

ELECTRICITY ENERGY EFFICIENCY PROGRAMMING POST 2024

Environmental Registry of Ontario Submission By The Atmospheric Fund

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Ontario is in an energy transition. Local and system-wide electricity needs are expected to increase significantly as we electrify our buildings, vehicles, and industries.

The Independent Electricity System Operator (IESO)'s [Pathways to Decarbonization study](#) put forward a scenario under which total transmission-connected capacity increases from [38.1 GW in 2022](#) to 88.4 GW in 2050, to support a doubling of energy demand. This vision relies on a massive buildout of centralized electricity generation, transmission, and distribution infrastructure, largely advancing the approach that has historically dominated long-term electricity planning in the province.

Fully unlocking the substantial potential of demand-side measures, however, can greatly reduce the need for infrastructure upgrades and help ensure the responsible and prudent use of ratepayer and taxpayer dollars. Our submission lays out several specific recommendations, informed by four main principles that we believe should underpin all future electricity and natural gas demand-side policy decisions and frameworks:

- **Prioritize efficient electrification** of transportation, space heating, water heating, and industrial end uses currently powered by fossil fuels.
- **Pursue all cost-effective energy efficiency**, both through reductions in demand through measures such as building envelope improvements, and the prioritization of efficient and beneficial electrification.
- **Ensure all demand is flexible**, where possible, optimizing the use of existing and new grid infrastructure, and enabling increased adoption of low-cost, intermittent supply resources.
- **Build efficient when building new**, ensuring that any future investments in electrification and housing prioritize efficiency with grid impact in mind, limiting the need to upgrade inefficient equipment or retrofit buildings in the future at much greater expense.

A smart and coordinated transition from fossil fuels can save households money. [Analysis](#) by the Canadian Climate Institute found that the average household would save 12% in energy costs by fuel-switching in large part because electric appliances are significantly more efficient than their fossil fuel counterparts.

Ontario needs to ensure that the right incentives are in place to promote efficient electrification, a win-win for consumers and the grid. As highlighted by a [recent study](#) by Efficiency Canada and the IESO's recent [mid-term CDM update](#), Ontario lags behind leading US jurisdictions in electricity savings, electricity savings targets, natural gas and non-regulated fuel savings, and program spending. **We recommend that Ontario adopt specific energy savings targets (at minimum 2% energy savings)**

to provide a clear signal to utilities and system planners on efficiency benchmarks. This would follow successful approaches adopted by states such as [Michigan and Massachusetts](#), which have implemented state policies for mandatory, multi-year targets for electricity or natural gas savings. Manitoba has set their annual energy savings targets through provincial legislation, and include savings from efficiency programs, load displacement, and codes and standards towards this target.

To accommodate new construction programming, coordinated CDM and DSM delivery, beneficial electrification, and optimized customer experience, **we recommend, at minimum, doubling the CDM budget to \$2 billion, making it \$500 million annually over four years.** As stated in the ERO notice, and supported by the [IESO's evaluation of energy efficiency incentives](#), "each dollar invested in electricity energy efficiency avoids two dollars in cost to the electricity system." The return on these investments will only increase as load growth accelerates in the coming years. Increased investments in efficiency result in lower electricity consumption. As a result, the subsidy required for the Ontario Energy Rebate (currently paid for by ratepayers) would decrease, and those funds could potentially be re-directed to CDM programming. Ontario's Financial Accountability Officer estimated that electricity subsidies would cost taxpayers roughly [\\$6 billion per year](#) over the next 20 years. A reduction of this subsidy and an increase in the CDM budget could provide substantial funding for CDM programming. Moreover, there is an unprecedented amount of funding available from the federal government for energy efficiency upgrades. **Ramping up CDM programming will ensure that more federal monies are flowing into the province.**

1. Expand the definition of CDM to reflect broader electrification efforts and emphasize the role of increased demand flexibility (Q2, Q3, Q4, Q6)

The energy transition will require a holistic approach inclusive of reducing greenhouse gas emissions and ensuring energy affordability for residents and businesses (Q4). The scope of any future CDM framework must include electrification to ensure it incentivizes efficiency (limiting energy consumption) and flexibility (limiting peak demand) and encourages action that is mutually beneficial to the grid and consumer.

(Q3, Q4) We recommend that the definition of CDM be amended as follows:

*The IESO shall consider CDM to be inclusive of activities aimed at reducing peak electricity demand and/or electricity consumption from the electricity system **and/or encouraging the beneficial and efficient electrification of technologies or processes that use fossil fuels.** Examples of CDM include **activities related to (1) energy efficiency ~~replacements~~ whereby similar output is achieved with less electricity, (2) increased demand flexibility (including load-shifting measures), (3) beneficial electrification resulting in reductions in overall emissions and costs, and (4) full compensation for behind-the-meter consumer generation and storage.***

However, for the purposes of the CDM programs, the IESO shall ~~consider CDM to exclude:~~

- a. ***Encourage value stacking of CDM ~~These measures that are also~~ promoted through a different program or initiative undertaken by the Government of Ontario or the IESO while ensuring identical value streams are not compensated twice; and***
- b. ***Consider CDM to exclude ~~behind-~~Behind-the-meter consumer generation that uses fossil fuels purchased from or otherwise supplied by a third party as a primary fuel source.***

(Q2) Additional objectives and/or targets might include:

- Incentivizing beneficial electrification that results in demonstrated greenhouse gas emissions reductions and increased resilience.
- Optimizing utilization of the grid through activities and technologies that encourage demand flexibility.
- Encouraging performance-based incentive programs that compensate customers based on realized energy use reductions.
- Prioritizing customer experience in accessing program incentives and resources and minimizing customer transaction costs.
- Seeking opportunities to support customer energy needs and reliability objectives.

(Q6) Activities that encourage electrification can be funded from a combination of electricity ratepayers, natural gas ratepayers, and taxpayers, depending on which funding source(s) accrue the benefits for related activities.

2. Coordinate the delivery of electricity CDM and natural gas DSM programs to ensure the efficient use of demand-side funding. (Q1, Q2, Q13, Q16)

(Q16) Collaboration can occur to varying degrees, from “coordination” (consistency in program design) to “integration” (joint delivery of programs). Potential benefits of coordinated and/or integrated CDM and DSM programs include: lower program costs, enhanced reach, greater clarity in the market, and lower transaction costs for consumers. In addition, certain investments, such as building envelope efficiencies, often result in reductions in both electricity and natural gas demand. Coordinated delivery ensures that incentives are priced and valued consistently and at their full value to the overall energy system rather than just to the system (natural gas, distribution-level electricity, or transmission-level electricity) through which the program originates.

(Q2) Residents and businesses should be required to examine fuel-switching options and encouraged to pursue opportunities that are cost-effective and reduce greenhouse gas emissions. Gas utilities should be required to collaborate on program design and delivery with the IESO (and electric utilities, where applicable), and to document these efforts in their DSM reports. Programming should consider the counterproductive incentives that exist for utilities. Utilities are not motivated to lower demand since they derive a rate of return from the related infrastructure. This is especially true for natural gas utilities, which will need to deliver incentives for both energy savings as well as electrification. (Q1) Given these tensions, it is critical that the Ministry provides strong direction on overall energy savings and electrification targets, and that the OEB is empowered to enforce those targets.

(Q13) Finally, customers’ interest in efficiency incentives and other demand-side programs are about affordability and meeting their energy needs. The back-end complexities, such as which utility delivers which rebate is of little concern to most consumers, and onerous user experiences can be a barrier to participation. It’s critical that, while program management and costs may be split between utilities behind the scenes, customers can access one streamlined program with a single application, point of contact, and set of marketing materials. This will be further discussed in point 6.

3. Ensure demand-side options (both efficiency and flexibility) are evaluated on equal footing with supply-side options when considering how to meet future energy needs (Q8, Q19)

(Q19) CDM programming should realize all available cost-effective energy efficiency resources. While detailed guidelines exist for evaluating the cost-effectiveness of CDM portfolios, programs, and measures, these initiatives are currently not pursued on equal footing with new supply.

Ontario is well behind many other North American jurisdictions in its energy efficiency efforts, missing the opportunity to improve health outcomes and avoid over-building of generation assets. The IESO's CDM mid-term review, released in December 2022, indicates that Ontario has fallen behind comparable jurisdictions not only in spending on energy efficiency, but also in leveraging the corresponding savings. Ontario is [currently being outperformed](#) by 20 US states and lags other provinces in spending per capita. [A jurisdictional scan](#) by Efficiency Canada further corroborates these findings, identifying energy efficiency programming as an area for improvement for Ontario and suggesting the expansion of electricity programs and natural gas DSM in order to reduce emissions.

(Q8) Leading American states like Michigan and Massachusetts have planning rules that mandate utilities to invest in all energy efficiency solutions that are lower cost than generation options. Requiring cost-effective energy efficiency over more expensive supply alternatives means a lower operation cost of the electricity system. The most cost-effective megawatt is usually the one avoided in the first place, as supported by the IESO's [Achievable Potential Study](#) in 2019 and [subsequent update](#) in 2022.

Long-term energy planning suffers from a bias inherent in energy system modelling [efforts across North America](#). Energy efficiency is treated as "negative demand", and as a result does not directly compete with supply-side resources such as wind, solar, and natural gas, as demonstrated in the IESO's recent Pathways to Decarbonization study.

As a result, demand-side options are consistently under-represented in system planning efforts, despite the IESO's own data showing that energy efficiency has a net benefit of two dollars for every one spent. In other words, demand-side measures are significantly out-performing their supply-side counterparts, and there remains significant unlocked potential.

4. Expand CDM programming to be inclusive of all distributed energy resources that are unlikely to participate in the IESO-administered market. (Q4, Q15, Q12)

(Q15) Increasing the use of smart devices and controls is a cost-effective resource for meeting Ontario's future capacity needs utilizing existing grid infrastructure. [A study commissioned by the IESO](#) last year showed that DERs have the economic potential to meet all incremental peak capacity needs over the next decade. The IESO and OEB have multiple initiatives under way that aim to fully integrate and compensate DERs for the value they provide to both transmission and distribution grids. While some of these resources (e.g. load shedding from large industrial users) are well-positioned to participate in the wholesale market, CDM programming should ensure that Ontario is tapping into all other cost-effective flexible demand to shave peak capacity needs.

Ontario's recent Peak Perks program is an ideal example of this and can be expanded to other end uses. The program sensibly targets a proven and well-understood resource and takes advantage of equipment already installed (existing central air conditioning and smart thermostats). However, there is potential to tap into a much larger resource by including other types of residential loads such as EV chargers, heat pumps, and water heaters. This includes thousands of Ontario households expected to install heat pumps and/or heat pump water heaters through Enbridge's Home Efficiency Rebate Plus program.

(Q4) In addition, the current definition for CDM includes non-emitting, behind-the-meter (BTM) consumer generation, given its ability to reduce peak demand and overall consumption from the

electricity system. Compensation for distributed generation and storage (e.g. rooftop solar and battery storage), however, is limited to net-metering credits tied to energy production. CDM programming should ensure that these assets are also compensated for the capacity value they provide, with higher incentives targeted at regions facing significant transmission-related constraints.

(Q12) Overall, the Ministry should take a holistic approach and prioritize ensuring **all demand, including residential, commercial, and industrial**, is incentivized to be flexible through one program or another, and that those incentives are priced appropriately. This should be supplemented by incentives for BTM generation and storage commensurate with the capacity and energy value they provide to the grid, inclusive of avoided T&D costs. Particularly, regional planning and local distribution plans should regularly assess market prices and capabilities to provide CDM activities as part of regular planning processes. This could include local procurement initiatives to determine the scope and capabilities of CDM resources (e.g., local capacity auctions as part of distribution system planning or regional planning processes).

5. Reintroduce CDM programming for new construction, ensuring that the energy system can accommodate future housing growth. (Q19)

In the IESO's [2022 CDM mid-term review](#), new construction programming was identified as a future opportunity. TAF agrees with this assessment and believes that the CDM budget for new construction programming should be re-introduced to ensure the energy system can accommodate future housing growth. To restore affordability, Ontario has set a goal to [build 1.5 million homes by 2031](#). Ensuring these newly built homes are as energy efficient as possible will be beneficial for utilities, rate payers, and the province.

Based on the IESO's assumptions in the Pathways to Decarbonization Study, the single biggest driver of incremental capacity and energy needs is increasing winter peak demand, resulting from electrification of heating in new buildings. This highlights a major gap in CDM programming – there is currently no funding targeted for new construction. Given that heating loads in new homes and buildings is the biggest driver of mid-term energy and capacity needs in a decarbonization scenario, the next conservation framework should include programs to support thermal efficiency in new construction. Key measures should include above-code levels of insulation and airtightness and ground-source heat pumps (GSHPs). While both air-source heat pumps (ASHPs) and GSHPs are highly efficient, the peak electrical load of a building heated with GSHP is [approximately 58% lower](#) than one heated with ASHPs. Considering that the most expensive component of a GSHP (the ground loop) has a 50+ year lifespan, the value proposition in avoided capacity, energy, and transmission costs is clear. With Ontario targeting construction of 1.5 million homes over the next decade, there is a one-time opportunity to make these homes as thermally efficient as possible.

6. Prioritize customer experience in delivering programs to maximize uptake and minimize customer transaction costs. (Q12, Q13)

(Q12, Q13) While the mechanics of designing and funding programs are complex, accessing information and incentives through those programs must be simple for end users. Consumers that would otherwise be candidates for CDM programs should not be disengaging due to administrative or process-related hurdles. Consumers are less concerned by back-end logistics; they want a single window for their energy needs. This currently does not exist, and makes the ecosystem confusing to navigate, resulting in lower program uptake, higher energy needs, and more stress on the overall system.

This centralization of information should be paired with marketing and outreach efforts to ensure higher uptake of programs. A survey completed for [the IESO's 2021 Retrofits program](#) displayed that between one-tenth and one-fourth of surveyed representatives and contractors indicated that various types of program marketing and outreach influenced their decision to complete their projects. They also rated “program marketing and outreach” the lowest of various aspects of the Retrofits Program. This mirrors similar findings from evaluations of the [Small Business Program](#), the [Energy Affordability Program](#), the [Small Business Lighting Program](#), and the [IESO's 2020 Retrofits program](#). Increased marketing was one of the main suggestions to overcome customer barriers to participation.

About The Atmospheric Fund

The Atmospheric Fund (TAF) is a regional climate agency that invests in low-carbon solutions for the Greater Toronto and Hamilton Area and helps scale them up for broad implementation. We are experienced leaders and collaborate with stakeholders in the private, public and non-profit sectors who have ideas and opportunities for reducing carbon emissions. Supported by endowment funds, we advance the most promising concepts by investing, providing grants, influencing policies and running programs. We're particularly interested in ideas that offer benefits in addition to carbon reduction such as improving people's health, creating local jobs, boosting urban resiliency, and contributing to a fair society. TAF is a proud member of the Low Carbon Cities Canada network. Learn more at taf.ca