

# Open Call for Written Submissions 2023

THE ELECTRIFICATION AND ENERGY TRANSITION PANEL

# EETP

ELECTRIFICATION AND  
ENERGY TRANSITION PANEL

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## Open Call for Submissions

### Purpose:

This guide provides instructions, contextual information, and guiding questions to support the submission of written feedback to the Electrification and Energy Transition Panel (the Panel), on the five key themes that the Panel is exploring in their work.

The Panel will consider the feedback received through this open call in their development of recommendations to government on short-, medium- and long-term opportunities for the energy sector with respect to electrification and the energy transition.

For the purpose of the Panel's work, time frames are defined as follows:

- **Short-term:** next 5 to 10 years (does not include near-term activities, such as procurements, that are already in progress).
- **Medium-term:** Until 2050
- **Long-term:** Beyond 2050

### Instructions:

#### *Format and timelines*

Please submit **one formal written submission per organization/ entity by attaching a word document and/or PDF to the Panel's email account at [energypanel@ontario.ca](mailto:energypanel@ontario.ca).**

Please limit the sharing of any quantitative information (e.g., Microsoft Excel Spreadsheets and data sheets) to only information that is required to understand written feedback.

The Panel is accepting written feedback until **June 30<sup>th</sup> at 5:00 pm EST**. Any feedback received after this date/time may not be considered.

#### *Written feedback*

**You/your organization are encouraged to provide feedback on what you identify as the most important and relevant to share with the Panel, as it relates to electrification and the energy transition.**

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You may provide one and/or two types of written feedback:

1. **You/your organization are welcome to provide responses to the guiding questions in this document.** There is **no requirement** to provide input on all the guiding questions. You may provide input on as few or as many of the guiding questions that are most relevant to you and on which you would like to provide feedback to the Panel.

If you are responding to questions in this document, **please clearly identify which key themes and guiding questions you are responding to**, for example:

- *Energy Planning: Response to Question #1:*
  - [placeholder]

2. **You/your organization are welcome to provide input on topics/questions that are not captured in this guide** so long as the topics are within the scope of the Panel's work and fall within the five key themes outlined throughout in this guide.

Please find a list of in and out of scope topics below that the Panel will and will not be considering:

- **In Scope:**
  - Opportunities and challenges to improve energy sector governance
  - Options to optimize energy demand and decarbonize future energy supply systems
  - Opportunities to improve the long-term energy planning framework, including integration of planning between electricity and natural gas systems and consideration of other fuels.
  - Consider the needs and interests of Indigenous communities, rights-holders, and the general public
  - Opportunities and challenges to balance system costs and climate objectives
  - Opportunities to improve frameworks and address barriers to enable core energy technologies and fuel types

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- Opportunities to advance economic development as it relates to the energy sector and the transition
- **Out of Scope:**
  - Specific options to address labour and supply chain issues because these issues are multi-disciplinary problems that many sectors are contending with
  - Options to improve energy sector cybersecurity because it deserves a deeper dive with experts on cybersecurity and critical infrastructure
  - Changes to Ontario's Natural Gas Expansion Program because it has its own government-led process
  - Specific decarbonization strategies for energy-intensive sectors (e.g., minerals, petrochemical industry, steel, automotive) because we (the Panel) are not experts in any particular sector.
  - Specific technology use cases (e.g., feasibility of carbon capture and storage for industrial emissions; feasibility of hydrogen replacing natural gas for electricity generation) because they are considered in other more comprehensive forums
  - The Panel is not able to advise on individual or specific energy projects or project details.

Please note that discussion questions in this document are the same as the questions that were explored during the roundtable engagement sessions which are taking place with select stakeholders and Indigenous partners throughout May and June. Minor adjustments have been to some of the questions.

### *Glossary*

Please refer to the Glossary at the end of the guide for descriptions of some of the recurring and common terms that are used throughout.

### **Panel Background:**

The Panel, comprised of Mr. David Collie, as Chair, Professor Monica Gattinger from the University of Ottawa, and Chief Emerita Emily Whetung, former Chief of Curve Lake First Nation, was established to provide advice to government on short-, medium- and



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long-term opportunities for the energy sector to support Ontario's economy to prepare for electrification.

The Panel is tasked with identifying opportunities to improve the province's long-term energy planning framework, including opportunities to integrate planning between electricity and natural gas systems, as well as opportunities and challenges related to energy sector governance, emerging technologies, affordability, investment and job creation, and climate objectives.

The perspectives of customers, communities, including Indigenous communities, and representatives from across the energy sector are critical to informing the Panel's advice to government and to ensuring a successful energy transition. The Panel's recommendations are due to government before the Panel's term ends in December 2023.

Written Feedback received through these engagements will help the Panel build on the input received by the Ministry of Energy (Ministry) through the Spring 2021 engagement process on its long-term planning review (<https://ero.ontario.ca/notice/019-3007>).

## Theme One: Energy Planning

### Context

#### *Current Long-Term Energy Planning Framework*

Ontario's current long-term energy planning framework is set out under the Electricity Act, 1998. It includes requirements for the ministry to publish a provincial Long-Term Energy Plan in accordance with specified objectives and sets procedural roles for the government, the Independent Electricity System Operator (IESO) and the Ontario Energy Board (OEB).

Under the Act, a long-term energy plan includes several goals and objectives ranging from (but not limited to), cost-effectiveness, reliability, consultation with Indigenous people, the use of cleaner energy sources and technologies, and measures related to conservation and management of energy.

After releasing the long-term energy plan, the Minister may issue implementation directives to the IESO and the OEB. The agencies submit their implementation plans to the Minister for approval within the timeframe specified by the directive. Once implementation plans are approved by the Minister, the IESO and the OEB move forward with their initiatives as outlined in the implementation plans.

### ***Integrated Energy Planning***

Integrated energy planning means coordinating future electricity and fuels needs in the energy planning process. Integrated planning allows planners to better understand the interdependence between different energy sources and to pursue the best overall pathways to meeting Ontario's current and future energy needs.

While the last long-term energy plan, released in 2017, was informed by both an electricity Ontario Planning Outlook and a Fuels Technical Report (which established a comprehensive view of the current state of the fuels sector in Ontario including a review of fuels consumption and a set of outlooks for the 2016 through 2035 period), electricity system planning and fuels planning are currently not coordinated as part of one integrated energy planning exercise in Ontario.

Planning is complex given the diverse structure of Ontario's energy system and the range of organizations and communities involved. To be successful in the long run, energy planning must be inclusive of everyone in the province, including Indigenous communities, as well as people living in urban, rural and remote locations. It is also an opportunity for joint initiatives between the energy industry and communities, including, Indigenous communities, and strengthening economic development.

The IESO has a planning function related to the wholesale electricity system, but there is no comparable independent planner for other fuels or for local distribution of electricity. While the OEB regulates the natural gas distribution sector, it does not have an active planning function. Other heating fuels (e.g., propane, heating oil, wood) and transportation fuels are unregulated, with decisions on the supply, storage, production, delivery and pricing of these fuels left to a competitive market. The unregulated fuels sector comprises a significant portion of the province's energy system.

## **Discussion Questions**

### **Achieving Integrated, Long-term Energy Planning**

*Scoping*

1. What is the best way to co-ordinate long-term energy planning for electricity with regulated fuels (e.g., natural gas) and non-regulated fuels (e.g., oil, propane)? What are the main principles, objectives and imperatives that need to inform planning?
2. How do our established ways of thinking about energy planning need to change to prepare Ontario to meet medium and long-term energy needs?
3. Beyond the status quo of being reflected in a fuels-based technical report, what fuels (both captured and not by past fuels-based technical reports) are most important to be integrated into the Province's long-term energy planning framework for a successful energy transition? (Link to the 2016 fuels technical report can be found here: <https://www.ontario.ca/document/fuels-technical-report/state-system-10-year-review> )
  - a. Natural gas (commonly used as a fuel for space and water heating in the residential and commercial sectors, and for high-heat processes in the industrial sector; natural gas may be converted into the form of liquefied natural gas [LNG] or compressed natural gas [CNG] for greater flexibility of applications)
  - b. Propane (commonly used as a home heating fuel, predominantly in rural areas and communities without access to natural gas including most Indigenous communities)
  - c. Oil products (for example, gasoline, commonly used in personal vehicles such as cars and light duty trucks; diesel, commonly used in trucks, farm equipment and used to generate electricity in remote communities or as back up generation; aviation fuel, used in planes; and fuel oil or heating oil commonly to provide space heating in rural areas, Indigenous communities, and remote communities without access to natural gas).
  - d. Biofuels (for example, ethanol or biodiesel, which are sometimes mixed with gasoline and used in vehicles, or renewable natural gas [RNG] to replace the use of conventional natural gas applications)



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- e. Wood and biomass (biomass and wood resources are commonly used as energy sources in industry, especially in the forestry sector and often used as a heat source in Indigenous communities)
  - f. Hydrogen (a flexible fuel that can be used for a variety of applications such as industrial processes, electrical generation or a form of energy storage. Hydrogen can be a low-carbon fuel if produced using clean electricity, biomass or through fossil fuels paired with carbon capture, utilization and storage)
  - g. Renewable natural gas (biogas which is a mixture of gases, produced in an oxygen-free environment by bacteria from raw materials such as agricultural waste, manure, plant material, sewage, green waste, wastewater, and food waste).
  - h. Others?
4. What actions might support the effective integration of these fuels into long-term energy planning?
  5. Are there cultural considerations to ensure energy planning is inclusive of Indigenous perspectives?
  6. What is the optimal approach to incorporate conservation and energy efficiency programming into long-term energy planning? How might budgets and targets for conservation frameworks be set to align with system needs and the energy transition? Examples include existing inputs to energy conservation plans, achievable potential studies, and annual planning outlooks.

*Planning Approach and Roles*

7. Currently, the Ministry of Energy has responsibility for long-term energy planning, and the Independent Electricity System Operator (IESO) has responsibility for planning the bulk power system. As such, the IESO regularly releases planning outlooks, engages and develops regional plans with stakeholders, and procures energy supply resources to meet electricity needs. While there is no entity mandated to aggregate planning of local electricity distribution, local distribution companies all undertake planning for their service territories. Likewise, while there is no entity mandated to undertake natural gas planning for the province,

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Enbridge Gas is responsible for most of the natural gas infrastructure and supply in Ontario.

- a. In the context of energy transition and electrification, which model/approach to long-term integrated energy planning would be best suited to Ontario? Consider centralized, bottom-up, hybrid, and other models.
  - b. Which entity is best suited to lead integrated, long-term energy planning for Ontario?
    - i. Ministry of Energy
    - ii. IESO with an expanded mandate to consider system integration
    - iii. Ontario Energy Board (OEB) with a revised mandate
    - iv. Another entity that exists today
    - v. A new entity, such as a new organization or an advisory board, that would guide integrated planning and/or provide independent oversight of integrated planning by other entities.
  - c. What makes this entity best suited to lead integrated energy planning for Ontario? What would have to be true about their mandates, authorities, organizational structures, or other aspects for them to be successful?
  - d. How might energy planning mandates and/or enabling legislation need to change to adequately address the needs and interests of Indigenous communities?
8. What role should local distribution companies and other local institutions play in planning?
- a. Are structural and institutional reforms required (for example, developing Distribution System Operator models)?
  - b. What should inform their development?
  - c. What role can electricity distributors play in relation to bulk electricity system planning and coordinated planning at the local level across electricity and fuels, notably natural gas?
  - d. What role should the natural gas utility play?
  - e. What role should municipalities play?

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9. How might different jurisdictions (e.g., neighbouring provinces or states) and levels of government (e.g., municipal, provincial, and federal) better align on energy-related objectives and better coordinate a transition to integrated energy planning? Do municipalities need new capabilities and capacity to effectively support long-term planning, electrification, and energy transition? What is the best way to support municipalities to develop capacity?
10. What other jurisdictions might Ontario learn from to advance integrated energy planning? What details might we learn?

**Improving the Long-term Planning Process and Outcomes**

1. How should long-term planning prioritize, balance and/or align the core energy objectives of reliability, affordability, and sustainability?
2. Please identify and describe three critical outcomes the Province should prioritize for future long-term energy plans which are inclusive of urban, remote, and Indigenous communities. Some principles that the Panel has heard so far include transparency, predictability, reliability, and flexibility. Potential outcomes might include:
  - Transparent policy and program development and implementation
  - Predictable long-term energy policies
  - Enables effective decision-making
  - Reliable and resilient energy supply that consider electricity and fuels
  - Flexible to adapt to changing circumstances including new technologies
  - Affordable energy bills for residential and industrial consumers
  - Supports net zero/decarbonization goals (e.g., GHG emission reductions)
  - Supports climate change adaptation
  - Enables economically competitive industry (e.g., investment attraction)
  - Enables access to financing to enable the energy transition
  - Others?
3. Forecasting energy demand involves estimating how much energy will be needed to meet the needs of Ontarians over the long-term, including when and where that energy will be needed.

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- a. What needs to change in forecasting in a rapid electrification transition?
  - b. What gaps in information and uncertainties need to be addressed to support the province in developing a long-term energy plan that will effectively guide the province through the energy transition?
  - c. Do you have any suggestions for how some of these gaps might be filled? For example, are there certain capabilities that Ontario needs to support forecasting, such as more robust modelling and scenario capabilities?
  - d. What uncertainties are unavoidable in energy demand forecasts and long-term energy planning?
  - e. How might government and/or the OEB and IESO better respond to these unavoidable uncertainties?
  - f. Is there information held by your organization that could be helpful in supporting energy agencies in their planning roles?
4. How might province-wide emissions reduction targets be better integrated into long-term energy planning (currently a responsibility of the Ministry of Energy) and procurement decisions (currently led by the IESO for the bulk electricity system and by Enbridge for the natural gas system)? What role might local distribution companies and other local institutions play?
  5. We heard long approvals timelines, lack of policy clarity, lack of access to capital for Indigenous communities, concerns over how the Province discharges its obligations to Indigenous communities, and the absence of clear cost-recovery mechanisms for energy infrastructure can reduce the cost-effectiveness of projects and decrease private sector companies' willingness to invest in Ontario.
    - a. What is needed to support timely execution of energy infrastructure projects within the near-term (5-10 years), medium-term (over the next 30 years) and the long-term (beyond 2050)?
    - b. More specifically, how might the province expedite transmission, electricity generation and other infrastructure projects, and support Indigenous communities that want to participate in energy projects, while mitigating risks? Some of the suggestions the Panel has heard are changes to system

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planning processes, land use planning, legislative/regulatory amendments, or regulatory oversight. Risks to consider might include:

- Environmental risks related to siting of infrastructure
  - Overbuilding with more energy infrastructure than is needed to meet Ontario's needs
  - Stranded assets, such as energy infrastructure that becomes abandoned due to greenhouse gas emissions regulations
- c. How might the province support and ensure that obligations to Indigenous communities are met in a manner satisfactory to all parties?

The Panel heard Ontario's current cost recovery framework for new or upgraded transmission connections can often require significant upfront capital contributions for large industrial customers (e.g., electrification of industrial heating or EV manufacturing) and other customers seeking to connect large electrification initiatives (e.g., an all-electric neighbourhood).

6. What changes to cost-allocation and cost-recovery mechanisms or financing tools would help support timely execution of transmission, electricity generation and other energy infrastructure projects in the short, medium and/or long-term?
7. What support(s) might be needed to increase Indigenous equity participation in energy infrastructure projects?
8. How might energy planning need to evolve to ensure short- medium- and long-term decisions are made at the right time and increment? What infrastructure pieces need to be in place to keep Ontario's energy transition moving forward effectively, without outpacing the resources necessary? What does your organization need to participate effectively?
9. Are there any other energy challenges or concerns that the Panel should consider in the context of long-term integrated energy planning? If so, what are those challenges and how might they be addressed?

**Theme Two: Governance and Accountability**

## Context

The Ontario Ministry of Energy sets electricity policy and, through its agencies, manages the electricity system, including the Ontario Energy Board (OEB) and the Independent Electricity System Operator (IESO).

### *Ontario Energy Board*

The OEB is an independent regulatory body. Its core mandate is to protect the interests of Ontario's energy consumers with respect to prices, adequacy, reliability, and quality of electricity services.

The responsibilities of the OEB include licensing energy companies, setting just and reasonable rates and fees for regulated entities of the energy sector, and approving construction of transmission lines and pipelines.

The *Ontario Energy Board Act, 1998* (OEBA) provides the OEB with powers to oversee and regulate the electricity sector.

Additional governance and oversight mechanisms include:

- **Annual Minister's Letter of Direction:** A Minister's letter of direction is issued to the OEB every year setting out broad government policy and key policy priorities for the organization. The current mandate letter was issued to OEB on October 21, 2022, providing an update on the government's priorities for the energy sector and the Minister's expectations for the OEB for fiscal years 2023-2026.
- **Ministerial Directives:** Under the OEBA the Minister of Energy can request that the OEB examine, report and advise on specific energy issues and/or take steps to support government policies through [ministerial directives \(link here\)](#).
- **Adjudicative Function:** The OEB has an adjudicative function to make decisions to ensure that consumers are treated fairly, and that the energy sector is reliable and sustainable through processes that are open and transparent.
- **OEB Modernization Initiative:** a multi-year governance reform initiative to strengthen the independence of the OEB's adjudicative function and provide clear accountability within the organization. On October 1, 2020, legislative amendments that reform the governance structure of the OEB came into effect.



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For more information about the OEB's mission, mandate and roles, please visit [Mission and mandate | Ontario Energy Board \(oeb.ca\)](#).

### ***Independent Electricity System Operator (IESO)***

The Independent Electricity System Operator's (IESO) mandate is established in legislation and regulations, primarily through the *Electricity Act, 1998*. The IESO is Ontario's system operator, responsible for balancing supply and demand of electricity, the operation of the transmission grid and interties with other jurisdictions.

The IESO is a not-for-profit corporation operating on a cost recovery basis with its fees and licences set by the OEB. The IESO is also responsible for delivering province-wide electricity conservation programs, system planning, and procurement for capacity and generation resources.

Through the IESO's Indigenous Energy Support Programs, First Nation and Métis communities and organizations develop and maintain community energy plans.

The IESO identifies and plans to meet needs on a quarterly, annual, 3-year and 5-year cycle through several resource adequacy assessments, including:

- **Reliability Outlook:** an 18-month outlook published on a quarterly basis that guides operational planning in Ontario.
- **Annual Planning Outlook:** a 20-year outlook intended to guide investment decisions and market development. The Outlook forecasts demand and assesses the adequacy of existing supply resources and transmission infrastructure to meet energy, capacity, and other requirements.
- **Bulk Transmission Planning:** intended to identify investment and operational needs required to support provincial electricity needs (i.e., network assets).
- **Regional Planning:** intended to identify investment and operational needs required to support regional electricity needs. Local regions are assessed at least every 5 years and with a 20-year outlook. If regional needs are identified, the IESO, with the local transmitter and distributors develop an Integrated Regional Resource Plan (IRRP) that outlines the unique needs of a planning region to inform local investment decisions as well as overall provincial needs.

To learn more about the IESO visit [Managing the Power System \(ieso.ca\)](#).

### ***2021 Consultation on Long-Term Energy Planning***

In January 2021, the Ministry invited individuals, organizations, and Indigenous partners to provide input on how to refocus the current long-term energy planning process to enable better use of resources and increase benefits to customers through an online posting on the Environmental Registry of Ontario (ERO).

Many submissions identified the following concerns and/or gaps related to governance and accountability:

- **Integrated planning:** Noted a lack of integrated planning, for example by an independent third-party agency.
- **Independent oversight:** Perceived lack of independent oversight of major expenditures and investments made.
- **Scope of oversight and review:** Absence of sustainability indicators or greenhouse gas emissions targets in the OEB's mandate.

Some of the options shared with ENERGY to address identified gaps and concerns that the Panel is looking to further explore included:

- Expand IESO's planning mandate to consider system integration.
- Improve transparency in the planning process by greater oversight of IESO within the long-term planning process (i.e., require the OEB or another independent body to review IESO's planning activities).
- Enhance or expand the oversight functions and mandate of the OEB, especially over activities that result in costs being recovered from ratepayers.
- Facilitate cross-sector collaboration (i.e., establish an expert Panel/ task force to review energy plans and guide integrated planning)
- Support decentralized energy planning, including distribution system plans, regional plans, and community energy plans to frame and drive planning decisions.
- Clearly define the scope of review for OEB through government policy.
- Develop a new over-arching agency.

To learn more about the Ministry's 2021 Consultation on Long-term Energy Planning and read the "What We Heard Report" please visit <https://ero.ontario.ca/notice/019-3007>.



### Discussion Questions

#### Governance and Oversight

1. Please explain how the roles and responsibilities of the OEB and IESO might need to change to facilitate and accommodate an evolving energy system. More specifically:
  - a. How might the mandates of the OEB and/or IESO need to change to encourage innovation? Innovation might entail accommodating new operating models for rate-regulated entities (e.g., LDCs) and the impacts of distributed energy resources, grid-edge technologies, and new models for energy management.
  - b. Should the OEB or IESO's mandates be expanded to include economic development objectives.
  - c. Should the IESO's mandate be changed to enable a greater role in coordinating integrated energy planning between electricity and natural gas systems?
  - d. Should the OEB's mandate be expanded to include climate change mitigation (GHG emissions reductions) and adaptation (e.g., resiliency of energy infrastructure)?
  - e. Should the OEB and IESO's mandates be expanded to include greater consideration of Indigenous ownership and participation in energy projects?
    - Why or why not might this role change be needed? How might it change to enable this role?
    - Are there other ways their mandates could be more inclusive of Indigenous energy needs?
  - f. Are there mandates at energy agencies/regulators from other jurisdictions that Ontario should consider?

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- g. What more can the OEB and IESO do within their existing mandates to facilitate and accommodate innovation, the energy transition, and an evolving energy system?
2. Many jurisdictions have taken steps toward achieving the energy transition and more integrated energy planning, such as California, New York, Massachusetts, United Kingdom, Denmark. This includes sector specific-targets and timelines (e.g., building heat) for electrification and emissions reductions, along with requiring energy planning, progress monitoring, principles to be considered (e.g., efficiency and equity) and other elements (e.g., Indigenous and public participation).
    - a. What role should whole economy greenhouse gas emissions targets play in guiding planning?
    - b. Are sector-specific targets and timelines required? What should inform their development?
    - c. Where is the appropriate place for Indigenous inclusion to be integrated, or better integrated, into new or existing governance structures (e.g., Indigenous representation/ participation on Boards of energy entities)?
    - d. What other considerations, institutions, and mechanisms need to be included to ensure energy planning is efficient and effective and protects customers (e.g., by avoiding stranding assets) and is trusted by the public?

**Accountability**

1. As it relates to electrification and the energy transition process, what should define “success” and “failure”? More specifically:
  - a. What characteristics are most needed to drive long-term policy success? Examples the Panel heard so far include clear objectives, measurable goals, predictable timelines, equity and inclusion of Indigenous perspectives and opportunities.
  - b. What are the biggest threats that could lead to policy failure and how can they be avoided and/or corrected?

2. What performance metrics should be used to evaluate:
  - a. The effectiveness of the long-term energy planning process?
  - b. The accountability of the Province and energy agencies (OEB/IESO) to commitments made in the long-term energy plans?
3. What performance metrics could be used to evaluate the OEB and IESO as they discharge their mandates (either existing or new)? This could include mandates related to the timely facilitation and accommodation of emerging energy technologies and services, planning, (e.g., for demand-side management) as well as alternative fuel sources and keeping costs low.
  - a. Timely facilitation and accommodation of emerging energy technologies, including accommodating the impacts of distributed energy resources, grid-edge technologies and new models for energy management?
  - b. Effective inclusion of Indigenous perspectives and opportunities for economic participation by Indigenous communities?
  - c. Related to OEB involvement in energy planning?
  - d. Related to IESO potential coordination of integrated energy planning between electricity and natural gas systems?
  - e. Maintaining competitive electricity rates for industry to enable further electrification of the economy?
  - f. Climate change mitigation (e.g., GHG emissions reduction targets) and adaptation in the energy sector (e.g., resiliency of energy infrastructure)?
  - g. Others?
4. What else might be done to ensure that the Province, and energy agencies (OEB/IESO) are held accountable to commitments identified in future long-term energy plans?

5. Are there areas where the Province needs to better align/coordinate with the federal government on long term planning and accountability? How should this best be pursued?

## Theme Three: Emerging Technologies

### Context

Electrification and the energy transition are intensifying, driven by significant and potential growth in technologies, such as electric vehicles, hybrid-heating solutions, and low-carbon fuels, and by customer and corporate environmental and sustainability decisions.

According to a broadly used definition, first advanced by the World Economic Forum, emerging technologies are those that:

- Arise from new knowledge, or the innovative application of existing knowledge;
- Lead to the rapid development of new capabilities;
- Are projected to have significant systemic and long-lasting economic, social and political impacts;
- Create new opportunities for addressing global issues; and
- Potentially disrupt or create entire industries.

Given potentially long lead times for the development of energy resources and integration of energy technologies across sectors (e.g. energy, heavy industry, buildings/housing, transportation, agriculture etc.), it is important that steps are taken now to ensure the Province has the right framework for effectively integrating and accommodating emerging technologies into Ontario's energy systems.

The Electrification and Energy Transition Panel is looking to better understand opportunities to improve frameworks, regulatory or otherwise, and address barriers to enable core energy technologies and fuel types in energy and other sectors such as heavy industry, buildings/housing, transportation, industry and agriculture.

Some examples of technologies that may be considered ‘emerging’ in the context of Ontario’s energy sector and regulatory frameworks include:

- **Digital and IT Infrastructure** such as services and software applications that make use of near real-time energy data as well as smart, automated and wireless technologies. These technologies can be used to improve and enhance the operation of the system (for example, infrastructure planning and monitoring system assets), communication between energy service providers and their customers, and the ability of energy users to manage consumption and respond to prices.
- **Distributed Energy Resources (DER)** which is any resource capable of providing energy services located at the distribution system level. DER can be used to meet industrial, commercial or residential customer needs including self-supply, backup power or to reduce energy costs and have the potential to be used as cost-effective alternatives to poles, wires and transformers.
- **Electric Vehicles (EVs)** which run in part (hybrid) or entirely on electricity. EVs have the potential to reduce GHG emissions and drive economic growth. EV chargers can also act like as DER through demand response and may provide vehicle-to-grid or vehicle-to-home services in the future.
- **Energy Efficiency Measures** such as lighting, Heating, Ventilation and Air Conditioning (HVAC), manufacturing and other equipment which can help eligible residential and business consumers save money on their energy bills.
- **Low-Carbon Fuels for Transportation** such as ethanol in the gasoline fuel pool, biodiesel in the diesel fuel pool, and natural gas as a transportation fuel.
- **Low-Carbon Hydrogen** which can be used for cars and trucks, for industrial processes and as feedstock, to replace natural gas in natural gas power plants, and to heat homes and businesses, all while producing little or no GHG emissions or other pollutants.
- **Renewable Resources** such as waterpower, wind, bioenergy and solar, and innovative arrangements for integration of renewable energy technologies at the community-, home-, or business-level.
- **Small Modular Reactors (SMRs)** which have the potential to generate clean, low-cost and reliable energy for on-grid and off-grid generation (e.g., remote mining), as well as drive economic growth and export opportunities.

## Discussion Questions

### The potential of emerging technologies in the short, medium, and long term

1. What emerging technologies have the greatest opportunity to provide value to Ontario with respect to (i) minimizing energy costs, (ii) providing flexibility to meet and manage uncertain demand, (iii) helping to achieve decarbonization/net-zero goals and/or (iv) facilitating Indigenous participation? How do they provide these outcomes?
2. What are the emerging technologies (for example, grid-edge technologies, biofuels, hydrogen and carbon capture and storage) with the greatest short, medium and long term economic and decarbonization potential for Ontario?
3. In what time frame(s) do you/your organization anticipate various emerging technologies could reach commercial operation or substantial market and social acceptance? Consider our timelines of short- (next 5 to 10 years), medium- (to 2050) or long-term (beyond 2050).
4. Emerging energy technologies sometimes come with challenges for the energy system or other sectors that require energy (for example, poor capacity, high development/infrastructure costs, a lack of cost certainty from regulators).
  - a. How real are these challenges?
  - b. What roles might the Province play in addressing them?
  - c. What are some of the benefits of these emerging energy technologies (for example, local resilience, lower transmission/delivery losses, customer choice, rapid deployment, economic and job creation for Ontario-made technologies etc.)?
5. Emerging energy technologies also sometimes come with challenges with respect to social and community acceptance.
  - a. How real are these challenges?
  - b. What roles might the Province play in addressing them?

### Role of the Province

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6. What role should the Province play when it comes to emerging technologies?
7. How might the Province better support the effective integration and scaling up of proven energy solutions across sectors (e.g., energy, buildings, housing, transportation, agriculture)? Are there any unique considerations for these opportunities in Indigenous communities? Are there examples from other jurisdictions that Ontario should consider?
8. What changes are needed, regulatory or otherwise, to address barriers to enable new technologies (both customer and utility owned) and fuel types in the energy sector and other sectors such as buildings/housing, transportation, industry, and agriculture? Are there any barriers that are specific to Indigenous communities?
9. How might the Province better take advantage of conservation, demand management, energy efficiency and smart energy technologies to optimize energy use/energy demand and reduce peak needs?
  - a. What role should programs like energy conservation, demand management and net metering play in supporting adoption of these technologies?
  - b. Should conservation and demand management programming be broadened to electrification and fuel switching measures?
10. Are there new business models, such as the Distribution System Operator model, or components of new business models, or competition between energy services companies that could support the cost-effective adoption of emerging technologies?
11. Are there areas where the Province needs to better coordinate with the federal government or other provinces on emerging technologies? How should this best be pursued?
12. Are there examples of effective government collaboration on emerging technologies that your organization is aware of or has experienced? How might those be replicated?
13. Are there key learnings where local adoption of emerging technologies has been successful? What were the key factors driving success?

- a. How can the province enable and encourage the development and uptake of these technologies?
  - b. Are there unique or specific considerations for the development and uptake of these technologies in Indigenous communities?
14. How can the Province proactively assess advantages, disadvantages and risks associated with emerging technologies in relation to achieving objectives – decarbonization, affordability, reliability, economic development, etc. What could an evaluation framework for emerging technologies look like?
15. In what areas, if any, would you/your organization like to have or see (a) more guidance/direction and (b) more flexibility as it relates to energy technologies?

## Theme Four: Community and Customer Perspectives, Affordability and Energy Sector Objectives

### Context

#### Community and Customer Perspectives

The concept of a *just transition* refers to an approach to the energy transition process, which emphasizes the role of government and industry in considering the needs and interests of people and communities, and the importance of meaningful engagement and partnership to prevent and minimize negative impacts and ensure the socio-economic benefits of electrification and the energy transition are distributed equitably across communities.

*Energy justice*, refers to the concepts of equity, affordability, accessibility and participation in the energy system and energy transition and considering the unique needs and priorities across communities, including regional-needs, income, age, Indigenous and racialized communities, etc.

From the Panel's engagements to date, we have heard that customers and communities can and should play a central role in enabling the energy transition.



We have also heard that Indigenous communities need funding to participate effectively in all stages of energy planning and that there should be more proactive engagement with Indigenous partners and communities, particularly where planning matters may affect inherent and treaty rights.

### *Ontario's long-term energy planning framework: Ministry Engagement*

In 2021, the Ministry of Energy reviewed Ontario's long-term energy planning framework and invited individuals, organizations and Indigenous partners to share their ideas and perspectives through an online posting on the Environmental Registry of Ontario (ERO).

Multiple Submissions identified relevant themes for government to consider:

- Affordability and Cost-Effectiveness
- Indigenous and Community Engagement; and
- Environmental/Climate Objectives

In addition, several considerations were raised as contributing to more effective engagement, including:

- **Timing:** Participation and feedback effectively incorporated into planning through involvement from the beginning of the planning process.
- **Accessibility:** Barriers to participation in consultation should be removed or limited, i.e., provide adequate funding and capacity to support meaningful engagement.
- **Transparency:** Government and/or agencies should explain how engagement feedback was considered in decision-making.
- **Decentralization:** Increased reliance on distribution system plans, regional plans, and community energy plans to frame and drive planning decisions.

Submissions emphasized the importance of engaging with Indigenous communities as full partners and called for funding to be provided for Indigenous participation in all stages of energy planning and decision making. Submissions also called for increased proactive engagement with Indigenous communities, particularly where planning and energy matters may affect communities' treaty or other rights.



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Submissions recommended learning from best practices of completed energy projects that involved significant Indigenous participation.

To learn more about the Ministry's 2021 Consultation on Long-term Energy Planning and read the "What We Heard Report" please visit <https://ero.ontario.ca/notice/019-3007>.

### *Examples of additional existing streams for customer and community engagement*

The OEB, IESO, Local Distribution Companies (LDCs), as well as gas distributors and other energy infrastructure proponents regularly engage with communities and customers, including through various working groups and advisory committees, consumer Panels, and regional networks.

Communities may provide input through the IESO's Community Energy Champions Program (CECP), which supports communities to hire a Community Energy Champion (CEC) to support planning, evaluating communities' energy priorities and implementing community energy plans, etc.

The IESO's Indigenous Community Energy Plan program (ICEP) supports First Nation and Métis communities and organizations to develop and maintain an updated community energy plan to improve community energy efficiency, reduce electricity consumption, and build community knowledge and understanding of energy planning, etc.

To learn more about the OEB's and the IESO's engagement activities please visit [Stakeholder Engagement | Ontario Energy Board \(oeb.ca\)](#) and <https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements>.

### **Affordability and Energy Sector Objectives**

Electrification and the energy transition will require an unprecedented transformation of the province's energy system and broader economy, including massive investments in new energy infrastructure as well as the equipment and appliances that businesses and households use daily.

Ensuring energy remains affordable throughout this process will be crucial for consumers, whether they be residential, commercial, or industrial. Considering the

needs of marginalized consumers as well as rural, remote, and Indigenous communities that face higher energy costs is critical to a successful energy transition.

This transformation will also require new thinking about how to pace and finance new energy infrastructure (whether it be supply, transmission, distribution, or end use equipment), and how costs are distributed and economic opportunities realized.

At present, a suite of energy support programs is available to people in Ontario to help manage energy costs. Eligible consumers can receive support on their electricity bill through several programs that can be found in the **Glossary below** under *Electricity Price Mitigation Programs*.

In addition to affordability as a key objective for both the energy sector, communities and customers, the Panel has also heard about several issues that may affect affordability, including the importance of:

- Transparency with respect to the cost of the energy transition and the potential rate impacts on taxpayers
- Cost-effective approaches to decarbonizing the whole energy system
- Adapting the energy system to ensure resilience in a changing climate with more frequent and intense extreme weather events
- Reliability and safety
- The protection of inherent Indigenous rights (i.e., harvesting, hunting and water rights, the protection of cultural rights, etc.)
- Holistic coordination across the sector, communities, and levels of government.
- Early consultation, engagement and partnerships with customers, communities, and Indigenous communities, including accessible and user-friendly education and awareness initiatives
- Economic growth and development

## **Discussion Questions**

### **Community and Customer Perspectives**

1. What are the best ways to support meaningful relationships and/or improve existing communications with Indigenous communities on energy topics,

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including long-term energy planning, regional planning, and specific energy projects?

2. How can Indigenous participation in energy planning, project development and decision-making be enhanced?
  - a. What lessons or best practices can be learned from completed energy projects that involved significant Indigenous partnership either in Ontario or in other jurisdictions?
  - b. What priority should be placed on support or requirements for equity participation for Indigenous Communities?

The panel has also heard about the importance of ongoing customer and community support for energy transition and electrification. Without it, political support for sustained emissions reductions could deteriorate.

3. What can be done to foster ongoing public support for energy transition and electrification? Are there particular messages that should be conveyed?
4. What does meaningful engagement and participation with local communities and the general public in energy planning look like? How can marginalized communities have their concerns identified and addressed effectively? Are there specific things that can be done to support municipalities in this process?
5. What changes are needed to enable a customer-centred approach to integrated energy planning and the energy transition more generally? How should equity and economic participation be incorporated into program design?
6. Based on your/your organization's experience, what are customers' interests in, and understanding of, the energy sector, transition, decarbonization, and electrification? Is it something they think much about?
7. Which consumer groups and/or communities are experiencing/likely to experience disproportionate impacts related to electrification and the energy transition? Please describe the negative impacts and the positive impacts.
  - a. What should be the government's or the energy sector's role in helping individuals and communities navigate such impacts?

## Affordability

1. What changes will be required in the roles of government (federal, provincial, municipal, Indigenous), industry, taxpayers and customers/ratepayers when it comes to pacing and financing the energy transition and electrification? For example, should certain costs be shouldered by the tax base in the future? What new financing models are needed? Who should pay for what, when and how when it comes to transition and electrification?
2. How do energy affordability issues vary across different types of customers in different regions of Ontario? How might the Province and/or Ontario's energy agencies ensure energy costs are affordable for different types of customers in different regions – residential consumers, rural consumers, Indigenous communities, marginalized communities, small business consumers, large commercial consumers, and industrial consumers?
  - a. What examples from other jurisdictions should Ontario consider when addressing affordability issues, including energy poverty?
  - b. To enable a customer-centred approach, should the Ontario Energy Board have oversight of all energy support and rate mitigation programs?
  - c. What changes, if any, might be needed to existing programs that provide financial support with energy costs (for example, electricity, gas, other fuels)? Please reference the **Glossary** for some examples of existing energy support programs.
  - d. Should Ontario consider new programs (e.g., rebates for fuel-switching appliances) or a new approach to mitigate energy affordability risks through the energy transition for:
    - i. Larger (primarily industrial) electricity consumers to ensure competitiveness and encourage electrification during the energy transition?
    - ii. Households across the income distribution spectrum?
    - iii. Commercial and institutional customers?

- e. What levers might be helpful to maintain or improve affordability for fuels (for example, gasoline, natural gas, propane, heating oil) for larger consumers and households?

### **Achieving Energy Sector Objectives**

1. In your organization's experience, what are consumers willing to do to support greater reductions in GHG emissions? How willing are they to:
  - a. Change their behaviour – For example, switch electricity uses to times of day when there is less burden placed on the electricity system such as to evenings, weekends and/or overnight.
  - b. Use more energy efficient technologies such as energy efficient fridges, washer/driers, light bulbs, space and water heating equipment.
  - c. Discontinue their natural gas services and transition to electric alternatives for home heating or cooking.
  - d. Use less electricity overall through conservation – for example leaving lights off when they would normally have them on.
  - e. Adopt renewable energy technologies like rooftop solar
  - f. Adopt electric vehicles
  - g. Switch heating and other fuel uses to non-emitting technology or technology that uses electricity
  - h. Shift patterns of energy usage/demand to avoid peaks
  - i. Track and analyze energy usage data to increase energy efficiencies and reduce demand on the energy system
  - j. Pay more for energy services or to offset emissions.
2. Do consumers have any issues or concerns with the reliability of their energy supply? If so, what are they and how would they like those concerns addressed?

3. What should Ontario do to ensure a reliable and resilient energy system in the future and to protect the health and safety of Ontarians in situations where power outages are unavoidable?
4. Are there any federal or municipal government initiatives, programs, or policy objectives that the provincial government should be more aligned with?

## Theme Five: Facilitating Economic Growth

### Context

#### *Economic Development*

The Ministry of Energy (ENERGY) supports the Ministry of Economic Development, Job Creation and Trade (MEDJCT) in attracting investment and expansion in Ontario.

ENERGY works closely MEDJCT and the Independent Electricity System Operator (IESO), Hydro One, local distribution companies and natural gas distributors to ensure prospective investors have the necessary information to inform their investment decisions, including:

- Presentations to help investors better understand Ontario's electricity system including comparing Ontario's electricity rates and carbon emissions to that of other North American jurisdictions.
- Illustrative electricity cost forecasts for potential investors.

Through these activities, the Province can support investors in identifying appropriate sites for projects, and the Province can factor information about potential investments into energy demand forecasts and planning activities. ENERGY also works with other partners across the broader public sector to support the acceleration of customer transmission connection projects.

#### *Electricity Pricing*

Historical long-term increases in electricity prices have been the result of the addition of significant generation capacity, including new natural-gas fired generation, renewables (e.g., wind, solar and bioenergy) and refurbished nuclear, as well as the cost of upgrading and maintaining the province's distribution and transmission infrastructure.

- **Residential and Small Business Electricity Pricing** – The Regulated Price Plan (RPP), which is overseen by the Ontario Energy Board, is an electricity price plan for most of Ontario's approximately 5 million residential, small business and farm customers. It is intended to provide stable and predictable electricity pricing, encourage conservation and ensure the price customers pay for electricity better reflects the price paid to generators.

You can find out more about electricity rate plans available to residential and small business consumers here <https://www.oeb.ca/consumer-information-and-protection/electricity-rates/choosing-your-electricity-price-plan> .

- **Commercial and Industrial Electricity Pricing** – Non-RPP Class B (i.e., small industrial/medium-sized commercial electricity consumers) and Class A (i.e., transmission-connected large industrial electricity consumers) electricity prices. Many industrial electricity consumers do not pay HST, as they receive tax credits equal to HST expenditures on electricity.
- There are also various programs that help to mitigate electricity prices for small business, commercial and industrial electricity consumers. A list of electricity price mitigation programs can be found in the **Glossary** at the end of this document.

### *Natural Gas Pricing*

Lower recent natural gas prices reflect a decrease in the global market price of natural gas, as well as lower pipeline transportation tolls.

Natural gas distributors are regulated by the Ontario Energy Board and do not earn a profit on the sale of the commodity. Their business is distributing the natural gas and they are paid to build and maintain the pipes and equipment required to deliver the natural gas.



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- You can find out more about electricity rates available to residential and small business consumers here <https://www.oeb.ca/consumer-information-and-protection/natural-gas-rates>

### *Clean Energy Credits*

As environmental and sustainability goals increasingly influence corporate decisions on where to invest and grow, the Ontario government is leveraging the province's clean electricity grid by launching a voluntary Clean Energy Credit (CEC) registry to boost competitiveness and attract jobs, helping to build Ontario's economy.

The CEC registry, administered by the Independent Electricity System Operator (IESO), will provide businesses with a new tool to meet their corporate sustainability goals and demonstrate that their electricity has been sourced from clean generation.

### **Discussion Questions**

1. What are the short-, medium- and long-term opportunities for Ontario to advance economic development through electrification and the energy transition? What are the strengths Ontario can build on and new areas it should develop?
2. How do economic development and emerging technologies intersect with energy planning and net zero targets? What role can governments, provincial entities, and public policies play in facilitating economic growth?
3. How can Ontario ensure that economic development is sustainable and inclusive? What are the most appropriate roles for different stakeholders in advancing sustainable and inclusive economic development through electrification and the energy transition?
  - a. Policymakers (e.g., different levels of government and agencies)
  - b. Private sector (e.g., industry, finance, venture capital)
  - c. Civil Society (e.g., academic, environmental, low-income, labour)
5. What are the opportunities for Indigenous economic development and reconciliation through electrification and the energy transition? What does the

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Province need to do to help realize these opportunities? What do other stakeholders need to do to help realize these opportunities? What are the opportunities to decarbonize and foster cross-sector collaboration in energy intensive sectors, such as mining, critical minerals, steel and automotive sectors, while maintaining a cost-effective and low carbon electricity supply?

6. How could the Province better support cross-sectoral initiatives and partnerships that advance local economic development, including opportunities across the following sectors and areas?
  - a. Transportation
  - b. Buildings
  - c. Agriculture
  - d. Waste (solid or liquid)
  - e. Emissions-intensive Industry
  - f. Scientific and technological research into clean energy solutions (e.g., energy efficiency and low carbon clean fuels)
  - g. Digital and information technology
  - h. Advanced materials
  - i. Others?
7. Are there examples of effective supports for cross-sectoral initiatives and partnerships in other jurisdictions that Ontario should consider?
8. How might the Province better support Ontario's participation in clean energy global supply chains?
9. What are the current gaps and barriers related to financing and funding structures to support innovation and economic development related to the energy transition?
  - a. What is required to support innovation in the short, medium, and long-term?

- b. Are there unique gaps or needs related to Indigenous communities?
  - c. What are the appropriate roles for the public and private sectors in financing and funding? What should be the sources of financing and funding (taxpayers, ratepayers, investors)? What risks are best allocated to the public sector? What risks are best be allocated to the private sector?
10. What are current non-financial barriers / funding gaps to supporting innovation and economic development? What should the roles of government and different stakeholders be in addressing these gaps and barriers?
11. Municipalities play a crucial role in electrification and energy transition, and are directly pursuing many new economic development opportunities. What can or should the Province do to support municipalities in this process?
12. Are there areas where the Province needs to better coordinate with the federal government or other provinces on economic development opportunities? How should this best be pursued?
13. What is the role of energy transition policy alignment and coordination between Ontario (and Canada) and its major trading partners in support economic development in Ontario?
14. How might the structure of Ontario's energy sector and energy markets need to change to facilitate innovation and economic development?

## Glossary *(non-exhaustive)*

### **General Terms**

**Conservation:** Energy conservation can be achieved in several ways: energy efficiency; behavioural changes (e.g., turning off the lights when not in the room); demand response and demand management (e.g., reducing air conditioning use);

behind the meter generation; in-front of the meter conservation (e.g., reducing line losses or optimizing voltage levels on the distribution system).

**Demand management:** Reducing or shifting electricity consumption away from peak periods of electricity demand, or when the system is stressed.

**Distribution System Operator (DSO):** A proposed entity responsible for planning and coordinating distributed energy resources and their services on the distribution system through market mechanisms like those currently employed by the IESO for the Ontario market.

**Electrification:** Refers to the process of replacing technologies that use fossil fuels (coal, oil, and natural gas) with technologies that use electricity as a source of energy.

**Energy efficiency:** Using less energy to provide the same service.

**Energy transition:** Refers to the global energy sector's shift from fossil-based systems of energy production and consumption, including oil, natural gas, and coal, to renewable energy sources, including wind and solar, lithium-ion batteries, etc.

**Net-Metering:** A billing arrangement between a customer and their Local Distribution Company (LDC), in which a customer can install renewable generation behind their meter to generate electricity for their own use and offset electricity consumption from the grid. The customer receives bill credits for any electricity they generate that is sent to the grid. The credits can be carried forward on bills for up to 12 months, at which time credits would expire. Customers can apply to their LDC to connect renewable generation and be billed on a net metering basis.

## **Fuels**

**Gasoline:** A mixture of hydrocarbons refined from petroleum (crude oil) most used in personal vehicles such as cars and light trucks.

**Diesel:** Designed for compression ignition engines and is commonly used in trucks, buses, locomotives, farm equipment, portable generators, and many other off-road applications. It contains greater power density than gasoline or alternative fuels.

**Aviation fuel:** Used to power aircraft and is produced to a higher quality than fuels used in less critical applications.

## Technologies

**Carbon Capture, Utilisation and Storage (CCUS):** Involves the capture of carbon dioxide (CO<sub>2</sub>) from large point sources, such as power generation or industrial facilities that use either fossil fuels or biomass as a fuel. CO<sub>2</sub> can also be captured directly from the atmosphere. If not being used on-site, the captured CO<sub>2</sub> is compressed and transported by pipeline, ship, rail or truck to be used in a range of applications, or injected into deep geological formations (including depleted oil and gas reservoirs or saline aquifers), which can trap the CO<sub>2</sub> for permanent storage.

**Behind the meter solutions:** Technologies installed at customer loads to offset or manage energy use, which can include generation, storage, and energy efficiency, conservation, or demand management technologies.

**Distributed Energy Resources (DERs):** Technologies that generate energy, store energy, or control load, which are directly connected to the distribution system or located behind a customer's meter.

## Electricity Price Mitigation Programs *(non-exhaustive list)*

**Comprehensive Electricity Plan (CEP):** Though the CEP, the government is funding a portion of non-hydro renewable energy contract costs, so they are no longer being paid by electricity consumers. In 2023, industrial consumers are forecast to see savings of about 14% on their bills, while mid-sized commercial consumers could see savings of about 17% on their bills. Actual savings depend on location and consumption.

**Distribution Rate Protection (DRP):** Provides distribution charge relief to eligible residential customers served by LDCs with the highest distribution costs and sets a maximum monthly distribution charge, which is currently set at \$38.08

**Energy Affordability Program:** Free energy assessment and electricity-savings upgrades for low-income customers, and electricity savings kits for other income-eligible customers, to continue providing the benefits of the former Home Assistance Program (HAP) and Affordability Fund Trust (AFT) which have ended. This program is also available to First Nation communities connected to the IESO electricity grid.

**First Nations Delivery Credit (FNDC):** Removes delivery charges directly from electricity bills of on-reserve First Nations residential customers, who face unique challenges that impact electricity affordability.



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**Industrial Conservation Initiative (ICI):** Lowers costs for eligible large electricity consumers (i.e., those with monthly peak demand exceeding 1 MW, and manufacturers between 500 kW and 1 MW) that reduce consumption during peak periods. ICI provides an electricity system benefit by reducing Ontario peak demand, which reduces the need for additional generation in the longer term.

**Industrial Electricity Incentive (IEI):** Offered reduced electricity rates for companies starting or expanding operations in Ontario. The IESO awarded 22 contracts to energy-intensive companies across the province through the program. The program no longer accepts applications and all contracts signed under the program expire by the end of 2024.

**Low-Income Energy Assistance Program (LEAP):** EAP provides Emergency Financial Assistance (EFA) grants to eligible lower-income customers who are in arrears on their electricity or natural gas bill and may face disconnection or have already been disconnected. LEAP is administered by the Ontario Energy Board.

**Northern Electricity Advantage Program (NEAP):** Available to eligible industrial facilities in northern Ontario where participants receive a rebate of two cents per kilowatt hour on eligible consumption. On average, industrial electricity prices can be reduced by over 20% through the program.

**Northern Ontario Energy Credit (NOEC):** Provides income-tax credits through the Ontario Trillium Benefit to low- and middle-income families and individuals to help with the higher energy costs they face living in the north.

**Ontario Electricity Rebate (OER):** The OER is a transparent on-bill rebate, provided to residential, farm and small business consumers. The percentage of the OER has been adjusted over time as electricity costs change to manage the trajectory of the average residential bill.

**Ontario Electricity Support Program (OESP):** Provides a monthly rate reduction directly on bills of eligible low-income electricity consumers in Ontario

**Ontario Energy and Property Tax Credit (OPETC):** The OEPTC helps lower-to moderate-income Ontario residents with the sales tax on energy and with property taxes, generally through monthly entitlements, as part of the Ontario Trillium Benefit payment. The Canada Revenue Agency (CRA) administers this program for Ontario.



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**Rural or Remote Rate Protection (RRRP):** Mitigates some of the high costs of electricity distribution in rural or remote areas of the Province by providing a fixed credit of \$60.50 per month to customers in Hydro One's R2 rate class

**Save on Energy – Industrial Energy Efficiency:** Launched in early 2022 to support transmission and distribution participants to get large complex projects focused on process improvement off the ground.

**Save on Energy - Small Business Program:** Provides up to \$2,000 in incentives towards eligible energy-efficient lighting upgrades and up to \$2,500 in incentives for eligible non-lighting equipment such as HVAC and refrigeration measures, which provide more opportunities for small businesses to reduce their electricity costs, help their businesses grow and recover from the potential impacts of COVID-19.