APRIL 23, 2025

Long Lead-Time Resource Procurement

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Territory Acknowledgement

The IESO acknowledges the land we are delivering today's webinar from is the traditional territory of many nations including the Mississaugas of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee and the Wendat peoples and is now home to many diverse First Nations, Inuit and Métis peoples. We also acknowledge that Toronto is covered by Treaty 13 with the Mississaugas of the Credit First Nation.

As we have attendees from across Ontario, the IESO would also like to acknowledge all of the traditional territories across the province, which includes those of the Algonquin, Anishnawbe, Cree, Oji-Cree, Huron-Wendat, Haudenosaunee and Métis peoples.

Overview

- This engagement is conducted according to the IESO Engagement Principles posted on the IESO Website
- Today's presentation will be recorded and available for viewing online following the session
- All documents associated with this session can be found on the LLT Engagement Webpage

Participation

- For questions and comments, click on the "raise hand" icon (hand symbol) at the top of the application window
- To unmute audio, click on the microphone icon at the top of the application window
- Audio should be muted when not asking a question
- If experiencing connection issues, contact engagement@ieso.ca or Microsoft Office Support

Purpose

The purpose of this session is to share insights from the Long Lead-Time Resources Request for Information (RFI) and discuss considerations related to the design of a Long Lead-Time (LLT) Resource Procurement.

Agenda

Today's engagement will cover the following:

1. Meeting System Needs
2. Summary of Long Lead-Time RFI Responses
3. LLT Resource Procurement Design Considerations
4. Next Steps

Meeting System Needs

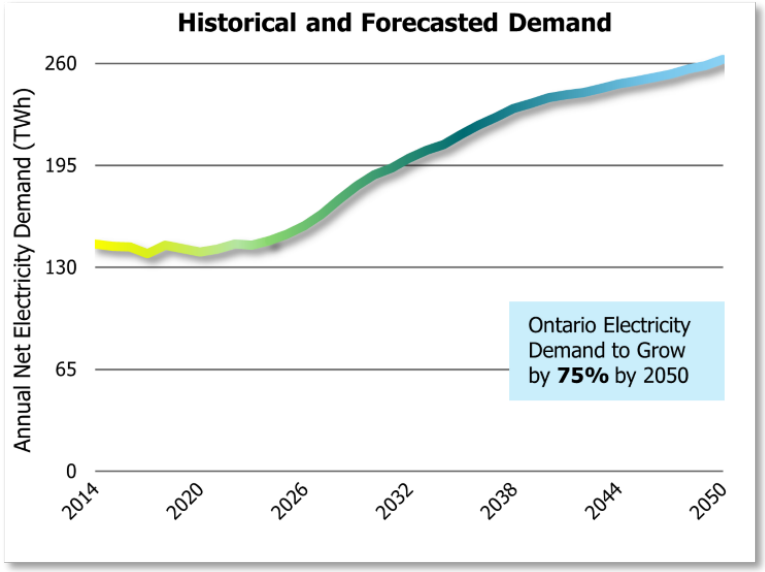
Ontario's Changing Electricity Landscape

This is a **pivotal point** for the electricity system. Ontario is entering a period of growing needs – by 2050, **electricity demand is expected to grow by 75%.**

These needs are being driven by **continued electrification** as well as **recent developments in industrial and data centre growth**.

This demand growth is happening in the midst of expiring generator contracts and nuclear refurbishments.

To meet the emerging needs, **Ontario will require new electricity infrastructure**, including new supply and transmission.



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Resource Adequacy Framework

To ensure reliability through this period of demand growth, the IESO has developed its Resource Adequacy Framework to ensure that multiple tools are available to meet emerging and growing energy and capacity needs:

Capacity Auction	Medium-Term Procurements	Long-Term Procurements	Programs	Bilateral Negotiations
Balances fluctuations in capacity needs from one year to the next. Executed on an annual basis.	Provides existing resources with greater certainty through flexible forward periods and 5- year commitments.	Incentivizes investment in new resources through longer forward periods and 20+ year commitments.	Meets electricity policy objectives in a more targeted manner, as directed (e.g., Small Hydro Program).	Secures resources where a need exists that cannot be addressed in a practical and timely way through competitive processes.

Ontario's Emerging System Needs

- To meet needs in the 2030s and beyond, new supply resources will be required.
  - A significant portion of energy needs emerging in the mid-2030s are expected to be met by new and refurbished nuclear facilities.
  - Additional resources will also be required, some of which will be secured through the Long-Term 2 (LT2) RFP and future long-term procurements.
- The Long Lead-Time (LLT) Resource Procurement provides an opportunity to procure additional resources that can be available starting in the mid-2030s in order to:
  - Promote an even more diverse supply mix by enabling resources that would otherwise not be built under the LT2 RFP; and
  - Provide a hedge against potential in-service delays of resources that are/will be expected to be operational during this period, further enhancing system reliability.

Long-Term Procurements: Review & Outlook

- Over the last few years, the IESO secured **over 3,000 MW** of year-round capacity services from new build and eligible expansion resources, to be in service by 2028, through the Expedited Long-Term 1 (E-LT1) and Long-Term 1 (LT1) procurements.
- With a need for more energy producing resources on the horizon, the LT2 RFP is targeting **up to 14 TWh** of new energy producing resources, and **up to 1,600 MW** of new capacity resources, to be in service between 2029-2034.
- While the current procurement framework helps enable new electricity generation projects with lead times of approximately 4 years, the IESO recognizes that certain resources, such as hydroelectric generation and certain types of long duration energy storage (LDES) may require longer development timelines.
- In order to further evaluate the needs of these resources, the IESO issued a Request for Information (RFI) for long lead resources, which closed in November 2024

Summary of Long Lead-Time RFI Responses

Long Lead-Time Resources RFI: Overview

- In September 2024, the IESO launched a Request for Information (RFI) focused on long lead-time resources, in particular LDES and hydroelectric generation.
- The intent of the RFI was to gather information to better understand how long lead-time resources can participate in current and future IESO procurements for electricity resources and contribute to a reliable and efficient electricity system in Ontario.
- Stakeholder participation in the RFI was helpful for the IESO to understand potential projects and to consider the risks/challenges developers anticipate facing in a future IESO procurement for long lead-time resources.

Long Lead-Time Resources RFI: Participation

- The IESO would like to thank everyone who participated in the Long Lead-Time Resources RFI. Your feedback is vital in shaping procurement design and supporting energy planning for a reliable and efficient electricity system.
- The Long Lead-Time Resources RFI received over 70 submissions, demonstrating a high level of stakeholder engagement.
- Responses were received from hydro developers with projects of varying sizes, and in relation to both pilot and commercialized LDES technologies, providing insight into what the IESO can expect from these resources in the future.

Stay Connected for Future RFIs

The Resource Adequacy RFI will be conducted regularly. Stay informed and involved to ensure that your voice continues to be heard in shaping future energy initiatives.

How to Stay Informed:

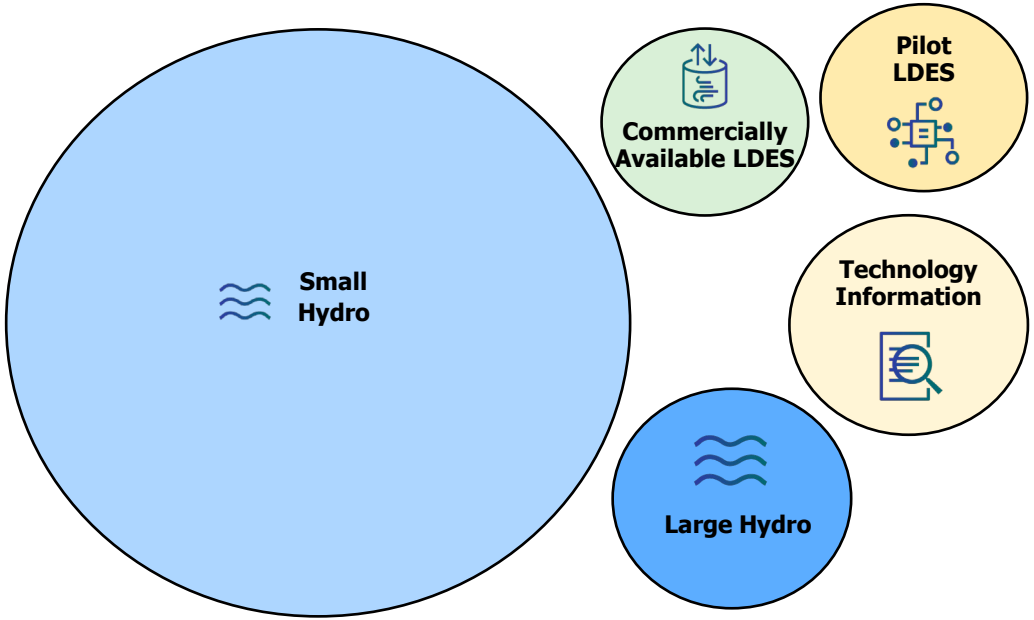
- The Request for Information - Resource Adequacy webpage will be the primary source for updates on current and future Resource Adequacy RFIs.
- Subscribe to the IESO Weekly Bulletin to receive announcements about other RFIs and new updates or postings on the Resource Adequacy RFI webpage.

Overview of RFI Submissions

Responses received generally reflected four resource categories:

Resource Category	Description
Small Hydro	Run of river resources with expected installed capacities less than 10 MW; mostly new build facilities with a handful of expansions
Large Hydro	New build or expansion run of river and pondage/storage resources with expected installed/incremental capacities greater than 10 MW
Large, Commercially Available LDES	New large-scale projects (greater than 50 MW) in respect of LDES technologies that are commercialized (e.g., compressed air energy storage, pumped hydro storage) or expected to be commercialized by the end of 2030
Demonstration/Pilot Scale LDES	New projects or technology information regarding novel technologies that are still in the pilot phase of development

Long Lead-Time Resources RFI: Results



- 49 small hydro project submissions (some in respect of the same proposed project sites)
- 10 large hydro project submissions
- 8 submissions related to commercially available LDES technologies
- 7 submissions related to pilot LDES technologies
- 9 submissions that provided information from technology providers with novel LDES technologies looking to partner with developers on future potential projects

*Note: Additional projects were submitted for informational purposes only and have not been included in the tallies above

Long Lead-Time Resources RFI: Results (2)

The following is an overview of key project details that were considered:

	Development Timeline	Project Lifetime	Project Status
Hydroelectric Generation	**An average of 6-8 years**, with larger projects requesting up to 9 years	**40+ years,** with some respondents indicating lifetimes of up to 100 years.	**Varied;** certain projects have secured sites, initiated permitting and commenced community engagement and others are still assessing project viability and/or potential participation options for their technology type
Long Duration Energy Storage	**3 years for pilot scale; ~7 years for commercially available**, with some projects requesting up to 10 years.	**10-50 years** depending on technology type and project size	

Key Challenges and Risks Identified

Procurement Timelines & Design

- Respondents requested more clarity on milestones (e.g., proposal submission deadline) and key design elements before advancing project development
- Timelines will also help inform eligibility for grants and federal investment tax credits (e.g., Clean Technology Investment Tax Credits) which can support project development

Project Siting and Permitting

- Respondents flagged uncertainties related to timing for obtaining site access and finalizing project permits; encouraged coordination with other government agencies

Cost Increases

- Due to long development timelines, respondents expressed concerns that the cost of materials or long-term debt may increase during the pre-commercial operation period

LLT Resource Procurement Design Considerations

Overarching Principles

The IESO will be guided by the following principles in designing the LLT:

Provide clarity on key design elements to enable project development

Certainty

Competition

Separate energy and capacity streams

Targets established based on system needs and market insights

Implement measures to ensure project pricing is competitive (e.g., price ceiling)

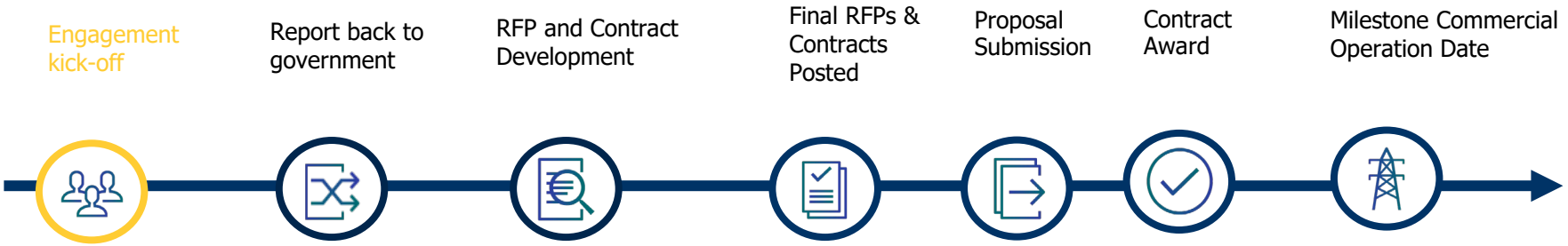
Cost-Effectiveness

Efficiency

LT2 design as a baseline and only make changes necessary to enable participation of long lead-time resources

Illustrative Procurement Milestones

Procurement milestones and associated timelines for LLT are under development:



On-going engagement

RFP and Contract Design Considerations

Defined Terms

- Capitalized terms used in this section of the presentation reflect defined terms under the draft LT2(e-1) and LT2(c-1) RFPs and Contracts.
- Please refer to these documents for further details (see LT2 RFP webpage).

Resource Eligibility: Hydroelectric Resources

- The IESO is proposing that the LLT be open to participation from **hydroelectric generation** resources that are equal to or greater than 1 MW and capable of being registered as a market participant
- Hydro resources will be eligible to participate in the energy stream, with the exception of pumped hydro storage which is expected to participate in the capacity stream
- As a reliability-based procurement, the LLT Resource Procurement is intended to be for new build facilities, however the IESO has received feedback requesting consideration for hydro redevelopments, expansions and upgrades to participate
    - The IESO is open to exploring this further and is seeking further information from stakeholders to understand the nature of these projects (e.g., development work required and metering arrangements for expansions and upgrades)

Resource Eligibility: LDES Resources

- In response to the RFI, a variety of LDES technologies were submitted for consideration, including those that are commercialized, emerging (some of which are expected to be commercialized near the end of this decade), and in the pilot phase of development
    - Certain LDES technologies (e.g., multi-day energy storage resources) that are still in the demonstration phase will require additional research and study to determine the benefits they can provide to Ontario's electricity grid in the future.
- To ensure resources secured under the LLT Resource Procurement will be capable of operating reliably over the contract term, the IESO is proposing that the capacity stream will be open to **commercially-proven long lead time LDES technologies** that are equal to or greater than 1 MW and capable of being registered as a market participant
    - The IESO will work with stakeholders to develop a list of eligible technology types

Term Length & Commercial Operation

- The IESO is proposing that all resources that are successful in the procurement will be offered contracts with a **40-year term length**
- The Milestone Date for Commercial Operation (MCOD) will be determined once the procurement timeline is finalized; it will apply across both streams and will provide a lead time of **up to 8 years** for proponents to begin/continue developing a proposed project post the expected date for contract award
- Resources that can be available prior to the established MCOD will be permitted to come in service early, provided there are no deliverability limitations; this would result in an early start to the contract term

Potential Mandatory Requirements

The following requirements apply under the LT2 RFP. The IESO expects these requirements to remain substantially the same as part of LLT Resource Procurement, however, is open to feedback on any changes that may be necessary:

Team Member Experience	Proponents must demonstrate experience in Planning, Developing, Financing, Constructing and Operating electricity generation or storage projects.
Minimum Project Size	The project must have a nameplate capacity equal to or greater than 1MW and be capable of becoming a registered facility under the Market Rules
Minimum Duration	(Capacity Stream only) - the facility must be capable of delivering a continuous amount of Electricity for at least 8 consecutive hours during Qualifying Hours

Policy Considerations: Mandatory Requirements

The following mandatory requirements currently apply under the LT2 RFP:

Municipal/Indigenous Support Confirmations	obtain support where the project is proposed to be located, in whole or in part, on Municipal or Indigenous Lands.
Project Site Restrictions	projects cannot be located on a Specialty Crop Area.
Requirements for projects located in Prime Agricultural Areas (PAA)	where the project is proposed to be located in a PAA, the proponent is required to: (a) at the time of proposal submission, confirm that the AIA Component One Requirement has been met to the satisfaction of the Local Municipality (b) post contract award, complete the AIA Component Two and Three Requirement to the satisfaction of the Local Municipality

Policy Considerations: Rated Criteria

The following rated criteria categories currently apply under the LT2 RFP :

Indigenous Community Participation	(up to 3 points) - recognizes projects with an Indigenous Participation Level of greater than 10%
Local Indigenous Community Participation	(up to 3 points) - recognizes projects that are located on Indigenous Lands, or lands within the treaty area of an Indigenous Community that holds an economic interest in the Proponent of at least 10%
Projects sited in a territorial district of Northern Ontario (3 points)	
Projects sited outside of Prime Agricultural areas (3 points)	

Technical Rated Criteria

- Under LT2(c-1), projects can receive rated criteria points for durations of 12+ hours
  - The LT2 RFP is technology agnostic, the preference for resources with longer durations applies across a variety of resource types
- The IESO is considering whether the rated criteria for durations of 12+ hours will remain for the capacity stream of the LLT Resource Procurement given the technologies that are expected to participate and their capabilities
- The IESO may introduce additional technical rated criteria to incentivize certain project capabilities/aspects.
- Stakeholders are encouraged to provide feedback on any other categories of rated criteria that they believe should be considered under the LLT Resource Procurement

Proposal and Contract Security

- Under the LT2 RFP, a security amount of $35,000/MW (with a minimum of $500,000 and maximum of $15 million) is required to be provided at the time of proposal submission, this amount is converted to Completion and Performance Security and held until the project comes into service, at which time it is reduced.
- The Supplier is required to post/maintain security at various stages during the procurement process and post contract award to:
  - demonstrate that the developer has the financial wherewithal to advance a project towards completion;
  - provide the IESO with comfort that a developer will make commercially reasonable efforts to complete the project on schedule and operate the facility in accordance with contractual requirements, in a way that contributes to future reliability.

Proposal and Contract Security (2)

- Due to the large scale of certain projects proposing to participate in the LLT, and the increased cost to carry the security for the longer development timeline, some stakeholders have asked the IESO to consider a phased approach to security.
    - For example, a lower amount provided as part of proposal submission, increasing to the full value over one or more milestones post contract award.
- The IESO is open to discussing further and is seeking additional feedback to be considered when developing a proposal for this design item.

Deliverability Guidance and Assessments

- Similar to the LT2 RFP, the IESO expects to evaluate deliverability of LLT projects during the Proposal Evaluation stage and is contemplating providing preliminary deliverability guidance and conducting 1:1 deliverability-focused consultations with Proponents to support and inform their project siting decisions.
- The IESO is still determining the methodology for assessing deliverability for LLT projects, including consideration for transmission enhancements under study in bulk planning.

Bulk System Planning & Long Lead-Time Resources

- The IESO conducts bulk system planning to ensure Ontario's electricity system is sufficient to meet long-term needs. This includes ensuring the transmission system can accommodate sufficient resources to meet growing provincial resource adequacy needs.
- Stakeholders are encouraged to participate in upcoming bulk system planning engagements over the next few months to understand ongoing studies for future transmission expansion throughout Ontario and provide information regarding potential LLT projects for further consideration.
- Locational information on potential resource projects will help inform the scope of transmission expansion options that will be evaluated and the future resource scenarios that will be considered for determining the economics of various reinforcement options.
- For further updates please subscribe to the IESO Weekly Bulletin.

Contract Design Considerations

- In alignment with the LT2 RFP, the IESO anticipates awarding successful energy producing resources an **Enhanced-PPA (E-PPA) style contract** and successful capacity resources a **capacity style contract**.
- To date, the IESO has only received feedback on contract design considerations from a few stakeholders
- To better inform the report back and the proposed design of the LLT contracts, the IESO is seeking additional stakeholder feedback on the LT2(e-1) and LT2(c-1) draft contracts highlighting areas that stakeholders feel should be reconsidered for LLT, or additional provisions that may be required.
- When providing feedback, stakeholders are encouraged to provide rationale for the suggested modifications to help inform decision making.

Tariffs

- The IESO acknowledges the uncertainty and risk introduced by US/Canadian tariffs and the changing global trade landscape.
- The IESO is currently evaluating approaches to address these risks for the LT2 RFP and will be seeking stakeholder feedback.
- The IESO would expect to align the LLT Resource Procurement with any approach adopted for the LT2 RFP, with potential adjustments to reflect the long development timelines of projects expected to participate in the procurement.

Next Steps

Next Steps

- The IESO invites stakeholder feedback on the materials presented today, including the proposed procurement considerations by **May 9, 2025.** All written feedback should be submitted to engagement@ieso.ca utilizing the IESO Feedback Form posted on the engagement webpage.
- Analysis of the RFI submissions and further feedback received from this engagement will feed into the IESO's report back to the Minister of Energy and Mines.
- If you have any questions regarding the LLT Resource Procurement, please send them to LLT.RFP@ieso.ca.

Q&A

Thank You

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