	low impact because there is no consequence
Efficiency:	low impact because there is no consequence

Blended Health Index Derating Project Ranking	95%
Final Project Score	67

PROJECT REVIEW AND APPROVAL	
Prepared By:	Ali Juma, P.Eng. Manager Eng System Reliability
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Renewal

Project Number:	G5
Project Name:	4.16 kV OH Conversions
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	2024 Asset Condition Assessment (ACA) - December 2024 (Sections 9 and 13 Appendix A) Asset Sustainment Plan: 2026 to 2035 - June 2025 (Sections 9 and 13) 4.16 kV Conversion Progress Report 2025 Update - December 2025
Project Overview:	The 4.16 kV overhead distribution system is a legacy voltage class that London Hydro is progressively converting to its standard 27.6 kV distribution voltage. The existing 4.16 kV system has limited capacity to accommodate load growth, higher electrical losses, reduced operational flexibility, and relies in part on aging municipal substations and overhead distribution assets that require ongoing renewal. Conversion provides an opportunity to address deteriorated poles, conductors, switches, and other overhead infrastructure while modernizing the distribution system, increasing capacity and operational flexibility, and supporting future customer growth. Conversion priorities are established using a coordinated, risk-based approach that considers asset age and condition, reliability and system performance, capacity requirements, operational flexibility, opportunities to retire aging substations, and coordination with municipal and other third-party projects. Priority areas currently include Zones D and G, together with select out-of-zone locations where asset condition, system needs, or coordination opportunities support earlier conversion. Proposed rebuilds also address deteriorating infrastructure identified through London Hydro's Asset Condition Assessment and Asset Sustainment Plan processes. As overhead 4.16 kV areas are rebuilt, aging infrastructure is replaced and the system is reconstructed to current 27.6 kV design and construction standards. While primarily driven by established system renewal needs, these investments also provide system-hardening and climate-resiliency benefits by addressing vulnerabilities associated with aging overhead infrastructure and improving the system's ability to withstand tree contact, severe weather, and other overhead hazards. Where appropriate, conversion also provides opportunities to improve system configuration, clearances, and construction standards, supporting both public and worker safety and reducing the potential frequency and consequences of outages. The overhead conversion program is coordinated with the 4.16 kV underground conversion program (Project B9), as both investments form part of London Hydro's broader strategy to progressively retire the legacy 4.16 kV system. In areas such as Zone G, this coordinated approach includes the replacement of legacy 4.16 kV rear-lot overhead infrastructure with 27.6 kV front-lot underground infrastructure under Project B9, providing additional system-hardening and resiliency benefits by reducing exposure to vegetation, tree contact, severe weather, and access constraints associated with rear-lot infrastructure. Historically, London Hydro has progressively converted 4.16 kV overhead and underground areas and retired associated municipal substations, including Sub-25, Sub-17, and Sub-22. This approach reduces reliance on aging legacy infrastructure and avoids continued investment in assets that would ultimately become obsolete as the 4.16 kV system is retired. Long-term planning and coordinated conversion therefore reduce the risk of undertaking interim refurbishment or replacement work that could result in premature obsolescence.

	In 2026, conversion work will continue in Zone D, with particular emphasis on sub-zone D4, while work in Zone G will commence. The program will also include conversion of the area supplied by Sub-27, allowing the end-of-life substation and associated 4.16 kV infrastructure to be decommissioned. In 2027, work will continue toward completion of the D4 conversions and advancement of Zone G. The planned work will also enable the retirement of an additional substation within the D4 area, with the specific substation selected based on asset age and condition, reliability performance, system configuration, and the sequencing of conversion work. Continued investment through 2028–2031 will progressively advance conversion of the remaining priority areas and support the long-term retirement of the 4.16 kV distribution system. The capital plan provides for a sustained average annual investment of approximately $3.5 million across the underground (Project B9) and overhead (Project G5) 4.16 kV conversion programs. The specific scope and sequencing of work will continue to be reviewed annually based on asset condition, reliability performance, system needs, coordination opportunities, and the overall capital investment envelope. This measured approach allows London Hydro to pace conversion in accordance with system priorities while maintaining progress toward retirement of legacy infrastructure. The program reduces the risk of failures associated with deteriorating assets, facilitates the retirement of aging substations, improves system capacity and operational flexibility, supports future load growth, and creates opportunities to coordinate renewal with municipal and third-party work to reduce lifecycle costs and customer disruption
Risks/Factors that Affect Timing & Mitigation	The risk to project completion is low. Execution requires coordination and sequencing with the related overhead 4.16 kV conversion work under Project B9, as well as the availability of internal and contractor resources. These risks are mitigated through annual work planning, coordinated project scheduling, and early resource allocation. London Hydro has successfully executed the 4.16 kV conversion program for more than a decade and has established processes and access to sufficient internal and contracted resources to deliver the planned work.

Capital Project Summary Sheet: System Renewal

Project Number: G5

Project Name: 4.16 kV OH Conversions

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Safety			**Cost**	
	Customer Value	**Historical Years**	**2022**	$2,027,184	
	Efficiency		**2023**	$1,433,190	
			2024	$2,656,597	
Alternatives Considered:			**2025**	$2,949,489	**Total Historical Costs**
The alternative of continued maintenance and deferring replacement was rejected, as continued operation of deteriorated equipment would increase the risk of failure, reduce system performance and reliability, and increase safety risks.		(bridge yr)	**2026**	$1,750,000	**$10,816,459**
		Forecast Years	**2027**	$1,250,000	
			2028	$1,600,000	
			2029	-	
			2030	-	**Total Forecast Costs**
			2031	-	**$2,850,000**
LH Project Driver:	REL	**LH Section #**			132

ADDITIONAL PROJECT INFORMATION

Substandard 4.16kV pole installation with secondaryopen bus and Positek fused transformer; Wood cross arms





London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G5
Project Name:	4.16 kV OH Conversions
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Conversion of the legacy 4.16 kV system to 27.6 kV enables the coordinated retirement of aging substations and deteriorated distribution infrastructure while improving system capacity, reducing electrical losses, and increasing operational flexibility. Underground and overhead conversion work is coordinated by zone to achieve efficient system reconfiguration and maintain reliable service throughout the transition. Where rear-lot overhead infrastructure is converted to front-lot underground infrastructure, the project also improves system resiliency by reducing exposure to tree contact and severe-weather-related hazards.
Safety	Removal of high-voltage overhead infrastructure from residential rear lots improves safety for the public and utility personnel. Safety is further enhanced through the retirement of aging and legacy infrastructure, including installations with Positek fused transformers and open-bus configurations.
Environmental Benefits	Replacement of deteriorated pole-mounted transformers reduces the risk of insulating-oil releases. Conversion of overhead infrastructure to underground in applicable areas also reduces exposure to vegetation and severe-weather hazards.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal and modernization of deteriorating legacy distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G5
Project Name:	4.16 kV OH Conversions
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY

	Reliability	Safety	Environment	Capacity	Efficiency
Ranking Factors & Weighting	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	7	8	5	5	9

Ranking Rationale

Reliability:	large impact because reliability is at stake with old infrastructure continuing to be in service
Safety:	extreme impact because public safety is at risk when utilizing old substandard overhead installations
Environment:	large impact because some impact exists from transformers with old bushings that can leak oil
Capacity:	large impact because conversion to a higher voltage system inherently increases the capacity
Efficiency:	extreme impact because the system is greatly enhanced with higher efficiency when operating at higher distribution voltage

Blended Health Index Derating Project Ranking	95%
Final Project Score	73

PROJECT REVIEW AND APPROVAL

Prepared By:	Adrian Lattanzio, P.Eng. Manager Eng System Planning
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G6, G7, G8, G12, G14
Project Name:	Overhead System Safety Enhancements
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	Reliability Incident Report - August 2013, Automatic Splice Failure Kinectrics Reports: Forensic Analysis of Canadian Porcelain Line Post Insulators (2014) EBOH-260619 Porcelain Fused Cutouts - Standards Dept. (June 2019)
Project Overview:	This project represents a consolidated program of targeted actions to generate safety enhancements on the overhead system. Investment in each area is covered below. Safety has been recognized to be at risk when energized overhead conductors come in contact with the ground or other equipment. Multiple incidents of conductor breakage occurring in the past in automatic splices suggest that these non-standard aerial connectors may not be very secure and, therefore, are unsafe. This budget item deals with ensuring the mechanical strength in the overhead lines by addressing risk from using these automatic splices. In addition, multiple incidents of older standard midspan tap connections failing have introduced another source of mechanical stress and potential failure in the system that need to be addressed to avoid conductor breakage which is a safety and reliability concern. Suspect insulators with known failure modes (such as porcelain, EPAC, etc.) are actively replaced as a result of a system wide program to eliminate this equipment by many manufacturers, which over time has exhibited extremely poor reliability. Failures range from single lateral outage impacts, to higher reliability and safety impact events on overbuilt lines that have had large consequences. Therefore, the elimination of these insulators is a priority. This budget item will deal with all the known suspect insulators (driven by field audits and inspections) installed on the system across the city. An additional element essential to the safe and reliable operation of a distribution system is proper grounding. The integrity of the grounding system has been compromised over time as grounding conductors have been stolen or cut at the base of the poles. The new standard copper-clad steel (CCS) conductor adopted by London Hydro as replacement for traditional copper grounds makes it possible for crews to re-establish lasting system grounding connections. A standing order will be issued for all remaining grounds that require repair. Repetitive outages that cause sustained interruptions for a localized customer group not only adversely impact the reliability of this group, but also each interruption occurrence causes a momentary outage on the feeder, which is a nuisance to other customers impacted. Depending on the customer type on the feeder (ex. C&I), this interruption could have a significant impact on their operations. This project also aims to reduce momentary interruptions on key feeders, while also improving individual customer reliability through the reduction of sustained interruptions in areas affected repeatedly by system failures. Legacy porcelain fused cutouts were deemed unsuitable and unsafe for the overhead system in 2019 due to failures resulting in pole fires. The porcelain fused cutout replacement program will continue in order to mitigate risk of pole fires, improve safety and reliability, and bring the installation location up to standard.

Capital Project Summary Sheet: System Renewal

Project Number:	G6, G7, G8, G12, G14
Project Name:	Overhead System Safety Enhancements
Timing:	January 1, 2026 - December 31, 2031

	Historically these deficiencies were targeted based on the direct output of any recent field inspections and reliability concerns of customers experiencing repeated interruptions. Locations will continue to be selected based on reliability and avoiding safety related concerns linking to at-risk items in the overhead system. In recognition of the documented failure modes across these asset classes and their potential to result in sustained outages, momentary interruptions, and elevated safety risk to the public and system operators, the program scope will be expanded in 2026, 2027 and forward. This increased execution rate is required to systematically reduce the backlog of identified deficiencies and transition from a historically reactive, inspection-driven replacement cycle to a proactive risk mitigation strategy. As a result, the remediation horizon is planned to be compressed from a historical projection exceeding 12 years (based on historical action plans) to an estimated 5-10 year timeframe, thereby reducing cumulative exposure to known failure mechanisms and aligning capital investment with the established safety and reliability risks within the overhead distribution system.
Risks/Factors that Affect Timing & Mitigation	Risks to completion are minimal. This project is part of a program that is successfully executed each year. The availability of resources (internal and contractor) is sufficient to complete this project.

Primary Driver:	Safety	**Historical & Forecast Project Costs**			
Other Drivers:	Reliability			**Cost**	
	Customer Value	**Historical Years**	**2022**	$152,697	
			2023	$244,533	
			2024	$587,756	
Alternatives Considered: Equipment at risk can remain in service but could compromise performance and increase safety risks, and therefore, other alternatives are not viable to ensure the system operates as expected.			**2025**	$358,057	**Total Historical Costs** **$1,635,794**
		(bridge yr)	**2026**	$292,750	
		Forecast Years	**2027**	$362,700	**Total Forecast Costs** **$1,953,200**
			2028	$376,100	
			2029	$390,200	
			2030	$404,600	
			2031	$419,600	
LH Project Driver:	SAF	**LH Section #**			132

Capital Project Summary Sheet: System Renewal

Project Number:	G6, G7, G8, G12, G14
Project Name:	Overhead System Safety Enhancements
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION

Copper grounds cut



Various overhead components susceptible to failure:







London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G6, G7, G8, G12, G14
Project Name:	Overhead System Safety Enhancements
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	A robust and secure overhead distribution system will improve the overall system operation by ensuring the reliable distribution of power to customers and by reducing outages that can be avoided.
Safety	Safety is the number one factor considered in addressing overhead system weaknesses since live contact can occur when equipment fails.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal of deteriorated distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

Capital Project Summary Sheet: System Renewal

Project Number:	G6, G7, G8, G12, G14
Project Name:	Overhead System Safety Enhancements
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY	**G6: Overhead Conductor and Connector Replacements**				
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	8	9	1	1	7

Ranking Rationale	
Reliability:	extreme impact because reliability is at stake when conductors on main circuits break
Safety:	extreme impact because public safety is at risk when live contact can occur due to breakage
Environment:	low impact because there is no consequence
Capacity:	low impact because there is no consequence
Efficiency:	large impact because the efficiency of the system is improved without a related outage risk

Blended Health Index Derating Project Ranking	95%
Final Project Score	65

Capital Project Summary Sheet: System Renewal

Project Number:	G6, G7, G8, G12, G14
Project Name:	Overhead System Safety Enhancements
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY	**G7: Porcelain Insulator Replacement**				
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	8	9	1	1	7

Ranking Rationale	
Reliability:	extreme impact because reliability is at stake when conductors come on top of each other
Safety:	extreme impact because public safety is at risk when live contact can occur due to insulator breakage
Environment:	low impact because there is no consequence
Capacity:	low impact because there is no consequence
Efficiency:	large impact because the efficiency of the system is improved without a related outage risk

Blended Health Index Derating Project Ranking	95%
Final Project Score	65

Capital Project Summary Sheet: System Renewal

Project Number:	G6, G7, G8, G12, G14
Project Name:	Overhead System Safety Enhancements
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY	**G8: Copper-Clad Steel (CCS) Grounds**				
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	This project was not scored because it is in response to a safety requirement for the operation of the distribution system.
Safety:	
Environment:	
Capacity:	
Efficiency:	

Blended Health Index Derating Project Ranking	N/A
Final Project Score	N/A

Capital Project Summary Sheet: System Renewal

Project Number:	G6, G7, G8, G12, G14
Project Name:	Overhead System Safety Enhancements
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY	**G12: Momentary Outage Mitigation**				
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	8	6	1	1	3

Ranking Rationale	
Reliability:	extreme impact because auto-reclosures (momentary ouatges) affect some customers to the same extent as permanent outages
Safety:	large impact because the cause of A/Rs can be substandard installation that can pose a safety threat
Environment:	low impact because there is no consequence
Capacity:	low impact because there is no consequence
Efficiency:	moderate impact because of efficiency slightly improves

Blended Health Index Derating Project Ranking	95%
Final Project Score	49

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G6, G7, G8, G12, G14
Project Name:	Overhead System Safety Enhancements
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY	**G14: Porcelain Cutout Replacement**				
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	7	7	1	1	3

Ranking Rationale	
Reliability:	large impact because reliability is at stake when a porcelain device breaks and interrupts a large section
Safety:	large impact because worker and public safety is at risk due to potential flash risk
Environment:	low impact because there is no consequence
Capacity:	low impact because there is no consequence
Efficiency:	moderate impact because of efficiency slightly improves

Blended Health Index Derating Project Ranking	95%
Final Project Score	51

PROJECT REVIEW AND APPROVAL	
Prepared By:	Ali Juma, P.Eng. Manager Eng System Reliability
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G9
Project Name:	Switch Installation & Component Replacements
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	2024 Quality of Supply Report Standards Department Equipment Bulletin: - EBOH-050619 Clam Shell Connector Failures (June 2019) - EBOH-201221 Hardware for Bolted Electrical Connections (December 2021) - EBOH-171221 Hardware Material for Electrical Connections (December 2021)
Project Overview:	Main line installed switches are crucial devices for operational flexibility. Preventing failures of these devices improves both safety and system reliability as these switches are typically installed on the main feeder, and therefore failures would result in large feeder level interruptions, and could lead to power lines making contact with other equipment or the ground. Following multiple failures of switch installations with prone to fail components in the past, this consolidated program aims to ensure the mechanical strength of these switch installations in the overhead system. Clamshell connectors (Figure 1), originally supplied with legacy overhead switches, are prone to overheating from corrosion initiated by contact between dissimilar metals. The heating and cooling at these points of corrosion lead to failure of the connector. These mechanical-style connectors will be replaced with 2-hole aluminum compression lugs (Figure 2) to mitigate corrosion and heating, thereby improving safety and system reliability. The use of proper bolted connections with the 2-hole compression lug is also important to ensure the longevity of these connections, and older installations that are prone to overheating and failing also need to be brought up to standard. Older dead-end insulators that came prebuilt with the horn piece directly built into it were prone to heating from main line load current, as the tap and horn is used as the conductive path to jumper over to a switch, for example. This heating would make the metal malleable over time, and since this connector was also part of the dead end piece, it was also the mechanical connection that was holding the main line in place, and if that overheated and failed then the conductor would fall to ground. The new deadend standard does not have the horn built into the apparatus itself, and all electrical connections would be made adjacent to the dead end on the line, and not on the dead-end equipment itself (Figure 3). Historically, this project focused exclusively on the replacement of clamshell connectors identified through routine audits and inspections. However, following multiple failures of other switch installations and associated components, the scope of the program was expanded to address a broader range of aging and at-risk assets that pose an increasing threat to system reliability and operational safety. Identified locations are prioritized based on failure risk and potential customer reliability impacts, ensuring that the highest-risk assets are addressed first. Continued funding of this program over the next five years is essential to complete the required replacements, mitigate the growing risk of equipment failures and unplanned outages, and maintain the safe, reliable, and efficient operation of the overhead distribution system.
Risks/Factors that Affect Timing & Mitigation	Risks to completion are minimal. This project is part of a program that is successfully executed each year. The availability of resources (internal and contractor) is sufficient to complete this project.

Capital Project Summary Sheet: System Renewal

Project Number:	G9
Project Name:	Switch Installation & Component Replacements
Timing:	January 1, 2026 - December 31, 2031

Primary Driver:	Safety	**Historical & Forecast Project Costs**			
Other Drivers:	Reliability			**Cost**	
	Efficiency	**Historical Years**	**2022**	$19,796	
	Customer Value		**2023**	$71,331	
			2024	$494,203	
Alternatives Considered:			**2025**	$204,824	**Total Historical Costs**
		(bridge yr)	**2026**	$500,000	**$1,290,154**
Equipment at risk can remain in service but could compromise performance and increase safety risks, and therefore, other alternatives are not viable to ensure the system operates as expected.		**Forecast Years**	**2027**	$525,000	
			2028	$544,400	
			2029	$564,600	
			2030	$585,500	**Total Forecast Costs**
			2031	$607,200	**$2,826,700**
LH Project Driver:	SAF	**LH Section #**			132

ADDITIONAL PROJECT INFORMATION

Failed Clamshell connector



Old style connector with built-in horn



Figure 1 - Clamshell Connector

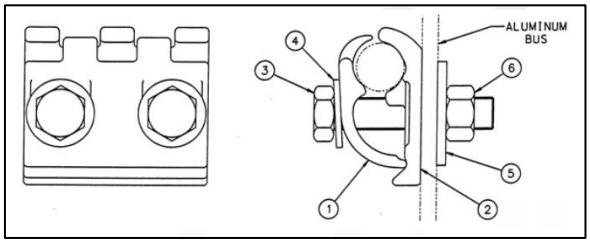


Figure 2 - Two-Hole Compression Lug

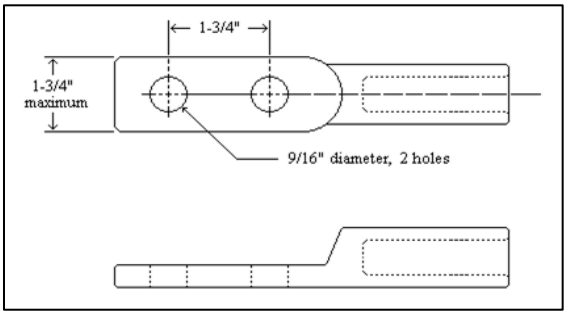
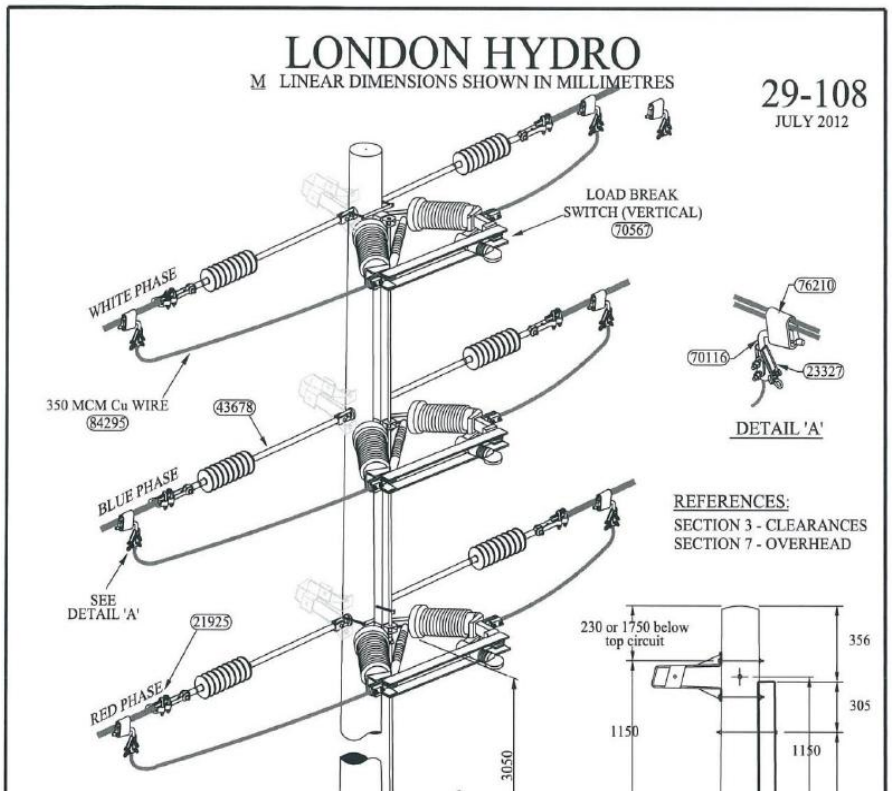


Figure 3 - Current Standard for Jumper Connections at Dead End Insulators



Capital Project Summary Sheet: System Renewal

Project Number:	G9
Project Name:	Switch Installation & Component Replacements
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	A robust and secure overhead distribution system will improve the overall system operation by reliably distributing power to customers and reducing the duration of unplanned outages.
Safety	The proactive removal of defective equipment from the overhead distribution system will lower risk to both powerline workers and the general public.
Environmental Benefits	No direct environmental benefits come from this project type.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal of deteriorated distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G9
Project Name:	Switch Installation & Component Replacements
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY

	Reliability	Safety	Environment	Capacity	Efficiency
Ranking Factors & Weighting	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	8	6	1	1	3

Ranking Rationale

Reliability:	extreme impact because reliability is at stake when one of these connectors fails and the conductor lets go falling onto the ground or other energized parts
Safety:	large impact because public safety is at risk when live contact can occur due to breakage
Environment:	low impact because there is no consequence
Capacity:	low impact because there is no consequence
Efficiency:	moderate impact because the efficiency of the system is improved without a related outage risk

Blended Health Index Derating Project Ranking	95%
Final Project Score	49

PROJECT REVIEW AND APPROVAL

Prepared By:	Ali Juma, P.Eng. Manager Eng System Reliability
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G10
Project Name:	Pole Reinforcements
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	
Project Overview:	In 2015, the Canadian Standards Association (CSA) issued an updated overhead systems standard, C22.3 No. 1-15, which defines the design requirements for overhead infrastructure. Following its introduction, utilities were required to apply non-linear analysis techniques (e.g., SPIDACalc) when designing poles and associated guying. This enhanced analytical approach provides a more comprehensive assessment of structural loads and, as a result, typically necessitates additional guying to adequately support overhead pole lines. This is especially important as it allows the user to assess the safety of distribution poles by considering weather conditions and determining whether the construction of the distribution pole is compliant with safety standards. To ensure compliance with C22.3 No. 1-15 and O. Reg. 22/04, all existing overhead structures that Joint Use partners intend to attach to - where such attachments are permitted by the LDC - must be engineered using a non-linear guying analysis program to identify any structural deficiencies. This capital program is intended to remediate those deficiencies by funding the reinforcement of poles within the overhead distribution system, including the installation of additional guys and anchors where required. Program funding requirements continue to increase in response to growing volumes of Joint Use attachment requests from external parties. Historical expenditure levels, coupled with current demand trends, indicate that comparable annual funding will be required over the next five years to support ongoing assessment and corrective work associated with these attachments. Maintaining this level of investment is necessary to ensure compliance with applicable standards and to preserve system safety and reliability.
Risks/Factors that Affect Timing & Mitigation	The availability of resources to carry out replacements and repairs of various aerial system components may limit the pace of these improvements. Priority is assigned to projects with the greatest potential impact on safety and reliability, based on location, fault severity, and associated risks.

Capital Project Summary Sheet: System Renewal

Project Number: G10

Project Name: Pole Reinforcements

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Safety	**Historical & Forecast Project Costs**			
Other Drivers:	Reliability			**Cost**	
	Customer Value	**Historical Years**	**2022**	$108,058	
			2023	$142,976	
			2024	$85,678	
Alternatives Considered:			**2025**	$45,705	**Total Historical Costs**
		(bridge yr)	**2026**	$131,300	**$513,717**
		Forecast Years	**2027**	$137,800	
			2028	$142,900	
Do nothing, however, risk of pole failure and public safety outweigh this alternative so it was rejected.			**2029**	$148,200	
			2030	$153,700	**Total Forecast Costs**
			2031	$159,400	**$742,000**
LH Project Driver:	SAF	**LH Section #**			132

ADDITIONAL PROJECT INFORMATION







London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G10
Project Name:	Pole Reinforcements
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	A robust and secure overhead distribution system will improve the overall system operation by reliably distributing power to customers and reducing outages that can be avoided.
Safety	Safety remains the primary consideration when addressing weaknesses in the overhead system, as certain equipment failure modes can expose workers or the public to the risk of live contact.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through meeting safety and compliance.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G10
Project Name:	Pole Reinforcements
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	This project was not ranked; it is necessary to reinforce poles with inappropriate guying to meet the current requirements of the CSA C22.3 No.1 standard for non-linear pole analysis. A broken pole could have a large impact on reliability but it is definately a hazard to the public as it would fail while supporting energized conductors.
Safety:	
Environment:	
Capacity:	
Efficiency:	

Blended Health Index Derating Project Ranking	N/A
Final Project Score	N/A

PROJECT REVIEW AND APPROVAL	
Prepared By:	Ali Juma, P.Eng. Manager Eng System Reliability
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Renewal

Project Number:	G13
Project Name:	Load Break/Sectionalizing Switches
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	2024 Quality of Supply Report Major Event Day - November 10, 2023 (Riverside Drive e/o Wonderland Rd)
Project Overview:	Outages resulting from an incident on the main line in the overhead system can result in an interruption of power on the entire feeder. These outages can be caused by a vehicle accident, tree contact, or even a failure of an equipment component. While automated equipment exists in the system to detect and isolate the faulted segment, the necessary repairs can still create prolonged outages to customers within the isolated segment. Sectionalizing switches will serve to reduce the duration of customer interruptions during such outage events by improving operational flexibility. A system wide reliability analysis was performed to establish optimal placement for new sectionalizing switches. The selection criteria addressed historical feeder performance and customer segmentation to reduce the system average interruption duration index (SAIDI). Forward looking needs were also projected based on various risks factors, such as vegetation impacts during severe weather conditions, or areas that are prone to vehicle accidents, to determine switch locations to aid in mitigating future at-risk locations. London Hydro will continue to add sectionalizing devices using reliability analysis. Historically, London Hydro has installed 2-4 manual switches annually within the overhead distribution system. Continued investment at this level is incorporated into the 2027–2031 capital forecast and is necessary to address identified reliability deficiencies, support evolving system risk profiles, and achieve the outage reduction benefits identified through the reliability analysis. These planned expenditures represent a targeted and cost-effective approach to improving system resilience and mitigating future customer reliability impacts.
Risks/Factors that Affect Timing & Mitigation	Risks to completion are minimal. This project is part of a program that is successfully executed each year. The availability of resources (internal and contractor) is sufficient to complete this project.

Capital Project Summary Sheet: System Renewal

Project Number: G13

Project Name: Load Break/Sectionalizing Switches

Timing: January 1, 2026 - December 31, 2031

<table>
<tr><td>Primary Driver:</td><td>Safety</td><td colspan="4">Historical & Forecast Project Costs</td></tr>
<tr><td rowspan="4">Other Drivers:</td><td>Efficiency</td><td colspan="2"></td><td>Cost</td><td rowspan="2"></td></tr>
<tr><td>Customer Value</td><td rowspan="4">Historical Years

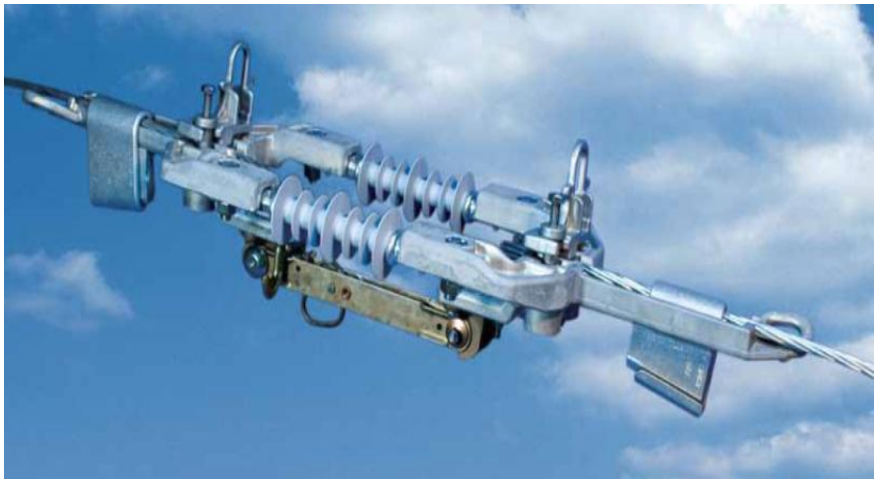
(bridge yr)</td><td>2022</td><td>$39,196</td></tr>
<tr><td>Reliability</td><td>2023</td><td>$72,089</td><td rowspan="4">Total Historical Costs
$249,584</td></tr>
<tr><td></td><td>2024</td><td>$82,639</td></tr>
<tr><td colspan="2" rowspan="6">Alternatives Considered:

SCADA-connected automated switches were considered for these additional isolation points but were not pursued, as they would be redundant with existing automated switching locations and exceed the functional requirements of these isolation points.</td><td>2025</td><td>$4,410</td></tr>
<tr><td>2026</td><td>$51,250</td></tr>
<tr><td rowspan="5">Forecast Years</td><td>2027</td><td>$53,800</td><td rowspan="5">Total Forecast Costs

$289,700</td></tr>
<tr><td>2028</td><td>$55,800</td></tr>
<tr><td>2029</td><td>$57,900</td></tr>
<tr><td>2030</td><td>$60,000</td></tr>
<tr><td>2031</td><td>$62,200</td></tr>
<tr><td>LH Project Driver:</td><td colspan="2">SAF</td><td colspan="2">LH Section #</td><td>132</td></tr>
</table>

ADDITIONAL PROJECT INFORMATION

In-Line Manul Sectionalizing Device



London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G13
Project Name:	Load Break/Sectionalizing Switches
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	A robust and secure overhead distribution system will improve the overall system operation by reliably distributing power to customers and reducing the duration of unplanned outages.
Safety	Ease of installation reduces the probability of malfunction due to workmanship and the double insulator design provides a more controlled workspace.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal of deteriorated distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G13
Project Name:	Load Break/Sectionalizing Switches
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	7	4	1	1	5

Ranking Rationale	
Reliability:	large impact because outage restoration can be improved for thousands of customers using additional sectionalizing devices
Safety:	moderate impact because of indirect improvement to safety
Environment:	low impact because there is no consequence
Capacity:	low impact because there is no consequence
Efficiency:	large impact because some efficiencies are gained with faster customer restoration

Blended Health Index Derating Project Ranking	95%
Final Project Score	42

PROJECT REVIEW AND APPROVAL	
Prepared By:	Ali Juma, P.Eng. Manager Eng System Reliability
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Renewal

Project Number:	G15
Project Name:	Radial Fusing
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	Unfused radials found in GIS
Project Overview:	This program aims to address overhead radials that are currently unfused, in an effort to minimize customers impacted during outage occurrences and to increase London Hydro's safety and reliability performance. While momentary faults can be cleared through the auto-reclose (A/R) capability of station breakers, most permanent faults are isolated by the opening of the closest upstream fuse in the system. This is done to keep the outage area as small as possible, while reducing the number of customers impacted. Also, minimizing the impacted fault zone makes it easier for crews to quickly find faulted components, make repairs, and replace any fuses that operated to clear the fault. This is especially important during severe weather events by localizing the impact of down tree events in neighborhoods, for example, which minimizes the customers affected and the associated safety concerns, without impacting the larger feeders. Due to London Hydro's fusing practices that have been changing over time, and also the acquisition of Hydro One rural infrastructure with different fusing practices than ours, there are several areas in the London Hydro distribution grid with unfused radial feeds. Those identified areas will be addresed and benefit from this program. Only unfused radials on the 27.6 kV supply system are being considered. London Hydro had paused the program in recent years due to competing capital priorities; however, the identified system deficiencies remain and continue to present elevated reliability risks. As a result, funding for this program has been incorporated into the 2027 capital plan and future forecast periods to systematically address unfused radial sections, improve fault isolation capabilities, reduce the number of customers affected by outages, and strengthen overall distribution system reliability.
Risks/Factors that Affect Timing & Mitigation	Risks to completion are minimal. This project is part of a program that has been successfully executed in the past. The availability of resources (internal and contractor) is sufficient to complete this project.

Capital Project Summary Sheet: System Renewal

Project Number: G15

Project Name: Radial Fusing

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Safety			**Cost**	
	Customer Value	**Historical Years**	**2022**	$161,239	
			2023	$163,032	
			2024	$952	
Alternatives Considered:			**2025**	$93	**Total Historical Costs**
		(bridge yr)	**2026**	-	**$325,317**
The alternative of retaining the existing unfused radial system was considered but not pursued, as it does not provide the required public safety and reliability benefits.		**Forecast Years**	**2027**	$52,600	
			2028	$54,500	
			2029	$56,600	
			2030	$58,700	**Total Forecast Costs**
			2031	$60,900	**$283,300**
LH Project Driver:	REL	**LH Section #**			132

ADDITIONAL PROJECT INFORMATION

Fused Radial



London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G15
Project Name:	Radial Fusing
Timing:	January 1, 2026 - December 31, 2031

This radial has been identified as a candidate for fuse installation due to the dense tree coverage and increased risk of animal contact in the area. Installing a fuse will ensure that any fault is isolated to this specific location if it persists after the station's automatic reclose protection.



London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G15
Project Name:	Radial Fusing
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	A robust and secure overhead distribution system will improve the overall system operation by ensuring the reliable distribution of power to customers and by reducing outages that can be avoided.
Safety	Safety is the number one factor considered in addressing overhead system weaknesses since live contact can occur when equipment fails. Unfused radials pose a safety hazard in some cases.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal of deteriorated distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Renewal

Project Number:	G15
Project Name:	Radial Fusing
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	6	7	1	1	6

Ranking Rationale	
Reliability:	large impact as without adequate fusing, outages can affect several thousand customers at once
Safety:	large impact as it reduces the chance of live equipment contact upon failures
Environment:	low impact as there is no consequence
Capacity:	low impact as there is no consequence
Efficiency:	large impact as it helps find fault locations faster compared to conducting feeder patrols

Blended Health Index Derating Project Ranking	95%
Final Project Score	51

PROJECT REVIEW AND APPROVAL	
Prepared By:	Ali Juma, P.Eng. Manager Eng System Reliability
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

London Hydro

System Service

Capital Project Summary Sheet: System Service

Project Number: AA

Project Name: Transformer Station

Timing: January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	2024 London Area Needs Assessment (Hydro One) 2025 London Area Scoping Assessment Outcome Report (IESO) 2026 Distribution System Plan (DSP), Section 5.3.2c, Supply Capacity and Utilization 2026 Distribution System Plan (DSP), Appendix A2-1: MTS-1 Municipal Transformer Station Business Study
Project Overview:	Regional Planning undertaken jointly by Hydro One, the Independent Electricity System Operator (IESO), and regional Local Distribution Company (LDC) partners through the London Area Technical Working Group has identified emerging transformation and bulk supply capacity constraints within critical areas of London Hydro's service territory. These constraints are driven by sustained residential, commercial, and industrial growth, together with increasing electrification. Load forecasts and planning analyses have confirmed that existing supply infrastructure will be insufficient to accommodate projected demand while maintaining appropriate system reliability and operational flexibility over the long term. To address these needs, London Hydro has established a new Municipal Transformer Station (MTS) program that provides a long-term supply solution through the development of municipal transformer stations strategically located within its service territory. The program includes environmental assessments, land acquisition, engineering, equipment procurement, regulatory approvals, and construction activities for MTS-1 in southeast London, together with the initiation of a second municipal transformer station (MTS-2) in the northwest later in the forecast period. Additional information regarding supply capacity, regional load forecasts, and planning studies is provided in Section 5.3.2c, Supply Capacity and Utilization, of London Hydro's 2026 Distribution System Plan, the 2024 London Area Needs Assessment prepared by Hydro One, and the 2025 London Area Scoping Assessment Outcome Report prepared by the IESO. Following completion of the Scoping Assessment, Regional Planning has advanced to the Integrated Regional Resource Planning (IRRP) phase. Updated regional load forecasts continue to validate the original planning assumptions, confirming sustained and significant long-term demand growth that reinforces the need for additional transformation capacity within London Hydro's service territory.
Risks/Factors that Affect Timing & Mitigation	Supply chain constraints remain a key risk; early identification and procurement of long-lead materials will help mitigate potential delays. Land acquisition and environmental assessment uncertainties also pose schedule risks and should be advanced as early as possible to reduce impact. The tendering, award, and construction phases introduce additional timing risks, which can be mitigated through proactive project management and clear milestone tracking and communication.

London Hydro

Capital Project Summary Sheet: System Service

Project Number: AA

Project Name: Transformer Station

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Customer Value			**Cost**	
	Econ. Dev.	**Historical Years**	**2022**		
	Grid Innovation		**2023**		
			2024		
Alternatives Considered: Alternative approaches, including feeder reconfiguration, targeted system reinforcement, demand-side measures, and Non-Wires Solutions (NWS), were considered during the planning process. However, these options cannot provide the permanent transformation capacity, operational flexibility, redundancy, or long-term reliability required to address the sustained load growth identified through Regional Planning while ensuring sufficient electrical capacity remains available to support continued customer growth and economic development. Given the extended lead times associated with new supply infrastructure, development of a Municipal Transformer Station is the prudent long-term solution.			**2025**	$18,789	**Total Historical Costs**
		(bridge yr)	**2026**	$1,900	**$20,689**
		Forecast Years	**2027**	$14,905,500	**Total Forecast Costs**
			2028	$9,189,700	
			2029	$17,791,400	
			2030	$19,290,600	
			2031	$15,820,150	**$76,997,350**
LH Project Driver:	REL	**LH Section #**			AA

Capital Project Summary Sheet:	System Service
Project Number:	AA
Project Name:	Transformer Station
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION

MTS-1 represents the first municipal transformer station to be developed, owned and operated by London Hydro. Land acquisition is planned for 2027, with the station targeted to enter service in 2031 following detailed engineering, environmental assessment, regulatory approvals, and construction. In parallel, early planning for MTS-2 has commenced to preserve future supply options for the northwest area, where Regional Planning has also identified capacity limitations. Given the extended lead times associated with transmission planning, environmental approvals, routing, land acquisition, and station development, early planning is necessary to ensure capacity is available when required. Land acquisition for MTS-2 is currently targeted for 2031, with future implementation subject to ongoing regional planning and confirmation of system need. MTS-2 is also expected to require upstream transmission expansion, which may necessitate a Customer Connection and Cost Recovery Agreement (CCRA) and future Incremental Capital Module (ICM) funding.

The Municipal Transformer Station program is consistent with the outcomes of Regional Planning and aligns with the Ontario Energy Board's expectations for prudent, evidence-based distribution system planning. Regional Planning studies have demonstrated that, under extreme weather planning scenarios, several transmission stations supplying London Hydro are expected to experience capacity shortfalls, while the aggregate transformation capacity available across the service territory will also become insufficient to meet projected demand in the near term. Given the significant planning, regulatory, environmental assessment, land acquisition, and construction lead times associated with new supply infrastructure, these investments must be initiated well in advance of when additional capacity is required. By proactively developing new municipal transformer stations, London Hydro will maintain adequate supply capacity and redundancy under contingency conditions, fulfill its obligation to connect new customers, and ensure the distribution system can continue to reliably support sustained population growth, economic development, and increasing electrification across its service territory.



Figure 2: Typical MTS Station
(Image from Hydro Ottawa)

London Hydro

Capital Project Summary Sheet: System Service

Project Number:	AA
Project Name:	Transformer Station
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Development of a new Municipal Transformer Station provides the transformation capacity, operational flexibility, and redundancy required to accommodate forecasted load growth while maintaining reliable service under normal and contingency operating conditions. The project relieves loading on existing supply stations, improves overall system resilience, supports timely customer connections, and enhances customer value by proactively addressing future capacity constraints before they affect reliability or limit growth. The additional capacity also increases hosting capability for future distributed energy resources (DERs) and electrification.
Safety	Minimal/Indirect Benefit - Indirect benefit through reduced reliance on constrained system operation and improved system redundancy during contingency events.
Environmental Benefits	Supports electrification and increased DER hosting capacity, although environmental benefits are not a primary project driver.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	The project establishes foundational infrastructure that supports the modernization of the distribution system by increasing hosting capacity for distributed energy resources, enabling greater electrification, and providing the flexibility required to accommodate future grid technologies and evolving customer energy needs.
Statutory / Regulatory Obligation	Supports London Hydro's obligation to provide adequate distribution system capacity to connect new customers and maintain reliable electricity service. The project also aligns with the Ontario Energy Board's expectations for prudent, evidence-based capacity planning and supports continued population growth, economic development, and electrification within the service territory.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	As part of London Hydro's distribution planning process, consideration was given to whether NWS, including demand response, DERs, energy storage, and other demand-side measures, could reasonably defer the need for additional transformation capacity. This consideration was informed by the Regional Planning process undertaken jointly with Hydro One and the IESO, together with the MTS-1 Business Study completed by an independent consultant for London Hydro. Consistent with the Regional Planning outcomes, and based on the scale, location, and timing of the forecasted load growth, together with the long planning and development lead times associated with municipal transformer stations, London Hydro concluded that currently available NWS technologies could not reasonably defer the need for a new municipal transformer station.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Service

Project Number:	AA
Project Name:	Transformer Station
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY

	Reliability	Safety	Environment	Capacity	Efficiency
Ranking Factors & Weighting	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	N/A	N/A	N/A	N/A	N/A

Ranking Rationale

Reliability:	This project is excluded from the project ranking process because it addresses a mandatory system capacity requirement identified through Regional Planning. As a distributor, London Hydro has an obligation to provide adequate supply capacity to connect customers and support forecasted growth; consequently, this investment is driven by system need rather than comparative asset condition or risk ranking.
Safety:	
Environment:	
Capacity:	
Efficiency:	

Blended Health Index Derating Project Ranking	N/A
Final Project Score	N/A

PROJECT REVIEW AND APPROVAL

Prepared By:	Adrian Lattanzio, P.Eng. Manager Eng System Planning
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

London Hydro

Capital Project Summary Sheet: System Service

Project Number:	B7
Project Name:	Underground Backup Supply
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION

Supporting Reference Material:	Radials identified in the GIS system
Project Overview:	London Hydro has been experiencing outages in residential underground subdivisions served by small radial underground systems. This configuration provides no alternative power supply, leaving the System Operating Centre unable to restore service during equipment failures until repairs are completed and the system can be re-energized. This leads to outage durations greater than 10 hours in some cases for the affected customers. This budget item funds the addition of an alternate supply source in these types of subdivision configurations, giving operators flexibility to restore power during outages switching the customers interrupted on healthy segments. This system reconfiguration project will significantly improve restoration times and enhance the overall reliability of service for customers located on such radial systems. Historically London Hydro has addressed three to six radials per year across one or two locations where at least three distribution transformers were supplied radially. These targeted radials were adjacent to one another, and provided an efficient method of looping together. Approximately two such installations will continue be addressed yearly from this budget.
Risks/Factors that Affect Timing & Mitigation	The risk to completion is low, as this project is part of an established program successfully executed in prior years. Adequate internal and contract resources are available to ensure its successful completion.

Primary Driver:	Customer Value	**Historical & Forecast Project Costs**			
Other Drivers:	Reliability			**Cost**	
		Historical Years	**2022**	$67,340	
			2023	$185,916	
			2024	$6,492	
Alternatives Considered: Customers may be served by radial systems; however, most faults in underground networks are permanent, and repairs can take considerable time. Without a backup supply, this can result in prolonged power outages for the affected customers, deeming the option considered an accepted distributor practice.			**2025**	$11,885	**Total Historical Costs** **$421,633**
		(bridge yr)	**2026**	$150,000	
		Forecast Years	**2027**	$183,800	**Total Forecast Costs** **$1,008,200**
			2028	$195,000	
			2029	$202,200	
			2030	$209,700	
			2031	$217,500	
LH Project Driver:	REL		**LH Section #**		145

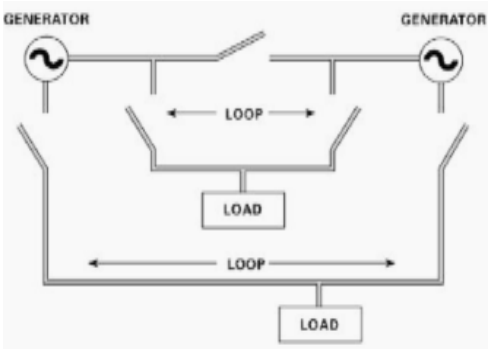
London Hydro

Capital Project Summary Sheet: **System Service**

Project Number:	B7
Project Name:	Underground Backup Supply
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION

A looped system





In the example above, this area was identified as benefiting from a backup supply loop feed. Each feed of 4 transformer tanks, which feed over 60 customers in each side, would require prolonged outage durations if an interruption were to occur in the existing configuration. Creating a backup supply would signficantly reduce outage duration for these groups of customers, ultimately improving system reliability (SAIDI).

London Hydro

Capital Project Summary Sheet: **System Service**

Project Number:	B7
Project Name:	Underground Backup Supply
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	A backup supply enables faster power restoration in the event of a permanent fault in the underground system, minimizing the impact on customer loads. This enhances reliability for homeowners and reduces the duration of power outages.
Safety	Not Applicable
Environmental Benefits	While there is no direct environmental benefit, quicker power restoration reduces crew time in the field, resulting in lower vehicle emissions.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal and modernization of deteriorating legacy distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Service

Project Number: B7

Project Name: Underground Backup Supply

Timing: January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	4	1	1	4	8

Ranking Rationale	
Reliability:	moderate impact since outages are of longer duration on radials but affecting limited numbers of customers
Safety:	low impact as there is no consequence
Environment:	low impact as there is no consequence
Capacity:	moderate impact since failure would not greatly affect system capacity
Efficiency:	extreme impact because system efficiency would increase greatly with a loop configuration

Blended Health Index Derating Project Ranking	85%
Final Project Score	34

PROJECT REVIEW AND APPROVAL	
Prepared By:	Cristina Terek, P.Eng. Senior Engineer Asset Management
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Service

Project Number:	B8
Project Name:	Installation of Fault Indication on Padmounted Transformers
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	Asset Management Enhancement - Faulted Circuit Indicators (2023) 2024 Quality of Supply Report
Project Overview:	Without fault indicators, finding faults in underground residential systems is time-consuming, requiring manual transformer inspections and multiple cable segment testing. Fault indicators aid in efficiently determining the faulted cable segment by using LED lights on transformers that detect if the unit "saw" the fault. By installing transformer fault indicators in complex underground circuits, outage durations for customers can reduce signficantly as faults are found faster and isolation can commence earlier. As underground cables and transformer age approach their life expectancy, fault likelihood increases. Installing additional fault indicators in subdivisions with very poor/poor/fair cable health, which are not planned for rebuild in the near term, will enable faster response to potential future faults. In addition, many existing fault indicators have exceeded their battery life (manufacturer rated life of 15 years) and are past their expected lifespan. This budget also includes replacing these end-of-life units at various locations. An internal assessment in 2023 resulted in a shift toward installing fault indicators more frequently in higher-risk areas, while minimizing installations in new subdivisions where failure risk is very low and the devices would likely reach end of life without ever being used for the purpose of their installation. Historically in the last five years London Hydro has installed an average of 400-450 fault indicators per year. More installations have recently been required to cover higher-risk residential underground areas, and to replace end-of-life units that have not operated as has already occurred in some cases. In future years London Hydro will install approximately 500 devices annually.
Risks/Factors that Affect Timing & Mitigation	The risk to completion is low, as this project is part of a program successfully implemented over the past ten years. Adequate internal staffing resources are available to ensure its completion.

Capital Project Summary Sheet: System Service

Project Number:	B8
Project Name:	Installation of Fault Indication on Padmounted Transformers
Timing:	January 1, 2026 - December 31, 2031

Primary Driver:	Efficiency	**Historical & Forecast Project Costs**			
Other Drivers:	Reliability			**Cost**	
	Customer Value	**Historical Years**	**2022**	$120,707	
			2023	$154,220	
			2024	$202,250	
Alternatives Considered: Deferring fault indicator installation until new transformation is installed was considered; however, this approach could lead to prolonged outages for many residential customers where the existing devices have reached end of life, and therefore the option was not pursued.			**2025**	$1,764	**Total Historical Costs**
		(bridge yr)	**2026**	$200,000	**$678,940**
		Forecast Years	**2027**	$210,000	
			2028	$217,800	
			2029	$225,900	
			2030	$234,300	**Total Forecast Costs**
			2031	$243,000	**$1,131,000**
LH Project Driver:	REL	**LH Section #**			145

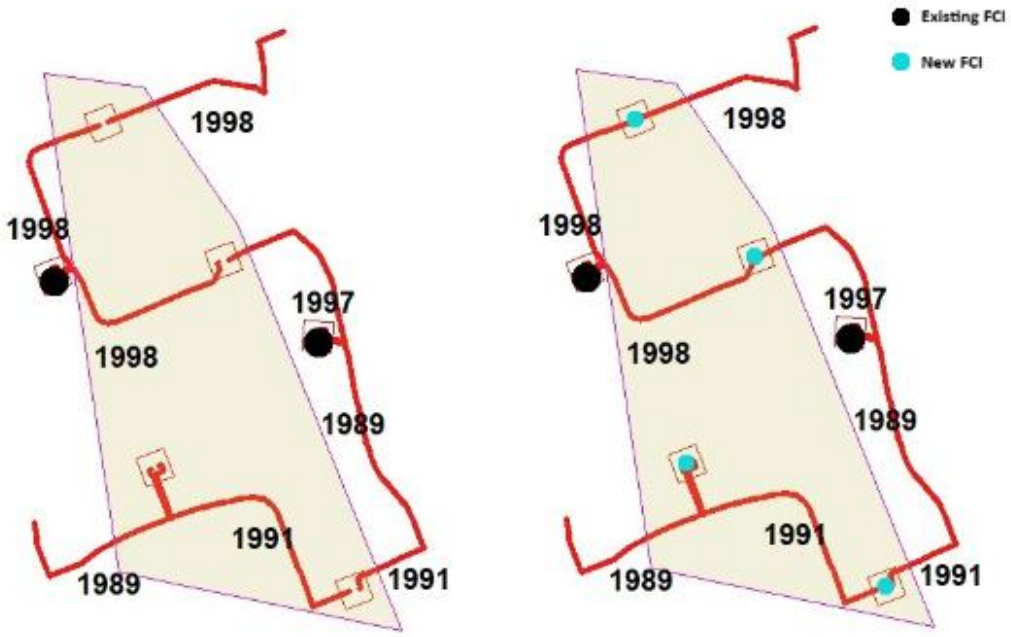
ADDITIONAL PROJECT INFORMATION

Typical Faulted Circuit Indicator (FCI)



Capital Project Summary Sheet: System Service

Project Number:	B8
Project Name:	Installation of Fault Indication on Padmounted Transformers
Timing:	January 1, 2026 - December 31, 2031



Along with the continued replacement of fault indicators that have reached end-of-life, prioritized installations are carried out focusing on areas with aged infrastructure and deteriorating cable health that is at-risk of faulting (30-40 years of age).

Capital Project Summary Sheet: System Service

Project Number:	B8
Project Name:	Installation of Fault Indication on Padmounted Transformers
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Fault indicators in underground distribution systems reduce outage duration. Older transformers can be retrofitted, with installations prioritized in areas based on subdivision performance and rehabilitation plans, leading to increased reliability and customer satisfaction.
Safety	There is no direct safety impact, but locating faults by patrolling the main road without opening every padmounted transformer enclosure reduces physical effort for operations personnnel.
Environmental Benefits	While there are no direct environmental benefits, reduced troubleshooting time decreases truck operation, leading to lower gas emissions.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide customers with safe and reliable electricity service through the prudent renewal and modernization of deteriorating legacy distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the renewal of deteriorated distribution assets to maintain system reliability and safety. NWS cannot address the physical condition or failure risk of aging distribution assets.
BCA Pre-assessment	Not Applicabe

London Hydro

Capital Project Summary Sheet: System Service

Project Number:	B8
Project Name:	Installation of Fault Indication on Padmounted Transformers
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	5	1	1	2	9

Ranking Rationale	
Reliability:	large impact since outages are of longer duration in the absence of fault indicators
Safety:	low impact as there is no consequence
Environment:	low impact as there is no consequence
Capacity:	moderate impact since lack of fault indicators would not greatly affect system capacity
Efficiency:	extreme impact because system efficiency would increase greatly with shorter troubleshooting times

Blended Health Index Derating Project Ranking	85%
Final Project Score	35

PROJECT REVIEW AND APPROVAL	
Prepared By:	Ali Juma, P.Eng. Manager Eng System Reliability
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: System Service

Project Number:	H1
Project Name:	Recloser Installations
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	London Area Regional Planning (Second Cycle)_ Final Needs Assessment Report 2024 Quality of Supply Report Grid Resiliency Report - December 2023 2024 Asset Condition Assessment (ACA) - December 2024 (Sections 11 and 12 Appendix A) Asset Sustainment Plan (ASP): 2026 to 2035 - June 2025 (Sections 11 and 12)
Project Overview:	Automatic reclosers are an important component of London Hydro's distribution automation strategy, supporting improved reliability, operational flexibility, and system resiliency. Reclosers detect and interrupt downstream faults and sectionalize the distribution system, limiting the number of customers affected by an interruption and reducing the likelihood that localized faults result in broader feeder-level outages. SCADA-controlled automated switches also provide operators with remote visibility and control, allowing faulted sections to be isolated and service to unaffected customers to be restored more quickly, often without initially dispatching field crews to operate equipment manually. Reclosers can also facilitate load transfers between feeders, providing additional operational flexibility during outages, planned work, and other system contingencies. London Hydro has progressively expanded distribution automation across its 27.6 kV system and currently has approximately 140 automatic interrupting reclosers in service. The long-term objective is to continue installing reclosers on main overhead feeders to sectionalize customers into groups of approximately 1,000 to better support both distribution level and transmission level (ORTAC) planning requirements. This approach reduces the number of customers exposed to individual fault events and provides operators with greater flexibility to isolate affected sections and restore supply through alternate feeder configurations where system conditions permit. The investment also contributes to London Hydro's broader system resiliency and Vulnerability Assessment and System Hardening (VASH) objectives described in Section 5.3.6 of the DSP. Overhead distribution infrastructure is inherently exposed to weather-related and external hazards, including severe storms, vegetation contact, wind, ice, and other events that can result in localized faults. While reclosers do not prevent these hazards from occurring, increased feeder sectionalization and remote automation reduce the consequences of resulting outages by limiting the number of customers affected and enabling faster isolation and restoration. The investment therefore complements London Hydro's vegetation management, overhead renewal, system hardening, and other grid modernization initiatives by improving the distribution system's ability to respond to and recover from disruptive events. Historically, London Hydro targeted the installation of approximately three to five new automation locations annually. In recent years, however, the need to replace deteriorated automated switches has reduced the number of new automation locations that could be established within the available program budget. For 2026 and 2027, funding has therefore been allocated for three to five reclosers at new automation locations to continue advancing feeder segmentation, together with an additional three units for emergency and proactive replacement of deteriorated assets identified through the Asset Sustainment Plan (ASP). These replacements preserve existing automation functionality while mitigating the

	reliability and operational risks associated with aging equipment. In 2027, London Hydro also plans to continue its S&C TripSaver II pilot with a second installation at an 8.32 kV step-down transformer. The pilot will provide further operational experience with this technology and assess its application for improving fault protection and sectionalization at these locations. The program also includes installation of heater kits in up to 50 existing recloser cabinets to mitigate corrosion and deterioration associated with exposure to harsh environmental conditions. Heater kits have been included as a standard feature on new recloser orders since 2023, and the planned retrofits will extend this protective measure to selected existing units, supporting asset life and continued reliable operation. Recloser installations will remain an ongoing investment initiative as London Hydro continues to expand distribution automation, renew deteriorated automated equipment, and improve feeder sectionalization. Together, these investments support sustained reliability, faster outage restoration, greater operational flexibility, and a more resilient distribution system capable of responding to increasingly complex operating conditions and weather-related hazards
Risks/Factors that Affect Timing & Mitigation	Execution risk is considered low, as this is an established program that London Hydro has successfully delivered for many years. Project timing may be affected by equipment availability, competing system priorities, outage scheduling, and field resource availability. These risks are managed through annual planning, advance procurement, coordination of planned outages, and reprioritization of installation locations where required.

Capital Project Summary Sheet: System Service

Project Number: H1

Project Name: Recloser Installations

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Efficiency			**Cost**	
		Historical Years	**2022**	$427,187	
			2023	$427,440	
			2024	$622,232	
Alternatives Considered:			**2025**	$290,779	**Total Historical Costs**
The alternative of not proceeding with this investment was considered and rejected, as it would limit further improvements in feeder sectionalization, distribution automation, and operational flexibility. This would reduce London Hydro's ability to limit the number of customers affected by faults, restore service quickly, and improve system reliability and resiliency.		(bridge yr)	**2026**	$415,000	**$2,182,637**
		Forecast Years	**2027**	$820,000	**Total Forecast Costs**
			2028	$694,800	
			2029	$645,300	
			2030	$669,200	
			2031	$693,900	**$3,523,200**
LH Project Driver:	REL	**LH Section #**			250

ADDITIONAL PROJECT INFORMATION

Overhead Automatic Recloser



London Hydro

Capital Project Summary Sheet: System Service

Project Number:	H1
Project Name:	Recloser Installations
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Increasing distribution system segmentation through automated reclosers reduces the number of customers affected by faults and supports faster service restoration. SCADA-enabled remote monitoring and control allow operators to more quickly identify and isolate faulted sections, restore unaffected customers, and reduce the need for field crews to manually operate equipment. These capabilities improve reliability, operational efficiency, and system resiliency.
Safety	Remote operation reduces the need for field crews to travel to and manually operate equipment during outage conditions, including during severe weather events, thereby reducing potential worker exposure to hazardous conditions.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Remote terminal units and associated communications will be secured in accordance with London Hydro's established cybersecurity practices and standards.
Grid Innovation	The continued deployment of SCADA-enabled reclosers advances distribution automation and provides greater real-time visibility and remote control of the distribution system. These capabilities support London Hydro's broader grid modernization strategy and provide a foundation for increasingly automated system operation.
Statutory / Regulatory Obligation	This investment supports London Hydro's obligation to provide safe and reliable electricity service by improving distribution system sectionalization, outage response, and restoration capabilities.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. This investment addresses distribution automation, feeder sectionalization, and the replacement of deteriorated automated equipment. NWS would not provide the required fault interruption, remote switching, sectionalization, or restoration functionality.
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Service

Project Number:	H1
Project Name:	Recloser Installations
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	8	1	1	3	10

Ranking Rationale	
Reliability:	extreme impact because we are improving sectionalization(s) and fault location
Safety:	low impact as there is no consequence
Environment:	low impact as there is no consequence
Capacity:	moderate impact as not adding capacity directly
Efficiency:	extreme impact since it provides remote operational flexibilty

Blended Health Index Derating Project Ranking	100%
Final Project Score	40

PROJECT REVIEW AND APPROVAL	
Prepared By:	Ali Juma, P.Eng. Manager Eng System Reliability
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

London Hydro

Capital Project Summary Sheet: **System Service**

Project Number:	H2, H3, H4, H5
Project Name:	SCADA Enhancements
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION

Supporting Reference Material:	
Project Overview:	A reliable SCADA system is required to efficiently monitor and control the distribution system. The SCADA projects will enhance components of the system that are either technically obsolete or inefficient to maintain. Specifically, the projects will increase the reliability of remote terminal units (RTUs), modernize communications protocols and mediums, secure data against cyber threats, and develop system intelligence tools and automation devices that further enable the monitoring and control of distribution assets. Continued investments in Power Quality and DA Monitoring systems will enable engineering and operations to monitor equipment performance, troubleshoot, and analyze protection and control events, effectively locate faults, and reduce outage duration.
Risks/Factors that Affect Timing & Mitigation	The risks to completion are minimal. Most of the SCADA enhancement projects are part of programs that have successfully been completed in previous years. Should project requirements exceed internal capabilities, working relationships with external resources have been established.

Primary Driver:	Interoperability	**Historical & Forecast Project Costs**			
Other Drivers:	Cyber Security			**Cost**	
	Reliability	**Historical Years**	**2022**	$609,699	
	Safety		**2023**	$458,557	
			2024	$1,065,891	
Alternatives Considered: Alternative technologies and vendors were assessed as part of the evaluation process, and the preferred SCADA enhancement approach was determined to provide the best overall value and functionality.			**2025**	$1,256,632	**Total Historical Costs**
		(bridge yr)	**2026**	$1,109,500	**$4,500,279**
		Forecast Years	**2027**	$610,700	
			2028	$1,074,000	
			2029	$1,113,800	
			2030	$1,155,000	**Total Forecast Costs**
			2031	$1,217,100	**$5,170,600**
LH Project Driver:	REL		**LH Section #**		250

London Hydro

Capital Project Summary Sheet: System Service

Project Number:	H2, H3, H4, H5
Project Name:	SCADA Enhancements
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION

H2 - Serial Conversion Program - The modernization of London Hydro's SCADA communication infrastructure involves replacing its outdated serial equipment with modern Internet Protocol (IP)-capable hardware. This is driven by the need to enhance system security and achieve cost efficiencies. A key element of this transition is the introduction of an Access Point Name (APN), which creates a dedicated gateway within the network. This gateway is essential for establishing redundant communication paths, ensuring system resilience if the primary link fails. In addition, the procurement of new equipment supports and enforces strict OEB cybersecurity mandates. Specifically, funding allocated under section 'H2' of the budget will be used to acquire new technologies to enable these redundant wireless high-bandwidth connections. The implementation of these wireless redundancies directly addresses a vital aspect of cybersecurity readiness. As part of the Ontario Energy Board's (OEB) Cyber Security Standard, licensed electricity transmitters and distributors must strengthen their security posture by deploying robust, non-single-point-of-failure network designs, such as the one enabled by this APN-based cellular system.

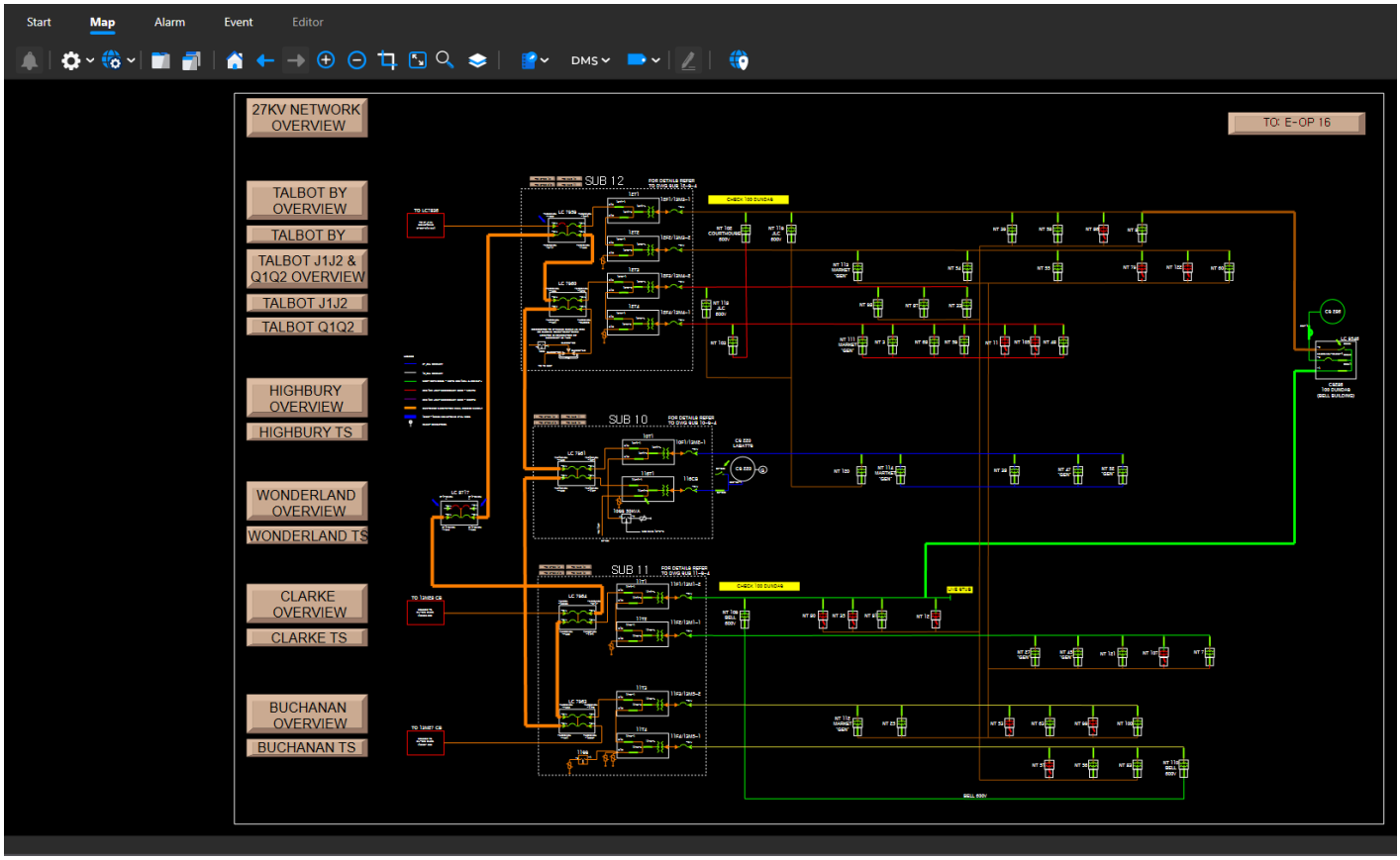
H3 - RTU Refurbishment program - The RTU Refurbishment Program is essential for maintaining key SCADA operations as older Remote Terminal Units (RTUs) become outdated. This proactive investment ensures the ongoing integrity and reliability of field data collection and control functions across the network. Refurbishing rather than replacing is a financially smart approach when suitable, extending the service life of existing assets and lowering immediate, high-cost expenses. This strategy directly helps meet performance standards by preventing system downtime caused by hardware failures nearing the end of their lifespan, thereby ensuring the dependable management of vital utility infrastructure into the future.

H4 - SCADA Cyber Security & OT Infrastructure - To meet the immediate needs of Operational Technology Cybersecurity and Infrastructure, investing in OT infrastructure is a critical strategic necessity, forming the essential backbone for all future grid enhancements. This modernization, which upgrades current components through digital architecture, is vital to unlocking true future-grid automation. This investment enables the operational capabilities needed for advanced grid management, such as dynamic resource allocation and faster fault isolation. Central to this upgrade is Cybersecurity; this modernization provides the platform necessary to fully comply with stringent OEB regulatory mandates, ensuring a secure-by-design posture against escalating digital threats targeting critical assets. Specifically, the new digital framework requires enhancements to our Intrusion Detection System (IDS) and more capable IT/OT firewalls to monitor IP-based traffic effectively and quickly identify anomalies. Furthermore, this investment will include the establishment of fibre optic connections and tower infrastructure, which will serve as the high-capacity, low-latency physical foundation supporting new and existing digital assets. A robust, secure, and automated OT environment delivers a significantly improved customer experience and superior grid reliability, achieved through faster anomaly detection and faster restoration, directly benefiting our customers by providing predictable service.

H5 - Line Status Sensors, (Remote Current, Real Time Fault Indication, & Early Fault Detection) - For decades utilities have utilized faulted circuit indicators to efficiently locate and isolate faults. As a result of advancements in wireless technology, this information can now be provided to Control Room Operators in real-time using Line Status Sensors. In addition to fault indication, the line sensors also provide real-time load information and Early Fault Detection (EFD) capabilities. These new technologies represent an economical alternative to installing SCADA-controlled switches for load information, and offer a more proactive approach to fault identification, improving system reliability and lowering repair costs. Power Quality monitoring tools will also be implemented to assist in analyzing the system's behaviors during normal and faulted conditions of the distribution system.

Capital Project Summary Sheet: System Service

Project Number:	H2, H3, H4, H5
Project Name:	SCADA Enhancements
Timing:	January 1, 2026 - December 31, 2031



London Hydro

Capital Project Summary Sheet: **System Service**

Project Number:	H2, H3, H4, H5
Project Name:	SCADA Enhancements
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	A modern, secure and robust SCADA system will improve the overall system operation by reliably providing real-time data to the System Operating Centre as well as historical data for engineering and system planning analysis, all of which will add customer value and improve system reliability.
Safety	Increased central visibility will improve London Hydro's ability to expediently respond to developing emergency situations.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Modern equipment (RTUs, Communication Devices, Networking Devices, etc.) will enhance London Hydro's ability to monitor, detect, and prevent the likelihood of cyber attacks.
Grid Innovation	Explore remote monitoring technology aimed at detecting fault potential before they occur. Furthermore, an innovative approach to detect copper theft will be explored.
Statutory / Regulatory Obligation	This investment supports London Hydro’s obligation to provide customers with safe and reliable electricity service through the prudent renewal and modernization of deteriorating legacy distribution infrastructure.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable. Non-Wires Solutions were not considered appropriate, as the primary driver is the interoperability and reliability of the SCADA system.
BCA Pre-assessment	Not Applicable

Capital Project Summary Sheet: **System Service**

Project Number:	H2, H3, H4, H5
Project Name:	SCADA Enhancements
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY	**H2: Serial Conversion Program**				
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	7	2	1	2	8

Ranking Rationale	
Reliability:	large impact because of some influence onto customer outage duration and frequency
Safety:	moderate impact indirectly on safety
Environment:	low impact because there is no consequence
Capacity:	moderate impact because project does not enhance system capacity directly
Efficiency:	extreme impact because of great improvement in SCADA communication and obsoleting end of life equipment

Blended Health Index Derating Project Ranking	100%
Final Project Score	37

Capital Project Summary Sheet: **System Service**

Project Number:	H2, H3, H4, H5
Project Name:	SCADA Enhancements
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY	**H3: RTU Replacement Program**				
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	7	2	1	2	8

Ranking Rationale	
Reliability:	large impact because of some influence onto customer outage duration and frequency
Safety:	moderate impact indirectly on safety
Environment:	low impact because there is no consequence
Capacity:	moderate impact because project does not enhance system capacity directly
Efficiency:	extreme impact because of great improvement in SCADA communication and obsoleting end of life equipment

Blended Health Index Derating Project Ranking	100%
Final Project Score	37

Capital Project Summary Sheet: **System Service**

Project Number:	H2, H3, H4, H5
Project Name:	SCADA Enhancements
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY	**H4: SCADA Cyber Security Program**				
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	10	9	1	1	10

Ranking Rationale	
Reliability:	extreme impact because SCADA system is responsible for controlling the entire distribution system
Safety:	extreme impact because malfunction can compromise system and resources (staff, operators)
Environment:	low impact because there is no consequence
Capacity:	low impact because there is no consequence
Efficiency:	extreme impact because of great improvement in SCADA functionality and security

Blended Health Index Derating Project Ranking	100%
Final Project Score	70

Capital Project Summary Sheet: **System Service**

Project Number:	H2, H3, H4, H5
Project Name:	SCADA Enhancements
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY	**H5: Line Status Sensors**				
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	7	6	3	1	10

Ranking Rationale	
Reliability:	large impact because line monitoring raises the reliability of supply by reducing outage time
Safety:	large impact because of indirect influence on safety by improving system awareness
Environment:	moderate impact because of indirect influence on environment by lowering unnecessary truck travel
Capacity:	low impact because there is no consequence
Efficiency:	extreme impact because of great improvement in load and fault condition monitoring

Blended Health Index Derating Project Ranking	100%
Final Project Score	55

PROJECT REVIEW AND APPROVAL	
Prepared By:	Norm Sacksen CET Manager Grid Operations and Technology
Reviewed By:	Hassan El Madhoun, M.Eng. P.Eng. Director of Operations Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

London Hydro

Capital Project Summary Sheet: System Service

Project Number:	H7
Project Name:	Control Centre Visualization
Timing:	January 1, 2027 - December 31, 2028

GENERAL PROJECT INFORMATION

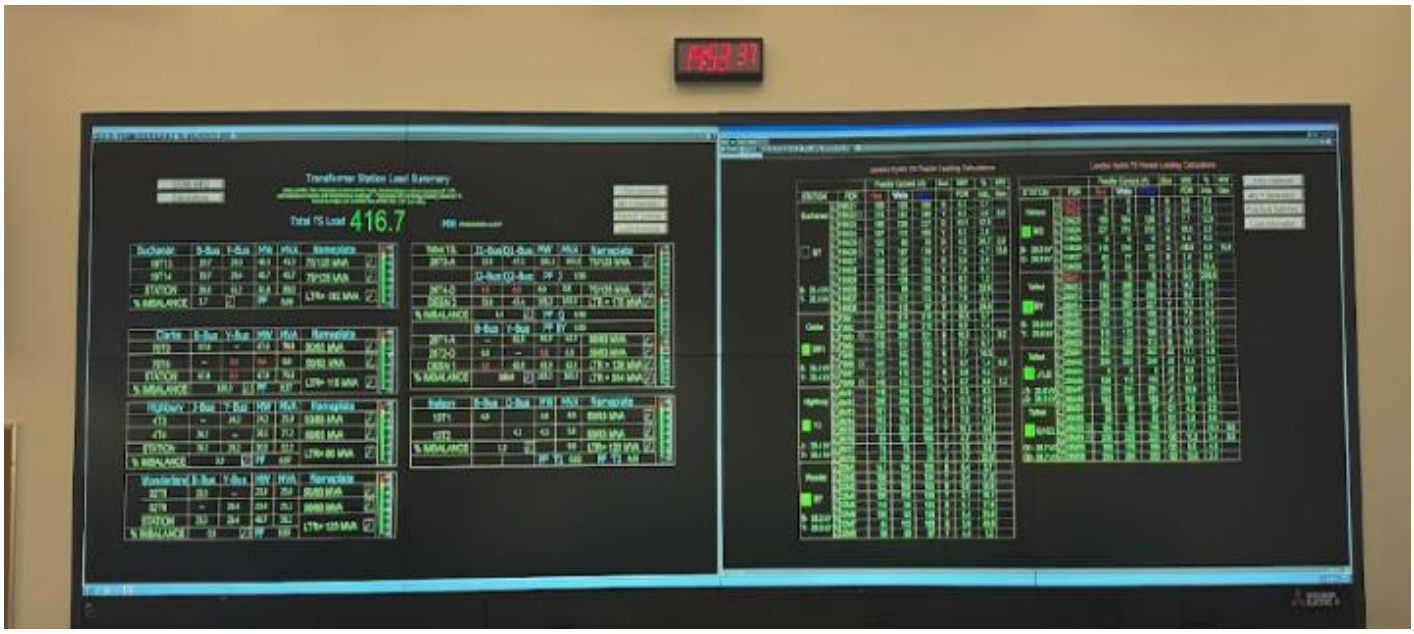
Supporting Reference Material:	ADMS Project Proposal
Project Overview:	This capital project seeks investment for two critical upgrades to our Control Room operations. The first is a large-format video wall to significantly enhance operator situational awareness (SA). This replacement is critical as our existing Mitsubishi screen is now end-of-life (EOL), and Mitsubishi exited the large display market in 2020, making future support and sourcing of replacement parts impossible. By consolidating real-time data, alarms, and video feeds into a unified, high-resolution display, we will facilitate faster analysis and accelerate crucial decision-making during high-stress scenarios, directly reducing incident response times. The second, and equally critical component, is a secure Keyboard, Video, and Mouse (KVM) solution. A KVM allows a single set of peripherals to control multiple computers. We propose implementing the BARCO CTRL system, which is paramount for cybersecurity integrity. It enables operators to seamlessly control both standard IT (Information Technology) workstations and mission-critical OT (Operational Technology) systems from a single console. BARCO CTRL achieves this without compromising the network segregation or security of the OT environment, providing a certified gap mechanism. This investment is justified by the heightened security, compliance requirements, and increased operator efficiency it delivers.
Risks/Factors that Affect Timing & Mitigation	Vendor implementation delays and integration complexity pose a risk to project timelines. This can be mitigated by developing milestone-based contracts, sourcing backup integrators, and preparing well documented integration use cases and testing strategies. Users may also struggle to adopt the new software system. This can be mitigated with extensive user training, ongoing support services, and incorporation of user feedback.

Primary Driver:	Efficiency	**Historical & Forecast Project Costs**			
Other Drivers:	Reliability			**Cost**	
	Safety	**Historical Years**	**2022**	$52,123	
	Customer Value		**2023**	$12,243	
	Environmental		**2024**	-	
Alternatives Considered:			**2025**	-	**Total Historical Costs**
		(bridge yr)	**2026**	-	**$64,366**
Do nothing – run the system until failure, then plan for a replacement at that time. This alternative was rejected due to the high criticality in the scope of this project.		**Forecast Years**	**2027**	$250,000	
			2028	$250,000	
			2029	-	
			2030	-	**Total Forecast Costs**
			2031	-	**$500,000**
LH Project Driver:	REL / EFF		**LH Section #**		250

Capital Project Summary Sheet: System Service

Project Number:	H7
Project Name:	Control Centre Visualization
Timing:	January 1, 2027 - December 31, 2028

ADDITIONAL PROJECT INFORMATION



London Hydro

Capital Project Summary Sheet: **System Service**

Project Number:	H7
Project Name:	Control Centre Visualization
Timing:	January 1, 2027 - December 31, 2028

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	This project replaces the End-of-Life video wall for better situational awareness and installs BARCO CTRL KVM to securely consolidate IT and OT control, enhancing efficiency and reliability.
Safety	The project significantly improves operational safety by enabling immediate detection of critical anomalies via the video wall displays, Alarms and Real-Time notifications alerts.
Environmental Benefits	Environmental benefits include significant energy savings from new displays, which reduce power consumption and HVAC load, minimizing the control room's carbon footprint.
Cyber-Security, Privacy	The evaluation criteria for Cybersecurity will focus primarily on verifying the BARCO CTRL KVM's core function – maintaining a certified physical air-gap to ensure rigorous network segregation between the IT and OT environments, confirming system hardening, and validating compliance with relevant industrial security standards. For Privacy, the criteria involve establishing strict, role-based access controls to limit unauthorized viewing of sensitive operational data displayed on the large video wall, alongside ensuring all KVM user logging and operational monitoring adhere to data minimization principles and internal policies regarding the handling of control room activity data.
Grid Innovation	The control room upgrade supports Grid Innovation by providing the high-resolution visualization needed for complex data such as DERs, FLISR, and microgrids, while the BARCO CTRL ensures the secure integration of new IT-based optimization tools alongside legacy OT systems.
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: System Service

Project Number: H7

Project Name: Control Centre Visualization

Timing: January 1, 2027 - December 31, 2028

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	9	1	1	3	8

Ranking Rationale	
Reliability:	extreme impact because we are improving sectionalization(s) and fault location
Safety:	low impact as there is no consequence
Environment:	low impact as there is no consequence
Capacity:	moderate impact as not adding capacity directly
Efficiency:	extreme impact since provides remote operational flexibilty

Blended Health Index Derating Project Ranking	100%
Final Project Score	40

PROJECT REVIEW AND APPROVAL	
Prepared By:	Norm Sacksen CET Manager Grid Operations and Technology
Reviewed By:	Hassan El Madhoun, M.Eng. P.Eng. Director of Operations Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: **System Service**

Project Number:	H14
Project Name:	ADMS & DERMS
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	ADMS Project Proposal
Project Overview:	The proliferation of Distributed Energy Resources (DER), electric vehicles, and other electrified loads is increasing operational complexity and customer expectations, while more frequent severe weather events demand a flexible, resilient grid. London Hydro's legacy Outage Management System (OMS) cannot meet these challenges, which are being addressed by proven Advanced Distribution Management Systems (ADMS) and Distributed Energy Resource Management Systems (DERMS). This project will implement a phased rollout of ADMS and DERMS, establishing the digital and functional foundation for long-term grid modernization. Starting January 1, 2027, the project deliverables include a core ADMS platform with Geographic Information System (GIS) and Supervisory Control and Data Acquisition (SCADA) integrations. A fully integrated OMS will also be established within ADMS for improved outage prediction, optimized fleet dispatch, and enhanced customer notifications. Key personnel will be engaged with testing, training, and migration activities prior to the legacy OMS cutover. This foundation will position London Hydro to refine its power system model and deploy advanced ADMS and DERMS capabilities from 2028 to 2031, supporting operational efficiency, customer choice, and grid resilience.
Risks/Factors that Affect Timing & Mitigation	Vendor implementation delays and integration complexity pose a risk to project timelines. This can be mitigated by developing milestone-based contracts, sourcing backup integrators, and preparing well documented integration use cases and testing strategies. Users may also struggle to adopt the new software system. This can be mitigated with extensive user training, ongoing support services, and incorporation of user feedback.

Capital Project Summary Sheet: System Service

Project Number: H14

Project Name: ADMS & DERMS

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Efficiency	**Historical & Forecast Project Costs**			
Other Drivers:	Reliability			**Cost**	
	Safety	**Historical Years**	**2022**	-	
	Customer Value		**2023**	-	
	Environmental		**2024**	-	
Alternatives Considered:			**2025**	$42,341	**Total Historical Costs**
Maintain Legacy OMS – Rejected because the legacy OMS lacks the features and scalability required to support evolving operational demands, and would incur escalating maintenance costs without delivering strategic value or performance improvements. Decentralized Automation Platforms – Rejected because localized edge devices lack the system-wide visibility required to safely orchestrate and optimize multi-circuit power flows across the entire grid.		(bridge yr)	**2026**	-	**$42,341**
		Forecast Years	**2027**	$5,465,600	**Total Forecast Costs**
			2028	$2,144,400	
			2029	$1,783,750	
			2030	$2,150,000	
			2031	$300,000	**$11,843,750**
LH Project Driver:	REL		**LH Section #**		250

ADDITIONAL PROJECT INFORMATION

In 2025, London Hydro hired a consultant to prepare a high level project proposal, which included a business case, schedule, and budgetary requirements. London Hydro will continue to refine its project plans with a consultant in 2026. This additional planning will help to mitigate potential project risks and add certainty to pricing and level-of-effort estimates by establishing an implementation roadmap, RFP requirements, and vendor evaluation plan.

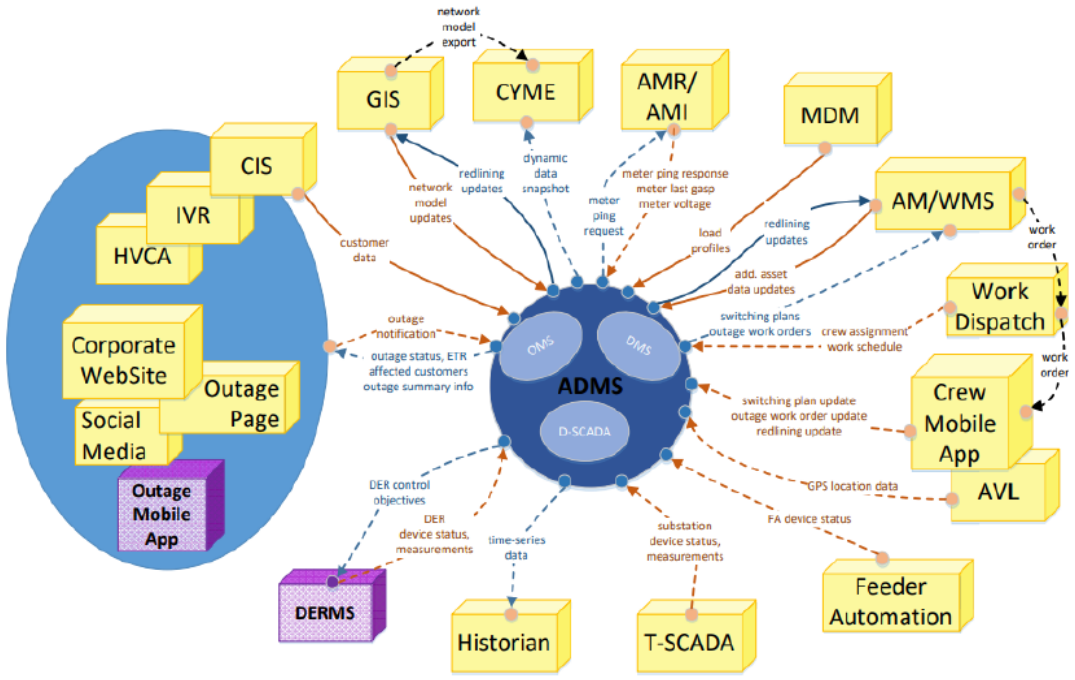


Figure 1: ADMS System Architecture and Data Integration Flow

London Hydro

Capital Project Summary Sheet: **System Service**

Project Number:	H14
Project Name:	ADMS & DERMS
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Optimizes power flow and reduces line losses by controlling voltage, reactive power, and switching operations. Enables participation in energy markets or local microgrid programs. Automates outage detection, isolation, and restoration.
Safety	Prevents overloads and equipment damage by monitoring real-time limit violations. Manages switches, DER, EV chargers, and storage assets to protect workers, customers, and equipment from unsafe conditions.
Environmental Benefits	Lower greenhouse gas emissions by enabling higher penetration of renewables, as well as reducing system losses, truck rolls, and the activation of nautural gas generators.
Cyber-Security, Privacy	Centralized monitoring allows consistent security policies and access control. Manages secure communication with DERs, ensuring data privacy for distributed generation and customer devices. Supports secure participation in demand-response.
Grid Innovation	Supports integration of advanced analytics, predictive maintenance, and smart grid technologies. Facilitates virtual power plants. Enables customer DER participation in ancillary services, peer-to-peer energy trading, and demand-response.
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	A preliminary business case was established in 2025, and will be refined under the ADMS roadmap initiative concluding 2026.

London Hydro

Capital Project Summary Sheet: System Service

Project Number: H14

Project Name: ADMS & DERMS

Timing: January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	25%	35%	15%	15%	10%
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	9	6	3	3	10

Ranking Rationale	
Reliability:	extreme impact because we are improving sectionalization(s) and fault location
Safety:	large impact as there is indirect influence on safety
Environment:	moderate impact as failure would have some influence
Capacity:	moderate impact as not adding capacity directly
Efficiency:	extreme impact since it provides remote operational flexibilty

Blended Health Index Derating Project Ranking	100%
Final Project Score	63

PROJECT REVIEW AND APPROVAL	
Prepared By:	Brandon Tapp, P.Eng. Senior Engineer Operations
Reviewed By:	Hassan El Madhoun, M.Eng. P.Eng. Director of Operations Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

London Hydro

General Plant

Capital Project Summary Sheet: General Plant

Project Number:	CC
Project Name:	Renewable Energy Capacity
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	2026 Distribution System Plan (DSP), Appendix J, London Hydro's Renewable Energy Generation Investment Plan 2026 Distribution System Plan (DSP), Section 5.3.4, System Capability Assessment for Renewable Energy Generation and Distributed Energy Resources
Project Overview:	The Ontario Energy Board's (OEB) evolving policy framework places increasing emphasis on enabling the integration of Distributed Energy Resources (DERs) into Ontario's electricity system. Through its Non-Wires Solutions (NWS) Guidelines, the OEB requires distributors to consider Non-Wires Solutions, including DERs, where appropriate, as part of distribution system planning. Complementing this direction, recent amendments to the Distribution System Code (DSC) are intended to lower barriers to DER connections by reducing costs, improving connection timelines, and enhancing the transparency, consistency, and efficiency of the connection process. Together, these initiatives support greater customer participation in distributed energy resources and encourage distributors to proactively address system constraints that limit DER integration. To address hosting capacity constraints at Hydro One-owned transformer stations (e.g. Nelson TS, Buchanan TS, and Talbot DESN1 - refer to DSP Section 5.3.4 for more details) and facilitate the continued adoption of customer-owned DERs, London Hydro has included capital contributions in this DSP to coordinate with Hydro One on the identification of the most feasible location to install bus-tie reactors at one constrained transformer station, followed by the initiation of similar work at a second station. Bus-tie reactors limit fault current contributions from the transmission system, thereby increasing the amount of DER capacity that can be safely connected to the 27.6 kV distribution system without exceeding equipment interrupting ratings or adversely affecting system protection performance. By removing these hosting capacity constraints, the investment also enables London Hydro to make more effective use of existing transformation capacity. Where transformer stations have available supply capacity but are constrained by fault levels, additional feeder connections or load transfers may not be practical if they would limit existing or future DER integration. Increasing hosting capacity provides London Hydro with greater operational and planning flexibility by allowing available transformation capacity to be more fully utilized. This enables new feeder connections, load transfers from constrained stations, and future system reconfiguration without unnecessarily restricting the ability to accommodate existing or future DERs. This coordinated investment leverages existing transmission infrastructure to expand hosting capacity in a cost-effective manner while supporting customer choice, renewable energy integration, and the future implementation of Non-Wires Solutions where appropriate. The proposed investment aligns with London Hydro's broader grid modernization strategy by maximizing the utilization and operational flexibility of existing supply infrastrucuture while enhancing the distribution system's ability to accommodate growing levels of DER adoption, improving network flexibility, and enabling future Non-Wires Solutions. It represents a prudent, long-term enhancement that positions the distribution system to meet evolving customer expectations and regulatory requirements while maximizing the use of existing transmission infrastructure. Engineering design and construction at the first transformer station are planned for 2027-2029, with work at the second station planned for 2030-2031.

Capital Project Summary Sheet: General Plant

Project Number: CC

Project Name: Renewable Energy Capacity

Timing: January 1, 2026 - December 31, 2031

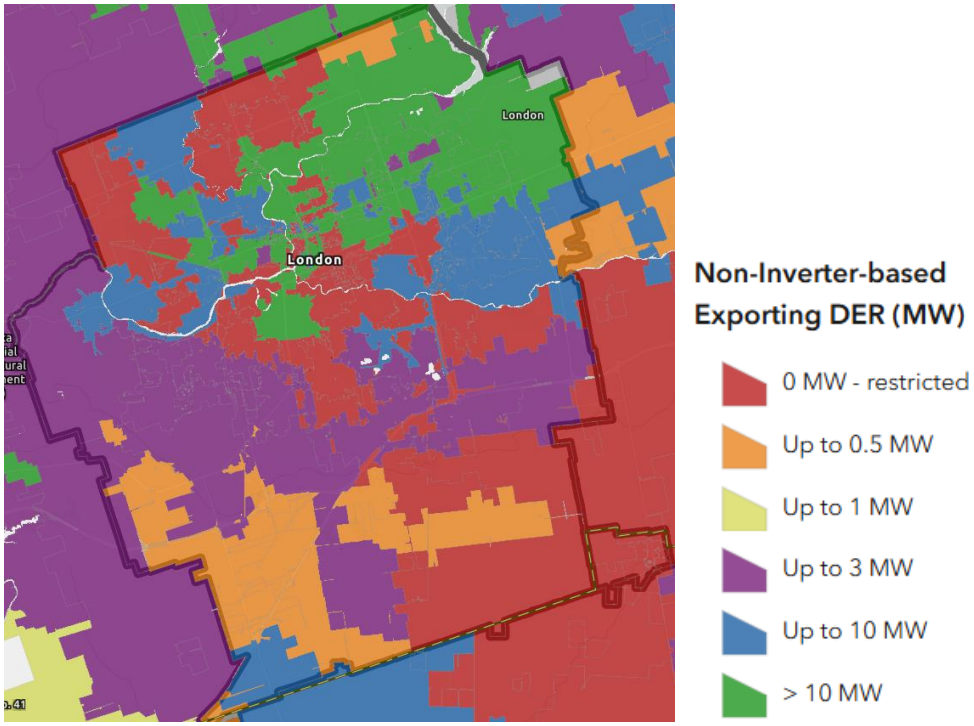
Risks/Factors that Affect Timing & Mitigation	Execution of this project is dependent on Hydro One's engineering design, procurement, construction, and outage scheduling processes, as the associated infrastructure is located within Hydro One-owned transformer stations. Industry-wide supply chain constraints, long lead times for specialized electrical equipment, contractor availability, and competing capital priorities may influence Hydro One's delivery schedule. London Hydro will mitigate these risks through early coordination with Hydro One, regular project monitoring, and continued collaboration to align schedules and facilitate timely execution.				
Primary Driver:	Customer Value	**Historical & Forecast Project Costs**			
Other Drivers:	Environmental			**Cost**	
	Efficiency	**Historical Years**	**2022**		
	Econ. Dev.		**2023**		
	Reliability		**2024**		
Alternatives Considered:			**2025**		**Total Historical Costs**
		(bridge yr)	**2026**	$899,700	**$899,700**
		Forecast Years	**2027**	$1,000,000	
			2028	$2,595,000	
			2029	$2,703,000	
			2030	$1,000,000	**Total Forecast Costs**
			2031	$2,595,000	**$9,893,000**
LH Project Driver:	Customer Value		**LH Section #**		CC

Capital Project Summary Sheet: **General Plant**

Project Number:	CC
Project Name:	Renewable Energy Capacity
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION

Available DER Hosting Capacity for London based on Centralized Capacity Information Map



London Hydro

Capital Project Summary Sheet: **General Plant**

Project Number:	CC
Project Name:	Renewable Energy Capacity
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Increasing hosting capacity enables the connection of additional DERs, improving system flexibility and resilience by diversifying local energy resources. The investment supports greater customer participation, enhances renewable energy integration, and may reduce localized system constraints while maximizing the use of existing transmission infrastructure.
Safety	Not Applicable
Environmental Benefits	Increasing DER hosting capacity facilitates the integration of renewable energy resources, supporting the transition to a lower-carbon electricity system and contributing to provincial decarbonization objectives.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Expanding DER hosting capacity supports grid modernization by enabling greater adoption of distributed generation, energy storage, and other emerging technologies, while providing a foundation for future Non-Wires Solutions and a more flexible distribution system.
Statutory / Regulatory Obligation	Supports London Hydro's compliance with the OEB's evolving regulatory framework for DER integration, including the consideration of Non-Wires Solutions and the removal of barriers to Distributed Energy Resource connections.

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	This project is an enabling investment that increases the distribution system's capacity to accommodate future DERs and NWS. As the project itself removes an existing technical constraint that limits DER integration, consideration of NWS as an alternative is not applicable.
BCA Pre-assessment	Not Applicable. This project enables future DER integration and NWS implementation rather than serving as a traditional wires investment intended to address a discrete capacity or reliability need that could be deferred through NWS.

London Hydro

Capital Project Summary Sheet: General Plant

Project Number:	CC
Project Name:	Renewable Energy Capacity
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	This project is excluded from the asset health-based ranking process as it is a strategic grid modernization investment that is not driven by asset condition. The investment removes technical barriers to Distributed Energy Resource (DER) integration by increasing hosting capacity, supporting the OEB's evolving regulatory framework and facilitating future Non-Wires Solutions.
Safety:	
Environment:	
Capacity:	
Efficiency:	

Blended Health Index Derating Project Ranking	N/A
Final Project Score	N/A

PROJECT REVIEW AND APPROVAL	
Prepared By:	Adrian Lattanzio, P.Eng. Manager Eng System Planning
Reviewed By:	Ismail Sheikh, M.Eng. P.Eng. Director of Systems Engineering
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: **General Plant**

Project Number:	Q
Project Name:	Office Furniture and Equipment
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION

Supporting Reference Material:

Accessibility for Ontarians with Disabilities Act, 2005 (https://www.ontario.ca/laws/statute/05a11)

OH&S Act & Regulations Handbook - Ontario Green Book

Project Overview:

In addition to its core distribution infrastructure, London Hydro owns and operates a range of supporting assets that enable the safe and efficient delivery of electricity services including Facilities services. Facilities services provides operational support though building and office infrastructure including buildings, furniture, security, cafeteria and related systems. These assets are categorized as “General Plant” in the capital plan.

Description/Scope	2026	2027
Operations	$26,000	$27,000
Customer Services	$10,400	$10,800
I.T. (PMO, I.T., etc.)	$10,400	$10,800
H.R.	$3,100	$3,250
Finance	$3,100	$3,250
Engineering	$6,200	$6,500
General Distribution	$15,600	$16,200
Safety & Security Equipment (cameras, monitors, etc.)	$312,000	$324,500
Office Equipment (paper shredders, etc.)	$5,200	$5,400
Facility Cleaning Equipment (polishers, vacuums, etc.)	$20,800	$21,650
Ergonomic Furniture (sit stand units and ergo chairs)	$78,000	$81,150
Furniture for Renovation Project	$260,000	$270,400
Misc. Equipment (Kitchen Equipment, recreation equip, etc.)	$52,000	$54,100
	$802,800	**$835,000**

Risks/Factors that Affect Timing & Mitigation

AODA compliance and workplace modernization are integral to London Hydro’s facilities lifecycle plan. Accessibility upgrades are coordinated with major renovations or replacements to maximize cost efficiency, while ergonomic improvements (e.g., sit/stand desks, noise reduction measures) are implemented through phased renewal projects. This ensures that each reinvestment aligns with health, safety, and accessibility objectives.

The office furniture needs are driven by renovations and growth in the office environment. Due to ongoing theft and vandalism concerns as well as aging existing security systems the substation security systems will be modernized with hardware and communication system upgrades.

Capital Project Summary Sheet: **General Plant**

Project Number: Q

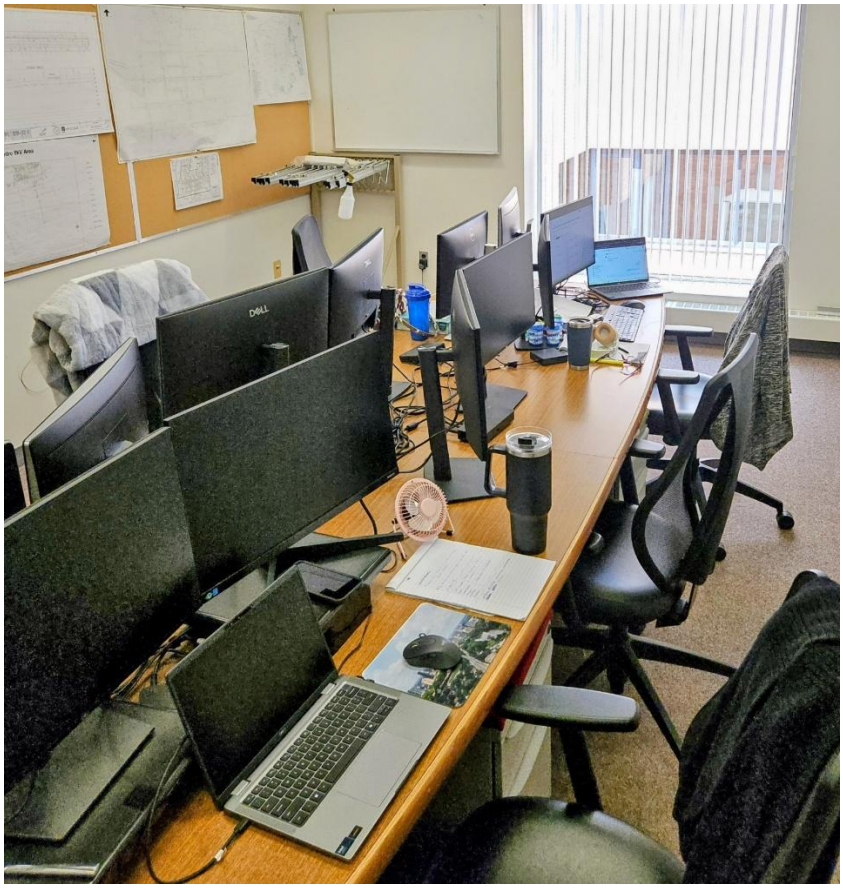
Project Name: Office Furniture and Equipment

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Efficiency	**Historical & Forecast Project Costs**			
Other Drivers:	Safety			**Cost**	
	Interoperability	**Historical Years**	**2022**	$181,895	
	Environmental		**2023**	$198,867	
			2024	$212,652	
Alternatives Considered:			**2025**	$204,862	**Total Historical Costs**
		(bridge yr)	**2026**	$802,800	**$1,601,076**
		Forecast Years	**2027**	$835,000	
			2028	$865,900	
			2029	$897,900	
			2030	$931,100	**Total Forecast Costs**
			2031	$965,600	**$4,495,500**

ADDITIONAL PROJECT INFORMATION

Figure 1. Meeting room being used for Customer Service project work due to lack of available workstations.



London Hydro

Capital Project Summary Sheet: **General Plant**

Project Number:	Q
Project Name:	Office Furniture and Equipment
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Facilities for work and meetings assists staff in being productive and efficient. Providing ergonomic furniture (chairs, desks) and adjustable lighting minimizes physical discomfort and fatigue. Maintaining optimal indoor air quality (IAQ) and a comfortable temperature range prevents drowsiness and sick days, supporting consistent concentration. Meeting rooms equipped with modern, reliable technology (video conferencing, screen sharing, fast Wi-Fi) reduce setup time and technical friction, leading to more efficient meetings.
Safety	Employee Ergonomics and Health and Safety are key deliverables with this program to renew building infrastructure and ensure desk, chairs and other equipment are in good serviceable condition to support utility operations.
Environmental Benefits	Facilities investments in waste systems and office equipment is expected to lead to better overall waste stream quality and diversion waste that would otherwise occupy space in landfill.
Cyber-Security, Privacy	Physical security protects assets and staff from vandalism and other threats. Cameras monitor high-value assets and sensitive areas, recording evidence and allowing real-time monitoring. Systems track who enters and exits specific areas, providing an audit trail.
Grid Innovation	Supports worker efficiency and effectiveness to more productivly collaborate and execute electricity system planning and delivery.
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: General Plant

Project Number:	Q
Project Name:	Office Furniture and Equipment
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	Not Applicable
Safety:	Not Applicable
Environment:	Not Applicable
Capacity:	Not Applicable
Efficiency:	Not Applicable

Blended Health Index Derating Project Ranking	Not Applicable
Final Project Score	Not Applicable

PROJECT REVIEW AND APPROVAL	
Prepared By:	Mark Zeleznik Manager of Facilities
Reviewed By:	Luke Seewald, P.Eng., MBA, CEM Director of Engineering Services
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

London Hydro

Capital Project Summary Sheet: General Plant

Project Number: R

Project Name: Building and Fixtures

Timing: January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION

Project Overview:

London Hydro performs continual capital renewal on facilities buildings, infrastructure and systems to ensure unencumbered support to continual utility operations. Safety of workers, contractors and general public as well as reduced maintenance and improved efficiency (i.e. reduced fuel and resources) are goals of this internal facilities program. In addition, equipment and systems are kept operational to ensure protection of the environment. Building improvements are also included in this program that supports organizational growth and development.

The Facilities Renovations Project is a large part of this capital renewal project. These projects have been making upgrades to the building facilities in order to support organizational growth and the need for additional office workspaces. These are complementary to the Operations Center Capital project and have allowed London Hydro to support growth within its existing land use constrained footprint.

Description/Scope	2026	2027
New Energy Saving Lighting & Controls	$88,400	$92,000
New Paving/Curbs - Sub Stations	$26,000	$27,000
New Door/Window/Roof - Sub Station	$31,200	$32,500
New HVAC Equipment (See Figure 2 below)	$156,000	$486,700
Paving in Yards	$36,400	$37,900
Stand-by Power and Electrical Projects (Figure 1 below)	$182,000	$162,300
Facility Environmental Upgrades	$308,900	$321,100
Facilities Renovations Project	$520,000	$540,800
	$1,348,900	**$1,700,300**

Risks/Factors that Affect Timing & Mitigation

Any emerging equipment failures or operational accidents that happen can accelerate replacement and defer planned replacement work.

Primary Driver: Efficiency

Other Drivers: Safety, Interoperability, Environmental

Alternatives Considered:

Historical & Forecast Project Costs

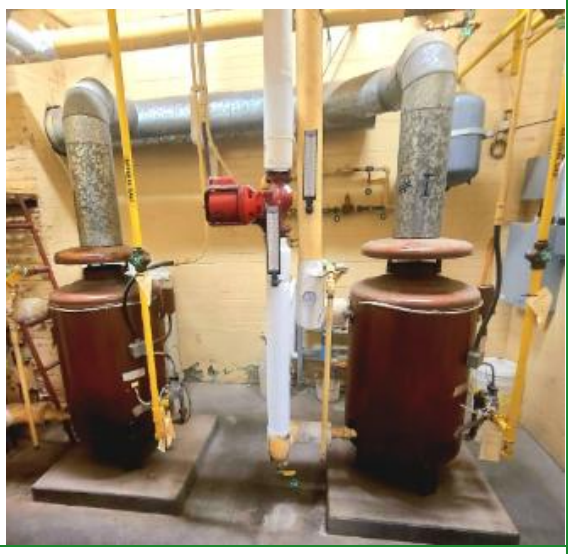
		Cost	
Historical Years	2022	$1,681,237	
	2023	$1,267,761	
	2024	$ 650,711	
	2025	$5,853,297	**Total Historical Costs**
(bridge yr)	2026	$1,348,900	**$10,801,906**
Forecast Years	2027	$1,700,300	
	2028	$1,726,300	
	2029	$1,790,000	
	2030	$2,028,300	**Total Forecast Costs**
	2031	$2,103,300	**$9,348,200**

ADDITIONAL PROJECT INFORMATION

Figure 1. Natural Gas Standby Power System



Figure 2. Natural Gas HVAC Boiler for Heating



London Hydro

Capital Project Summary Sheet: General Plant

Project Number:	R
Project Name:	Building and Fixtures
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	The Facilities department ensures that buildings, building equipment and operational facilities are functional in order to support utility administration and operations. Standby power systems ensure continuity of mission critical control room and grid reliability systems and programs.
Safety	Employee Ergonomics and Health and Safety are key deliverables with this program to renew building infrastructure and ensure compliance with various environmental, city and technical requirements.
Environmental Benefits	Facilities investments in environmental systems helps protect the environment. Examples include lead processessing, recycling and oil water separator detection for storm water.
Cyber-Security, Privacy	Physical security protects assets and staff from vandalism and other threats.
Grid Innovation	Supports worker efficiency and effectiveness to more productivly collaborate and execute electricity system planning and delivery.
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: General Plant

Project Number: R

Project Name: Building and Fixtures

Timing: January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	Not Applicable
Safety:	Not Applicable
Environment:	Not Applicable
Capacity:	Not Applicable
Efficiency:	Not Applicable

Blended Health Index Derating Project Ranking	Not Applicable
Final Project Score	Not Applicable

PROJECT REVIEW AND APPROVAL	
Prepared By:	Mark Zeleznik Manager of Facilities
Reviewed By:	Luke Seewald, P.Eng., MBA, CEM Director of Engineering Services
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: **General Plant**

Project Number:	RR
Project Name:	Second Operations Center
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	Three Reports: 1) London Hydro Facility Needs Assessment report - Dillon Consulting (2025) 2) Verve Consulting, "Remote Operations Assessment", (2020) 3) Canning Consulting, "Proposal for Two Separate Operations Facilities", (2020)
Project Overview:	At the time of this submission, London Hydro is still generating and evaluating alternative options for meeting its land and facilities needs. This could include leasing space, purchasing and developing land, or purchasing and building on available land. Each phase may include some level of implementation, rework, improvements, and sharing with other organizations to utilize any unused space. The budget London Hydro set accounts for purchasing land and developing buildings - a buy-build scenario. This is one of the many scenarios being considered. In this buy-build scenario the timing of the in-service date is assumed to be early in the next rebasing period. London Hydro is providing information about this project ahead of the alternative generation phase and has included budgetary plans before making a final decision on the type of solution. London Hydro is assessing its current facilities to determine the need for new storage and maintenance spaces to meet immediate operational demands and plan for long-term growth. London Hydro will be seeking to secure land in 2026 for a material and vehicle storage yard. Based on the existing conditions reviewed several high-level critical issues were identified for the current facility, including: • **Capacity and Growth Limitations:** Several departments are at or over capacity, restricting their ability to expand and support future growth. For instance, the fleet department specifically needs more space and higher ceilings. • **Inefficient Storage:** The current storage solutions are insufficient, leading to materials and equipment being dispersed across multiple on-site and off-site locations. The lower yard is used for large equipment, but some materials should be stored indoors based on manufacturer recommendations. Additionally, a lack of loading docks causes congestion, and materials stored outdoors are exposed to the elements. • **Site Constraints:** The facility has insufficient parking for staff and fleet vehicles, and a shared driveway with a neighboring business often causes delays and poses a site security risk. The downtown location creates traffic congestion and makes it difficult to maneuver large trucks. • **Safety and Environmental Concerns**: The lower yard is in a floodplain, posing risks to equipment, materials and the environment creating unnecessary operation risk. There are also security issues, with vehicle break-ins and material theft occurring in the lower yard. • **Workspace Inefficiencies:** The building layout is fragmented and difficult to navigate, with departments spread across multiple levels. The facility is also not AODA compliant, and there is an immediate need for additional space for amenities like locker rooms, drying rooms, and gender specific change rooms.
Risks/Factors that Affect Timing & Mitigation	Changes in requirements for material storage and/or environmental events (i.e. flooding) impact to current land storage. Also, changes to external lease agreements may impact timing.

Capital Project Summary Sheet: **General Plant**

Project Number: RR

Project Name: Second Operations Center

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Efficiency	**Historical & Forecast Project Costs**			
Other Drivers:	Safety			**Cost**	
	Interoperability	**Historical Years**	**2022**		
	Environmental		**2023**		
			2024		
Alternatives Considered:			**2025**		**Total Historical Costs**
		(bridge yr)	**2026**	$14,296,100	**$14,296,100**
		Forecast Years	**2027**	$598,500	
			2028	$5,841,500	
			2029	$6,088,600	
			2030	$6,346,200	**Total Forecast Costs**
			2031	$15,634,500	**$34,509,300**

ADDITIONAL PROJECT INFORMATION



Figure 1. Example Phase II Pole and Material yard

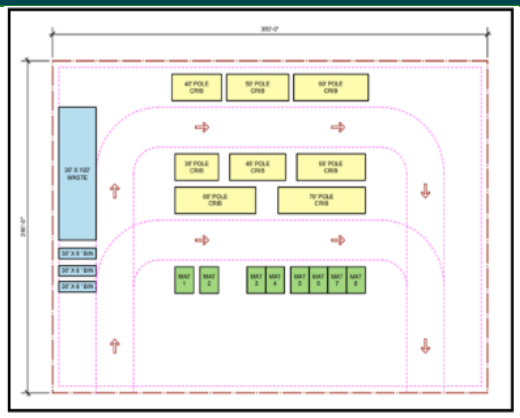


Figure 2. Example Phase I Layout Design

This Project is envisioned to be conduced in three Phases:

Phase I sees the proposed Second Operations Center serving as a central hub for materials storage, fleet management, and operational coordination. It is envisioned that this phase will result in approximately 25% of the land to be used for material storage. This includes items such as utility poles, wire, transformers, and construction materials such as aggregates. Phase I work will include land acquisition, permitting, site planning, site preparation, fencing and security, etc.
Timeline: 2026-2028 ***Budget***: $20,737,000

Phase II is expected to include all the pre-construction activities, e.g., site studies, architectural and engineering design, site preparation, etc. This phase may also include the installation of structures and buildings to support staff and protect material, equipment and vehicles. Although considerable work will have been undertaken to further develop the site and advance construction of a building, LHI anticipates that only another 10% of the site will be useful to support day-to-day operations.
Timeline: 2029-2031 ***Budget***: $28,070,000

Phase III will include the construction and commissioning of a new operations center, at which time the whole site will be fully functional and complement the whole of Operations.

Capital Project Summary Sheet: General Plant

Project Number:	RR
Project Name:	Second Operations Center
Timing:	January 1, 2026 - December 31, 2031

Timeline: 2032-2033 ***Budget***: $30,984,000.

London Hydro

Capital Project Summary Sheet: **General Plant**

Project Number:	RR
Project Name:	Second Operations Center
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	The Facilities department ensures that buildings, building equipment and operational facilities are functional in order to support utility administration and operations. Material storage and vehicle operations are key to delivering on capital programs as well as outage restoration response activities.
Safety	Employee Ergonomics and Health and Safety are key deliverables with this program to renew building infrastructure and ensure compliance with various environmental, city and technical requirements.
Environmental Benefits	Facilities investments in environmental systems helps protect the environment.
Cyber-Security, Privacy	Physical security protects assets and staff from vandalism and other threats.
Grid Innovation	Supports worker efficiency and effectiveness to more productivly equip and execute electricity system planning and delivery.
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: General Plant

Project Number:	RR
Project Name:	Second Operations Center
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	Not Applicable
Safety:	Not Applicable
Environment:	Not Applicable
Capacity:	Not Applicable
Efficiency:	Not Applicable

Blended Health Index Derating Project Ranking	Not Applicable
Final Project Score	Not Applicable

PROJECT REVIEW AND APPROVAL	
Prepared By:	Mark Zeleznik Manager of Facilities
Reviewed By:	Luke Seewald, P.Eng., MBA, CEM Director of Engineering Services
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: General Plant

Project Number:	N
Project Name:	Vehicles and Equipment
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION

Project Overview:

London Hydro continually refreshes its fleet vehicles and equipment to ensure high uptime and availability for crews. London Hydro's Fleet department manages the maintenance, repair, licensing and inspection requirements for all vehicles and equipment required to build and maintain the Company's distribution system infrastructure. Fleet Services ensure that vehicles are operating safely and are available when needed for prompt outage response for customers and efficient completion of new and rebuilt capital projects. London Hydro's rolling stock assets consist of over 180 units including small and large trucks, SUV's, sedans, backhoes, forklifts and other pieces of equipment.

Fleet lifecycle management follows the same risk-based, cost-optimized approach applied to London Hydro's distribution system assets. A comprehensive Fleet Replacement and Maintenance Model defines the repair, replace, and deferral criteria for all vehicle and equipment classes. When a vehicle approaches its scheduled replacement year, the Fleet Supervisor conducts a comprehensive assessment of:

1. Mileage, engine hours, and age relative to service category averages,
2. Maintenance cost trends, with vehicles flagged for replacement when costs exceed 20% of vehicle value for two consecutive years,
3. Safety and compliance with MTO legislation and third-party engineering evaluations,
4. Resale value and impact on total cost of ownership, and
5. Operational suitability and departmental feedback on performance needs.

If cost, safety, and performance criteria support life extension, the vehicle remains in service and is re-evaluated in the next budget cycle. This disciplined approach allows London Hydro to extend asset life beyond depreciation periods where justified, thereby reducing capital spending without compromising operational reliability. The company also applies economic cost models to determine the optimal replacement timing by assessing cumulative ownership and maintenance costs against resale value. This analysis is complemented by consultation with end-user departments to ensure any replacement improves functionality, safety, or efficiency. Senior management reviews fleet performance and replacement schedules annually to confirm alignment with operational priorities and available budget.

List of Equipment	2026	List of Equipment	2027
Bucket Truck	$372,000	Equipment Trailer	$30,000
Bucket Truck	$372,000	Double Bucket Truck	$800,000
Pickup Truck	$80,000	Pickup Truck	$65,000
Radial Boom Derek Truck	$630,000	Pickup Truck	$65,000
Bucket Truck	$500,000	Pickup Truck	$65,000
Mini Van	$50,000	Pickup Truck	$65,000
Pickup Truck	$80,000	Double Bucket Truck	$800,000
Utility Trailer	$30,000	Pickup Truck	$50,000
Float Trailer	$40,000	Sedan	$60,000
Equipment Trailer	$40,000	Pickup Truck	$70,000
Walkie Stacker	$20,000	Pickup Truck	$75,000
Pickup Truck	$80,000	Pickup Truck	$50,000
		Sedan	$80,000
		Pickup Truck	$50,000
		Pickup Truck	$120,000
	$2,294,000		**$2,445,000**

Capital Project Summary Sheet: General Plant

Project Number: N

Project Name: Vehicles and Equipment

Timing: January 1, 2026 - December 31, 2031

Risks/Factors that Affect Timing & Mitigation	Vehicle accidents or other unplanned repairs can impact the priority of vehicle replacement.				
Primary Driver:	Efficiency	**Historical & Forecast Project Costs**			
Other Drivers:	Safety			**Cost**	
	Interoperability	**Historical Years**	**2022**	$1,292,005	
	Environmental		**2023**	$1,483,733	
			2024	$1,557,285	
Alternatives Considered:			**2025**	$1,821,945	**Total Historical Costs** **$8,448,968**
		(bridge yr)	**2026**	$2,294,000	
		Forecast Years	**2027**	$2,445,000	
			2028	$3,462,300	
			2029	$3,772,600	
			2030	$3,851,100	**Total Forecast Costs** **$17,307,200**
			2031	$3,776,200	

London Hydro

Capital Project Summary Sheet: General Plant

Project Number:	N
Project Name:	Vehicles and Equipment
Timing:	January 1, 2026 - December 31, 2031

ADDITIONAL PROJECT INFORMATION



London Hydro

Capital Project Summary Sheet: General Plant

Project Number:	N
Project Name:	Vehicles and Equipment
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	London Hydro's vehicle and equipment fleet provides workers with mobile operational platforms to maintain and repair distribution equipment. High vehicle availability ensures crews can respond quickly and safely to outages at all ours.
Safety	Hydraulic bucket trucks enable workers to build and fix overhead equipment and thus the vehicles are an integral component in ensuring worker safety.
Environmental Benefits	Efficient vehicles can assist in reducing emissions to the environment.
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: General Plant

Project Number: N

Project Name: Vehicles and Equipment

Timing: January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	Not Applicable
Safety:	Not Applicable
Environment:	Not Applicable
Capacity:	Not Applicable
Efficiency:	Not Applicable

Blended Health Index Derating Project Ranking	Not Applicable
Final Project Score	Not Applicable

PROJECT REVIEW AND APPROVAL	
Prepared By:	Mark Zeleznik Manager of Facilities
Reviewed By:	Luke Seewald, P.Eng., MBA, CEM Director of Engineering Services
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

London Hydro

Capital Project Summary Sheet: General Plant

Project Number: O

Project Name: Operating Equipment

Timing: January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION

Project Overview:

London Hydro has a continual renewal of tools and equipment to support operations including all field departments.

List of Equipment	2026	2027
Misc. Operationg Equ. P. & C.	$10,400	$10,800
Misc. Operationg Equ. Sub Station	$10,400	$10,800
Misc. Operationg Equ.Line	$49,920	$51,900
Misc. Operationg Equ. Electric Meter	$10,400	$10,800
Misc. Equ. Construction	$29,120	$30,300
Misc. Equ. EUS	$21,860	$22,700
Misc. Equ. Garage	$93,600	$97,300
Misc. Equ. Safety/Environmental/Other	$20,800	$21,600
Misc. Equ. Stores -includes Storage Racks moved from Bldgs	$31,200	$32,400
Measurement & Test Equ. P.&C.	$38,480	$40,000
Measurement & Test Equ. Sub Station	$16,640	$17,300
Measurement & Test Equ. Line	$21,840	$22,700
Measurement & Test Equ. Electric Meter	$34,300	$35,700
Measurement & Test Equ. Construction	$10,400	$10,800
Measurement & Test Equ. EUS	$15,600	$16,200
Measurement & Test Equ. Garage	$21,840	$22,700
	$436,800	**$454,000**

Risks/Factors that Affect Timing & Mitigation

Damage, loss or theft of existing tools may accelerate the replacement of some items.

Primary Driver: Efficiency

Other Drivers: Safety, Interoperability, Environmental

Alternatives Considered:

Historical & Forecast Project Costs

		Cost	
Historical Years	2022	$249,198	
	2023	$310,025	
	2024	$281,013	
	2025	$416,668	**Total Historical Costs**
(bridge yr)	2026	$436,800	**$1,693,704**
Forecast Years	2027	$454,000	
	2028	$470,800	
	2029	$488,200	
	2030	$506,200	**Total Forecast Costs**
	2031	$525,000	**$2,444,200**

ADDITIONAL PROJECT INFORMATION

Figure 1. Metering Test Equipment for performing installation verifications is an example of the type of operational equipment that are used by technical field crews.



London Hydro

Capital Project Summary Sheet: **General Plant**

Project Number:	O
Project Name:	Operating Equipment
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency, Customer Value, Reliability	Functional tools support the timely and accurate completion of work by field crews to help deliver first-time right compliant and reliable installation. Field tool dependability helps with ensuring distribution equipment is installed and maintained correctly and with minimum downtime.
Safety	Properly maintained tools help ensure worker safety and proper installation of distribution equipment also helps ensure the safety of the public.
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	Not Applicable
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: **General Plant**

Project Number:	O
Project Name:	Operating Equipment
Timing:	January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	Not Applicable
Safety:	Not Applicable
Environment:	Not Applicable
Capacity:	Not Applicable
Efficiency:	Not Applicable

Blended Health Index Derating Project Ranking	Not Applicable
Final Project Score	Not Applicable

PROJECT REVIEW AND APPROVAL	
Prepared By:	Mark Zeleznik Manager of Facilities
Reviewed By:	Luke Seewald, P.Eng., MBA, CEM Director of Engineering Services
Approved By:	Jac Vanderbaan, P.Eng. CPA, CMA V.P. Operations & Planning

Capital Project Summary Sheet: General Plant

Project Number:	V1
Project Name:	Hardware & Software
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	IT Asset Management Framework
Project Overview:	**Hardware/Software Infrastructure Lifecycle** This project area represents London Hydro's capital investment in end-user and core infrastructure hardware replacement required for reliable day-to-day business operations. The project includes lifecycle refresh and targeted expansion of user computing devices, field and mobile devices, network equipment, security infrastructure, meeting room technology, printing equipment, and other supporting IT tools. The overall program and annual spend is intended to maintain supportable and secure technology, address end-of-life infrastructure risks, improve workplace productivity, and ensure IT infrastructure continues to meet operational and business requirements. These capital allocations are essential for upholding the operational efficiency of London Hydro, fortifying our cybersecurity posture, and delivering dependable service to our customer base. Primary Driver: Reliability Other Driver: Efficiency
Risks/Factors that Affect Timing & Mitigation	Driven by ever-growing demand for AI, the hardware market is currently facing a structural supply chain crisis. This situation has led to component shortages, surging prices, and extended lead times that are anticipated to continue past 2027.To facilitate IT procurement, London Hydro employs a vendor of record strategy. These industry-leading suppliers generally maintain more extensive inventory levels.

Capital Project Summary Sheet: General Plant

Project Number: V1

Project Name: Hardware & Software

Timing: January 1, 2026 - December 31, 2031

Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Customer Value			**Cost**	
	Cyber Security	**Historical Years**	**2022**	$664,900	
	Efficiency		**2023**	$638,799	
			2024	$658,467	**Total Historical Costs**
Alternatives Considered:			**2025**	$1,195,727	
		(bridge yr)	**2026**	$1,046,400	**$4,204,293**
Do-nothing: This approach would require London Hydro to assume significant cybersecurity and out-of-support hardware and software risks. Stagger replacements and implementations: Adopting a staggered schedule for replacements and implementations would necessitate a high level of risk tolerance. Furthermore, this strategy would subject London Hydro to increased expenses for operations and support, alongside the risk of failing to meet regulatory standards.		**Forecast Years**	**2027**	$1,466,900	
			2028	$1,121,200	
			2029	$1,177,500	
			2030	$1,235,900	
			2031	$1,296,400	**Total Forecast Costs** **$6,297,900**
LH Project Driver:	REL/CUS Value	**LH Section #**			

ADDITIONAL PROJECT INFORMATION

EVALUATION CRITERIA AND INFORMATION	
Efficiency	IT hardware and software upgrades are crucial for London Hydro to maintain vendor supportability and ensure the resilience of critical services. By planning replacements in advance, the organization avoids the significant operational risks associated with obsolescence, such as the inability to receive critical patches or manufacturer support, which can lead to prolonged outages and cybersecurity vulnerabilities. This proactive lifecycle management directly impacts efficiency by reducing technical debt and allowing for more predictable funding through annual refresh programs. Furthermore, replacing hardware before failure ensures that the infrastructure can meet growing data volumes and application requirements, thereby accelerating staff performance and maintaining reliable 24/7 service delivery to customers.
Customer Value	London Hydro is guided by the "Earn Every Customer" vision, a primary strategic pillar aimed at establishing the utility as a reliable, customer-centric energy provider through 2030. This strategy emphasizes proactive community engagement, operational excellence, and the continuous improvement of the customer experience to ensure high levels of satisfaction. Our IT investment is essential to this mission, driving customer value by optimizing processes across front, mid, and back-office operations. Through strategic investments in digital channels and platforms, we provide tailored solutions that enhance self-service capabilities and improve overall usability. This commitment to technology simplifies service access and reinforces London Hydro's pledge to safeguard customer interests while providing premier utility and community services.
Reliability	To ensure the highest level of uninterrupted service and business continuity, London Hydro is making strategic investments to modernize and fortify our technology infrastructure. Our asset lifecycle management approach is designed to continuously strengthen our digital landscape, while creating a more secure, reliable, and resilient foundation for our operations and customer services teams.
Safety	Not Applicable
Environmental Benefits	Not Applicable

Cyber-Security, Privacy	London Hydro is committed to defend against an expanding threat surface that includes ransomware, phishing, and supply chain vulnerabilities. Modernizing infrastructure through regular refresh programs ensures the application of critical system patches and the implementation of robust endpoint security, which are essential for safeguarding sensitive customer information and maintaining data privacy. Failing to upgrade leads to out-of-support risks and technical debt that can result in prolonged operational outages and the inability to meet regulatory standards like the OEB Cyber Security Framework. Ultimately, proactive lifecycle management fortifies a utility's cybersecurity posture, building customer trust through the reliable and secure 24/7 delivery of essential services.
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

Capital Project Summary Sheet: **General Plant**

Project Number: V1

Project Name: Hardware & Software

Timing: January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	Not Applicable
Safety:	Not Applicable
Environment:	Not Applicable
Capacity:	Not Applicable
Efficiency:	Not Applicable

Blended Health Index Derating Project Ranking	Not Applicable
Final Project Score	Not Applicable

PROJECT REVIEW AND APPROVAL	
Prepared By:	Zoran Stojanovic – Director, Information Systems Nathan Kerr – Director, Information Systems
Approved By:	Stuart Smith – VP IT & Chief Information Officer

London Hydro

Capital Project Summary Sheet: General Plant

Project Number:	W1
Project Name:	Compliance & Sustainment
Timing:	January 1, 2026 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	IT Asset Management Framework
Project Overview:	**Cyber Security Initiative** This Cyber Security initiative is dedicated to the ongoing reinforcement of our cyber security capabilities, ensuring full alignment with the OEB Cyber Security Framework. Key activities include the phased rollout of a "zero-trust" architecture, the application of critical system patches, an upgrade to CIEM, and proactive efforts in vulnerability detection and remediation. Primary Driver: Reliability Other Driver: Customer Value **Settlement Process Update** This initiative focuses on modernizing our IESO settlement reconciliation process, removing reliance on legacy and unsupported technological components currently in use. Its primary objectives include delivering enhanced capabilities for unbilled revenue reporting, optimizing IESO statement and invoice reconciliation, and ensuring data historian auditability. In addition, the project will provide necessary enhancements to reinforce our core billing and settlement supporting workflows. Primary Driver: Reliability Other Driver: Efficiency **Customer Engagement Platform Optimization** This initiative includes customer-facing portals, mobile App, C&I App, Property Management Portal and supporting cloud and on-premise infrastructure. Primary activities for this budget year include planned upgrades of the C&I energy management application and property management portal. Upgrades will deliver consolidation and unification of code base and data services for all customer engagement applications. Primary Driver: Customer Value Other Driver: Reliability **Systems Hardening and Upgrades** This initiative incorporates major version upgrades to our operational systems, inclusive of feature enhancements in the following core areas: - Databases lifecycle upgrades - Fleet form digitization - Mobile workforce/viewer inspection upgrade - Financial system upgrade - Smart metering system upgrade Primary Driver: Reliability Other Driver: Efficiency The annual expenditure and overall program are structured to uphold cybersecurity posture maintenance, regulatory adherence, and application vendor supportability and compliance. Simultaneously, these investments sustain operational excellence and continue to deliver customer value.

Capital Project Summary Sheet: General Plant

Project Number: W1

Project Name: Compliance & Sustainment

Timing: January 1, 2026 - December 31, 2031

Risks/Factors that Affect Timing & Mitigation	Maintaining operational readiness at London Hydro requires addressing core risks related to talent availability, testing protocols, and complex system interdependencies. Ensuring capital project predictability involves a strategic mix of internal expertise and external partners. This approach is essential for performing the comprehensive functional and end-to-end compatibility testing necessitated by system modifications.

Primary Driver:	Reliability	**Historical & Forecast Project Costs**			
Other Drivers:	Customer Value			**Cost**	
	Cyber Security	**Historical Years**	**2022**	$4,371,650	
	Efficiency		**2023**	$3,301,122	
			2024	$3,591,921	
Alternatives Considered: Do-nothing - This approach would require London Hydro to assume significant cybersecurity and out-of-support software risks. Stagger replacements and implementations - Adopting a staggered schedule for replacements and implementations would necessitate a high level of risk tolerance. Furthermore, this strategy would subject London Hydro to increased expenses for operations and support, alongside the risk of failing to meet regulatory and cybersecurity standards.			**2025**	$3,300,085	**Total Historical Costs**
		(bridge yr)	**2026**	$3,990,000	**$18,554,778**
		Forecast Years	**2027**	$2,733,100	
			2028	$1,742,200	
			2029	$1,806,700	
			2030	$1,873,500	**Total Forecast Costs**
			2031	$1,942,800	**$10,098,300**
LH Project Driver:	REL/CUS Value	**LH Section #**			

ADDITIONAL PROJECT INFORMATION

Capital Project Summary Sheet: General Plant

Project Number:	W1
Project Name:	Compliance & Sustainment
Timing:	January 1, 2026 - December 31, 2031

EVALUATION CRITERIA AND INFORMATION	
Efficiency	IT hardware and software upgrades are crucial for London Hydro to maintain vendor supportability and ensure the resilience of critical services. By planning replacements in advance, the organization avoids the significant operational risks associated with obsolescence, such as the inability to receive critical patches or manufacturer support, which can lead to prolonged outages and cybersecurity vulnerabilities. This proactive lifecycle management directly impacts efficiency by reducing technical debt and allowing for more predictable funding through annual refresh programs. Furthermore, replacing hardware before failure ensures that the infrastructure can meet growing data volumes and application requirements, thereby accelerating staff performance and maintaining reliable 24/7 service delivery to customers.
Customer Value	London Hydro is guided by the "Earn Every Customer" vision, a primary strategic pillar aimed at establishing the utility as a reliable, customer-centric energy provider through 2030. This strategy emphasizes proactive community engagement, operational excellence, and the continuous improvement of the customer experience to ensure high levels of satisfaction. Our IT investment is essential to this mission, driving customer value by optimizing processes across front, mid, and back-office operations. Through strategic investments in digital channels and platforms, we provide tailored solutions that enhance self-service capabilities and improve overall usability. This commitment to technology simplifies service access and reinforces London Hydro's pledge to safeguard customer interests while providing premier utility and community services.
Reliability	To ensure the highest level of uninterrupted service and business continuity, London Hydro is making strategic investments to modernize and fortify our technology infrastructure. Our asset lifecycle management approach is designed to continuously strengthen our digital landscape, while creating a more secure, reliable, and resilient foundation for our operations and customer services teams.
Safety	Not Applicable
Environmental Benefits	Not Applicable

Cyber-Security, Privacy	London Hydro is committed to defend against an expanding threat surface that includes ransomware, phishing, and supply chain vulnerabilities. Modernizing infrastructure through regular refresh programs ensures the application of critical system patches and the implementation of robust endpoint security, which are essential for safeguarding sensitive customer information and maintaining data privacy. Failing to upgrade leads to out-of-support risks and technical debt that can result in prolonged operational outages and the inability to meet regulatory standards like the OEB Cyber Security Framework. Ultimately, proactive lifecycle management fortifies a utility's cybersecurity posture, building customer trust through the reliable and secure 24/7 delivery of essential services.
Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

London Hydro

Capital Project Summary Sheet: General Plant

Project Number: W1

Project Name: Compliance & Sustainment

Timing: January 1, 2026 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	Not Applicable
Safety:	Not Applicable
Environment:	Not Applicable
Capacity:	Not Applicable
Efficiency:	Not Applicable

Blended Health Index Derating Project Ranking	Not Applicable
Final Project Score	Not Applicable

PROJECT REVIEW AND APPROVAL	
Prepared By:	Zoran Stojanovic – Director, Information Systems Nathan Kerr – Director, Information Systems
Approved By:	Stuart Smith – VP IT & Chief Information Officer

London Hydro

Capital Project Summary Sheet: General Plant

Project Number:	W2
Project Name:	IT New Capabilities
Timing:	January 1, 2027 - December 31, 2031

GENERAL PROJECT INFORMATION	
Supporting Reference Material:	IT Asset Management Framework
Project Overview:	**Reporting & Analytics** The Business Analytics area includes data infrastructure upgrades required for ongoing business support of data driven analytics and reporting systems. 2027 project will focus on data governance aspects delivering enterprise wide standardization for data quality management, metadata management, data cataloging, and compliance monitoring. Primary Driver: Efficiency Other Driver: Reliability, Customer Value **Operations Damage Assessment** The Damage Assessment module will deliver a scalable and fully integrated solution designed to manage London Hydro's response to severe weather events. This module is essential to our operations, as it allows personnel to create, update, and display event data on a map, dispatch assessors efficiently, and quickly triage assessed events for repair. By enabling damage assessors to complete forms, add remarks, and attach photos for assigned locations, the system will ensure swift and accurate communication throughout the restoration process. Primary Driver: Reliability Other Driver: Efficiency, Customer Value **Collection and Billing Enhancement** The Collections and Billing Enhancements initiative centers on separating and decoupling the RPP customer billing workflow from the OEMP pricing process. By establishing this independence, the project optimizes operational timelines for both billing and collections while strengthening auditability across billing functions and enables further enhancements for collective billing functionality and customer options. Primary Driver: Efficiency Other Driver: Customer Value The annual program and associated expenditures are designed to drive continuous business transformation. By introducing enhanced system capabilities and operational efficiencies, the program streamlines core processes, eliminates existing pain points and limitations, and delivers new features to improve the employee capabilities and customer experience. Furthermore, the 2029 program plan includes a comprehensive upgrade of the financial system alongside the optimization of related financial system capabilities.
Risks/Factors that Affect Timing & Mitigation	The primary risks identified involve vendor system data integration and support limitations. To mitigate these concerns, London Hydro will leverage and develop integration components internally.

Capital Project Summary Sheet: General Plant

Project Number: W2

Project Name: IT New Capabilities

Timing: January 1, 2027 - December 31, 2031

Primary Driver:	Efficiency	**Historical & Forecast Project Costs**			
Other Drivers:	Reliability			**Cost**	
	Customer Value	**Historical Years**	**2022**	$264,657	
			2023	$992,972	
			2024	$404,207	
Alternatives Considered:			**2025**	$1,051,916	**Total Historical Costs**
		(bridge yr)	**2026**	$923,000	**$3,636,752**
Do-nothing - Choosing this path would lead to the degradation of internal business functions that depend on the availability of accurate and punctual data. Such a decline in capability would, in turn, diminish the overall quality of service and value provided to our customer base. Additionally, opting for this alternative would heighten cybersecurity vulnerabilities originating from the lack of a unified data systems architecture.		**Forecast Years**	**2027**	$1,500,000	
			2028	$2,136,600	
			2029	$6,015,800	
			2030	$1,890,600	**Total Forecast Costs**
			2031	$1,760,800	**$13,303,800**
LH Project Driver:	EFF/REL	**LH Section #**			

ADDITIONAL PROJECT INFORMATION

EVALUATION CRITERIA AND INFORMATION	
Efficiency	An enterprise data platform acts as a vital catalyst for any business transformation. By centralizing governance, data versioning and access, London Hydro will strengthen its data posture to a predictive one, using real-time analytics and data insights to oversee every facet of its operations. Moreover, providing unified access to data speeds up decision-making and considerably lowers operational costs by automating manual and batch based reporting and refining maintenance workflows, ultimately leading to more dependable services at a lower price point.
Customer Value	London Hydro is guided by the "Earn Every Customer" vision, a primary strategic pillar aimed at establishing the utility as a reliable, customer-centric energy provider through 2030. This strategy emphasizes proactive community engagement, operational excellence, and the continuous improvement of the customer experience to ensure high levels of satisfaction. Our IT investment is essential to this mission, driving customer value by optimizing processes across front, mid, and back-office operations. Through strategic investments in digital channels and platforms, we provide tailored solutions that enhance self-service capabilities and improve overall usability. This commitment to technology simplifies service access and reinforces London Hydro's pledge to safeguard customer interests while providing premier utility and community services.
Reliability	By embedding data-driven workflows into core utility operations, these initiatives directly enhance business reliability. The Damage Assessment module transforms unpredictable severe weather events into a structured, quantifiable response, ensuring infrastructure repairs are triaged with statistical precision. Meanwhile, new billing capability strengthens the core business process required for managment of liquid capital necessary to sustain consistent service standards.
Safety	Not Applicable
Environmental Benefits	Not Applicable
Cyber-Security, Privacy	By implementing an enterprise data platform (EDP), London Hydro can significantly fortify its cybersecurity defense through a unified, data-centric strategy. This centralized architecture allows for the effective discovery, classification, and protection of sensitive data residing within the utility's hybrid, SaaS, and multi-cloud environments. By consolidating disparate information into a single, governed ecosystem, the EDP eliminates departmental silos and the associated "blind spots" that attackers frequently exploit.

Grid Innovation	Not Applicable
Statutory / Regulatory Obligation	Not Applicable

CONSIDERATION OF NON-WIRES SOLUTIONS & BENEFIT-COST-ANALYSIS FOR PROJECTS >$2M	
Consideration for Non-Wires Solutions	Not Applicable
BCA Pre-assessment	Not Applicable

Capital Project Summary Sheet: **General Plant**

Project Number:	W2
Project Name:	IT New Capabilities
Timing:	January 1, 2027 - December 31, 2031

INVESTMENT PRIORITY					
Ranking Factors & Weighting	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A
Project Scores (1-10) See Guideline in EI-31 located in Appendix E.	Reliability	Safety	Environment	Capacity	Efficiency
	N/A	N/A	N/A	N/A	N/A

Ranking Rationale	
Reliability:	Not Applicable
Safety:	Not Applicable
Environment:	Not Applicable
Capacity:	Not Applicable
Efficiency:	Not Applicable

Blended Health Index Derating Project Ranking	Not Applicable
Final Project Score	Not Applicable

PROJECT REVIEW AND APPROVAL	
Prepared By:	Zoran Stojanovic – Director, Information Systems Nathan Kerr – Director, Information Systems
Approved By:	Stuart Smith – VP IT & Chief Information Officer