

The Electrification Advantage

Date: April 2, 2026

To: Infrastructure and Environment Committee

From: James Nowlan, Executive Director, Environment, Climate and Forestry

Wards: All

SUMMARY

This report responds to multiple directives related to increasing local renewable energy generation and reducing dependence on natural gas combustion at the Portlands Energy Centre. Specifically, this report responds to direction received as part of the *Mayor's Economic Action Plan in Response to United States Tariffs* for City Staff to work with Toronto Hydro and The Atmospheric Fund to develop a report titled "The Electrification Advantage".

This report also addresses recommendations in Item 2025.IE26.14 that were referred to the Executive Director, Environment, Climate and Forestry. As it relates to recommendation 1 in 2025.IE26.14, while the Independent Electricity System Operator's (IESO) provincially-developed 2025 Integrated Regional Resource Plan (IRRP) for Toronto is not incompatible with the City's TransformTO Net Zero Strategy Action Plan, the plan alone will not achieve the City's climate goals. This report outlines actions the City is continuing to take, within its authority, that will build on the IRRP by pursuing all cost-effective local energy efficiency, renewable energy and storage options, as well as maximizing local energy conservation/efficiency and local distributed energy resources.

This report also outlines the City's actions to improve affordability, air quality, and reduce climate pollution and avoid unnecessary natural gas combustion at the Portlands Energy Centre. These include significantly increasing local distributed energy generation and storage, and through measures that shift electricity demand off-peak, above the minimums outlined in the IESO's IRRP, in alignment with the City's 2040 net zero target.

As it relates to recommendation 2 in 2025.IE26.14, Toronto Hydro cannot develop a separate electricity plan for the City of Toronto. The electricity sector involves multiple actors, including the Ontario Ministry of Energy and Mines, the Ontario Energy Board, the IESO, Ontario Power Generation, Hydro One, and local distribution companies such as Toronto Hydro. The City and Toronto Hydro operate within provincial regulatory and market frameworks and cannot act unilaterally.

The report sets out four interconnected advantages of electrification for Toronto:

- **Energy Security Advantage:** Investment in the electricity grid and widespread electrification enables Toronto to be more self-sustaining and resilient in the face of geopolitical challenges;
- **Economic Growth Advantage:** Affordable and reliable electricity supports economic development in cleantech, mixed-use development, clean infrastructure, and transit expansion;
- **Affordability Advantage:** Through thoughtful grid investment and rate design, electrification can reduce overall energy costs for Torontonians; and
- **Climate Advantage:** Electrification is the most effective and scalable pathway to achieving Toronto's Council-adopted TransformTO climate goals.

Through coordinated efforts by the City, Toronto Hydro, and The Atmospheric Fund, actions are underway and planned (as outlined in Section 4) to reduce soft costs (e.g., connection timelines), accelerate rooftop and parking lot solar and battery storage (including on City assets), expand demand flexibility and non-wires alternatives, enable low-carbon thermal energy networks (e.g., Enwave's Deep Lake Water Cooling System), and advance provincial and federal collaboration to remove barriers and unlock financing.

Ultimately, progress will depend on collaboration with the Government of Ontario, regulators, system operators, and market participants to evolve policies, programs, and planning approaches over time.

Progress will be reported through the Annual TransformTO Net Zero Progress and Accountability Report.

RECOMMENDATIONS

The Executive Director, Environment, Climate and Forestry, recommends that:

1. City Council endorse the coordinated approach outlined in Section 4 of this report and the continued expansion and acceleration of the deployment and strategic management of renewable energy and distributed energy resources including, without limitation, rooftop solar, battery electricity storage, demand flexibility, net-metering, and low-carbon thermal energy networks.
2. City Council direct the Executive Director, Environment, Climate and Forestry, in consultation with Toronto Hydro and The Atmospheric Fund, to maximize the use of available federal and provincial funding for electrification, distributed energy resources, and low-carbon technologies, including facilitating community access to eligible funding programs.
3. City Council direct the Executive Director, Environment, Climate and Forestry, to engage with the Government of Ontario, including the Ontario Energy Board and the Independent Electricity System Operator, on further opportunities to support

electrification and distributed energy resources aligned with TransformTO climate objectives.

4. City Council direct the Executive Director, Environment, Climate and Forestry, to report back to the Infrastructure and Environment Committee on progress made on the resolutions adopted by Council as part of this agenda item and other components of The Electrification Advantage through the Annual TransformTO Net Zero Progress and Accountability Report.

FINANCIAL IMPACT

There are no financial implications resulting from the adoption of the recommendations in this report. Any work detailed in this report can be accommodated within the existing budgets and resources for the Environment, Climate and Forestry Division.

The Chief Financial Officer and Treasurer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

At its meeting on December 16 and 17, 2025, City Council adopted the report, *TransformTO Net Zero Strategy: Action Plan (2026-2030)*, and directed the Executive Director, Environment, Climate and Forestry, in consultation with Toronto Hydro, to include in the report on “The Electrification Advantage”, in the first quarter of 2026, a plan to improve affordability, air quality, and reduce climate pollution and avoid unnecessary gas combustion at the Portlands Energy Centre by significantly increasing local distributed energy generation and storage and through measures that shift electricity demand off-peak, above the minimums proposed in the Independent Electricity System Operator’s (IESO) 2025 Integrated Regional Resource Plan for Toronto. City Council also directed the Executive Director, Environment, Climate and Forestry, to include in the report on “The Electrification Advantage” opportunities to exceed the projections for distributed energy resources (DERs) outlined by the IESO 2025 Integrated Regional Resource Plan (IRRP) for Toronto.
<https://secure.toronto.ca/council/agenda-item.do?item=2025.IE26.3>

At its meeting on December 4, 2025, the Infrastructure and Environment Committee referred item IE26.14, *Electricity and Toronto’s Climate Commitments*, to the Executive Director, Environment, Climate and Forestry for consideration. The motion responded to a letter from Councillor Saxe with recommendations to: (1) advise the IESO that its draft twenty-year Integrated Regional Resource Plan for Toronto is fundamentally incompatible with Toronto’s climate commitments and therefore is unacceptable; (2) request the Toronto Hydro Board to propose and cost a plan for electricity supply to the City of Toronto that is aligned with the City’s 2040 net zero target, phases out the Portlands natural gas plant by 2035 and aggressively pursues all cost-effective local energy efficiency, renewable energy and storage options; and (3) request the Auditor General of Ontario to review the impact on Torontonians’ energy costs and air quality of the Independent Electricity System Operator’s draft Integrated Regional Resource Plan, and whether Torontonians’ energy costs and exposure to air pollution could be durably

reduced by maximizing local energy conservation/efficiency (negawatts) and local distributed energy resources, including vehicle-to-grid integration.

<https://secure.toronto.ca/council/agenda-item.do?item=2025.IE26.14>

At its meeting on July 23 and 24, 2025, City Council adopted the report, *Mayor's Economic Action Plan in Response to United States Tariffs: Update to Council*, and directed the City Manager and the Executive Director, Environment, Climate and Forestry to work with Toronto Hydro and The Atmospheric Fund to engage key stakeholders in developing The Electrification Advantage Report, outlining accelerated actions to expand local renewables, achieve TransformTO goals, enhance energy security, strengthen long-term financial and environmental sustainability, encourage innovation and job creation, and address affordability for residents and businesses. City Council also requested the Executive Director, Environment, Climate and Forestry to review the July 16, 2025 letter from The Atmospheric Fund in developing the report.

<https://secure.toronto.ca/council/agenda-item.do?item=2025.EX25.6>

At its meeting on March 26 and 27, 2025, City Council adopted the report, *Mayor's Economic Action Plan in Response to United States Tariffs* and directed the Executive Director, Environment, Climate and Forestry, in consultation with Toronto Hydro, to report to the July 16, 2025 Executive Committee meeting on how the City can increase local renewable energy generation (e.g., rooftop solar, geothermal, wind), energy storage, and customer electrification to reduce dependence on United States fossil fuels.

<https://secure.toronto.ca/council/agenda-item.do?item=2025.EX21.2>

COMMENTS

1. Overview of The Electrification Advantage

City Council originally directed that this report be prepared as part of the *Mayor's Economic Action Plan in Response to United States Tariffs*. The economic challenges and uncertainties associated with international trade continue to be a serious issue for residents and businesses in Toronto, throughout Ontario, and across Canada. Often referred to as an energy superpower, Canada has an energy advantage in confronting that challenge. With its robust provincial electricity system, Ontario has an electrification advantage. Toronto shares in that electrification advantage and has opportunities to further advance and improve the quality of that advantage.

In preparing this report, additional significant benefits of electrification were identified beyond energy security, namely economic growth, affordability, and climate mitigation and resilience.

Engagement with community members and stakeholders also highlighted that the complexities of Ontario's electricity system are not widely understood. This report therefore provides additional background on roles and responsibilities to support informed policy dialogue.

The bulk of this report explores the critical work being advanced by the City, Toronto Hydro, and The Atmospheric Fund to produce the local benefits of electrification. The

local electricity grid is operated by Toronto Hydro, a business corporation, the shares of which are solely owned by the City of Toronto. The grid is key to economic growth, housing development, urban renewal, and decarbonization.

Toronto Hydro's investments in grid modernization, reliability, and smart infrastructure are economic enablers unlocking new opportunities for jobs, clean growth, and resilience by ensuring that energy remains plentiful, affordable, and reliable.

Not all benefits of electrification are within the jurisdiction of the City or the provincially regulated mandate of Toronto Hydro. However, through ongoing and planned initiatives, as well as new initiatives that may emerge from active engagement with communities and stakeholders, Toronto will continue to be a leader in electrification and maximize its advantages. Further, as active participants in provincial policymaking and planning processes, the City and Toronto Hydro, along with other members of the community, will continue to press for opportunities to support electrification and decarbonization, aligned with the [TransformTO Net Zero Strategy](#).

2. The Benefits of Electrification

a. The Energy Security Advantage

Today, Canada and Toronto face unprecedented geopolitical and economic challenges. As Canada's economic engine, Toronto is experiencing these pressures acutely. The impact of U.S. tariffs is being felt across multiple sectors, placing pressure on Canadian businesses and workers. These tariffs disrupt long-standing expectations of fair cross-border trade and underscore the urgent need to strengthen domestic supply chains by increasing national self-reliance and economic resilience.

As a critical infrastructure provider, Toronto Hydro recognizes the importance of investing in local supply chains, driving domestic innovation, and building economic resilience across the province and country. In a time of global uncertainty and rising geopolitical risk, having a secure, domestically produced electricity supply strengthens Canada's resilience, ensuring Canadians have reliable, affordable power when it's needed.

Toronto Hydro has made investments in Canadian talent and materials. To support Ontario's commitment to strengthening the local economy, advancing electrification, and ensuring that public procurement generates meaningful benefits for communities, Toronto Hydro continues to assess both sourcing policies and procurement practices with the aim of reducing the procurement of US goods and services. Additionally, the utility is working collaboratively with suppliers to assess the feasibility of relocating all or part of their manufacturing operations to Canada over the long term.

Navigating the challenges posed by tariffs, Toronto Hydro believes that this is a pivotal moment for Canada's energy future; one that demands unity, foresight, and a shared commitment to building a stronger, more self-reliant country. Governments at all levels are increasingly focused on accelerating domestic production, supporting workers, and

strengthening local economies. Energy is increasingly central to Canada's economic prosperity. Electrification represents a strategic advantage for both Toronto and Canada, positioning the country to lead in a rapidly evolving global economy.

By investing in the grid and enabling widespread electrification, Toronto positions itself to be a self-sustaining, resilient urban centre that relies less on external jurisdictions, cross-border gas supply chains, or out-of-country infrastructure. A modern, electrified grid helps Toronto decouple from the volatility of global energy markets, reduce exposure to international supply chain disruptions, and take control of its own future. It's how Toronto Hydro ensures that Toronto remains competitive, affordable, and secure - a city that powers itself.

b. The Economic Growth Advantage

Electrification is not just an environmental choice; it's an economic strategy. A modern, electrified city will attract investment, create jobs, lower costs, and strengthen resilience. By investing in grid modernization, capacity expansion, and distributed energy integration, Toronto Hydro is laying the foundation for Toronto's long-term economic competitiveness.

As Toronto grows, our ability to power that growth from within - to heat homes, move people, and drive industry using electricity generated, delivered, and managed locally - is becoming a strategic economic imperative. Like roads, transit, and broadband internet, the electricity grid is foundational economic infrastructure, and underpins economic activity by:

- Attracting new industries like cleantech, data centres, and electric mobility by guaranteeing scalable, reliable capacity;
- Unlocking economic development in high-potential zones like the Port Lands, Downsview, and the Golden Mile, where electrification is a precondition for mixed-use redevelopment;
- Enabling housing and building intensification, particularly in vertical communities where electricity powers everything from heating, ventilation, and air conditioning (HVAC) to elevators to electric vehicle (EV) chargers;
- Reducing operating costs for businesses and institutions by enabling access to low-carbon, grid-connected solutions like heat pumps and demand response which reduce peak electricity demand and avoid the need for additional infrastructure; and
- Supporting major transit expansion and electrification, including the Ontario Line, Scarborough and Yonge North Subway Extensions, the Eglinton Crosstown West Extension, and the GO Expansion program. Between 2025 and 2029, Toronto Hydro is relocating assets and expanding grid capacity to support electrified transit systems, enabling transit-oriented growth and strengthening Toronto's long-term economic competitiveness.

As global capital flows increasingly toward clean, low-carbon jurisdictions, the availability of affordable and reliable electricity is becoming a competitive differentiator. Toronto Hydro is delivering the infrastructure that gives the city a competitive advantage - ensuring that companies can invest, expand, and operate with confidence in a reliable,

cost-effective jurisdiction that also aligns with their climate goals. By strengthening the grid today, Toronto Hydro is helping ensure that Toronto remains economically attractive well into the future.

In addition to enhancing Toronto's position as a destination for investment and job creation, clean electrification can also be an engine of economic growth in itself. Investments in electrification and local renewables and storage create significant local economic benefits, including green jobs for local installation companies and opportunities for local and regional suppliers of equipment, materials, and services. There is a significant amount of federal and provincial funding available for these types of investments currently and accelerating clean electrification can draw billions of dollars in funding into Toronto's economy. Every dollar of investment in clean electrification solutions generates an estimated \$4-8 in economic activity, yielding a total economic impact potential in the tens of billions of dollars over the next decade.

c. The Affordability Advantage

Electrification, when paired with thoughtful grid investments and rate design, can also reduce overall household energy costs. Toronto households and businesses spend approximately \$6.5 billion annually on fossil fuels, most of which leaves the City's economy. Electrification and distributed energy resources (DERs)¹ offset this financial drain, meeting energy needs more affordably with local solutions. For example, it costs approximately 10 times less to fuel a vehicle with electricity than with gasoline. According to the Canadian Climate Institute, most households are expected to spend less on energy in a net-zero future than they do today, as electricity replaces more volatile and carbon-intensive fuels such as natural gas and oil. Affordability is integral to the design of Toronto Hydro's system planning and investment decisions. Every capital dollar is guided by value-for-money principles and a robust business case, and is subject to oversight from the Ontario Energy Board (OEB). This regulatory review helps ensure that customer bills reflect prudent, efficient investments in reliability, safety, and modernization.

Toronto Hydro is building and operating a system designed to maximize customer choice — whether that means installing rooftop solar, participating in demand-response programs, adopting EV charging, or simply relying on safe, reliable, and affordable grid power. Rather than steering customers toward specific technologies, the utility provides a flexible, technology-agnostic, and economically efficient distribution platform that makes all options viable and interoperable. Its focus is on developing an open, adaptable grid capable of integrating the tools and solutions that customers, businesses, developers, and third-party providers choose to adopt while maintaining reliability and managing overall system costs.

¹ Distributed Energy Resources (DERs) are defined as any source of electric power that is connected to the distribution grid of a Local Distribution Company (LDC) that distributes electrical power to customers and consumers (e.g., rooftop solar, battery electricity storage, etc.).

d. The Climate Advantage

Electrification is the most effective and scalable pathway to achieving Toronto's climate goals. As sectors like transportation, heating, and industry transition away from fossil fuels, the role of the electricity grid becomes central: it must not only deliver more energy, but do so cleanly, reliably, and locally. Toronto Hydro plays a central role in advancing the City of Toronto's TransformTO climate goals. Approximately 75 percent of the emissions reductions in the City's goal of reaching net zero by 2040 depend on Toronto Hydro's distribution grid.

To enable electrification and deep emissions reductions envisioned in the City's TransformTO strategy, in 2021, at the request of City Council, Toronto Hydro produced an industry-leading Climate Action Plan. In 2022, City Council approved the implementation of a non-regulated Climate Advisory Service provided for in the Climate Action Plan. Through that service, Toronto Hydro proactively supports customers in their electrification journey, including through the removal of barriers to the adoption of clean technologies.

To demonstrate progress on electrification and value to the City and its residents, Toronto Hydro established medium- and long-term targets for EV chargers, heat pumps, behind-the-meter solar and battery storage, with specific milestones set for 2025 and 2040, based on a budget stipulated in the City-endorsed Climate Action Plan. By the end of 2024, Toronto Hydro had already exceeded its 2025 targets, as shown in Table 1, and it has established 2040 targets for transportation, building heating electrification, and renewables and storage as shown in Table 2.

The Atmospheric Fund's most recent greenhouse gas inventory indicates that, despite reductions since 1990, emissions are on an increasing trend, mainly due to significant increases in the carbon-intensity of the provincial electricity grid. Electrification of the main sources of emissions – heating and cooling buildings and transportation - is a key pathway to meeting the City's climate objectives, but can only be achieved with an affordable, low-carbon electricity system.

As the IESO's Local Achievable Potential Study for Toronto demonstrates, there are technically feasible and economically achievable opportunities for implementation of the measures profiled in this report, and accelerated implementation will play a key role in reducing carbon emissions, making energy more affordable, growing and strengthening economic development, and improving public health.

Table 1: Toronto Hydro Electrification Achievements

Technology	2023-2025 Target	2023 Actuals	2024 Actuals	Total Actuals as of 2024	% of 2023-2025 Target Achieved	2040 Target
Electric Vehicle Chargers (Units)	5,500	4,781	5,572	10,353	188%	50,000
Air Source Heat Pumps (Units)	80	N/A	299	299	374%	60,000
Solar Connections (MW)	6.5	3.8	6.2	10	154%	150
Storage Connections (MW)	6.5	5.2	4.4	9.6	148%	150

Table 2: Toronto Hydro (TH) Climate Action Targets for Transportation, Building Heating Electrification, and Renewables and Storage by 2040 in support of the City's TransformTO goals

Toronto Hydro-Supported Climate Programs	Program Size	Impact
Transportation Electrification	50,000 chargers	Serving 1 million+ electric vehicles
Buildings Electrification	60,000 air-source heat pumps	15% of all buildings
Renewables & Storage	300 MW of local generation	300,000 projects

A clean electricity system is the cornerstone of Canada’s climate strategy, enabling reductions in GHG emissions across every part of the economy. Through targeted investment in the grid, Toronto Hydro is creating the infrastructure that allows customers to decarbonize their homes, vehicles, and businesses, while ensuring that distributed renewables like rooftop solar and battery storage can be efficiently integrated into the system.

3. Roles and Responsibilities in Ontario's Electricity Sector

a. Core Governance Bodies

Ontario Ministry of Energy and Mines: Sets the overall policy direction for the energy sector through policy documents such as the 2025 Integrated Energy Plan, as well as through laws and regulations. It issues ministerial directives to the OEB and IESO to align their activities with government priorities. It also establishes frameworks and budgets for electricity Demand Side Management (DSM).

Ontario Energy Board (OEB): Acts as the Government of Ontario's independent economic regulator. Its primary role is to protect consumers by setting fair electricity and natural gas rates, approving major infrastructure projects, licensing energy companies, and setting standards of conduct and service. It also reviews and approves natural gas demand-side management programs, targets, and budgets.

Independent Electricity System Operator (IESO): Serves as the electricity system operator and planner. It manages the provincial power grid in real-time, balancing supply and demand, and administers the wholesale electricity market where power is bought and sold. It is responsible for Ontario's Integrated Regional Resource Plans (IRRPs) across the 21 provincial planning regions. It also develops and administers province-wide electricity DSM programs.

b. Major System Participants

Ontario Power Generation (OPG): A self-funding Crown corporation whose sole shareholder is the Government of Ontario, and which generates approximately half of Ontario's electricity. It is the province's largest generator, operating nuclear, hydroelectric, and thermal facilities, among other assets.

Hydro One: The province's largest transmitter, owning and operating high-voltage transmission lines that transmit electricity produced at generating stations to terminal stations, at which point the voltage is then reduced (or stepped down) to distribution-level voltages. While the government remains a significant shareholder, it is a publicly traded corporation.

Local Distribution Companies (LDCs): LDCs are the local utilities such as Toronto Hydro that deliver electricity directly to homes and businesses and are regulated by the OEB regarding the rates they charge and the services they provide. They are also eligible for funding from the IESO to promote province-wide electricity Demand Side Management programs, or to establish local programs (in coordination with the OEB).

c. Toronto Hydro

Toronto Hydro is the LDC that owns and operates the electricity distribution system that serves approximately three million people in Toronto and distributes approximately 18 percent of the electricity consumed in Ontario. Toronto Hydro's customers range from single family homes and neighbourhood shops to multi-use skyscrapers, and some of the province's largest commercial, institutional, and industrial facilities. The utility serves

non-residential customers from a variety of sectors, including dozens of hospitals and other healthcare facilities; hundreds of schools, colleges, and universities; data centres; and large industrial and manufacturing facilities. Each of the thousands of multi-unit residential condominium and apartment buildings served by Toronto Hydro can have dozens or hundreds of behind-the-meter units.

Toronto Hydro is responsible for the following services:

- Delivering safe and reliable electrical power to approximately 796,000 residential, commercial, and industrial customers in Toronto;
- Planning, maintaining and operating its electricity distribution infrastructure efficiently and in an environmentally responsible manner;
- Providing consistent, high-quality customer service; and
- Facilitating the connection and integration of DERs.

Notwithstanding the City being its sole shareholder, Toronto Hydro's mandate is set and limited by provincial regulation. Toronto Hydro does not have the authority to establish or override provincial plans for large-scale generation in Toronto and is precluded from giving preferential treatment within its OEB-licensed service territory.

d. City of Toronto

Policy, planning, and programs that shape electricity demand and electrification:

The City's TransformTO Net Zero Strategy serves as the foundational policy and guidance for all City climate and decarbonization efforts and includes, for example, the need to rapidly reduce natural gas use in buildings, expand local renewables, and accelerate EV uptake policies in conjunction with Toronto Hydro.

Sole shareholder and governance: The City is the sole shareholder of Toronto Hydro Corporation. City Council appoints the Board (11 members, including councillors) and directs the utility through a Council-approved Shareholder Direction (amended and restated in 2024).

4. Accelerating Electrification and Distributed Energy Resources (DERs) - Coordinated Actions by the City of Toronto, Toronto Hydro, and The Atmospheric Fund (TAF)

The City of Toronto, Toronto Hydro, and The Atmospheric Fund are working together to enable and accelerate electrification and DERs. The City specifically leads as an enabler, deployer, convener, and advocate. Through its assets, programs, partnerships, and policy engagement, the City works to reduce barriers, accelerate deployment, and align local action with broader electricity system planning and net zero objectives.

4.a. Lowering Soft Costs

The City is reducing non-hardware ('soft') costs that can delay or discourage the deployment of DERs. Actions include modernizing Toronto's Zoning By-law to remove

regulatory barriers to solar photovoltaic (PV), battery storage, heat pumps, EV chargers, and over-cladding (expected in Q2 2026); streamlining permitting and approvals; and reviewing licensing and right-of-way licensing fees so clean energy infrastructure is not disadvantaged in comparison to natural gas utility infrastructure (the study kicked off in Q1 2026). The City has already reduced solar permit review timelines from 10–30 days to three days, and is collaborating with Toronto Hydro to simplify interconnections and eliminate unnecessary steps.

Toronto Hydro has also taken significant steps to streamline customer connections for behind-the-meter solar and storage. In 2024, 99.77 percent of Preliminary Consultation Reports for customers seeking to establish solar connections met the OEB's 15-day service standard; for formal applications under 10 kW, connection agreements are typically issued within one to two days. In 2023 and 2024, Toronto Hydro eliminated system size restrictions for nearly all customers, providing them with greater flexibility to design systems that meet their evolving electricity needs.

Beginning in 2024, Toronto Hydro also started deploying advanced meters to residential properties, with all new installations being solar-ready by default. This proactive measure helps customers install solar systems, saving both time and money, as there is no longer a need to purchase and install a new electricity meter. Approximately 70 percent of Toronto Hydro's residential and small commercial meters will have surpassed their expected useful life by 2025. Therefore, the utility intends to replace approximately 680,000 meters with advanced meters during the 2023-2028 period.

In conjunction with other regional industry counterparts, Toronto Hydro is also building a platform designed to maximize customer choice — inclusive of rooftop solar, battery storage, and demand-response programs, with safe, reliable, and affordable grid power. The utility will provide the flexible, technology-agnostic, and economically efficient platform ensuring people, businesses, and third-party providers can adopt the solutions that best meet their needs.

Together, the City and Toronto Hydro will continue to coordinate on simplified approvals and faster, more transparent interconnection processes to reduce administrative timelines, lower costs, and accelerate DER deployment.

4.b. Enabling Community Adoption: Standards, Financing, Incentives, and Customer Supports

The City plays a key enabling role by aligning standards, financing, incentives, and partnerships to accelerate energy efficiency, electrification, and DER adoption.

4.b.i. Standards and Planning

The Toronto Green Standard (TGS) sets sustainable design requirements for new buildings, with Tier 1 as the base standard and higher tiers (Tier 2+) representing more stringent energy and emissions performance. It advances energy efficiency, electrification and encourages on-site renewable energy, such as solar PV. Financial

incentives, including partial development charge refunds, are available for eligible developments that achieve higher-tier performance.

In addition, the City is developing an energy efficiency standard for existing buildings called the Building Emissions Performance Standards (BEPS). These standards will further drive energy efficiency upgrades in existing buildings and will promote the electrification of a building's systems over time.

The City also conducts Community Energy Plans (CEPs) to establish a low-carbon energy vision for major growth areas and requires large developments (20,000 m²+ or within a CEP area) to submit an Energy Strategy report. An Energy Strategy Report evaluates the potential for on-site renewable energy generation and a low-carbon thermal energy network and is intended to prompt early-stage consideration of these approaches and guide developers toward lower-carbon design solutions.

4.b.ii. Financing and Incentives

The City's low-interest financing programs, combined with provincial incentives such as the IESO's Save on Energy, and federal incentives, provide a strong foundation for market uptake. However, these funding and financing sources are not being fully utilized, highlighting the importance of working with the community to facilitate access.

The following provincial and federal programs support electrification, including energy efficiency, heat pumps, solar, and storage:

- Provincial eDSM Framework (2025–2036) – supports energy efficiency, demand response, solar, and storage.
- Provincial Gas DSM Plan (2027–2030, draft) – supports energy efficiency and heat pump deployment.
- Federal Clean Economy Investment Tax Credits – supports solar, storage, and electrification technologies.
- Federal Green and Inclusive Community Buildings / Build Communities Strong Fund – supports building retrofits and clean energy infrastructure.
- Canada Infrastructure Bank – provides financing for large clean energy and electrification projects.

The City plans to expand outreach and coordination with Toronto Hydro and the IESO to improve program awareness and participation. The City provides the following low-interest financing across residential and non-residential sectors, including single-family homes, high-rise residential buildings, and eligible non-residential properties:

- Home Energy Loan Program (HELP): Supports homeowners with low-interest financing for energy efficiency, electrification, and renewable energy upgrades, including solar and battery storage, with repayment through property tax bills.
- High-Rise Retrofit Improvement Support (Hi-RIS): Provides low-interest financing for energy and water efficiency retrofits in multi-unit residential buildings.
- Energy Retrofit Loan (ERL): Offers low-interest financing for non-residential buildings to support energy efficiency, electrification, and low-carbon upgrades.

With sufficient capital in place, the City is focused on improving program delivery by streamlining applications, reducing administrative burdens, and increasing access and uptake, including refining HELP to better reach underrepresented households and reduce participation barriers, for example, by expanding eligible upgrades beyond energy to address broader homeowner needs, and providing greater support in navigating incentive pathways.

4.b.iii. Customer Supports

Through its Climate Advisory Services Team, Toronto Hydro further supports homeowners in adopting low-carbon technologies, including solar and home electrification. The utility provides personalized energy coaching, practical decision-support tools, and access to vetted contractor directories to help residents identify energy-saving opportunities, navigate available incentives, and move forward with upgrades confidently. Through programs such as the BetterHomesTO Furnace Upgrade initiative, Toronto Hydro helps households accelerate efficiency improvements and electrification, with a continued focus on scaling impact across the city.

4.c. Solar and Battery Storage

The City is already a significant owner and operator of renewable energy assets, with more than nine megawatts of solar photovoltaic capacity deployed across over 100 City-owned sites and additional projects planned.

Supported by incentives from IESO's Save on Energy programs, the financial rationale for solar on City facilities is increasingly compelling. Between 2026 and 2030, the City will accelerate deployment of rooftop solar and battery energy storage on City-owned buildings and lands. The financial rationale is expected to improve significantly with the expected finalization in spring 2026 of the Clean Electricity Investment Tax Credit, which is available to municipally-owned corporations and provides a 15 percent rebate on all investments in solar and storage.

For City-owned sites, the City has already developed an internal guide to align re-roofing projects with rooftop solar installations, based on technical feasibility, funding availability, and capital plan alignment. In parallel, the City will continue work to develop a corporate guide to assess the feasibility of solar carports during surface parking lot repaving projects through asset management planning. Together, these actions would embed solar deployment into routine capital cycles and significantly scale renewable energy on City assets over time.

The City will also explore opportunities for larger-scale DERs, including battery storage on City-owned lands where they can provide system grid benefits.

The Atmospheric Fund (TAF) undertakes a range of initiatives that align with the City's climate, clean economy and affordability objectives, with a focus on advancing solutions to decarbonize heating and cooling of buildings and transportation and reducing the carbon intensity of electricity which is needed to electrify the economy. TAF's Retrofit

Accelerator provides free expert services and funding to assist multi-unit residential buildings across the GTHA in pursuing retrofits which provide owners and occupants efficient, healthier buildings. TAF's EV-Ready initiative is advancing a comprehensive business model for EV charging in multi-residential buildings and the Future Charge initiative is engaging industry, users and other stakeholders in developing and advancing a City-wide plan for public charging infrastructure on non-municipal lands; both are essential to facilitate adoption of electric vehicles. TAF's Home Solar Accelerator, implemented in collaboration with Toronto Hydro, offers homeowners free, independent guidance to support the installation of rooftop solar, and storage where there is a business case, providing Torontonians with an opportunity to power their homes with clean energy and contribute to the local distributed energy system. This practical work is complemented by advocacy to advance policies and programs that mobilize the goods, services and capital required to implement urban low-carbon solutions.

4.d. Grid Investment and Electrification Readiness

Toronto Hydro is actively building and modernizing the infrastructure required to support Toronto's electrification and growth. The utility is supporting housing intensification across Scarborough, Etobicoke, and North York by increasing grid capacity and alleviating constraints for new and upgraded connections. Its 2025–2029 Investment Plan includes expansion of nine transformer stations to serve dense urban development and future growth.

Toronto Hydro is enabling EV-ready neighbourhoods and commercial corridors by supporting residential chargers, depot-scale electrification, and public-access charging networks. Through its Climate Advisory Services operations, Toronto Hydro supports implementation of the City's Electric Vehicle Strategy and works closely with City staff and the Toronto Parking Authority to coordinate electric vehicle infrastructure rollout. These efforts align grid investment, charging deployment, and land use planning to enable widespread vehicle electrification in support of TransformTO.

4.e. Enabling Electrification Through Grid Modernization and Non-Wires Alternatives

4.e.i. Demand Management

Energy efficiency and demand management are among the most cost-effective tools to support electrification while managing peak demand.

Demand Management allows electricity users to temporarily reduce or shift electricity use during peak periods, helping manage system demand and defer grid upgrades. Examples include utility-led programs for commercial and institutional customers, as well as IESO-led residential programs such as Peak Perks, which adjusts smart thermostats for central air conditioners and heat pumps during peak events. The City supports the expansion of residential and commercial demand response (DR) programs, including IESO and Toronto Hydro-led initiatives. Building on this, the City

will work with Toronto Hydro and community partners to support participation in demand response programs, including Peak Perks by raising awareness through platforms such as BetterHomesTO and other engagement tools. BetterHomesTO serves as the City's resident-facing platform for energy and electrification information, guidance, and financing support. The City, with support from Toronto Hydro, will also support awareness of enabling supports such as the Home Energy Loan Program (HELP) which help address upfront costs for technologies such as electric water heaters, batteries, and other flexible electric loads so residents and businesses can better take advantage of these mutually beneficial opportunities.

The City already participates in demand response through the Industrial Conservation Initiative (ICI) at several large facilities.² Toronto Water also participates in the IESO Demand Response and Capacity Auction by reducing load when called upon and receiving capacity payments. The City will explore, where feasible, demand response opportunities across additional divisions, agencies, and corporations, while continuing to scale load management initiatives at more sites to help manage peak demand, support electrification, and demonstrate leadership.

Demand flexibility reduces the need for traditional infrastructure and lays the groundwork for non-wires alternatives (NWA's).

4.e.ii. Advancing Low Carbon Thermal Energy Networks (LCTENs)

Low carbon thermal energy networks play a valuable role in the decarbonization of buildings by delivering efficient heating and cooling to a building while also reducing GHGs and avoiding increases to peak electricity demand.

In close consultation with Toronto Hydro, the City conducted the Port Lands Demand Justification and DER Potential Study to inform the IESO's 2025 Integrated Regional Resource Plan for Toronto. The study assessed the impact of coordinated LCTENs on peak electricity demand and found that integrated thermal networks can significantly limit future increases to peak loads compared to building-by-building electrification, supporting consideration of LCTENs alongside electricity infrastructure planning.

In 2018, following a competitive City-led process, the City entered into a Joint Development Agreement with Enwave Energy Corporation to facilitate the development of low carbon thermal energy networks. The Etobicoke Civic Centre Precinct is the first project under this framework and includes a geothermal system serving multiple blocks and the new civic centre.

Enwave operates thermal energy networks for heating and cooling in downtown Toronto, serving approximately 200 buildings. Cooling is low carbon through its Deep Lake Water Cooling system, while the heating system has historically relied on fossil fuels to generate and distribute steam. To address this, Enwave has begun

² The Industrial Conservation Initiative (ICI) program is designed to incentivize eligible industrial and commercial customers to reduce their demand during peak periods to help defer the need for investments in new electricity infrastructure that would otherwise be needed.

decarbonizing its heating network by expanding new low-carbon hot water systems and collaborating with the City and Toronto Hydro to electrify existing infrastructure.

In 2025, the City established the Wastewater Energy Program, enabling access to wastewater as a low-carbon source of heat and cooling that can support future thermal energy networks. Building on this, the City's Low Carbon Thermal Energy Network Plan study, expected to launch in 2027, will identify additional opportunities for heat recovery and reuse and how City assets and processes can support implementation.

The City will continue to plan, coordinate, and enable low-carbon thermal networks at the neighbourhood and precinct scale. In parallel, the City will make efforts to engage with Toronto Hydro and the IESO to ensure the impacts of LCTENs on electricity consumption and peak demand are considered in regional and local electricity planning, alongside other DERs.

4.e.iii. Non-Wires Alternatives (NWA): Using DERs to Minimize Costs and Improve Reliability

Toronto Hydro is advancing non-wires alternatives that use DERs to defer or avoid traditional poles-and-wires upgrades while strengthening grid reliability and resilience. These solutions include demand response and utility-scale battery storage, positioning DERs as active grid assets.

4.e.iii.1. Demand Response as a Non-Wires Alternative

At Cecil, Manby, and Horner Transformer Stations, Toronto Hydro deployed demand response as a non-wires alternative by contracting dispatchable capacity from large commercial and institutional customers. Flexibility was provided through behind-the-meter generation and targeted load curtailment of non-critical systems such as HVAC and process loads, reducing peak demand and deferring traditional infrastructure upgrades.

Toronto Hydro's work at these stations illustrates the utility's leadership in deploying and scaling non-wires solutions that leverage DERs for both local and bulk-system benefits:

- Cecil Transformer Station: From 2015-2019 at Cecil Transformer Station, Toronto Hydro implemented Ontario's first utility-led non-wires solution, contracting approximately eight megawatts of demand response from commercial and institutional customers. By combining behind-the-meter generation with targeted load curtailment, and dispatching it five to six times per year, the utility was able to defer and ultimately avoid a costly station upgrade. In the 2015 to 2019 period, this program allowed Toronto Hydro to defer approximately \$30 million in capital upgrades — a textbook example of how DERs, when anchored in the grid, can unlock cost-effective flexibility and turn uncertain growth forecasts into "no-regrets" capacity.
- Manby and Horner Transformer Station: Building on that foundation, from 2020–2024, Toronto Hydro expanded its Local Demand Response operations to Manby and Horner Transformer Stations. Through the Pilot, which was co-funded by the

IESO Grid Innovation Fund and supported by the OEB Innovation Sandbox, Toronto Hydro tested how customer-sited resources could be optimized to deliver both local and bulk system benefits using Toronto Hydro's distributed energy management platform.

This approach has now been formally embedded in Toronto Hydro's 2025–2029 investment plan, scaling Flexibility Services to procure up to 30 megawatts of dispatchable capacity across six major transformer stations. These local demand response plans are projected to avert approximately \$10 million in traditional capital upgrades at roughly half the cost of poles-and-wires alternatives, delivering value to participants, the utility, customers, and the broader electricity system.

4.e.iii.2. Battery Storage as Non-Wires Alternatives (NWA)

Toronto Hydro is also deploying utility-scale battery storage as a non-wires solution. The 2-megawatt / 2-megawatt-hour Bulwer battery project, commissioned in 2021, manages peak demand and extends the life of existing infrastructure, complementing conventional grid assets. Toronto Hydro continues to evaluate additional sites where battery storage can relieve constraints, improve resilience, and defer capital investments.

Building on this approach, the City is supporting Toronto Hydro's battery storage strategy by facilitating access to City-owned lands where feasible. These projects will strengthen local reliability, support bulk system needs, reduce peak demand, relieve growth area constraints, and accelerate electrification.

4.e.iii.3. Emerging Opportunity: Vehicle to Grid

As EV adoption grows, managed charging and vehicle-to-grid (V2G) technologies could provide additional demand flexibility and peak management. V2G enables EVs to charge during low-demand periods and discharge energy back to buildings or the grid, allowing EV batteries to function as DERs and enhance local reliability.

Subject to supportive provincial frameworks and market conditions, the City, together with Toronto Hydro and provincial partners, could explore pilot projects with municipal fleets or community participants to assess bidirectional charging, interconnection, tariffs, and dispatch considerations. Lessons learned would help inform future planning and policy development.

4.f. Distribution System Operator (DSO) Evolution

Today's successes have been enabled by a grid that is technically capable, digitally integrated, and institutionally empowered. A mature DSO model represents a natural evolution of Toronto Hydro's role.

A future DSO would operate an active distribution network that coordinates and dispatches DERs in real time, enabling reliable bidirectional power flows, voltage stability, and real time communication at scale. It would function as both a trusted grid

operator and market facilitator, integrating DERs at scale, coordinating with the IESO, and ensuring reliability and power quality across a decentralized system. Importantly, the role of customers under a DSO model should be clarified, including the expectation that they have the technologies required to actively participate.

This is not a departure from Toronto Hydro's current role, but a progression that builds on its operational expertise, local knowledge, and customer relationships to orchestrate an electrified future for Toronto.

One emerging approach to coordinating DERs under a DSO framework is the use of Virtual Power Plants (VPPs), which aggregate behind-the-meter solar, batteries, and controllable loads into dispatchable grid resources. When coordinated effectively, VPPs can reduce peak demand, defer infrastructure investment, and provide both local distribution and bulk system support. Regulatory and market structures in Ontario are increasingly enabling aggregated DER participation, and Toronto Hydro continues to explore how coordinated flexibility can be integrated into distribution planning.

The City can help position Toronto for potential VPP opportunities by enabling flexible technologies on City-owned lands and collaborating with Toronto Hydro, the IESO, and other partners. If programs emerge, the City will support participation where feasible.

While not a non-wires alternative itself, VPPs can support non-wires outcomes by coordinating and aggregating DERs to reduce peak demand and provide localized system support.

4.g. Building on the IESO Local Achievable Potential Study (L-APS)

The Local Achievable Potential Study (L-APS) is an IESO-led assessment that evaluates the potential, scale, location, and timing of electricity demand-side management and DER opportunities across Toronto, completed to inform the 2025 Integrated Regional Resource Plan (IRRP). It provides a rigorous foundation for demand-side planning, supported by calibrated digital twins, transformer-station-level analysis, and differentiation between technical, economic, and achievable potential.

The City views the L-APS as both an important resource and a valuable analytical framework. While the study highlights a notable gap between technical and achievable potential, the City intends to work with the IESO and Toronto Hydro to explore pathways to close this gap through improved program design, market mechanisms, and implementation approaches.

4.h. Provincial Advocacy to Remove Barriers to Renewable Energy

The IESO supports DERs through incentives, demand response programs, market participation mechanisms, aggregation frameworks, and targeted procurements, through ministerial directives provided by the Government of Ontario and regulatory oversight, including interconnection rules, established by the OEB. The City supports these efforts and recognizes their importance in advancing DER adoption.

At the same time, the City and Toronto Hydro will continue to advocate to the Government of Ontario and the IESO to remove barriers to renewable energy deployment, including the absence of a community solar regulatory framework, restrictive setbacks for ground-mounted solar and solar carports, and interconnection processes, rules, and regulations that limit the effective deployment of DERs.

The City, with support from The Atmospheric Fund, will also advocate for improvements to program design and compensation to better reflect different customer needs and use cases, including better alignment across existing IESO incentives and enhanced compensation for industrial, commercial, and institutional customers.

The City acknowledges ongoing IESO and OEB work to evolve DER participation, compensation, and valuation frameworks and will continue to advocate for outcomes that ensure DERs are appropriately compensated. The City also looks forward to the continued evolution of Toronto Hydro's DSO capabilities to support more effective integration and active management of DERs as part of a modernized electricity system.

The City will also advocate for IESO-supported pilot and demonstration programs to test emerging DER technologies, program designs, and compensation approaches, including through projects on City-owned sites where appropriate.

The City will continue to engage with the Government of Ontario on the future of offshore wind energy generation in Lake Ontario and identify opportunities that could support net-zero objectives, should provincial policy frameworks evolve. Toronto already leverages Lake Ontario for energy solutions such as deep lake water cooling and heat exchange systems, and offshore wind remains a potential long-term clean electricity opportunity subject to provincial direction and regulatory review.

4.i. Advancing the Toronto Third Line and Scaling Distributed Energy Resources (DERs)

The City welcomes the Government of Ontario's decision to advance the Toronto Third Line to bring a new electricity supply to Toronto as a critical investment to support electrification, long-term reliability, and the future integration of local renewables and storage, and supports opportunities for advancing Indigenous engagement and participation within Ontario's energy sector.

In parallel, the City recognizes the importance of accelerating cost-effective non-wires alternatives - including energy efficiency, demand response, and DERs - to help manage peak demand and support system reliability. These solutions can play an important role both in the interim period before the Third Line is in service and alongside the Third Line over the longer-term to manage peak demand and help offset the need to run the Portlands Energy Centre. The Third Line is also expected to support greater integration and connection of DERs over time. The City will continue to engage with the IESO and Toronto Hydro on opportunities to advance timely DER deployment as well as over the long-term as part of an electrification advantage future for Toronto. The City will

collaborate with the IESO and Toronto Hydro to advance timely local supply and other electrification opportunities.

5. Ongoing and Future Work

The City and Toronto Hydro operate within established provincial regulatory and market frameworks and cannot act unilaterally. Progress depends on collaboration with the Government of Ontario, regulators, system operators, and market participants to evolve policies, programs, and planning approaches over time.

The City values the input of industry stakeholders, utilities, community groups, and advocacy organizations, whose feedback helps inform practical solutions and strengthen program design. Through coordinated action and constructive engagement, all parties can help advance DERs, electrification, and a decarbonized energy future for Toronto.

Building on Council's December 2025 direction ([IE26.3](#)), City staff - working with Toronto Hydro and sector partners such as TAF - will continue to advance electrification to avoid unnecessary gas combustion at the Portlands Energy Centre by increasing local distributed energy generation and storage, and through measures that shift electricity demand off-peak, going above the minimums proposed in the IESO's 2025 Integrated Regional Resource Plan for Toronto. This commitment aligns with TransformTO and the mandate to identify opportunities to complement the IRRP's projections for DERs.

As outlined in Section 4 of this report, the City will continue to advance actions that lower soft costs, accelerate rooftop and parking lot solar and battery storage (including on City assets), expand demand flexibility and non-wires alternatives, enable low-carbon thermal energy networks, and pursue provincial and federal collaboration to remove barriers and unlock financing. Consistent with stakeholder input, solutions will be prioritized - for example, energy efficiency, demand management, solar energy, and energy storage - that are the lowest-cost and fastest options to meet growing electricity needs, reduce energy bills, and protect public health and the environment, while maintaining reliability and affordability for residents and businesses.

This work will proceed in close collaboration with the Government of Ontario, the IESO, Toronto Hydro, industry, and community stakeholders. Staff will continue constructive engagement with local organizations and experts as work proceeds.

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