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RE: Electricity Energy Efficiency Programming Post 2024 (ERO # 019-7401)

On behalf of Ontario's more than 3,000 environment and cleantech firms, the Ontario Environment Industry Association (ONEIA) is writing to provide our response to the Ontario Ministry of Energy's ERO posting # 019-7402 seeking input on the future of electricity energy efficiency programs in Ontario.

Ontario is home to Canada's largest group of environmental and cleantech companies. The most recent statistics from the federal government show that Ontario's environment sector employs more than 226,000 people across a range of sub-sectors. This includes firms working in such diverse areas as materials collection and transfer, resource recovery, composting and recycling solutions, alternative energy systems, environmental consulting, brownfield remediation, and water treatment – to name just a few. These companies contribute more than \$25-billion to the provincial economy, with approximately \$5.8-billion of this amount coming from export earnings.

ONEIA members are committed to engaging with governments as they develop policies and regulations that are consistent with our principles of sound science, a sound environment, and a sound economy.

ONEIA would like to congratulate the Ministry on its efforts to seek public input on the future of electricity energy efficiency programs in Ontario. We welcome the opportunity to provide our input and to offer valuable information to assist the Ontario Government in making informed decisions about the future of electricity efficiency programs before it ends existing programs and launches new programs in 2025.

Introduction and Overview

We suggest that there is a significant opportunity to create a new generation of aggressive energy efficiency programs in Ontario enabled by the rapid evolution of decentralized technologies, including energy efficiency, low impact renewables and storage, and by innovative business models that often leverage new data driven technologies like Artificial Intelligence (AI).

The implementation of aggressive energy efficiency programs would not only lower consumers' bills while increasing the province's relatively low energy productivity but would also encourage greater participation in the energy economy, increase resilience, lower transmission losses and reduce carbon emissions. In addition, broadening the Conservation Demand Management (CDM) definition to capture distributed energy resources (DER), demand response (DR), and other opportunities both behind and in-front of the meter would enable greater customer choice to achieve more energy savings as well as to participate in energy markets.

The recent Ontario Distributed Energy Resources Potential Study by Dunsky for IESO indicated that “there is ample cost-effective DER capacity to meet or exceed all incremental system needs under all scenarios and that the achievable potential results reveal that, when factoring in real-world conditions, DERs are able to satisfy a material portion of the province’s energy needs – from 1.3 to 4.3 GW of peak summer demand by 2032.”

Rooftop-based solar, agrivoltaics and other distributed renewable energy systems are not only easing the burden on the distribution grids and allowing companies, farmers and households to lower their electricity bills but also for energy consumers to also become energy producers. This can be enhanced further by the integration of on-site energy storage systems (power wall, repurposed lithium car batteries, vehicle-to-grid (V2G) technology). These systems which typically involve low impact renewables like solar PV, can also contribute to significantly reducing carbon emissions globally.

There are several innovative financing models for energy efficiency and renewable energy that have gained traction in recent years. Some of these models include Property Assessed Clean Energy (PACE), On-Bill Financing, Energy Savings Performance Contracts, Energy Efficiency as a Service, Energy Performance Contracts, among others.

New digital and data driven technologies such as AI, blockchain and the Internet of Things (IoT), offer significant opportunities to enhance the delivery of energy efficiency programs as well as the integration of DER, making them more effective and impactful. They can serve to empower consumers, enhance program efficiency, and support a more sustainable and resilient energy system.

In addition, an aggressive energy efficiency program will create jobs, develop and support new skills, and increase Ontario exports across these many solutions.

In response to the specific feedback that the Ministry of Energy is seeking regarding the future of electricity energy efficiency programs in Ontario, please note our comments and responses on the following questions posed in your consultations:

A. Objectives and targets

1. How sufficient are the current primary objectives and targets for addressing evolving system and customer needs?

The rapid evolution of decentralized technologies, including energy efficiency, low impact renewables and in particular storage, as well as innovative business/financing models, enable the implementation of much more aggressive energy efficiency programs including DER than are reflected in the current

primary objectives and targets. We believe this would allow for a more incremental approach to meeting load growth while avoiding the risks of building too much or too little electricity capacity. In that regard, there are some key energy, economic and environmental objectives and targets that should be considered in meeting system and customer needs.

- Energy & Environmental Benefits
 - Reduced infrastructure costs/risks associated with investing in large, centralized power generation.
 - Increased resilience to failures or disruptions (e.g. weather)
 - Reduced transmission losses
 - May reduce the adverse effects of EV charging load over longer term, while at the same time incorporating the potential to use EV energy in the grid (local or system wide)
 - Integration of renewable energy puts us on a pathway to eliminate fossil fuel usage and their associated emissions
 - Economic Benefits
 - Lower energy bills and improved energy productivity
 - Job creation and local economic development
 - Increased competition and consumer choice
 - Export products and services developed in Ontario, and conversely, reduce the import of foreign products and services.
2. Should additional objectives or targets be considered when developing electricity energy efficiency programming? For example, objectives and/or targets relating to beneficial electrification (replacing fossil fuel use with electricity in a way that reduces overall emissions and energy costs), overall grid efficiency including demand flexibility (reducing, increasing or shifting customer load), electricity bill reduction, etc.

Yes, we strongly support that there should be additional objectives related to encouraging greater participation in the energy economy, reducing energy costs and bills while also increasing resilience, lowering transmission losses and reducing carbon emissions. This would include targets related to beneficial electrification (replacing fossil fuel use with electricity in a way that reduces overall emissions and energy costs), overall grid efficiency including demand flexibility (reducing, increasing or shifting customer load) and electricity bill reduction.

Ontario has an opportunity here to build on its previous successes in reducing emissions while reducing electricity bills. In doing so, it will build a stronger economic future for all Ontarians such as recently evidenced by Volkswagen's choice to locate its EV battery facility here. Moving towards decentralized technologies, including energy efficiency, low-impact renewables and storage will be of relevance to industries and investors committed to net-zero pathways especially in light of the U.S. Inflation Reduction Act and the EU Green Industrial Plan which have accelerated competition for clean energy investment and jobs. For example, coordination of aggressive Ontario electricity energy efficiency initiatives including smart buildings, DER and demand response with companies that locate in Ontario can also provide an incentive to attract more jobs and economic activity.

In this regard, there should be adequate support for local area energy planning as a means of exploring a range of different future local energy scenarios to achieve deep decarbonization at least cost while promoting clean growth. Such a process enables stakeholders, led by local government and Indigenous communities, to explore different energy futures for an area and to develop the most promising, cost-effective options for decarbonization. Local Area Energy Planning develops a shared vision as a basis for targeting investment.

B. Definition:

3. Does this CDM definition appropriately capture DER, and demand response (DR), and other opportunities arising from new technologies and business models that enable greater customer choice to achieve more electricity savings within CDM? If not, what changes should be made recognizing there may be other revenue options and models that may become available to DERs (e.g., local and wholesale electricity markets) outside of CDM?

In light of the rapid evolution of decentralized technologies, including energy efficiency, low impact renewables and storage in addition to innovative business/financing models, the CDM definition should be broadened to more effectively capture DER, DR, and the other opportunities that enable greater customer choice to achieve more electricity savings or participate in local and wholesale electricity markets both within and outside of the current CDM definition.

Other revenue models are becoming available to DERs outside of CDM and many of these decentralized technologies and business models are not exclusively found "behind the meter". The definition needs to reflect the transformation of energy consumers to prosumers, e.g., from warehouse and industrial rooftops, agriculture, parking lots, etc., which is causing a major shift in the energy landscape. Both residential and commercial consumers can choose to implement their own power systems in their homes or places of business, taking control of their energy usage or being able to sell to local and wholesale electricity markets.

4. At the same time the CDM must be careful to not result in a movement to fossil fuel behind-the-meter solutions. In that regard, DER and behind-the-meter solutions need to meet GHG reduction levels that the overall system is at. Should the definition consider additional elements such as beneficial electrification?

Yes, it should consider additional elements such as beneficial electrification such as heat pumps and EV charging to reduce greenhouse gas emissions but integrated with low impact renewables, e.g., solar, wind, geothermal, etc., and storage along with innovative business models such as to reduce any adverse effects of heat pumps or EV charging load over longer term.

Broadening the definition in these ways will help better align energy efficiency programming with the objectives cited previously of reducing energy bills and encouraging greater participation in the energy economy while also increasing resilience, lowering transmission impacts/losses and reducing carbon emissions.

C. Funding Source

5. Currently, funding from electricity ratepayers through the Global Adjustment (GA) can support electricity energy efficiency programs that target local and/or regional needs and which also demonstrate cost effectiveness at the system-wide level. How do we determine the extent to which local and/or regional programs are to be funded by all electricity ratepayers (i.e., through the GA)?

Recognizing current cost-of-living challenges facing Ontarians and sensitivities around electricity rate pressures, we would continue to support that funding from electricity ratepayers through the GA can support electricity energy efficiency programs that target local and/or regional needs and that also demonstrate cost effectiveness at the system-wide level.

However, we recommend the incorporation of new business and financing models that can actually reduce energy bills (such as net billing mixing self-consumption and surplus feed in tariff for prosumers, on-bill financing, Property Assessed Clean Energy or PACE financing, renting or leasing options that provide additional maintenance services, sale of electricity (e.g., solar, thermal, etc.) to local and wholesale electricity markets. New decentralized technologies, including energy efficiency, low impact renewables and in particular storage typically require upfront capital investment, but can reduce monthly electricity bills while generating longer term cost effectiveness at the system-wide level. These new financing models can amortize these upfront costs over the economic lives of the underlying assets (as opposed to typical retail bank lending terms) which can be repaid through consumer and system-wide savings over time.

6. Currently, DER and DR activities can be funded through the GA if they meet the CDM definition. Beneficial electrification is not an eligible CDM activity. Should beneficial electrification be an eligible CDM activity; and if so, what funding source is most appropriate (e.g., electricity ratepayer, natural gas ratepayer, taxpayer)?

We would highly recommend including beneficial electrification as an eligible conservation demand management activity. Including beneficial electrification in the program can have several advantages, including the following:

- **Energy Efficiency:** Electric technologies have the potential to be more energy-efficient compared to traditional fossil fuel-based systems, leading to reduced energy consumption and lower energy bills for consumers.
- **Technological Advancements:** Encouraging beneficial electrification can drive innovation and advancements in electric technology, leading to more efficient and affordable solutions over time as well as technology commercialization opportunities for Ontario companies. These could give Ontario companies early mover advantages and the ability to eventually export their products and services given the rapid pace of electrification globally.
- **Jobs and Economic Opportunities:** Beneficial electrification will create opportunities for Ontario workers and businesses. Some of the business opportunities and jobs include energy engineers and technicians, who design, install, maintain, and operate beneficial electrification systems. They

also include building architects and construction workers, who plan, design, build, and renovate buildings that are energy-efficient.

- **Lower Greenhouse Gas Emissions:** By transitioning from fossil fuel-based technologies to electric ones, there will be a significant reduction in carbon dioxide and other greenhouse gas emissions, contributing to Ontario's efforts to combat climate change and meet emission reduction targets. This would ensure Ontario has an attractive power system to attract foreign investment.

Funding Source:

The electricity ratepayer is generally the most suitable funding source for this initiative because of the following:

- **Direct beneficiaries:** electricity ratepayers will directly benefit from the increased efficiency and reduced costs associated with beneficial electrification. As more people adopt electric technologies, the overall demand for electricity may rise, leading to more stable or potentially reduced electricity rates for ratepayers due to economies of scale.
- **Incentivizing Electric Utilities:** Funding beneficial electrification through electricity ratepayers can incentivize electric utilities to actively participate in the program and support the transition to electric technologies. This support may include offering rebates, incentives, or assistance to consumers in making the switch to electric equipment, as well as incentivize and support potential prosumers.
- **Financial Feasibility:** Given that beneficial electrification is focused on the electric sector, using electricity ratepayer funds would be a practical and transparent way to finance the initiative. It ensures that the funding is specifically targeted toward the intended conservation efforts.
- **Alignment with Climate Goals:** Since beneficial electrification contributes to greenhouse gas emissions reduction, it aligns with the broader climate goals of the province. By allocating funds from electricity ratepayers, the program can be directly linked to the reduction of emissions associated with electricity consumption.

However, there are also some reasonable arguments for involving natural gas ratepayers in funding such initiatives, including:

- **Energy Independence:** Reducing reliance on natural gas by transitioning to electric alternatives can improve energy independence for Ontario. Diversifying the energy mix and minimizing dependence on a single energy source from outside Ontario can increase resilience and mitigate risks associated with supply disruptions or price fluctuations. This is particularly important as Ontario reduces and eliminates its reliance on NG to home and other heating applications.
- **Equitable Distribution of Costs:** Sharing the funding responsibility between electricity and natural gas ratepayers can promote a sense of fairness and equity in addressing energy conservation and emission reduction initiatives. Many consumers use both electricity and natural gas, and spreading the cost across multiple energy sources can prevent undue burden on any single group, resulting in a possible disincentive for electricity consumers.

- **Integrated Energy Solutions:** Encouraging collaboration and coordination between electricity and natural gas utilities can lead to more integrated energy solutions. Jointly funding beneficial electrification programs can facilitate cooperation between different energy sectors and create innovative, cross-sectoral approaches to energy conservation.
- **Future-proofing the Natural Gas Industry:** As society moves towards cleaner and more sustainable energy solutions, the natural gas industry will need to adapt to remain viable. By contributing to beneficial electrification, natural gas ratepayers can invest in the long-term sustainability of their energy sector and potentially open up new revenue streams through innovative technologies and applications. For example, Enbridge’s financing and support of solar and cogeneration projects, as well as NG efficiency programs.
- **Climate Change Mitigation:** While the immediate focus of beneficial electrification is to reduce greenhouse gas emissions from the electricity sector, a broader perspective recognizes the importance of addressing emissions across all sectors, including natural gas. Incentivizing beneficial electrification through natural gas ratepayers can contribute to the overall reduction of greenhouse gas emissions, aligning with provincial climate change goals.

Involving both electricity and natural gas ratepayers in funding beneficial electrification requires proper communication and transparency with all ratepayers, highlighting the benefits of the program and the importance of transitioning to a more sustainable and energy-efficient future. This could be combined with new financing models mentioned earlier which can amortize upfront costs over the economic lives of the underlying assets which can be repaid through consumer savings from lower natural gas or heating oil consumption over time. Additionally, continuous monitoring and evaluation of the program's effectiveness will be crucial in refining and optimizing its outcomes over time.

II. Responsiveness to system needs

7. Would a more enduring commitment to energy efficiency programming and funding produce better outcomes? What could this look like?

A more enduring commitment to energy efficiency programming and funding would likely produce better outcomes by providing continuity, consistency, long-term planning, and an improved framework for adopting innovative solutions – both technical and financial. It can increase investment and participation, enhance program effectiveness, and enable adaptability to changing circumstances.

To achieve this, the Ontario Integrated Electricity System Operator (IESO) could adopt rolling start and end dates, performance-based funding, broader stakeholder collaboration, technology utilization, and public awareness campaigns.

- **Rolling Start and End Dates:** Rather than having all programs start and end on specific dates, the IESO could adopt a rolling approach. This means that new programs can be introduced while existing ones continue, avoiding abrupt transitions and program gaps. This also provides the potential for a longer time frame in which project developers, financiers, etc. can amortize their

efforts and investments. Doing so would result in increased involvement, innovation, competition, and lower prices.

- **Performance-Based Funding:** Linking funding to the achievement of specific energy savings targets can incentivize service providers and participants to deliver better results over the long term.
 - **Stakeholder Collaboration:** Engaging broader groups of stakeholders including local utilities, municipalities, consumers, prosumers, financiers, etc. in the planning and evaluation process can ensure that programs are better aligned with their needs and that potential issues are addressed proactively.
 - **Technology and Data Utilization:** Leveraging technology and data analytics can provide valuable insights into program performance and customer behavior, enabling continuous improvement and evidence-based decision-making.
 - **Public Awareness and Education:** A sustained commitment to energy efficiency would benefit from ongoing public awareness campaigns to encourage consumer engagement and support.
8. In the context of the energy transition and growing electrification needs, how can electricity energy efficiency programs be better integrated into electricity distribution and transmission system planning as well as resource procurements?

Integrating electricity energy efficiency programs into electricity distribution and transmission system planning, as well as resource procurements, is crucial for maximizing energy savings, optimizing grid operations, and supporting the energy transition. Some strategies to achieve better integration include:

- **Data-Driven Planning:** Use data analytics to identify areas with high energy consumption, peak demand, new technologies, and potential for energy savings and DER.
- **Collaborative Approach:** Involve a broader group of stakeholders, including municipalities, LDC's, regulators, government agencies (e.g., housing, transportation) industry, and energy efficiency program administrators, in the planning process.
- **Conservation Demand Management (CDM) Integration:** Integrate energy efficiency measures as part of CDM programs in managing electricity consumption patterns to optimize grid operations and reduce the need for additional generation and transmission capacity.
- **Non-Wires Alternatives:** Consider non-wires alternatives as part of transmission and distribution system planning. Energy efficiency measures, such as demand response and distributed energy resources, can often provide cost-effective alternatives to infrastructure upgrades.
- **Integrated Resource Planning (IRP):** Implement IRP processes that consider a broad range of resources, including energy efficiency, renewable energy, storage, and traditional generation, along with recently adopted technical advancements, to prioritize energy efficiency programs as part of the resource mix.

- **Incentive Mechanisms for Consumers:** Encourage consumers to participate in energy efficiency programs by both better coordinating existing and offering new financial incentives, rebates, or lower electricity rates to boost program participation and overall energy savings.
- **Real-Time Data and Automation:** Utilize real-time data and automation to optimize energy efficiency measures. Smart technologies, IoT devices, and advanced metering infrastructure can help consumers and utilities make real-time decisions to save energy.
- **Public Awareness and Education:** Raise awareness about the benefits of energy efficiency and its integration into electricity planning. Educating consumers and stakeholders can foster support and engagement in energy-saving initiatives. Resulting in a long-term reduction in costs to Ontario and its electricity consumers.

By adopting these strategies, electricity energy efficiency programs can be better integrated into distribution and transmission system planning, as well as resource procurements, facilitating a smoother and more effective energy transition.

9. What additional tools could be used to develop energy efficiency programming budgets and targets? Examples of existing available tools include:
 - Achievable Potential Studies, which evaluate how much electricity energy efficiency is possible from a technical, economic, and market potential basis.
 - Annual Planning Outlooks, which provide a long-term view of electricity demand needs in Ontario and indicates the relative economic value of CDM. This report is updated on an annual basis.
 - Annual Acquisition Reports, which specify the mechanisms to provide a flexible and cost-effective approach for competitively securing electricity resources necessary to meet demand.

The above tools are quite useful. We would also suggest IESO provide a working template integrating the various input/output factors identified in the current programs and this response. This would allow the various stakeholders to define and assess scenarios for the system, their specific regions, their impacts, etc.

10. How can electricity energy efficiency programs be better integrated or coordinated with other policy initiatives such as procurements (e.g., of DER resources), pricing schemes, building codes and energy efficiency standards, to help manage electricity demand and reduce GHG emissions?

Integrating electricity energy efficiency programs with other policy initiatives is vital for effectively managing electricity demand and reducing GHG emissions. Some strategies that could be considered for better coordination include:

- **Collaborative Governance:** Foster collaboration among relevant government agencies, utilities, and stakeholders to coordinate efforts and share best practices for energy efficiency and emissions reduction. The critical importance of energy to Ontario and the many different sectors and stakeholders requires a broader governance.

- **Joint Planning and Evaluation:** Integrate energy efficiency considerations into the planning and evaluation of other policy initiatives. Assess the potential synergies between different measures to maximize overall benefits. The integration across sectors, government levels, agencies, industry, etc. is critical to ensure efficiency, reliance, and optimal cost of the overall system.
- **Incentive Complementarity:** Coordinate incentives and subsidies for energy efficiency, renewable energy, and DER resources to create a more attractive and integrated package for consumers, prosumers, and businesses.
- **Market Integration:** Integrate energy efficiency programs with electricity markets and pricing schemes. Time-of-use pricing and demand response mechanisms can complement energy efficiency efforts in managing peak demand.
- **Technology Integration:** Incorporate energy efficiency measures into distributed energy resource (DER) procurements. Encourage the adoption of energy-efficient and data analytic (including AI projection) technologies as part of DER projects.
- **Building Codes and Standards:** Ensure that building codes and energy efficiency standards work hand-in-hand to promote energy-efficient construction and retrofitting.
- **Data Sharing and Analytics:** Facilitate data sharing between agencies to assess the impact of energy efficiency programs on electricity demand and GHG emissions. Use data analytics to optimize program performance.
- **Lifecycle Analysis:** Consider the lifecycle GHG emissions of energy efficiency measures and DER resources to make informed decisions about their environmental impact.
- **Public Awareness and Education:** Conduct public awareness campaigns that highlight the importance of energy efficiency and its role in reducing electricity demand and GHG emissions.
- **Policy Alignment:** Ensure that energy efficiency programs align with broader policy goals related to renewable energy procurement, pricing schemes, building codes, and emissions reduction, and across various government levels where possible. This alignment ensures a cohesive approach to energy management.
- **Policy Incentive Stacking:** Allow the stacking of incentives across different programs, such as offering additional rewards for combining energy efficiency measures with renewable energy installations.
- **Policy Integration in Long-Term Planning:** Integrate energy efficiency goals and targets into long-term energy, housing, transportation, industrial, and environmental planning. This ensures a sustained focus on energy efficiency as a key component of emissions reduction strategies.

By integrating and coordinating electricity energy efficiency programs with other policy initiatives, governments can create a more effective and comprehensive approach to managing electricity demand, promoting sustainable energy practices, and achieving significant reductions in GHG emissions.

11. What are examples from other jurisdictions where demand flexibility and targeted energy efficiency have helped optimize the use of the existing grid in constrained areas or where the grid is under-utilized? For example, aggregated demand response program, DER and non-wires alternatives, energy storage, locational value and electricity pricing options, etc.

Demand flexibility and targeted energy efficiency initiatives have been implemented in various jurisdictions to optimize the use of the existing grid in constrained areas or under-utilized regions. Here are some examples of these strategies that might be transferable to the Ontario context:

- **Aggregated Demand Response Program (United States):** In some U.S. states, utilities have deployed aggregated demand response programs where they incentivize consumers to reduce electricity consumption during peak demand periods. By aggregating the demand response capacity of multiple consumers, utilities can effectively manage peak loads and avoid grid constraints.
- **DER and Non-Wires Alternatives (New York, USA):** New York State has been at the forefront of integrating DER and non-wires alternatives into grid planning. For instance, the Reforming the Energy Vision initiative promotes the use of distributed energy resources, such as rooftop solar, energy storage, and demand response, to defer or replace traditional grid infrastructure upgrades in constrained areas.
- **Energy Storage (Australia):** Australia has been actively deploying large-scale energy storage systems, like battery storage, to optimize grid use and manage intermittent renewable energy sources. These storage systems help balance electricity supply and demand, enhancing grid stability and efficiency.
- **Locational Value and Electricity Pricing (Germany):** In Germany, some utilities have introduced locational pricing schemes that charge different electricity rates based on the location and grid congestion levels. Higher prices during peak periods incentivize consumers to shift consumption to off-peak times, thereby optimizing grid utilization.
- **Demand-Side Management (DSM) (California):** California has been a leader in implementing comprehensive DSM programs. The state's utilities, under the guidance of the California Public Utilities Commission (CPUC), have implemented various energy efficiency measures and demand response initiatives. For instance, the "Demand Response Auction Mechanism" allows demand response resources to bid into wholesale electricity markets, providing grid operators with additional flexibility during peak demand periods.
- **Smart Grid Initiatives (Singapore):** Singapore has invested in smart grid technologies, such as advanced metering infrastructure and real-time demand management systems. These initiatives enable consumers to monitor and adjust their electricity usage, contributing to load balancing and grid optimization.
- **Energy Efficiency Certificates (Italy):** Italy has implemented an Energy Efficiency Certificate (EEC) trading scheme that rewards energy-saving projects. Utilities are required to meet energy savings

targets, and they can trade EECs to comply with these obligations. This scheme incentivizes targeted energy efficiency initiatives to optimize grid utilization.

- **Virtual Power Plants (VPPs) (South Korea):** South Korea has adopted VPPs, where distributed energy resources like solar PV, energy storage, and demand response are aggregated and operated as a single entity. VPPs enhance grid flexibility by intelligently managing the output of these resources based on grid conditions and demand patterns. Note, the USA and its DOE have stated they will be supporting VPPs through the IRA.
- **Time-of-Use (TOU) Pricing (Japan):** Some regions in Japan have introduced TOU pricing schemes, where electricity rates vary based on the time of day. This pricing structure encourages consumers to shift electricity consumption away from peak periods, reducing grid congestion.

We hope that these examples are useful in demonstrating how demand flexibility, targeted energy efficiency, DER integration, non-wires alternatives, energy storage, locational value, and electricity pricing options can be successful in optimizing grid utilization in different jurisdictions, addressing both constrained and under-utilized grid areas.

III. Improving customer experience

Energy efficiency programs are uniquely positioned to engage directly with electricity customers, to help inform behaviours and provide choice that will benefit both customers (e.g., through electricity bill reductions) and the system (e.g., through reducing reliance on additional infrastructure investments including resource procurements). There is an opportunity with electricity energy efficiency programming to improve the customer experience and enhance customer choice to achieve greater impact.

A. Needs:

12. What additional support is needed to get customers to undertake more energy efficiency?

Currently, energy efficiency programs for all energy sources (i.e. electricity, natural gas, heating oil, propane, wood) including communications, information, auditing, incentives and financing are highly fragmented, confusing and cumbersome for energy customers while often involving high upfront costs despite offering life-cycle bill savings for deep retrofits. These are poorly coordinated across a range of different electrical and natural gas utilities and across federal, provincial and municipal governments. This makes it overly complicated for even the most energy conscious consumers to access information about available programs, find and coordinate energy audits, arrange for contractors to undertake the retrofits, access the different incentives and then finance the improvements.

Improving the customer experience is crucial for the success and effectiveness of energy efficiency programs. In that regard, having one, single delivery body or point of contact for consumers that provides information about all available programs for electricity, natural gas, etc., finds and coordinates energy audits, arranges for contractors to undertake the retrofits, provides direct access to the different incentives from all levels of government and utilities and then helps to finance the improvements will be

crucial to developing effective programs that can scale and make meaningful improvements in energy efficiency and beneficial use of electricity.

In addition, to get customers to undertake deep energy saving retrofits or beneficial adoption of electricity, it is necessary to integrate both the upfront incentives required to bring the cost of the retrofits/conversions down as well as the financing, including on-bill financing and/or local area improvement charges(LIC)/Property Assessed Clean Energy (PACE) financing, to amortize the costs over the economic life of the equipment so that energy consumers realize an actual reduction in monthly bills right at the outset without having to take on more debt.

Some additional best practices to enhance the customer experience in delivering energy efficiency programs include:

- **Personalized and Accessible Communication:** Tailor communication to each customer segment, addressing their specific needs and concerns. Use personalized messaging to make customers feel valued and engaged in the program. Communications designed and delivered that are responsive to locale, language/culture, media, etc.
- **Simplified Enrollment Process:** Make the enrollment process for energy efficiency programs easy and straightforward. Minimize paperwork and administrative requirements to encourage more participation.
- **Clear Program Information:** Provide clear and concise program information, including benefits, incentives, eligibility criteria, and expected outcomes. Transparency builds trust and helps customers make informed decisions.
- **User-Friendly Online Platforms:** Offer user-friendly online platforms for program enrollment, tracking progress, and accessing information. An intuitive interface makes it convenient for customers to participate and engage with the program.
- **Prompt and Responsive Customer Support:** Ensure prompt and responsive customer support to address inquiries, concerns, and technical issues. Efficient support enhances customer satisfaction and boosts program credibility.
- **Incentives and Rewards:** Offer attractive incentives and rewards to customers for participating in energy efficiency programs. Financial or non-financial incentives can motivate customers to take action. Citizens want to participate in and in many cases show they are part of successful and beneficial programs, e.g., Blue Box recycling.
- **Education and Awareness:** Conduct educational campaigns to raise awareness about the benefits of energy efficiency and the available programs. Educated and aware customers are more likely to adopt energy-saving measures.
- **Energy Audits and Home/Business Assessments:** Provide energy audits or home/business assessments to identify potential energy-saving and/or prosumer opportunities tailored to each customer's situation. These personalized recommendations increase the relevance of the program.
- **Community Engagement:** Engage with local communities to promote energy efficiency and encourage collective participation. Community-based initiatives can generate enthusiasm and support for the program.

- **Continuous Feedback and Evaluation:** Collect feedback from customers regularly to understand their experiences and identify areas for improvement. Use data-driven insights to enhance program effectiveness.
- **Collaboration with Partners:** Collaborate with local utilities, businesses, and other stakeholders to extend program outreach and maximize resources. Partnerships can lead to a more comprehensive and impactful program.
- **Post-Program Support:** Offer post-program support to customers to ensure that energy efficiency measures continue to be effective and sustainable. This support can include ongoing guidance and troubleshooting.
- **Gamification and Social Incentives:** Incorporate gamification elements and social incentives to make energy efficiency engaging and fun. Public recognition or competition among participants can increase motivation.
- **Tracking and Reporting Savings:** Provide customers with regular updates on their energy savings and environmental impact. Demonstrating tangible results reinforces the value of the program and assists with communicating the programs to others.

There are a couple of relevant North American examples of integrated energy efficiency program delivery models that provide a very positive customer experience and, in turn, significant results.

- **Efficiency Nova Scotia:** Efficiency Nova Scotia is Canada's first energy efficiency utility that works with more than 300 local partners. It is funded by supplying electricity efficiency and conservation activities to Nova Scotia Power that helps them meet Nova Scotia's electricity needs. The cost of these services is included in electricity rates and regulatory oversight is provided by the Nova Scotia Utility and Review Board. It has:
 - helped 400,000 program participants complete energy efficiency projects
 - helped businesses and homeowners save more than \$4 billion in lifetime energy costs, including \$400 million in savings for low-income homeowners and renters
 - avoided 10MT of CO₂e since 2011
- **Efficiency Vermont:** Efficiency Vermont provides objective advice, technical services, and financial support to help Vermont households and businesses reduce their energy use and costs with efficient buildings, equipment, and lighting. Vermonters pay for energy efficiency through a charge on their electric bill and it is regulated by the Public Utilities Commission. Established as the U.S.'s first statewide energy efficiency utility in 2000 by the Vermont Public Service Board, it has substantially reduced electrical demand and significantly helped to balance load growth in recent years.

By implementing these best practices, energy efficiency programs can deliver a positive customer experience, encouraging more significant participation and fostering long-term engagement in energy-saving efforts.

13. What should the government consider when communicating the benefits and motivations behind energy efficiency programs to encourage participation and improve public awareness? Examples of benefits are cost savings, comfort, enhanced customer choice, etc.

In terms of communicating the benefits and motivations behind energy efficiency programs to encourage participation and improve public awareness, historical and cross-jurisdictional experience suggests that the government should consider highlighting or prioritizing:

- **Energy bill reduction:** Emphasize the potential bill savings that participants can achieve by adopting energy efficiency measures. Show how energy-efficient practices can reduce utility bills and save money over the long term. The focus should be on reducing overall energy bills for consumers and not on electricity rates as energy savings can repay the costs of installing energy-efficient technologies such that consumers realize an actual reduction in monthly bills especially if financing is provided using on-bill financing or through Local Improvement Charges and the costs are amortized over the economic life of the equipment.
- **Incentives and Rebates:** Promote any available financial incentives, rebates, or tax credits associated with the energy efficiency programs. Make it clear how participants can take advantage of these benefits.
- **Health and Comfort Benefits:** Explain how energy efficiency measures can lead to improved indoor air quality, enhanced comfort, and healthier living conditions for participants and their families.
- **Revenue from Participation in Local & Regional Electricity Markets:** Highlight how both residential and commercial consumers can choose to implement their own power systems in their homes or places of business being able to sell to local and wholesale electricity markets.
- **Environmental Benefits:** Highlight the positive environmental impact of energy efficiency initiatives, such as reduced greenhouse gas emissions, lower carbon footprints, and contributions to sustainability goals.

By considering these factors, the Province can effectively communicate the benefits of energy efficiency programs, increase public awareness, and encourage active participation in energy-saving efforts.

14. Are there best practices from other jurisdictions on improving customer engagement in energy efficiency particularly for the hard-to-reach segments?

How the benefits and motivations associated with energy efficiency programs are communicated matters as much or more than the actual content of the communications and there are a range of useful approaches that have been used in other jurisdictions including:

- **Targeted Messaging:** Tailor the messaging to specific audiences, such as homeowners, renters, businesses, farms, or different demographic groups. Address their unique needs and concerns related to energy efficiency. This is particularly important given the significant multi-cultural make-up of Ontario.
- **Long-Term Commitment:** Demonstrate the government's long-term commitment to energy efficiency initiatives to build confidence among the public and stakeholders.

- **Case Studies and Success Stories:** Share real-life case studies and success stories of individuals or businesses that have participated in energy efficiency programs. Personal narratives can inspire others to follow suit.
- **Partnerships and Endorsements:** Collaborate with reputable organizations, influencers, or celebrities who support energy efficiency initiatives. Piggyback on others' events and programs. Their endorsement can lend credibility and reach a broader audience.
- **Online and Offline Platforms:** Use various communication channels, including websites, social media, community events, workshops, and local outreach programs, to reach different segments of the population.
- **Education and Awareness Campaigns:** Launch educational campaigns to raise awareness about the importance of energy efficiency and its impact on energy conservation and environmental protection.
- **Feedback and Interaction:** Encourage two-way communication by inviting feedback, questions, and suggestions from the public. Respond to inquiries promptly to foster trust and engagement.
- **Measuring and Showcasing Results:** Regularly measure and showcase the tangible outcomes of energy efficiency programs, such as energy savings and emission reductions. Concrete results provide evidence of program success.

15. How can we make better use of technology to achieve our electricity energy efficiency goals?

Ontario has a history of leveraging technology for promoting energy efficiency and there are ways to build on this to better achieve electricity energy efficiency goals:

Smart Meters and Advanced Metering Infrastructure (AMI): Ontario implemented smart meters and AMI to enable real-time monitoring of electricity consumption. By using these to provide consumers with detailed information about their energy usage patterns, they can make informed decisions to reduce wasteful consumption.

Smart Thermostats and Home Automation: Further encouraging the adoption of smart thermostats and home automation systems that optimize heating, cooling, and lighting based on occupancy and weather conditions. These technologies can significantly reduce energy waste and improve comfort.

Energy Management Systems (EMS): Promote broader adoption of EMS in commercial and industrial buildings to monitor, control, and optimize energy usage. EMS can identify energy-intensive processes and equipment, allowing for targeted energy efficiency improvements.

Internet of Things Devices: Utilize IoT devices and sensors to collect data on energy usage, occupancy, and environmental conditions. This data can be analyzed to identify opportunities for energy savings and optimization.

Artificial Intelligence and Machine Learning: Apply AI and machine learning algorithms to analyze large datasets and identify energy efficiency patterns and trends. These technologies can optimize energy consumption and predict demand patterns.

Distributed Energy Resources: Integrate DERs such as solar panels, wind turbines, and energy storage systems into the grid using smart grid technologies. DERs can complement traditional power sources and reduce overall energy demand.

Demand Response Technologies: Utilize DR technologies to manage electricity demand during peak periods. Automated demand response systems can respond to signals from grid operators to curtail energy usage when needed.

Data Analytics and Energy Auditing: Utilize data analytics and energy auditing tools to assess energy usage patterns in buildings and industries. Identifying energy inefficiencies helps prioritize energy-saving measures.

Virtual Power Plants (VPPs): Implement VPPs that aggregate and manage the collective output of small-scale DERs and demand response resources. VPPs can provide grid support and increase the penetration of renewable energy.

Blockchain for Energy Efficiency: Explore the use of blockchain technology to enable transparent and secure energy transactions, incentivizing energy conservation and rewarding participants for reducing consumption.

Electric Vehicles and Vehicle-to-Grid (V2G) Technology: Promote the adoption of EVs and V2G technology, allowing EV batteries to store excess energy and discharge it back to the grid during peak demand periods.

Energy-Efficient Appliances and Devices: Encourage the use of energy-efficient appliances and devices for homes and businesses by implementing energy labeling and certification programs. Smart appliances can also be integrated into energy management systems.

Online Energy Dashboards and Apps: Provide consumers and businesses with online energy dashboards and mobile apps that display real-time energy usage and offer personalized energy-saving tips.

Gamification and Incentive Platforms: Implement gamification elements and incentive platforms to engage consumers in energy efficiency efforts. Rewarding energy-saving behaviors can foster long-term participation.

Ongoing innovation: Members of ONEIA, CANREA, OCTIA and others are continually developing and enhancing technologies to add new functionality, improve performance, and/or reduce costs in all of the areas identified above. IESO, or other possible agency within the Ontario government, should establish a dedicated program/department focused on supporting development and specifically, adoption, of new electrical efficiency related technologies.

By embracing these technological advancements, governments, businesses, and consumers can work together to achieve electricity energy efficiency goals, reduce greenhouse gas emissions, and build a more sustainable energy future.

B. Coordinated delivery:

Electricity and natural gas energy efficiency programs are currently delivered under separate policy frameworks. Stakeholders have indicated that outcomes in both programs would be improved if there was more coordination between electricity and natural gas energy efficiency programs. Benefits could include more customer choice, improved customer experience, and administrative efficiencies (e.g., from joint procurements).

16. What opportunities should Ontario consider, to improve the coordination of electricity and natural gas energy efficiency frameworks, program delivery, and oversight?

Improving the coordination of electricity and natural gas energy efficiency frameworks, program delivery, and oversight in Ontario can lead to more effective and comprehensive energy conservation efforts. Here are some opportunities that Ontario should consider:

- **Integrated Energy Efficiency Strategy:** Develop an integrated energy efficiency strategy that encompasses both electricity and natural gas sectors along with other fuels like hydrogen. This strategy should align with the province's broader energy and climate goals and facilitate coordinated planning and implementation.
- **Cross-Sector Collaboration:** Foster collaboration and communication between electricity and natural gas stakeholders, including utilities, regulators, program administrators, and government agencies. Joint planning and sharing best practices can lead to more synergistic and efficient energy efficiency programs.
- **Unified Program Design:** Aim to create a unified approach to program design across both electricity and natural gas sectors. This could involve standardized program elements, incentive structures, and reporting requirements to streamline program delivery.
- **Aligned Incentives and Objectives:** Ensure that incentives and objectives across electricity and natural gas energy efficiency programs are aligned. This may involve coordinating financial incentives, performance metrics, and targets to coordinate a managed transition from NG to zero carbon fuels.
- **Data Sharing and Integration:** Establish mechanisms for sharing and integrating data between electricity and natural gas utilities and program administrators. This data exchange can help identify cross-sector energy-saving opportunities and optimize program targeting.
- **Joint Program Development:** Explore opportunities for joint program development that leverage the strengths of both electricity and natural gas sectors. For example, combined retrofit programs that address both heating and electricity systems in homes.
- **Customer Outreach and Education:** Implement coordinated customer outreach and education campaigns that emphasize the benefits of energy efficiency for both electricity and natural gas consumers. The ideal model would be to adopt an integrated energy efficiency model like Efficiency Nova Scotia or Efficiency Vermont that can create a more cohesive message and increase participation.
- **Cross-Energy Assessments:** Conduct cross-energy assessments to identify integrated energy efficiency solutions. For instance, consider the interplay between electric heat pumps and natural gas heating in achieving energy savings.

- **Unified Evaluation and Reporting:** Develop a unified evaluation framework for energy efficiency programs across electricity and natural gas sectors. This ensures consistent and comparable assessments of program effectiveness.
- **Regulatory Support:** Encourage regulatory support for cross-sector energy efficiency initiatives. This may involve updating regulations to facilitate joint program development, data sharing, and collaborative planning.
- **Innovation and Technology Integration:** Promote the integration of innovative technologies that bridge the electricity and natural gas sectors, such as combined heat and power (CHP) systems, which can increase energy efficiency.
- **Clear Roles and Responsibilities:** Clarify the roles and responsibilities of different stakeholders involved in energy efficiency coordination. This includes defining the roles of utilities, government agencies, program administrators, and oversight bodies.

By capitalizing on these opportunities, Ontario can foster a more integrated and effective approach to energy efficiency, maximizing the benefits for consumers, businesses and the environment in both the electricity and natural gas sectors.

17. What common performance metrics could be used to design, track, and evaluate coordinated energy efficiency activities (e.g., cost benefit tests, emissions reduction goals)?

To design, track, and evaluate coordinated energy efficiency activities, several common performance metrics can be used to assess the effectiveness and impact of these initiatives. Here are some key performance metrics:

- **Energy Savings:** Measure the total energy savings achieved through coordinated energy efficiency activities. This metric indicates the overall reduction in energy consumption due to the implemented measures.
- **Demand Reduction:** Track the reduction in peak and load demand resulting from energy efficiency efforts. Lower peak demand can help avoid grid constraints and reduce the need for expensive peaker plants.
- **Cost-Benefit Ratio:** Conduct cost-benefit tests to evaluate the economic viability of energy efficiency programs. Compare the total costs of the programs with the monetary value of energy savings achieved.
- **Return on Investment (ROI):** Calculate the ROI for each energy efficiency activity. It represents the financial returns generated by the program compared to the initial investment.
- **Emissions Reduction Goals:** Monitor and evaluate the progress towards emissions reduction goals. Assess the reduction in greenhouse gas emissions resulting from energy efficiency measures.
- **Participation Rates:** Measure the rate of participation in energy efficiency programs. This metric helps gauge the level of engagement and the success of outreach efforts.
- **Customer Satisfaction:** Gather feedback from participants to evaluate their satisfaction with the energy efficiency programs. High customer satisfaction indicates the effectiveness of program design and delivery.

- **Avoided Costs:** Assess the avoided costs in energy generation, transmission, and distribution that result from energy efficiency activities. This metric demonstrates the financial savings achieved through reduced energy consumption.
- **Technology Adoption Rates:** Track the adoption rates of energy-efficient technologies, such as smart thermostats, LED lighting, and high-efficiency appliances. This metric indicates the success of technology promotion efforts.
- **Lifecycle Analysis:** Conduct lifecycle assessments to evaluate the long-term environmental impact of energy efficiency activities, considering factors such as embodied energy, manufacturing, and disposal.
- **Persistence of Savings:** Measure the persistence of energy savings over time. Evaluating the longevity of the achieved savings ensures that benefits are sustained in the long run.
- **Equity and Inclusivity:** Assess the reach of energy efficiency programs across different socioeconomic groups and demographics. Ensure that the benefits of energy efficiency are accessible to all segments of the population.
- **Market Transformation:** Evaluate the impact of energy efficiency activities on transforming markets and driving the adoption of energy-efficient products and services.
- **Innovation and Technology Deployment:** Monitor the deployment of innovative technologies and approaches in energy efficiency programs to drive continuous improvement.

By using these performance metrics, policymakers, utilities, and program administrators can effectively design, track, and evaluate coordinated energy efficiency activities to achieve energy savings, emissions reduction, and other program objectives. Regular evaluation and refinement based on these metrics help optimize the impact of energy efficiency initiatives.

18. Are there examples from other jurisdiction where natural gas and electricity energy efficiency program planning and delivery are integrated?

Yes, there are examples from other jurisdictions where natural gas and electricity energy efficiency program planning and delivery are integrated. Some regions have recognized the potential for coordinated efforts across both sectors to maximize energy savings and achieve broader sustainability goals. Here are a few examples:

- **Massachusetts, United States:** The Massachusetts Energy Efficiency Advisory Council oversees and coordinates the state's energy efficiency efforts. The council integrates energy efficiency programs for both electricity and natural gas, working collaboratively with utilities to design and deliver comprehensive initiatives.
- **Oregon, United States:** The Energy Trust of Oregon is an independent organization that coordinates energy efficiency programs for both electricity and natural gas across the state. The Energy Trust collaborates with utilities to provide a seamless approach to energy efficiency, offering incentives and support for consumers and businesses.
- **United Kingdom:** The UK's Office of Gas and Electricity Markets has taken steps to align electricity and natural gas energy efficiency efforts. The Energy Company Obligation program, for example, offers support for energy efficiency measures in both electricity and gas-heated homes.

- **Queensland, Australia:** The Queensland Government's Energy Efficiency Program integrates energy efficiency initiatives across both electricity and natural gas sectors. The program supports residential, commercial, and industrial customers to improve energy efficiency and reduce consumption.
- **Denmark:** Denmark's comprehensive energy efficiency strategy involves integrated efforts across electricity and natural gas sectors. The country promotes energy efficiency measures for buildings, appliances, and industrial processes, considering both energy sources.
- **Netherlands:** The Netherlands has developed energy efficiency programs that integrate actions for both electricity and natural gas consumption. These efforts include incentives for energy-saving renovations in buildings and promoting the use of high-efficiency appliances.
- **British Columbia, Canada:** British Columbia's CleanBC initiative takes an integrated approach to energy efficiency. The program aims to improve energy efficiency across various sectors, including electricity and natural gas consumption, to meet climate goals.
- **Belgium:** Belgium's energy efficiency efforts encompass both electricity and natural gas. The country offers various incentives and support programs for energy-saving measures in homes, businesses, and industries.

These examples demonstrate that some jurisdictions have recognized the importance of integrating energy efficiency planning and delivery across both electricity and natural gas sectors. By adopting a coordinated approach, these regions can leverage synergies, optimize resources, and achieve more impactful energy savings and emissions reductions.

IV. General

19. The IESO's Mid-Term review of the 2021-2024 CDM Framework, including programming, was released in December 2022. Please share any further feedback on any of the existing programming, including opportunities for improvement or lessons learned from other jurisdictions.

There are a couple of relevant North American examples of integrated energy efficiency program delivery models that provide a very positive customer experience and, in turn, significant results. These include:

- **Efficiency Nova Scotia:** Efficiency Nova Scotia is Canada's first energy efficiency utility that works with more than 300 local partners. It is funded by supplying electricity efficiency and conservation activities to Nova Scotia Power that helps them meet Nova Scotia's electricity needs. The cost of these services is included in electricity rates and regulatory oversight is provided by the Nova Scotia Utility and Review Board. It has:
- **Efficiency Vermont:** Efficiency Vermont provides objective advice, technical services, and financial support to help Vermont households and businesses reduce their energy use and costs with efficient buildings, equipment, and lighting. Vermonters pay for energy efficiency through a charge on their electric bill and it is regulated by the Public Utilities Commission. Established as the U.S.'s first statewide energy efficiency utility in 2000 by the Vermont Public Service Board, it

has substantially reduced electrical demand and significantly helped to balance load growth in recent years.

In addition, to get customers to undertake deep energy saving retrofits or beneficial adoption of electricity, there is a need to integrate both the upfront incentives needed to bring the cost of the retrofits/conversions down as well as the financing including on-bill financing and/or local area improvement charges/ PACE financing to amortize the costs over the economic life of the equipment so that energy consumers realize an actual reduction in monthly bills right at the outset without having to take on more debt.

ONEIA appreciates the opportunity to provide our comments and suggestions and is ready to work with the Ministry and other areas of the government as it plans for the future of energy efficiency programming. We welcome the opportunity to discuss our position and recommendations further. Please contact our office at info@oneia.ca or at (416) 531-7884 should you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Michelle Noble". The signature is written in a cursive, slightly slanted style.

Michelle Noble
Executive Director
ONEIA