

1 OEB STAFF INTERROGATORY 18

2 **7.0 IESO LTEP Cost**

3 **7.1** *Are the costs associated with the activities identified in the IESO's Long-Term Energy*
4 *Plan (LTEP) Implementation Plan appropriate?*

5 **Staff IR #18**

6 INTERROGATORY

7 Reference: Exhibit A-2-2. Pg. 9

8 Preamble: on page 9 of Exhibit A-2-2, the IESO identifies the nine LTEP initiatives it is directed
9 to deliver.

10 Questions:

- 11 a) Please provide a comparison of individual budgets against actuals for each of the nine
12 initiatives.
- 13 b) Please identify the number of staff assigned to each LTEP initiative. Please identify the total
14 number of staff assigned to the LTEP project.
- 15 c) The IESO's scorecard identifies that six key LTEP initiatives are to be completed by year end
16 2018:
- 17 i. Please discuss the status of each of these six initiatives.
- 18 ii. Please discuss when the remaining three initiatives are anticipated to be finalized.

19 RESPONSE

- 20 a) The IESO's 2018 – 2020 Business Plan accounted for the Implementation Plan for Long-Term
21 Energy Plan Initiatives with the inclusion of:
- 22 • \$640K in 2018 for incremental staff resources; and
- 23 • \$500K in 2018 for contracted services.

1 Individual project budgets have not been created for the Implementation Plan for LTEP
2 initiatives; however, 2018 year-to-date June actuals for LTEP Implementation Plan expenses
3 are as follows:

4

Projects	2018 YTD June Actuals
<ul style="list-style-type: none">• Renewable DG Demo Projects• Power-to-Gas Pilot Projects	\$21,000
<ul style="list-style-type: none">• Energy Storage	\$10,000
<ul style="list-style-type: none">• Bulk System Planning Process• Regional Planning Process• Transmission Assets End-of-Life• Transmission Procurement• Customer Reliability	\$27,000
<ul style="list-style-type: none">• General Expenses	\$47,000
Total Expenses	\$105,000

5

6 b) The IESO's 2018 – 2020 Business Plan allocated 5.25 incremental FTEs in 2018 for the
7 implementation of the Long-Term Energy Plan initiatives. In addition to the incremental
8 resources, implementation of the initiatives is also being supported by core staff as part of
9 their regular core functional duties. The breakdown of incremental staff is not available by
10 initiative.

11

12 c) The status of the six initiatives to be completed by year end 2018 is provided below, along
13 with the dates for the completion of the remaining projects. The completion dates noted
14 below are those published in the IESO's LTEP implementation Plan, provided as
15 Attachment 1 to SEC Interrogatory 27 at Exhibit I, Tab 7.1, Schedule 8.27.

1

LTEP Implementation Deliverable	Deliverable Due Date	Status <i>(as of August 20, 2018)</i>
Status of Projects to be Completed by Year End 2018		
<p><u>First Nation and Métis Energy Support Programs</u> <i>Review and propose options to improve support programs currently offered by IESO to First Nations and Métis, and better align programs with community needs and interests. Evolve programs to support the implementation of Indigenous community energy plans</i></p>	Q1 2018	Options for First Nation and Métis energy support programs presented through a webinar hosted on March 26, 2018
<p><u>First Nation and Métis Conservation Programs</u> <i>Prepare a report on options to improve conservation programs, and access to programs, for First Nations and Métis, including communities served by independent power authorities</i></p>	Q1 2018	Indigenous Conservation Programming Report posted to IESO website on March 29, 2018
<p><u>Energy Storage</u> <i>Identify potential obstacles to fair competition for energy storage with other technologies in the delivery of services and, where appropriate, propose mitigation strategies</i></p>	Q3 2018	<ul style="list-style-type: none"> • Energy Storage Advisory Group (ESAG) established in May 2018 with three meetings held between May and August 2018 • Fourth ESAG meeting scheduled for September 2018 to present the applicable mitigation strategies prior to the finalization of project
<p><u>Renewable DG Demonstration Projects</u> <i>Develop a program to support a select number of innovative renewable DG demonstration projects to gain experience with integration of distributed energy resources, refine methodologies for assessing value streams, and to inform the evolution of grid systems, processes and practices</i></p>	Q4 2018	<ul style="list-style-type: none"> • Engagement undertaken to solicit feedback on investigation topics and introduce the first call for Virtual Net-Metering • Draft call for applications guidelines posted for feedback

LTEP Implementation Deliverable	Deliverable Due Date	Status <i>(as of August 20, 2018)</i>
Status of Projects to be Completed by Year End 2018		
<p><u>Power-to-Gas Pilot Projects</u> <i>Identify options for pilot projects that evaluate the electricity system benefits, costs and GHG emission reductions of using electricity to create hydrogen</i></p>	Q4 2018	<ul style="list-style-type: none"> • Market research undertaken including a review of regulatory requirements • Draft Request for Expression of Interest issued for feedback
<p>Transmission Assets End-of-Life <i>Ensure a coordinated, cost-effective, long-term approach to replacing transmission assets at end of life, in order to better align investments with power system and market conditions and needs</i></p>	Q4 2018	<ul style="list-style-type: none"> • Draft process for incorporating transmission assets end-of-life in the bulk and regional planning processes developed • Engagement on draft process to take place in fall 2018
Status of Projects to be Completed in 2019		
<p>Bulk Planning Process <i>Develop a formal integrated bulk system planning process that ensures needs and solutions are identified and assessed in a transparent manner</i></p>	Q3 2019	<ul style="list-style-type: none"> • Review of existing processes conducted and jurisdictional scan work underway • Engagement to begin in fall 2018
<p><u>Regional Planning Process Review</u> <i>Review and report on the regional planning process and propose adjustments to recommendations to improve the process, including regulatory and/or legislative changes. The review will ensure the process is efficient, integrates with other planning initiatives, considers transmission facility end-of-life and effectively considers cost-effective alternatives to transmission and distribution infrastructure to meet regional requirements.</i></p>	Q4 2019	<ul style="list-style-type: none"> • Review of the existing planning process conducted and jurisdictional scan work underway • Engagement launched with formation of a Regional Planning Review Advisory Group; inaugural meeting to be held September 2018

LTEP Implementation Deliverable	Deliverable Due Date	Status <i>(as of August 20, 2018)</i>
Status of Projects to be Completed by Year End 2018		
Competitive Transmission Procurement Process <i>Develop a competitive transmitter selection or transmission procurement process that is transparent, efficient and able to respond to changing policy, market and system needs</i>	Q2 2019	<ul style="list-style-type: none"> • Research on the competitive processes used in other jurisdictions underway • Engagement to begin in fall 2018
Customer Reliability <i>Review and report on the technical criteria used to assess customer reliability and supply security in order to identify and evaluate options for local area enhancements.</i>	Q4 2019	<ul style="list-style-type: none"> • Review of the customer reliability impacts due to disturbances on the IESO-controlled grid and jurisdictional scan underway • Engagement to begin in fall 2018

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ENERGY PROBE INTERROGATORY 8

2 7.1 *Are the costs associated with the activities identified in the IESO's Long-Term Energy Plan*
3 *(LTEP) Implementation Plan appropriate?*

4 **EP IR #8**

5 INTERROGATORY

6 **Reference:** Exhibit B, Tab 1, Schedule 1, page 7

7 **Preamble:** IESO lists a number of risks to its forecasts, which include the "potential impacts of
8 fulfilling new directives from the Minister and managing the work associated with new
9 contracts, whether for new supply, conservation or the import and export of power."

- 10 a) Has IESO received any directives from the Minister? If so, are there any costs associated
11 with those directives?
- 12 b) Has IESO undertaken the management of any new contracts related to conservation or new
13 supply? If so, what are the costs of that work?
- 14 c) Has IESO created a budget for the nine items in the LTEP that it was directed to undertake?
15 If so, please provide that budget or any estimates related to LTEP directives.

16 RESPONSE

17 All Ministerial directives can be found on the IESO website: (<http://www.ieso.ca/corporate-ieso/ministerial-directives>).

19 a) The IESO has received three Ministerial directives in 2018 which are described below:

20 1. July 13, 2018

21 **Wind Down of Feed-in Tariff and Large Renewable Procurement Contracts**

22 The Minister of Energy has directed the IESO to wind down certain Feed-in-Tariff
23 and Large Renewable Procurement contracts. The directive notes that the IESO's
24 recent system planning work indicates that Ontario's current contracted and rate
25 regulated electricity resources are sufficient to satisfy or exceed forecasted provincial
26 needs for the near term and that there are other means of meeting future energy
27 supply and capacity needs at materially lower costs than long-term contracts that
28 lock in the prices paid for these resources.

29 2. February 15, 2018

30 **Approval of IESO's Long-Term Energy Plan Implementation Plan**

31 The Minister of Energy has approved the IESO's Long-Term Energy Plan (LTEP)

1 Implementation Plan, submitted on January 31, 2018, that sets out the actions the
2 IESO will take to deliver the initiatives outlined in the LTEP.

3 3. February 8, 2018
4 **Reallocation of Targets from the Industrial Accelerator Program to 2015-2020**
5 **Conservation First Framework and Deliver of Programs Targeted to On-Reserve**
6 **First Nations Communities**

7 The Minister directs that 0.4 TWh of the IAP electricity savings target be reallocated
8 to the CFF target, which savings will be achieved through Centrally-Delivered and
9 Province-wide LDC Programs. The IESO will establish a new budget to achieve the
10 additional 0.4 TWh of savings under CFF without increasing the overall IAP and
11 CFF budgets.

12 The Minister also directs that in consultation with Distributors serving on-reserve
13 First Nations communities, the IESO will design and fund a centrally-designed First
14 Nations Conservation Demand Management Program(s).

15 All three directives have resulted in additional internal work for the IESO.

16 At this time, for directive #1 which was issued on July 13, it is not known whether there will
17 be any costs to the IESO in 2018 resulting from the directive.

18 Directive #2 has resulted in additional costs. Please see the response to OEB Staff
19 Interrogatory 18(a) at Exhibit I, Tab 7.1, Schedule 1.18.

20 Directive #3 has not resulted in additional costs for the IESO.

21 b) The IESO continues to progress towards the 8.7 TWh Conservation First Framework
22 ("CFF") target and has not undertaken the management of any new contracts beyond the
23 CFF mandate.

24 c) Please see the response to OEB Staff Interrogatory 18(a) at Exhibit I, Tab 7.1, Schedule 1.18.

1 ENERGY PROBE INTERROGATORY 9

2 7.1 *Are the costs associated with the activities identified in the IESO's Long-Term Energy Plan*
3 *(LTEP) Implementation Plan appropriate?*

4 **EP IR #9**

5 INTERROGATORY

6 **Reference:** Exhibit B, Tab 2, Schedule 1, page 3

7 **Preamble:** IESO has underspent its capital budget in 2016 and (more significantly) in 2017.

8 Please provide a detailed explanation for the underspend in IESO's capital budget for 2017.

9 RESPONSE

10 Please refer to the table in the response to AMPCO Interrogatory 9 at Exhibit I, Tab 1.4,
11 Schedule 2.09, Attachment 1.

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1 OSEA INTERROGATORY 6

2 7.1 OSEA 6

3 INTERROGATORY

4 Reference: Exhibit A, Tab 2, Schedule 21, pages 9-10 of 28

5 Preamble: "The following are the nine directed initiatives that the IESO will be responsible to
6 deliver:

- 7 • The IESO will develop a program for innovative renewable distributed generation
8 projects to demonstrate enhanced system integration and deployment potential,
9 including projects demonstrating virtual net metering models that would inform
10 potential future net metering policy updates.
- 11 • In coordination with the OEB, the IESO will review market rules, industry codes and
12 regulations to identify potential obstacles to fair competition for energy storage with
13 other technologies in the delivery of services, and where appropriate, propose
14 mitigation strategies.
- 15 • The IESO will identify options for pilot projects that evaluate the electricity system
16 benefits, costs and GHG emission reductions of using electricity to create hydrogen."

- 17 a) Please explain if the IESO Implementation Plan for initiatives in the 2017 Long-Term Energy
18 Plan is affected by the Ontario government's decisions to cancel the Green Ontario Fund,
19 the Cap and Trade Program, and the renewable energy contracts. If so, explain the impact
20 for each initiative.
- 21 b) Please explain what are the cost implications (e.g. savings or added expenses) for the IESO
22 Implementation Plan as a result of the Ontario government's recent decisions.

23 RESPONSE

- 24 a) and b) The Ontario government's recent decisions are not expected to impact the
25 implementation of the LTEP initiatives. The IESO continues to implement the LTEP
26 initiatives as per the Minister's direction dated October 26, 2017.

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1 SEC INTERROGATORY 27

2 **7.1-SEC-27**

3 INTERROGATORY

4 With respect to the IESO's LTEP implementation plan:

- 5 a. Please provide a copy of the IESO's LTEP implementation plan.
- 6 b. Please provide the status of each element of the implementation plan;
- 7 c. For each element of the implementation plan, please provide the cost associated with the
- 8 implementation both in its entirety and in 2018;

9 RESPONSE

- 10 a. The IESO's LTEP implementation plan is provided as Attachment 1 to this exhibit.
- 11 b. Please see the response to OEB Staff Interrogatory 18(c) at Exhibit I, Tab 7.1, Schedule 1.18.
- 12 c. Please see the response to OEB Staff Interrogatory 18. In addition to the 2018 expenses,
- 13 \$87 thousand was spent in 2017 on the LTEP.

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JANUARY, 2018

Putting Ontario's Long-Term Energy Plan Into Action

Implementation plan for initiatives of the
2017 Long-Term Energy Plan



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Preface

The Independent Electricity System Operator (IESO) works at the heart of Ontario's power system, ensuring there is enough power to keep the lights on, today and into the future. Its broad mandate includes managing the power system in real-time, planning for the province's future energy needs, enabling conservation, and overseeing the electricity market.

The IESO also has a key role informing and implementing policy. The IESO is responsible for issuing a technical report to inform the Government of Ontario's Long-Term Energy Plan (LTEP) and an implementation plan to outline the steps it will take to implement LTEP policy initiatives.

The IESO issued its technical report, the [Ontario Planning Outlook](#), on September 1, 2016. The report provided a 10-year review and a 20-year outlook for Ontario's electricity system, concluding that Ontario is well-positioned to meet provincial needs until the mid-2020s, while continuing to adapt to significant change across the sector.

The government released the 2017 LTEP, *Delivering Fairness and Choice*, and issued an [implementation direction](#) and [amending direction](#) to the IESO on October 26, 2017.

Putting Ontario's Long-Term Energy Plan Into Action outlines how the IESO will work with Ontario communities, stakeholders, and First Nations and Métis to implement certain initiatives in the Government of Ontario's 2017 LTEP.

Informed by Engagement

The IESO engaged with First Nations and Métis, customers, communities and stakeholders through multiple channels in the development of this implementation plan. A dedicated engagement webpage was created where the public could learn about opportunities to participate. These opportunities included a public webinar and a public meeting with the IESO's Stakeholder Advisory Committee.

In summary, approximately 100 people participated in the webinar, including distributors, generators, associations, First Nation community representatives, a Métis representatives, municipalities and consumers. Formal submissions were received from 16 parties and this feedback was considered in the development of this plan. Public feedback and IESO responses can be found on the "[Development of the IESO Implementation Plan for 2017 LTEP](#)" webpage.

A series of meetings were held with First Nation communities, as well as an Aboriginal Energy Working Group meeting. The IESO also met on request with multiple parties to provide context and clarification into the scope of feedback that would guide the development of the Implementation plan.

The IESO conducts its engagements in accordance with a [set of principles](#) that guide the conduct of the IESO, market participants, stakeholders, communities, customers and the general public towards an efficient and effective process. The IESO uses the perspectives brought forward in these forums to inform its decision making.

The public, for the purposes of engagement, refers to market participants, stakeholders, communities, First Nations and Métis peoples, customers and the general public.

Message from Peter Gregg, President and CEO



I am pleased to present the IESO's *Putting Ontario's Long-Term Energy Plan Into Action*. This plan charts a path forward for implementing initiatives of the Government of Ontario's *Long-Term Energy Plan (LTEP)*, *Delivering Fairness and Choice*.

This marks the first implementation plan the IESO has delivered under the new long-term planning process established by legislation in 2016. This plan demonstrates the important role the IESO has, using its expertise and experience, to inform and implement policy.

It started with the *Ontario Planning Outlook*, the IESO's technical planning document, which was submitted to the Minister of Energy and helped to inform the government's LTEP. Now that policy objectives have been established in the LTEP, the IESO will lead the implementation of initiatives that are aimed at supporting Indigenous capacity and leadership, encouraging an innovative sector, and delivering a flexible and efficient system.

Each initiative will benefit significantly from the input and advice of many others, including industry stakeholders, innovators, communities, customers, and First Nations and Métis. Together, we can apply our expertise, experience and judgement to ensure initiatives are implemented effectively and to our collective benefit.

In addition to initiatives contained in this implementation plan, work will continue on other areas of importance mentioned in the LTEP. Notably, this includes our work to fundamentally redesign Ontario's electricity markets through the Market Renewal Program and our efforts to guard against cybersecurity threats as they grow in number and complexity.

I encourage readers to get involved in initiatives that interest or impact them. In our increasingly decentralized electricity system, collaboration and success go hand in hand.

A handwritten signature in black ink, appearing to read 'Peter Gregg'.

Peter Gregg,
President and CEO

Executive Summary

Technological advancements, increasing consumer engagement, growth in distributed energy resources, and climate change policies are changing the dynamics of Ontario's electricity system. These developments are creating a more decentralized and interconnected system that is opening up unprecedented opportunities for communities, consumers and industry stakeholders.

At its core, the electricity system functions the same today as it has in years past: electricity is generated, transmitted, and consumed. Ontarians flip a switch and the lights come on.

However, communities and consumers are now able to take part in conservation programs and energy efficiency incentives, manage energy use with smart thermostats and other technologies, generate and store their own electricity, and participate in regional planning discussions. Ongoing innovation and engagement will continue to improve and expand upon opportunities like these.

Ontario's electricity market is also undergoing fundamental change. The IESO's Market Renewal Program will evolve our market to ensure it fosters innovation, creating a space where consumers and new technologies can compete with traditional resources to meet Ontario's electricity needs more efficiently and cost-effectively.

The transformation of the electricity system means the IESO must evolve its decision-making process to be more inclusive. Shaping the future of our electricity system is now a collective effort, and the IESO continues to establish processes and forums for communities, consumers and new entrants to participate.

It is within this context that the IESO releases *Putting Ontario's Long-Term Energy Plan Into Action*, outlining the steps it will take, informed by engagement, to implement initiatives of the Ontario government's *2017 Long-Term Energy Plan*.

Supporting Indigenous Capacity and Leadership involves working with First Nations and Métis to improve and expand access to conservation programs, and evolve support programs to better meet their needs. These initiatives will help First Nations and Métis to manage their electricity use in a way that is cleaner, more affordable, and more reliable, and to continue to participate in energy project developments, including support to implement community energy plans.

Encouraging an Innovative Sector initiatives will see the IESO work with industry stakeholders and other interested parties to identify and address barriers to fair competition for energy storage with other resources, and learn from innovative renewable distributed generation and power-to-gas pilot projects. These initiatives will help expand opportunities for industry stakeholders and new entrants, broadening the market and increasing competition, while giving insights into how innovative technologies can contribute to the reliable operation of the electricity grid.

Delivering a Flexible and Efficient System will evolve electricity planning to better serve Ontario communities and consumers. These initiatives will enhance transparency at all planning levels, including development of a formalized bulk system planning process and an evolved regional planning process that better meets community needs. Transmission procurement will increase competition and planning will be broader in focus, resulting in the most efficient and cost-effective outcomes.



Supporting Indigenous Capacity and Leadership

The role of consumers and communities in Ontario's electricity system is growing, a trend exemplified no better than by First Nations and Métis peoples.

First Nations and Métis are now leading or partnering on major transmission projects and over 600 wind, solar, and hydroelectric generation projects across Ontario. Through funding from the IESO's Aboriginal Community Energy Plan program, approximately 20 community energy plans have been developed, with close to 90 more under development. The plans are supporting communities in improving energy efficiency, reducing electricity consumption, and developing renewable energy projects.

There is more that the IESO can do to enable First Nations and Métis in the energy sector. Gaps in conservation and energy efficiency program availability mean there are First Nations communities and Métis without awareness or equitable access to opportunities that could help their energy use become more efficient and affordable.

Where IESO funding is provided through energy support programs, there is now an opportunity to evolve these programs to better meet the needs of First Nations and Métis, including tailored support that recognizes the unique characteristics of each community or organization. This includes providing support to implement community energy plans.

The following sections outline the objectives, scope and the actions the IESO will take to implement the following initiatives:

1. Evolving First Nations and Métis Energy Support Programs
2. Improved and More Accessible Conservation Programs for First Nations and Métis

1.

Evolving First Nations and Métis Energy Support Programs

The IESO seeks to empower and partner with First Nations and Métis to create efficient and cost-effective solutions to their unique energy needs. One of the ways it does this is through its energy support programs. These programs promote participation in Ontario's energy sector by providing education about the energy sector, supporting community energy planning and supporting renewable energy project development.

The IESO's energy support programs currently include:

- the **Education and Capacity Building Program**, which provides funding for awareness, education and training to help prepare communities to fully leverage energy opportunities;
- the **Energy Partnerships Program**, which provides funding for the preparation and development of renewable energy and priority transmission projects; and
- the **Aboriginal Community Energy Plan program**, which invests in community energy planning, helping communities move toward a more secure energy future based on local interests, needs, challenges and opportunities.

These mutual investments of time, energy and capital have helped First Nations and Métis become owners and partners in meeting Ontario's near- and long-term goals for a sustainable and reliable electricity supply while ensuring Indigenous peoples have the support they need to build capacity and develop energy plans for their communities. The IESO will now evolve these programs, taking into account lessons learned and informed by engagement with First Nations and Métis.

Objective

Review and propose options to improve energy support programs currently offered by IESO to First Nations and Métis, with the objective of better aligning programs with community needs and interests, and evolving programs to support the implementation of community energy plans.

Scope

This review includes: assessing the need for re-alignment or expansion of programs to meet the needs and interests of First Nations and Métis and exploring ways to improve the application process for existing energy support programs for First Nations and Métis.

IESO Actions

The review is already underway. The IESO has reviewed all completed community energy plans to identify themes, needs and interests of communities. Additionally, the IESO is meeting with various funding providers to understand the current funding availability and landscape.

Most importantly, the IESO has been engaging with First Nations and Métis and reviewing learnings from the Indigenous Community Energy Symposium that was held on October 26-27, 2017.

The IESO will provide a summary of the feedback heard to date via a public webinar in February and invite further feedback. Options to improve energy support programs will be proposed in Q1 2018.

Past Engagements

A number of engagement activities have already taken place, including:

- Meetings with First Nations representatives at the 2017 Regional Forums in Thunder Bay (October 19), Sudbury (November 10), London (November 24), and Vaughan (December 12)
- The Indigenous Community Energy Symposium (October 26-27), which was attended by ~300 individuals from ~100 communities
- Ministry of Environment and Climate Change Indigenous roundtable meetings at Whitefish River First Nation (November 1), Michipicoten First Nation (November 8-9) and Chippewas of the Thames First Nation (November 23)
- Community visit to Chippewas of Georgina Island First Nation (November 23)
- A meeting with the IESO's Aboriginal Energy Working Group (December 4)
- A survey that was sent to hundreds of community members in the fall of 2017 about energy needs and gaps in current programming

Planned Engagements

- Community visit to Wunnumin Lake First Nation
- Engagement with Métis Nation of Ontario and Métis councils to gather input on how to best evolve support programs for Métis councils and organizations
- A webinar in February to share a summary of feedback heard to date and invite further feedback

Initiative Milestones

Q4 2017 - Q1 2018	Engagement with First Nations and Métis
Q1 2018	One-on-one engagement with community suppliers Meeting with Métis councils Meeting with various funding providers to understand gaps and potential synchronicities
February, 2018	Public webinar to share summary and invite feedback on results of the initial engagement activities
Q1 2018	Options to be proposed to improve energy support programs



With funding from the Education and Capacity Building Support Program, TREC Education offered technical skills training for members of the Bkejwanong Territory - Walpole Island First Nation.

2.

Improved and More Accessible Conservation Programs for First Nations and Métis

Conservation programs give consumers an opportunity to manage their electricity costs while reducing provincial demand, which helps defer investments in infrastructure like generation and transmission lines. Programs have evolved over time to get more residents and businesses involved and to leverage innovation. The collective participation of Ontarians has created a culture of conservation and made the province a North American leader in the field.

Halfway through the Conservation First Framework (2015-2020), the IESO is exploring changes based on lessons learned and stakeholder and community input. One area of focus is improving programs for First Nations and Métis and making them more accessible. By addressing gaps in conservation and energy efficiency availability, the IESO will help ensure First Nations and Métis are able to better manage their electricity use and associated costs.

Starting in 2015, the responsibility for conservation program design and delivery was transferred to local distribution companies, who were required to serve all customer segments within their service territory, including First Nations communities. Current programs being offered include Hydro One's First Nation Conservation Program, and the Conservation on the Coast Program being delivered in Attawapiskat First Nation, Kashechewan First Nation and Fort Albany First Nation, which have community-owned local distribution companies.

Objective

Prepare a report on options to improve conservation programs, and access to programs, for First Nations and Métis. This includes communities served by non-regulated distributors, known as Independent Power Authorities.

Scope

Development of the report will include an assessment of:

- existing programs offered under the Conservation First Framework and the Demand Side Management Framework, as well as energy support programs;
- underlying electricity and energy efficiency related issues in on-reserve First Nation communities;
- opportunities for technologies or processes that would support energy efficiency for First Nations and Métis; and
- gaps in program design or delivery for existing conservation programs

Development of the report will also consider options for programs for Métis peoples and off-reserve First Nation peoples.

IESO Actions

This initiative aligned with work underway through the IESO's mid-term review of the Conservation First Framework and is almost complete. The IESO held various engagement sessions with First Nations and reviewed learnings taken from the Indigenous Community Energy Symposium. The IESO also conducted a review of existing and historical programs and results, and a review of Indigenous community energy plans funded under the Aboriginal Community Energy Plan program.

Looking ahead, the IESO will engage with the Métis Nation of Ontario and Métis councils and visit Wunnumin Lake First Nation. The Indigenous Conservation Programming Report will be finalized and released in Q1 2018.

Past Engagements

The development of the report will be informed by the following engagement activities:

- Meetings with First Nations representatives at the 2017 Regional Forums in Thunder Bay (October 19), Sudbury (November 10), London (November 24), and Vaughan (December 12)
- The Indigenous Community Energy Symposium (October 26-27), which was attended by ~300 individuals from ~100 communities
- Community visit to Chippewas of Georgina Island First Nation (November 23)
- A meeting with the IESO's Aboriginal Energy Working Group (December 4)
- Attendance at Ministry of Environment and Climate Change Indigenous roundtable meetings
- A survey that was sent to hundreds of community members in the fall of 2017 about energy needs and gaps in current programming



Workers from the Conservation on the Coast Program improve the energy efficiency of a home in Fort Albany First Nation.

Planned Engagements

- Community visit to Wunnumin Lake First Nation
- Engagement with Métis Nation of Ontario and Métis Councils

Initiative Milestones

Q4 2017 – Q1 2018	Engagement with First Nations and Métis
Q1 2018	The Indigenous Conservation Programming Report is published

Encouraging an Innovative Sector

Ontario's electricity system is changing as a result of a confluence of factors, including technological advancements, evolving climate change policies, increased access to data, increasing distributed energy resources, and a more engaged consumer.

With change comes opportunity, and innovation can play an important role in unlocking these opportunities. The IESO enables innovation through the information it provides, funding and programs it offers, and market-based opportunities it facilitates. Innovation can lead to new opportunities for consumers and stakeholders, downward pressure on costs, and a more efficient and reliable electricity system.

The IESO is enabling innovation in a variety of ways. For example, the Market Renewal Program will put in place a marketplace that fosters innovation, creating a space where consumers and new technologies can compete with traditional resources to meet Ontario's electricity needs. Another example is the IESO's Conservation Fund, which supports innovative conservation technologies, practices, research and programs that have the potential to deliver significant energy savings.

The IESO will continue to enable innovation through the initiatives outlined in this chapter. This includes energy storage, which can provide a variety of electricity services. The IESO has been assessing the potential for energy storage for several years now, including through various pilot projects. There is more opportunity for storage and a first step in unlocking that potential is by looking at the barriers that are limiting the ability of energy storage to compete with other resources in the delivery of services.

The IESO will also work with the public to develop a renewable distributed generation demonstration program and options for power-to-gas pilot projects. This will lead to learnings about the potential electricity system benefits these types of resources could have, and learnings about their integration into the electricity system.

The following sections outline the objectives, scope and the actions the IESO will take to implement the following initiatives:

3. Renewable Distributed Generation Demonstration Projects
4. Energy Storage
5. Power-to-Gas Pilot Projects

3.

Renewable Distributed Generation Demonstration Projects

The adoption of renewable distributed generation and other distributed energy resources (DERs) is leading to a more decentralized and interconnected system. There are now over 4,300 MW of DERs in service and under development in Ontario, more than half of which is solar photovoltaics. This is changing the historical one-way, top-down flow of electricity in the system, increasingly contributing to planning and operational challenges while also creating opportunities to use resources in novel ways and to help meet system needs.

In regional planning discussions, the IESO has heard from some communities that they prefer DERs as alternatives to traditional transmission and distribution infrastructure solutions. DERs can support existing grid assets by enhancing their value and potentially avoiding or deferring capital expenditures. DERs also present an opportunity for customers to have more control and choice over how they use and pay for energy, for instance through a net metering arrangement with their local distribution company to self-generate electricity.

DERs can provide value at all levels of the electricity system, including the end-customer, the distribution system, and the bulk electricity system. The IESO continues to evolve the market to facilitate the participation of all resource types, including DERs, better enabling them to compete to provide wholesale-level services. Furthermore, as barriers to implementing alternatives to transmission and distribution infrastructure are addressed, DERs could provide additional grid services.

Further integrating DERs into electricity system operations, planning, markets, and regulations will ensure continued reliable service to customers and will enable more of the potential value of DERs to be realized.

Objective

Develop a program to support a select number of innovative renewable distributed generation demonstration projects in order to gain direct experience with integration of distributed energy resources, refine methodologies for assessing value streams, and to inform the evolution of grid systems, processes, and practices.

Scope

The IESO will seek renewable distributed generation projects, strategically located and paired with other distributed energy resources and smart-grid technologies, that demonstrate opportunities to enhance integration into electricity system operations, planning, markets, and regulations.

The process for project selection and the funding agreements will vary in design based on the nature of the investigation topic. Project selection may include competitive elements and the funding agreements are expected to have a term of two to three years. The IESO is considering a total commitment of up to \$45 million to be invested in electricity supply, capacity or storage related to renewable distributed generation demonstration projects over a period of approximately three years.

IESO Actions

Working with public input, the IESO will identify topics to be investigated and will periodically initiate targeted calls for projects for each investigation topic. The program will also align with the energy storage and regional planning initiatives, as well as the Market Renewal Program, as applicable.

Virtual Net Metering (VNM) will be the first investigation topic. In a VNM arrangement, customers are billed on a net-metered basis for eligible electricity generated from a facility that is not connected directly to the customer (i.e., not located behind the customer's meter). Credits accrued from electricity from the generation facility are applied to associated customer accounts to reduce their electricity bills. The IESO anticipates initiating the call for applications in Q3 2018.

Engagement

The IESO will engage the public to identify three to five additional topics of investigation for the program, and seek further stakeholder input into program design, including process for project selection, evaluation of project results and funding agreements.

Initiative Milestones

Q1 2018	Engagement to solicit feedback on investigation topics and introduce the first call for VNM
Q2 2018	Draft project selection and funding agreement documents for VNM posted
Q3 2018	Final VNM documents released Process expected to begin for second investigation topic
Q3 - Q4 2018	VNM proposal submissions received
Q4 2018	Successful VNM projects announced



Over 4,300 MW of distributed energy resources are in service and under development in Ontario, including the 10kW project built on top of the Devi Mandir Hindu Temple (pictured).

4.

Energy Storage

Integrating energy storage resources into the electricity system is an important step to innovate and modernize the sector, as these resources have the potential to help play a role in balancing multiple objectives facing the grid. As Ontario moves to more competitive and technology-neutral acquisition of resources, energy storage resources need to be able to compete in the delivery of services to ensure their potential is realized.

The IESO has been learning about the integration of storage into Ontario's electricity system for several years, first procuring six megawatts of regulation service – a service that maintains second-by-second balance on the grid – from two storage facilities in 2012. Another step was taken in 2014 when 50 megawatts were procured to learn about energy storage's ability to provide price arbitrage and ancillary services in support of grid reliability and efficiency.

Regulatory barriers to energy storage in Ontario were identified in a 2014 *Storage Working Group Report*, prepared by the Ontario Energy Board (OEB) Smart Grid Advisory Committee and Energy Storage Working Group.

In 2016, the IESO published an *Energy Storage Report*. The report includes lessons from past IESO procurements of energy storage and presents potential opportunities and challenges for bulk system energy storage providers. Specifically, the report identifies the operational and reliability system needs brought about by changes to the generation mix over the next few years and the potential for energy storage technologies to address those needs.

A milestone for energy storage was reached in late 2017 when two providers were selected through a competitive process to provide a combined 55 megawatts of regulation service. Further demonstrating the value of these technologies, the successful projects also represented one of the largest reductions in per-unit regulation costs since Ontario's electricity market opened.

More recently, the government has announced a proposal to amend Ontario Regulation 429/04 in order to provide a definition for energy storage and adjust the treatment of the Global Adjustment for Class B energy storage facilities.

The IESO will now work with the OEB, storage providers, and other interested parties to further identify and mitigate obstacles to energy storage, as appropriate, to enable those resources to provide value to customers and the electricity system.

Objective

Identify potential obstacles to fair competition for energy storage with other technologies in the delivery of services and, where appropriate, propose mitigation strategies.

Scope

This initiative will identify potential obstacles to energy storage resources through a review of the market rules, industry codes, and regulations relevant to energy storage resources. Where appropriate, strategies for mitigating obstacles will be suggested. The review will focus on both distribution and transmission connected energy storage resources within the current structure of the market.

The goal of this initiative is to propose mitigating strategies for the obstacles that exist today, within the current structure of the market, where appropriate. It is expected that it will also be a useful input to the OEB's work to enable distributed energy resources.

The proposed scope of work will not include the identification of system needs and the potential ability of energy storage to meet those needs; the feasibility of connecting and/or siting energy storage resources; or the economic business case for storage.

IESO Actions

The IESO will conduct this initiative in coordination with the OEB.

The IESO will conduct four main activities, including: a jurisdictional scan to understand how barriers to energy storage participation in other jurisdictions are addressed; development of principles with stakeholders to guide the determination of inappropriate obstacles; identification of obstacles facing energy storage resources in Ontario with input from the public and stakeholders in the storage community; and, where appropriate, development of mitigating strategies for those obstacles that are found to be inappropriate.

Many energy storage obstacles, and solutions, have been identified by industry and through the work of the 2014 OEB Storage Working Group; the IESO will leverage these findings and update them as necessary as part of this work.

Engagement

The IESO will be seeking input from the public, and specifically from stakeholders in the storage community on the development of principles to help identify which obstacles facing energy storage resources are inappropriate and warrant mitigation. The IESO will also be asking stakeholders to review the list of identified obstacles for completeness. The IESO's Energy Storage Working Group will be a forum for discussions with stakeholders on this work, as will a broader engagement open to the public.

Initiative Milestones

Q1 - Q2 2018	Engagement to develop principles and identify obstacles to the fair competition of energy storage resources. For those obstacles that are found to be inappropriate, develop mitigating strategies
Q2 - Q3 2018	Report on obstacles identified and any proposed mitigation strategies

5.

Power-to-Gas Pilot Projects

Power-to-gas is the process of converting electricity to hydrogen using an electrolyser. The hydrogen can be stored and then used in a variety of ways, such as to heat homes or fuel vehicles.

The IESO will soon learn from a power-to-gas facility that will provide regulation service, a critical grid service that helps balance supply and demand on a second-by-second basis. This project was a successful proponent of the IESO's Phase I Grid Energy Storage Procurement in 2014 (following from the 2013 LTEP) and is expected to be operational in 2018.

Objective

Identify options for pilot projects that evaluate the electricity system benefits, costs and greenhouse gas emission reductions of using electricity to create hydrogen.

Scope

The IESO will examine, with input from the public, the different power-to-gas technologies available and their applications, as well as their associated technical and operational characteristics. It will also identify pilot project opportunities that may be available in the province.

This initiative will culminate in the identification of options for pilot projects and does not include implementation of these options.

IESO Actions

The IESO will issue a Request for Expression of Interest to gather information from the public. It will also undertake market research on the technical applications of power-to-gas, including a review of the respective regulatory requirements. Potential pilot project initiatives will be identified to evaluate the opportunity for power-to-gas applications.

Engagement

The public will have an opportunity to provide feedback on a draft Request for Expression of Interest to ensure the IESO's requests for information are clear and comprehensive. Interested parties will then be able to respond to the final Request for Expression of Interest, providing information on the different power-to-gas technologies available and their applications, as well as their associated technical and operational characteristics. The Request for Expression of Interest will also help identify pilot opportunities that may be available within the province.

Initiative Milestones

Q1 2018	Market research on power-to-gas, including a review of regulatory requirements
Q2 2018	Draft Request for Expression of Interest is issued for feedback
Q3 2018	Final Request for Expression of Interest is issued
Q4 2018	Options for pilot projects are identified

Delivering a Flexible and Efficient System

Keeping the lights on for Ontario's communities and consumers involves many actions and many decisions that have historically been made by the IESO and other industry stakeholders. As the electricity system has become more decentralized, and as communities and consumers have become more engaged, the IESO is taking steps to make the planning process more inclusive and transparent.

The regional planning process identifies needs and solutions for a planning region and includes input from local advisory committees, whose meetings are open to the public, and plans that are posted online. The current regional planning process was formalized in 2013 and, since that time, the needs of all 21 planning regions in Ontario have been evaluated, completing the first cycle of the process.

As the IESO and regional planning working group partners move forward to the next cycle of regional planning, there is an opportunity to review the existing process to determine where planning activities can be better coordinated and streamlined, and where the process can be evolved to better consider conservation, distributed energy resources and customer-based solutions to meet local needs.

A formalized process for bulk system planning will also be developed that integrates with other planning processes, coordinates with Market Renewal and results in greater transparency in bulk system planning in Ontario.

Additionally, there is an opportunity to ensure cost-effective outcomes by establishing a process for considering transmission assets that are reaching end-of-life in planning and introducing competitive procurement for new transmission facilities.

Finally, the IESO will review and report on its technical criteria to assess customer reliability. These criteria will be used to identify local reliability needs.

As each initiative progresses, the IESO will ensure there is alignment with the Market Renewal Program.

The following sections outline the objectives, scope and the actions the IESO will take to implement the following initiatives:

6. A Formal Integrated Bulk Planning Process
7. Review and Report on the Regional Planning Process
8. A Coordinated, Cost-Effective, Long-Term Approach to Replacing Transmission Assets at End-of-Life
9. Competitive Transmission Procurement and Pilot Projects
10. Customer Reliability

6.

A Formal Integrated Bulk Planning Process

The IESO plans for the resources needed to meet Ontario's future electricity needs. This includes forecasting and assessing the province's current and short-term electricity needs as well as the adequacy and reliability of the integrated power system. For the longer term, the IESO forecasts electricity demand and identifies options for meeting needs for up to 20 years to ensure Ontarians have cost-effective and sustainable solutions well into the future.

Given recent changes to the energy planning framework used within Ontario, new requirements imposed by North American Electricity Reliability Corporation (NERC) and the movement toward a more competitive electricity market through the Market Renewal Program, bulk system planning processes must evolve to coordinate with these changes.

Objective

Develop a formal integrated bulk system planning process that ensures needs and solutions are identified and assessed in a transparent manner. The planning process will also align with other planning functions and initiatives to enable the effective and efficient development of bulk system plans.

Scope

This initiative will consider alignment of existing bulk system planning processes including Ontario planning studies, inter-connection studies, the Long-Term Energy Planning process and other IESO reporting, such as those required by NERC, Northeast Power Coordinating Council, and other planning activities. This initiative will also consider the replacement of transmission assets at end-of-life, regional planning, Market Renewal, system operability and resilience, integration of distributed energy resources, and the application of IESO's customer reliability criteria.

IESO Actions

To inform the IESO's development of a formalized and transparent bulk system planning process, the IESO will review the existing process for conducting bulk system planning and conduct a jurisdictional scan to understand best planning practices in other jurisdictions.

The IESO will then develop a process for identifying bulk system needs in consideration of risks and opportunities; an approach to identifying options and alternatives to address the needs; mechanisms to allow innovative supply and demand side opportunities to be tabled and considered; and a process to evaluate options and alternatives, in consideration of provincial and local costs, community and environmental impacts, and other decision-making criteria.

Development of the process will include coordination with the OEB, as required. The process will establish high level approaches and criteria for developing recommended solutions and associated implementation mechanisms. The IESO will also conduct engagement with communities and interested stakeholders to seek feedback during the process.

When developing the bulk system planning process the IESO will identify interactions with related processes, which may be evolving concurrent with the development of the bulk system planning process. These include regional planning, the incorporation of transmission asset end-of-life considerations, Market Renewal and competitive transmission procurement.

The outcome of this initiative will be a documented process for integrated bulk system planning that includes demand, conservation, resource and transmission planning.

Engagement

Engagement activities to support this initiative will seek feedback from the public including, but not limited to, the following:

- Community and Indigenous representatives
- Transmitters
- Resource Proponents
- Industry Partners, such as the OEB and local distribution companies

The IESO will be seeking feedback from communities and stakeholders on the design of the bulk system planning process, coordination with other planning processes and what role communities and stakeholders will have in the planning process.

Initiative Milestones

Q1 - Q2 2018	Review existing processes for bulk system planning and conduct a jurisdictional scan
Q3 - Q4 2018	Engagement to gather initial feedback to help guide the development of the process Draft bulk system planning process
Q1 - Q2 2019	Engagement on the draft bulk system planning process
Q2 - Q3 2019	Finalization of the bulk system planning process

7.

Review and Report on the Regional Planning Process

Regional system planning ensures a reliable supply of electricity to the 21 electricity planning regions across Ontario. Regional planning looks at each region's unique electricity needs and is an integrated process that considers conservation, generation, transmission and distribution, and innovative resources to meet these needs. The current regional planning process was formalized in 2013 and is endorsed by the OEB.

From 2015 to 2017, the IESO worked with transmitters and local distribution companies to prepare 16 Integrated Regional Resource Plans that identified regional needs and recommended solutions. The IESO also established 11 local advisory committees, which include representatives ranging from local Indigenous representatives, municipalities, industry, and members of the public, that provided input to these regional planning processes.

Having completed the first cycle of the formalized regional planning process, it is an opportune time to consider lessons learned, feedback from stakeholders and communities, and findings from other regional planning development initiatives, such as pilots and studies to improve the process for future cycles.

Objective

Review and report on the regional planning process and propose adjustments or recommendations to improve the regional planning process, including regulatory and/or legislative changes. This review is to ensure the regional planning process is efficient, integrates with other planning initiatives, considers transmission facility end-of-life and effectively considers cost-effective alternatives to transmission and distribution infrastructure to meet regional needs.

Scope

The scope includes the review of the existing regional planning process, including Needs Screen, Scoping Assessment, Integrated Regional Resource Plan, Regional Infrastructure Plan, Local Planning, engagement activities and associated regulation and legislation. This review will examine the key inputs, outputs,

activities, roles and responsibilities, engagement activities with stakeholders and communities, and timelines associated with the various stages of the regional planning process.

The review will specifically look at how the existing process considers cost-effective alternatives to transmission and distribution infrastructure solutions in the regional planning process, such as conservation and distributed energy resources, and identify any regulatory, policy and administrative barriers for implementing them in a local area, such as investment risk.

This initiative will explore possible linkages to the Market Renewal Program. This includes co-ordinating the regional planning process with the new markets to help the marketplace specify requirement that can address both regional needs and system needs (i.e. value stacking). This also includes designing a regional planning process that considers value to the market when determining what transmission investments are needed to meet a regional need. This initiative will assess what regional planning data is needed by the marketplace, to enable the regional planning process and the new markets to work together to produce the most cost-effective solutions.

This initiative will also examine how the existing regional planning process interacts and coordinates with the provincial bulk system planning process and local community energy planning processes, and will focus specifically on how and when information is being shared and considered, common areas of interests, opportunities for coordination and how the various parties work together.

This initiative will be informed by work already underway by the OEB and the Regional Planning Process Advisory Group.

IESO Actions

In 2018, the IESO will focus on gathering information from key stakeholders, local utilities, transmitters and communities on the existing regional planning process and identifying key areas of focus for this review, including what has worked well and any potential gaps in the process. In early 2019, an interim report will be provided to summarize the status and key findings to date.

The IESO will also conduct a jurisdictional scan to understand best practices from other jurisdictions, including how barriers to implementing alternatives to transmission and distribution infrastructure solutions are addressed; develop and evaluate options to address the gaps identified; develop draft recommendations to address these gaps; consider regulation or legislation amendments required to support recommended actions; and seek input on these recommendations from relevant stakeholders and communities.

The IESO will then integrate these recommendations into a final report, including any supporting regulation or legislation amendments required.

Engagement

The IESO will be conducting this initiative with regular engagement with the OEB, as the OEB is responsible for the regulatory frameworks that support regional planning.

Engagement activities to support this initiative will seek feedback from the public, including specific segments such as:

- Transmitters
- LDCs and representatives
- Indigenous communities
- Municipalities, associations and community groups
- Proponents of alternatives to transmission and distribution infrastructure solutions

The IESO will be seeking feedback on the barriers to the implementation of cost-effective alternatives to transmission and distribution infrastructure solutions; effectiveness of customer, community and stakeholder engagement in the existing regional planning process; and the IESO's recommendations to improve the regional planning process.



Initiative Milestones

Q1 - Q4 2018	Review the existing regional planning process and conduct a jurisdictional scan. Periodic engagement of local utilities, transmitters, communities and key stakeholders during review
Q1 2019	Prepare an interim report summarizing the current status and key findings to date
Q1 - Q4 2019	Develop draft recommendations and/or adjustments to the regional planning process and engage with the public on these draft recommendations
Q4 2019	Publish the report summarizing the final recommendations and/or proposed adjustments, and the recommended supporting regulatory and legislative tools

8.

A Coordinated, Cost-Effective, Long-Term Approach to Replacing Transmission Assets at End-of-Life

This initiative will identify opportunities that transmission facilities reaching end-of-life present, such as “right-sizing” the new or refurbished facilities to better reflect future needs. For example, in an area where demand has changed, a like-for-like replacement may not be the most cost-effective solution.

Transmitters currently look out about five years when planning investments. This provides limited time to ensure that replacement facilities are properly considered in a broader planning context. This is especially important to consider now, as a significant number of assets are expected to reach their end-of-life in the 20-year planning horizon.

Objective

Ensure a coordinated, cost-effective, long-term approach to replacing transmission assets at end of life, in order to better align investments with power system and market conditions and needs, including with respect to system operability and resilience, integration of distributed energy resources and customer reliability.

Scope

The scope of this initiative includes the information transfer from the asset owner to the planners undertaking a planning process. The mechanism, timelines and type of information transferred will be considered in developing a repeatable process for use in planning.

This initiative will be informed by work already underway by the OEB and the Regional Planning Process Advisory Group (RPPAG). The RPPAG was established by the OEB in 2014 recognizing the need to continuously monitor regional planning processes and to identify opportunities for improvements based on lessons learned.

More specifically, the initiative will include:

- Developing a process for identifying and integrating transmission end-of-life considerations into the bulk and regional planning processes
- Extending when facilities reaching end-of-life are identified to at least ten years in advance
- Developing a set of criteria for screening the identified end-of-life investments, or assets at or nearing their expected service life, for opportunities to better align with future power system and market conditions through more comprehensive long-term planning

IESO Actions

To inform the IESO’s development of a new process for integrating transmission asset end-of-life information in planning, the IESO will, working with transmitters and LDCs, conduct a review of the existing planning process considering assets reaching the end of their expected service life; conduct a jurisdictional scan to understand best practices for how asset end-of-life is considered in integrated planning in other jurisdictions; and, define the desired outcomes and identify process gaps. Working with stakeholders, such as transmitters and LDCs who own transmission facilities, the IESO will develop a process for use in planning and, working with the OEB, address any gaps in implementing the process due to the existing regulatory framework.

Determination of asset end-of-life, asset condition assessment, generation assets and management of work programs are beyond the scope of this initiative.

Engagement

Engagement activities to support this initiative will seek input from the Regional Planning Process Advisory Group, of which the IESO is a member, and feedback from interested stakeholders, including transmitters and LDCs.

The IESO will be seeking feedback on the development of the process for identifying assets reaching end-of-life; extending the planning horizon on sustainment investments; and the development of the planning criteria for screening high value opportunities for considering assets reaching the end of their expected service life.

Initiative Milestones

Q1-Q2 2018	Develop a draft process for incorporating transmission asset end-of-life in planning
Q2-Q3 2018	Engagement on the draft process
Q4 2018	Finalize process for integration in the bulk and regional planning processes

9.

Competitive Transmission Procurement and Pilot Projects

Ontario's electricity sector is moving toward increased competition, as demonstrated by the ongoing development of technology-neutral capacity auctions to meet the province's future needs. Competition can encourage companies to innovate and drive down costs. Consistent with this approach, the IESO will engage with the public, interested stakeholders and Indigenous communities and representatives to develop a competitive transmitter selection or procurement process. Options for Indigenous participation in the sector will be considered in the development of this process.

Currently, new transmission facilities are typically developed by existing transmitters. A competitive transmission procurement process will result in a more inclusive and fair approach to transmission development in Ontario with a goal of reducing the cost of new high-voltage transmission facilities.

Objective

Develop a competitive transmitter selection or transmission procurement process that is transparent, efficient and able to respond to changing policy, market and system needs.

Scope

This initiative will create a transparent and flexible competitive transmitter selection or procurement process for new transmission facilities. To ensure efficiency, the process will consider utilizing streamlined processes for smaller scale or less complex projects (a tiered approach). As part of this initiative, the IESO will make recommendations, if necessary, for amendments to legislation, regulations, statutes or programs that will support the implementation of competitive transmission procurement or transmitter selection.

The IESO will also consider potential pilot project(s). Whether or not a pilot project is used to inform the development of the process will depend on if a project suitable for a competitive process is identified.

The scope of this initiative is the development of a transmission selection or procurement process and does not include the selection of the transmission facilities as the preferred solution for addressing a system need, or needs. The decision to address system needs with transmission will be made through separate processes, such as bulk system planning or regional planning.

IESO Actions

To inform the IESO’s development of a competitive process, the IESO will review procurement designs from other programs run by the IESO, research approaches to competitive processes for transmission used in other jurisdictions, and assess potential barriers to the implementation of a transmission selection or procurement process in Ontario.

Engagement

Engagement activities to support this initiative will seek feedback from the public, including specific segments such as:

- Indigenous communities and representatives
- Transmitters
- Municipalities
- Other government ministries

The IESO will seek feedback on the design of the process, including timelines, qualification requirements, bid evaluation criteria, Indigenous community participation and how and when stakeholders and communities should be engaged in the procurement process.

Initiative Milestones

Q1 - Q2 2018	Research approaches for competitive processes used in other jurisdictions and prepare engagement documents outlining principles and objectives of competitive procurement
Q3 - Q4 2018	Engagement on the initial information gathering and on draft procurement process (when available)
Q4 2018	Develop recommendations paper outlining the competitive process including any associated tiered approaches and recommend pilot project(s), if any are suitable
Q1 2019	Engagement on the draft process
Q1 - Q2 2019	If suitable pilot project or projects are identified, formalize and commence one or more competitive procurement processes

10.

Customer Reliability

Making sure Ontarians have power whenever they need it is at the core of what the IESO does. The IESO maintains the reliability of the bulk power system in Ontario, and in doing so complies with reliability standards and ensures Ontario electricity sector participants also comply with standards. The IESO is also audited by the Northeast Power Coordinating Council (NPCC) on a regular basis to ensure that its processes and procedures meet those reliability standards.

The IESO's system planning standards for Ontario are consolidated in the Ontario Resource and Transmission Assessment Criteria (ORTAC). As the system and customer requirements for electrical service transform, criteria may need to be reviewed to ensure that electricity planning continues to provide a cost-effective and adequate level of reliability to customers.

Objective

Review and report on the technical criteria used to assess customer reliability and supply security in order to identify and evaluate options for local area enhancements. This may include consideration of potential improvements to customer load security and restoration criteria, including consideration of criteria for customers in remote areas. As part of this initiative, the impacts on the cost and funding responsibilities for electricity consumers, distribution and transmission utilities and other stakeholders will be included. The results from this review will be recommendations to be considered by the OEB for approval.

Scope

The scope of work for this initiative includes determining if changes are required to the IESO's customer reliability and supply security standards, which are currently limited to [Section 7 of the ORTAC](#).

The outcome of this initiative will be a report on recommendations for new or modified IESO customer reliability and supply security standards, including a cost and benefit based justification for the proposed revisions and cost allocation considerations. Recommendations will be informed by public feedback, a root-cause analysis of customer interruptions and a cost-benefit analysis.

The scope of work for this initiative does not include seeking changes to bulk system standards, such as those of the North American Electric Reliability Corporation and NPCC; IESO adequacy standards; customer reliability or performance standards for the distribution system; power quality or the implementation of the recommendations.

IESO Actions

To complete this initiative, the IESO will review customer reliability and supply security delivered by the IESO-controlled grid; conduct a jurisdictional scan of customer reliability and supply security standards, how they are used in system planning and how they are enforced in other jurisdictions; review documented feedback and solicit further feedback on customer reliability from Ontario customers, communities and stakeholders; and, develop,

assess, engage and report on alternatives for new or amended IESO customer-reliability and supply security standards, including the cost of implementing, and impact to utilities, customers, communities, and stakeholders. The IESO will then report on these recommendations.

Engagement

The IESO will be conducting this initiative with regular engagement with the OEB to ensure that this activity is coordinated with their review of customer reliability.

Engagement activities will seek feedback from the public, including specific segments such as:

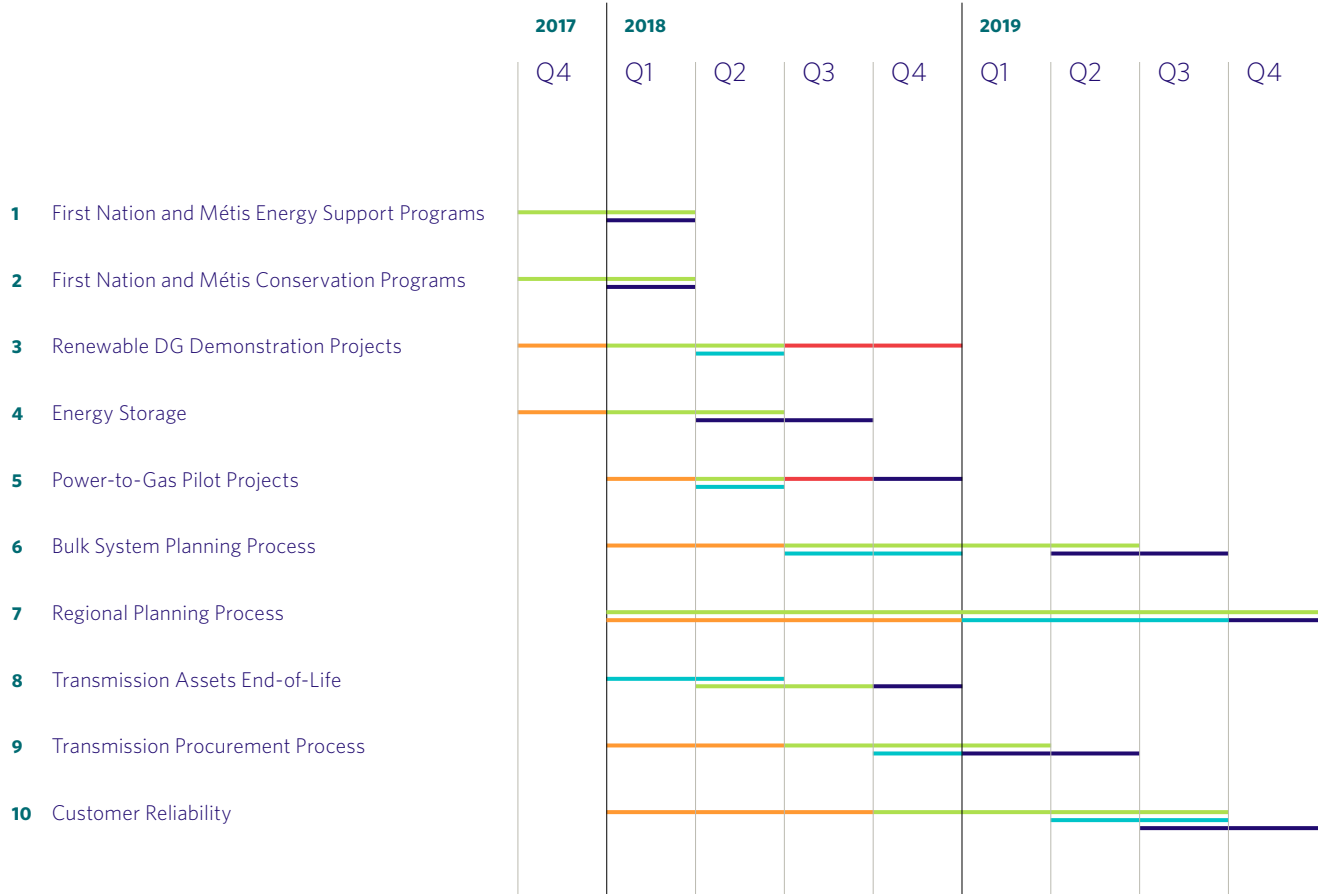
- Indigenous communities and representatives
- Municipalities
- LDCs and Transmitters
- Transmission connected customers

The IESO will be seeking feedback on the customer experience of reliability delivered by the IESO-controlled grid, relative weighting of some attributes the IESO will be using as decision-making criteria to compare alternatives, and draft alternatives and recommendations.

Initiative Milestones

Q1 - Q3 2018	Review customer reliability impacts due to disturbances on the IESO-controlled grid
Q4 2018 - Q1 2019	Engagement on themes raised in the review and on stakeholder preferences of reliability (e.g. based on cost-benefit analysis)
Q2 - Q3 2019	Development of a draft report summarizing alternatives and recommendations and engagement on the draft report
Q3 - Q4 2019	Report on recommendations for changes to criteria

Timeline of Activities



- Gather data and information
- Engagement
- Draft documents/processes for engagement
- Calls for demonstration projects or expressions of interest
- Concluding activities

The Implementation Plan was informed by engagement. Where possible, the timing of activities incorporates the feedback received or has been designed to maximize efficiencies across the various engagements for customers, communities and stakeholders.

*This timeline may be subject to change.
Engagement plans will be developed for each initiative.

Addendum: Changes to How We Define “Conservation”

As announced in the 2017 Long-Term Energy Plan, the IESO is making changes to how it defines conservation. These changes come as the IESO continues to work with stakeholders on a comprehensive mid-term review of the Conservation First Framework and Industrial Accelerator Program.

Distribution System Conservation


The IESO now allows any measures a distributor uses to maximize the efficiency of its new or existing distribution system infrastructure, excluding general plant buildings and fixtures, to count towards a distributor’s targets under the Conservation First Framework. Examples include savings that come from reducing transmission line losses or optimizing voltage levels.

Distribution system conservation can result in electricity savings and peak demand reductions for customers behind-the-meter and increase the efficiency of the distribution system. Distribution system conservation measures will continue to be funded through distribution rates.

Excluding Behind-the-Meter Fossil Fuels

To align with the government’s climate change policies, behind-the-meter generation that uses fossil fuels purchased from, or otherwise supplied by, a third party as their primary fuel source will no longer count as conservation under the Conservation First Framework and the Industrial Accelerator Program. Behind-the-meter generation, where the electricity is generated primarily from heat or fuel that is a waste by-product of a facility will continue to be eligible.

This change will be in effect for applications for projects received by the IESO on or after July 1, 2018.



Appendix: Ministry of Energy 2017 Long-Term Energy Plan Directive to the IESO



**Order in Council
Décret**

On the recommendation of the undersigned, the Lieutenant Governor, by and with the advice and concurrence of the Executive Council, orders that:

Sur la recommandation du soussigné, le lieutenant-gouverneur, sur l'avis et avec le consentement du Conseil des ministres, décrète ce qui suit:

WHEREAS the Minister of Energy has, with the approval of the Lieutenant Governor in Council, issued the Long-Term Energy Plan, 2017 setting out and balancing the Government of Ontario's goals and objectives respecting energy for the period specified by the plan;

AND WHEREAS the Minister of Energy may, with the approval of the Lieutenant Governor in Council, issue a directive to the Independent Electricity System Operator (IESO) pursuant to subsection 25.30 (1) of the *Electricity Act, 1998* setting out the Government of Ontario's requirements respecting the implementation of the Long-Term Energy Plan, 2017 by the IESO and any other related requirements, and the date by which the IESO must submit an implementation plan to the Minister;

NOW THEREFORE the Directive attached hereto is approved.

ATTENDU QUE le ministre de l'Énergie a, avec l'approbation du lieutenant-gouverneur en conseil, rendu public le Plan énergétique à long terme de 2017, qui énonce et équilibre les buts et objectifs du gouvernement de l'Ontario en matière d'énergie pour la période prévue par le plan; par le plan;


ATTENDU QUE le ministre de l'Énergie peut, avec l'approbation du lieutenant-gouverneur en conseil, donner une directive à la Société indépendante d'exploitation du réseau d'électricité (SIERE) en vertu du paragraphe 25.30(1) de la *Loi de 1998 sur l'électricité* énonçant les exigences du gouvernement de l'Ontario en ce qui concerne la mise en œuvre du plan énergétique à long terme de 2017 par la SIERE et toute autre exigence s'y rattachant, ainsi que

la date limite à laquelle la SIERE doit présenter un plan de mise en œuvre au ministre;

POUR CES MOTIFS, la directive jointe aux présentes est approuvée.



Recommended: Minister of Energy
Recommandé par: Ministre de l'Énergie



Concurred: Chair of Cabinet
Appuyé par: Le président/la présidente du Conseil des ministres

Approved and Ordered: OCT 25 2017
Approuvé et décrété le:



Lieutenant Governor
La lieutenant-gouverneure

MINISTER'S DIRECTIVE

TO: THE INDEPENDENT ELECTRICITY SYSTEM OPERATOR

I, Glenn Thibeault, Minister of Energy, hereby direct the Independent Electricity System Operator ("IESO") pursuant to section 25.30 (1) of the *Electricity Act, 1998*, as follows: The IESO shall submit to me by no later than January 31, 2018, an implementation plan containing an outline of the steps that the IESO intends to take to implement the goals and objectives set out in *Delivering Fairness and Choice*. The plan shall reflect the content of the relevant chapters of *Delivering Fairness and Choice* and include steps that clearly demonstrate how the IESO plans to implement the policy reviews, processes and programs enumerated below. The implementation plan should comprehensively detail the key implementation milestones for each initiative, provide sufficient detail on process and timing, and articulate intended outcomes. The implementation plan should also include how the IESO will engage with the public, Indigenous communities and stakeholders including electricity transmission and distribution companies and large power consumers on the policy reviews, processes and programs enumerated below.

1. Supporting Indigenous Capacity and Leadership

With respect to the Government of Ontario's objective of supporting local opportunities in the electricity sector for First Nations and Métis and improving the availability of conservation programs for First Nations and Métis, the IESO shall:

- 1.1 Review and propose options to improve energy support programs currently offered by IESO to First Nations and Métis, with the objective of better aligning programs with community needs and interests. Options proposed shall include activities related to the implementation of community energy plans and be informed by engagement with First Nations and Métis.
- 1.2 Prepare a report on options to improve conservation programs, and access to programs, for First Nations and Métis, including communities served by Independent Power Authorities. This report will include an assessment of existing programs offered under the Conservation First Framework (CFF) and the Demand Side Management (DSM) Framework, as well as energy support programs. The report timing shall be aligned with the Mid-Term Review of the CFF and be informed by engagement with First Nations and Métis.

2. Encouraging an Innovative Sector

With respect to the Government of Ontario's objectives of modernizing the energy system and removing barriers to innovation, the IESO shall:

- 2.1 Develop a program to support a select number of innovative renewable distributed generation demonstration projects, strategically located and paired with other distributed energy resources and smart-grid technologies, as well as virtual net-metering demonstration projects. The program shall be administered by IESO, and will inform future grid modernization and net metering policies, support grid interoperability and be aligned with market renewal.
- 2.2 In coordination with the Ontario Energy Board, review market rules, industry codes, and regulations, in order to identify potential obstacles to fair competition for energy storage with other technologies in the delivery of services and, where appropriate, propose mitigation strategies.
- 2.3 Identify options for pilot projects that evaluate the electricity system benefits, costs and GHG emission reductions of using electricity to create hydrogen.

3. Delivering a Flexible and Efficient System

With respect to the Government of Ontario's objectives of ensuring a flexible energy system delivering efficiency and value to consumers, enhancing reliability, recognizing regional priorities and ensuring public engagement in the electricity sector, the IESO shall:

- 3.1 Develop a formal integrated bulk system planning process that ensures solutions are identified transparently as needs materialize. The process shall also include a coordinated, cost-effective, long-term approach to replacing transmission assets at end of life, in order to better align investments with power system and market conditions and needs, including with respect to system operability and resilience, integration of distributed energy resources and customer reliability. In doing so, the IESO shall request information, as required, from transmission asset owners.
- 3.2 Develop a competitive transmitter selection or transmission procurement process that is transparent, efficient and able to respond to changing policy, market and system needs. In addition to other details the IESO considers appropriate, the IESO may include the following in its implementation plan:
 - identification of specific pilot projects, if any are suitable, to be selected based on the suitability of their scale, scope and need timeframe for a competitive selection or procurement process;
 - an implementation strategy including milestone dates and key objectives taking into consideration competitive tension, transparency, Indigenous community participation in the sector and other factors the IESO considers relevant;

- consideration of the option of a tiered process scaled to the complexity of project; and
 - identification of potential amendments to statutes, regulations, policies or programs that would support the implementation of the proposed transmitter selection or procurement processes.
- 3.3 Review and report on the regional planning process, taking into account lessons learned, and provide options and recommendations. The IESO may use existing processes and working groups in its review and consult stakeholders and experts, and, in addition to other details the IESO considers appropriate, shall:
- identify barriers to the implementation of cost effective non-wires solutions such as conservation and demand management and distributed energy resources, and provide options to address any such barriers, including potential legislative or regulatory changes, as well as options to address local distribution company capacity;
 - propose approaches for improving the integration of regional planning with bulk system, distribution and community energy planning, and approaches to ensure alignment with market-based approaches;
 - include consideration of improved planning for replacement of transmission assets reaching end of life; and
 - propose approaches for streamlining the regional planning process.
- 3.4 Review and report on its technical criteria used to assess customer reliability in order to identify and evaluate options for local area enhancements. In addition to other details the IESO considers appropriate, the IESO shall consider potential improvements to customer load restoration criteria, including in remote areas, and the cost and funding of any proposed changes including impacts on electricity consumers, distribution and transmission utilities and other stakeholders.

Ministry of Energy

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OCT 26 2017

Mr. Peter Gregg
President and Chief Executive Officer
Independent Electricity System Operator
1600–120 Adelaide Street West
Toronto ON M5H 1T1

Dear Mr. Gregg

RE: Amendments to Ministerial Directions Arising from the Long-Term Energy Plan 2017

I write in my capacity as the Minister of Energy in order to exercise the statutory power I have to amend or revoke continued directions issued to the Independent Electricity System Operator (IESO) under the *Electricity Act, 1998*, as amended (the "Act").

This direction implements *Delivering Fairness and Choice* by making the following changes to conservation and Indigenous support programs.

Background

Conservation

On March 31, 2014 the then Minister of Energy issued a direction to the Ontario Power Authority (now IESO) to coordinate, support and fund the delivery of Conservation and Demand Management (CDM) programs through electricity distributors to achieve a total of 7 terawatt hours (TWh) of reductions in electricity consumption between January 1, 2015 and December 31, 2020. The Distributor CDM target was set in order to remain on track to achieve the provincial target of 30 TWh in 2032, as outlined in the 2013 LTEP, *Achieving Balance: Ontario's Long Term Energy Plan*.

Delivering Fairness and Choice commits to expand the scope of conservation to recognize distribution system energy efficiency, and seeks to align conservation initiatives with initiatives identified in the 2016 to 2020 Climate Change Action Plan.

Support Programs

On November 21, 2014, the then Minister of Energy issued a direction to the Ontario Power Authority (now IESO) to improve and streamline various Energy Partnership Programs, including the Aboriginal Energy Partnerships Program (“AEPP”). The IESO was directed to consolidate certain programs, including the Aboriginal Renewable Energy Fund and Aboriginal Transmission Fund portions of the AEPP, into one new program consisting of two funding streams: the Partnership Stream, and the Project Development Stream.

Direction

Therefore, pursuant to my authority under subsection 25.32(11) of the *Electricity Act, 1998*, I hereby make the following amendments to the directions listed below:

1. Conservation

With respect to the Ministerial Direction dated March 31, 2014, titled “2015-2020 Conservation First Framework”:

1.1 Section 7 is amended by adding the following:

7.2 Notwithstanding the definition of CDM set out in Section 7.1, CDM shall be considered to exclude behind the meter customer generation that uses fossil fuels purchased from or otherwise supplied by a third party as a primary fuel source where the application for the project is received by the IESO on or after July 1, 2018. For greater clarity, CDM shall continue to be inclusive of behind the meter generation, where the generation of electricity is primarily from heat or fuel that is a waste by-product of a facility.

7.3 Notwithstanding the definition of CDM established in Section 7.1, the IESO shall allow reduced electricity consumption resulting from any measures a Distributor uses to maximize the efficiency of its new or existing distribution system infrastructure, excluding general plant buildings and fixtures, to count towards a Distributor’s CDM Target for the purpose of the Distributor being eligible to receive the tiered performance incentives described in Section 1.6(i) at the end of the 2015-2020 Conservation First Framework.

1.2 Section 5 is amended by removing and replacing 5.1 with the following:

5.1 The IESO shall continue to produce and publish an annual report on overall progress toward achieving the provincial CDM target of 30 TWh, including contribution to the target achieved through each of the following:

- i) Province-Wide Distributor CDM Programs,
- ii) Local Distributor CDM Programs,
- iii) measures used by a Distributor to maximize the efficiency of their new or existing distribution system infrastructure, excluding general plant buildings and fixtures, where the resulting electricity reductions are counted towards a Distributor's CDM Target by the IESO,
- iv) demand response programs,
- v) programs for transmission connected customers, and
- vi) product codes and standards.

The annual report shall cover the period from January 1 to December 31 of the previous year.

With respect to the Ministerial Direction dated July 25, 2014, titled "Industrial Accelerator Program":

1.3 Section 6 is amended by adding the following:

6.2 Notwithstanding the definition of CDM set out in Section 6.1, CDM shall be considered to exclude behind the meter customer generation that uses fossil fuels purchased from or otherwise supplied by a third party as a primary fuel source where the application for the project is received by the IESO on or after July 1, 2018. For greater clarity, CDM shall continue to be inclusive of behind the meter generation, where the generation of electricity is primarily from heat or fuel that is a waste by-product of a facility.

2. Support Programs

With respect to the Ministerial Direction dated November 21, 2014 titled "Support Programs":

2.1 References to "Aboriginal" shall be replaced with "Indigenous".

2.2 Section 1 is amended by deleting "soft" in section 1.2.

2.3 Section 1 is amended by deleting section 1.3.

2.4 Section 1 is amended by deleting "...under the FIT and Large Renewable Procurement ("LRP") Programs" in the third and fourth line of section 1.4 and deleting "...under the FIT Program" in the fifth line of section 1.4.

2.5 Section 4 is amended by deleting the phrase “major transmission lines” in the fourth line and replacing it with “transmission facilities”.

2.6 Section 4 is replaced by:

“First Nations and Métis shall also be eligible for funding from the Partnership Stream for the due diligence work required to assess and develop opportunities for participation with licensed transmitters, or entities seeking to become licensed, in those future transmission facilities that have been included in regional plans, bulk system plans or the Long Term Energy Plan and for which the Ministry has determined it is prudent to commence development work, including but not limited to the East-West Tie Expansion Line, the Transmission Line to Pickle Lake, the Northwest Bulk Transmission Line, Remote Community Connections, or others that may be conveyed to the IESO by the Minister in writing.”

2.7 Section 5 is amended by deleting the phrase “and Aboriginal Renewable Energy Network (“AREN”) and deleting the phrase “and to provide a web-based resource for conservation and renewable energy development respectively” along with such other modifications as are necessary.

2.8 Section 6 is amended by deleting the phrase “municipalities, public sector entities, and co-operatives”.

2.9 Section 7 is amended by deleting the acronym “AREN” in the second line.

This direction takes effect on the date it is issued. It supplements and amends previous directions to the extent that a previous direction is inconsistent with the provisions of this direction. All other terms of any previous direction remain in full force and effect.

Sincerely,



Glenn Thibeault
Minister

- c. Tim O'Neill, Chair, Independent Electricity System Operator
Serge Imbrogno, Deputy Minister, Ministry of Energy
Maud Murray, Director, Legal Services Branch,
Ministries of Energy; Economic Development, Employment and Growth;
Infrastructure; Research, Innovation and Science; and Accessibility

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