

NOVEMBER 18, 2026

Regulation Service RFP

Independent Electricity System Operator (IESO)

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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 Anishnaabeg, 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, Anishnaabeg, Cree, Oji-Cree, Huron-Wendat, Haudenosaunee, Métis and Inuit peoples.

Engagement Principles

This engagement is conducted in accordance with the IESO's External Engagement Framework, which includes the following principles:

- **Purposeful** – Initiate meaningful conversations that move the sector forward
- **Inclusive** – Invite many voices and diverse perspectives to the table
- **Timely** – Seek input and insight when it can have the most impact
- **Accessible** – Ensure we meet people where they are on their energy journey
- **Traceable** – Allow everyone to follow the path that is being taken
- **Transparent** – Show how engagement helped shape the final outcome

Shared Commitment to Respectful Participation

To support a focused and constructive discussion:

- We will take questions one at a time; please use the "raise-hand" feature to enter the speaking queue.
- We encourage concise and focused comments to allow time for multiple perspectives.
- Participants are encouraged to raise relevant points during the discussion and provide more detailed feedback through the written submission process.
- We ask that all participants maintain a respectful and professional tone throughout the session.
- Facilitators will guide the discussion and manage participation to stay aligned with today's focus and agenda. Where necessary, we may disable a participant's microphone to manage participation.

Purpose

To provide a high-level overview of regulation service, present the need for incremental regulation service capacity, and introduce a competitive procurement process to acquire that incremental regulation service capacity, highlighting key requirements and anticipated timelines.

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Agenda

1. What is Regulation Service?
2. Meeting Regulation Service Needs
3. Procurement Design Considerations
    - Eligibility and Technical Requirements
    - Contract Considerations
4. ERP SHIP Phase II – Updates & Linkages
5. Timelines and Next Steps

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Engagements Related to Regulation Service

The IESO is engaging with stakeholders on multiple streams related to the provision of regulation service:

ERP Storage and Co-located Hybrid Integration Project	**Regulation Service Market Rules**	**Regulation Service RFP**
Market design for enabling batteries to provide regulation service. Engagement will also discuss items related to the provision of regulation applicable across all resource types (e.g., scheduling).	Amendments to Market Rules and Market Manuals related to the **update of the performance measurement framework** applied to regulation service providers.	Development of a **competitive procurement** to secure resources that can provide regulation service.

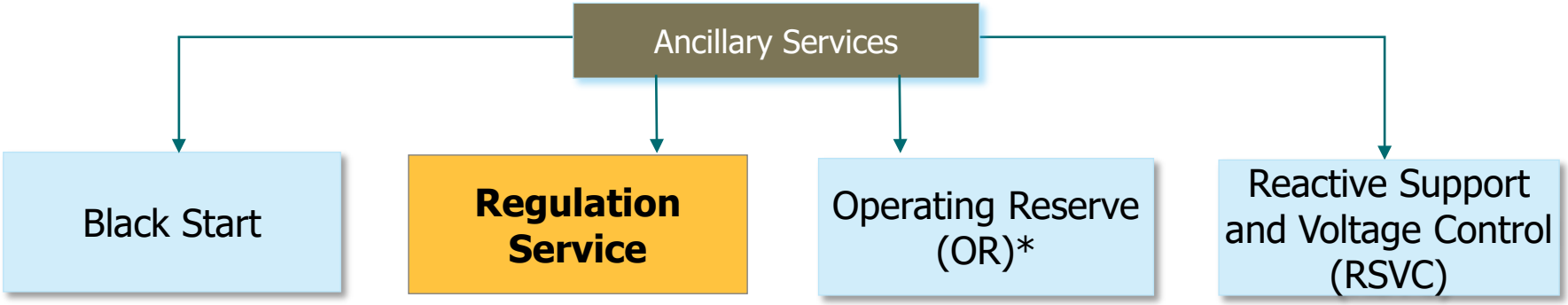
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What is Regulation Service?

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Regulation Service: An Ancillary Service

- Ancillary Services are specialized services that support the reliable operation of Ontario's power system. While they account for a small share of the total power system costs, they play a critical role in maintaining grid reliability.
- Regulation service is one of four of these critical ancillary services.



**OR is obtained from the market in Ontario*

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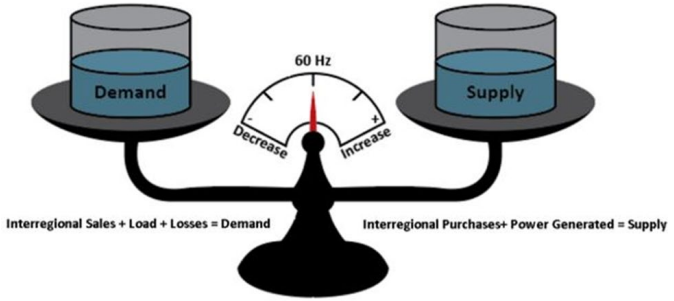
What is Regulation Service? (1)

- During normal operations, small mismatches between total demand and total supply occur.
- The system is designed to automatically respond to these small mismatches by making continuous adjustments that maintain system balance.
- Mismatches between supply and demand for different lengths of time require different services to respond.

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What is Regulation Service? (2)

Mechanism	Inertial Response	Primary Frequency Response	Regulation	Operating Reserve	Ramping Capability
What is the response time?	Immediately following a system event	Within the first few seconds following a system event	Within less than 5-minutes of a mismatch between supply and demand	Within 10 minutes or 30 minutes of a system event	Five minutes to hours
How is balancing currently achieved?	Drawn from the stored kinetic energy of rotating equipment	Automatic adjustment of energy output by generators	Signal from IESO tools to a resource to adjust energy output	Activated by the IESO	Scheduled by the IESO's dispatch scheduling engine



- For regulation service, instructions to begin ramping (up or down) are sent out as often as every four seconds.
- Ramp rates are considered, and responses occur within the dispatch interval.

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What is Regulation Service? (3)

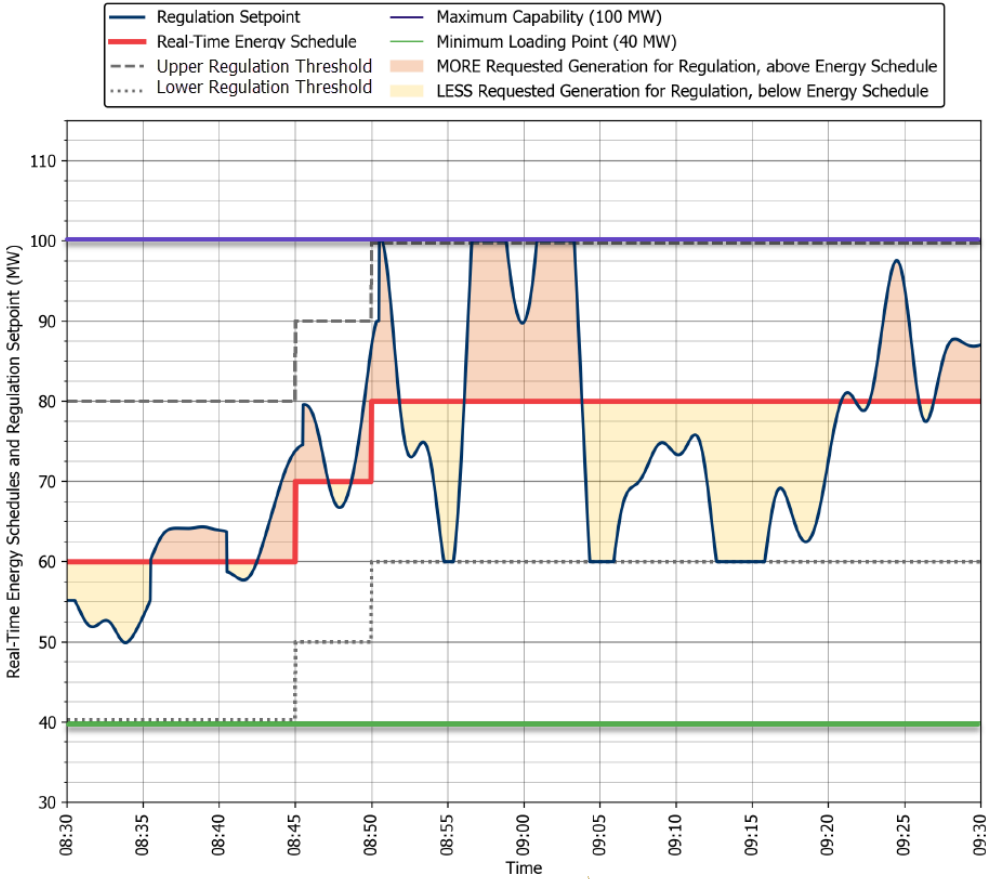
- Regulation service provides short term balancing to ensure electricity supply matches demand and is provided by resources that can automatically vary their output in response to Automatic Generation Control (AGC) signals sent by the IESO.

What is Automatic Generation Control (AGC)?

- "Regulation" and "AGC" are often used interchangeably, but they do not mean the same thing.
  - Regulation means the service required to control power system frequency and maintain the balance between load and generation.
  - Automatic Generation Control (AGC) means the process that automatically adjusts the output from a generation or electricity storage resource that is providing regulation.
- The AGC function checks system frequency and actual power flows into and out of Ontario every two seconds and then recalculates and sends regulation setpoints to resources up to every four seconds.
- Signals are smoothed to minimize unnecessary cycling of regulation resources caused by short-term small, temporary fluctuations in supply and demand.

Other Important Terms

- **Real-Time Energy Schedule** means the economic dispatch of the resource.
- **Lower Regulation Threshold** means the lower MW setpoint of the resource, based on the Regulation Capacity.
- **Upper Regulation Threshold** means the upper MW setpoint of the resource, based on the Regulation Capacity.
- **Regulation Setpoint** means the expected output of the resource as sent by the AGC tool.



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Why is Regulation Service needed?

Reliability	Changing System Needs
• To minimize large or sustained mismatches between supply and demand and keep frequency close to schedules. • To maintain compliance with the relevant reliability standard, as established by the North American Electric Reliability Corporation (NERC).	• To support the integration of larger volumes of renewable resources such as wind and solar, which generate intermittently. • To manage the forecasted load growth, including loads with highly fluctuating profiles, electrification of industrial loads and public transit electrification and expansion.

Meeting Regulation Service Needs

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Current Status

- The IESO currently schedules a minimum of ±100 MW of regulation service on a 24/7 basis, as required by the Market Rules.
- Today, regulation service needs are provided by generation facilities through bilaterally negotiated contracts; no market or competitive procurement exists.
- No formal scheduling framework exists that governs resource selection; as such, all regulation capacity that is offered from contracted facilities is scheduled prior to the close of the day ahead submission window.

Meeting Future Regulation Service Needs

- The 2026 APO identified incremental regulation needs of 30 MW in 2027 increasing to 110 MW by 2034.

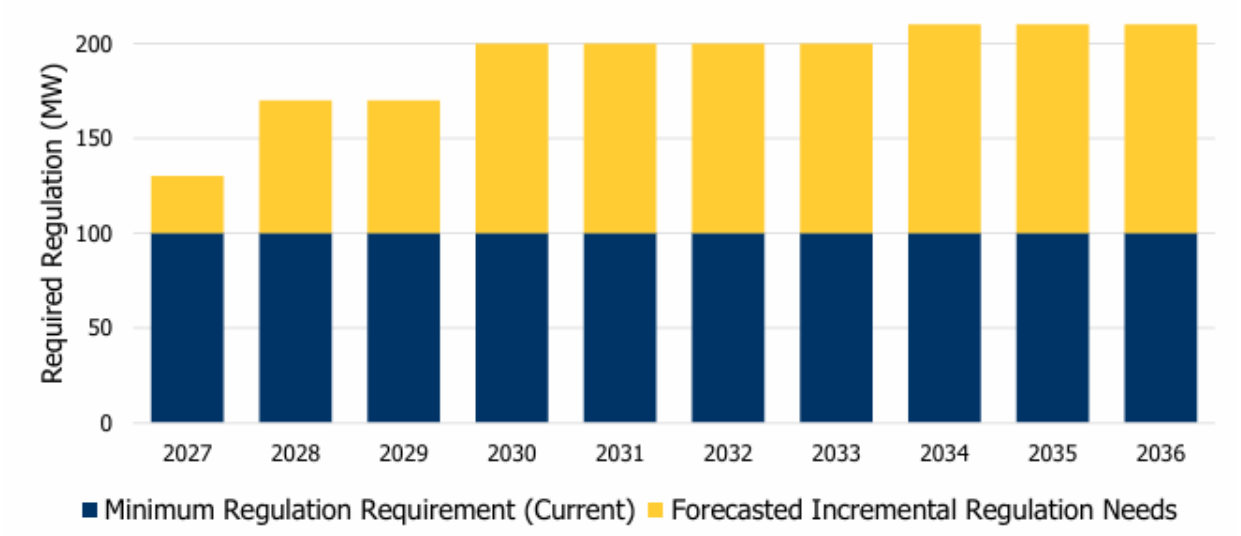


Figure 28: Forecasted Incremental Regulation needs, 2026 Annual Planning Outlook

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Meeting Longer-Term Regulation Needs

- As regulation needs continue to grow, the IESO will require a cost-effective and predictable mechanism to secure regulation service capacity on an ongoing basis.
- The IESO is introducing the Regulation Service Request for Proposals (RS RFP) to secure regulation service to meet needs that emerge as early as 2030. Stakeholder input will help shape the competitive procurement design and identify barriers to participation.
- The IESO has taken steps in recent capacity resource procurements (e.g., the LLT RFP) to have facilities become "regulation ready" (i.e., install the required equipment and complete some testing requirements), with the aim of reducing barriers to participate in future regulation service opportunities; likely to continue in future capacity procurements such as window 2 of the LT2 RFP.

Procurement Design Objectives

When designing the RS RFP, the IESO understands it will be important to:

- Provide revenue predictability through a transparent and cadenced procurement approach.
- Engage with stakeholders to determine appropriate commercial incentives, including settlement structure and contract term, while protecting ratepayer value through the consideration of operating costs of regulation resources.
- Consider interaction with performance obligations under current capacity contracts.
- Align with the Enabling Resources Program (ERP) Storage and Hybrid Integration Project (SHIP) Phase 2 timelines, which will enable batteries to provide regulation service and support increased participation in the procurement.
- Develop a clear scheduling framework that provides certainty regarding when and how regulation resources would make offers and be scheduled to provide regulation.

Procurement Design Considerations

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Overview of Procurement Design Considerations

- Eligibility & Technical Requirements
  - Resource Eligibility
  - Locational Requirements
  - Regulation Capacity Considerations
  - Ramping Requirements
  - Telemetry and IT Requirements
- Contract Considerations

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Eligibility & Technical Requirements

To be eligible to participate in the procurement, the IESO is proposing that a generation or battery storage resource meet the following requirements:

- Be an existing resource (the IESO will consider eligibility of new build resources in future procurements but will initially focus on existing resources).
- Be connected to the transmission system and meet the locational requirements.
- Be a dispatchable resource that is capable of meeting regulation performance requirements.
- Be capable of providing a minimum amount of regulation capacity (requires the provision of both regulation up and down).
- Install the required equipment and be capable of receiving and following AGC signals that are sent as frequently as up to every 4 seconds.
- Meet the minimum regulation ramp rate requirements (for resources currently providing regulation, this must be at least 50% of the offered regulation capacity per minute).

Resource Eligibility

- The initial procurement is expected to focus on existing resources capable of providing regulation service to meet incremental needs beginning in 2030.
  - An existing resource is a generation or battery storage resource that is currently in operation or expected to reach commercial operation by a specified milestone.
- The procurement is intended to support participation from a range of technologies, including conventional generation (e.g., gas, hydro), and batteries.
- Alignment with implementation of ERP SHIP Phase 2 will be important, as the program is expected to establish the market and operational framework needed to enable participation of batteries.

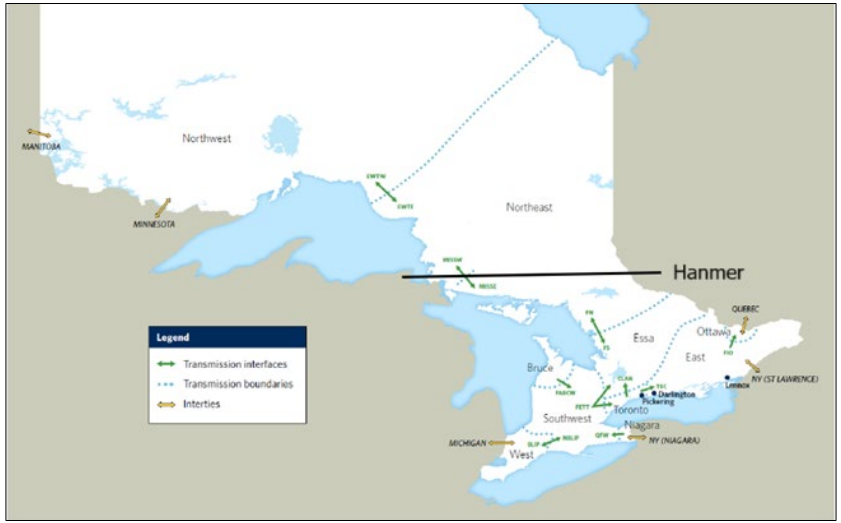
Locational Requirements

Resources located in certain electrical zones in the province are less suited to provide regulation service, for instance:

- Congested electrical zones, and
- Zones with existing or expected transmission security or voltage concerns

For these reasons, the IESO is only seeking regulation service from facilities located in Ontario, south of Hanmer TS.

More granular locational requirements will be provided in the future.



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Regulation Capacity Considerations

- The IESO is proposing that regulation resources should be capable of providing a minimum of ±10 MW of regulation capacity.
  - For example, a 25 MW resource with a minimum loading point (MLP) of 5 MW, would be capable of providing ±10 MW of regulation capacity from a basepoint of 15 MW.
    - If the same resource had a MLP of 15 MW, it would only be capable of providing ±5 MW of regulation capacity from a 20 MW basepoint, and would not be eligible to participate in the procurement.
- The IESO may also establish a maximum amount of regulation capacity that can be provided by each resource to ensure sufficient depth of supply.

Telemetry and IT Requirements

- A facility or resource providing regulation service must be capable of receiving and following control signals sent from the IESO every two seconds.
- The facility or resource's programmable logic controller (PLC) system (or alternative control system, as applicable) must be able to receive the setpoints sent by the AGC system, and the associated control system must be able to adjust the response (dependant on the technology type) accordingly, to change the output of the facility or resource according to the setpoint.

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Contract Considerations

- The IESO is considering contract term lengths of 3-5 years; this provides revenue certainty for regulation suppliers and flexibility for the IESO to adapt to changing system needs.
- The contract will require selected resources to install the required equipment and telemetry to be fully commissioned and ready to provide regulation services by the milestone date, which is anticipated to be in Q4 2029 for the first window of the RS RFP.
- The IESO will be engaging on the commercial design including revenue and performance requirements in future stakeholder engagement sessions.

ERP SHIP Phase 2 - Updates & Linkages

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ERP SHIP II – General Update

- The ERP hosted a stakeholder engagement session on Storage and Co-located Hybrid Integration Project: Phase 2 Regulation Service Design on October 15, 2026.
- The IESO presented on a variety of topics relevant to resources providing regulation service, including:
  - The Participation Model: simultaneous OR and regulation service participation, state-of-charge reservation, scheduling framework
  - Performance Evaluation: details about performance calculations
- Additional engagements on Settlements and Uplift Exemptions are being scheduled and will commence in Q1 2027.

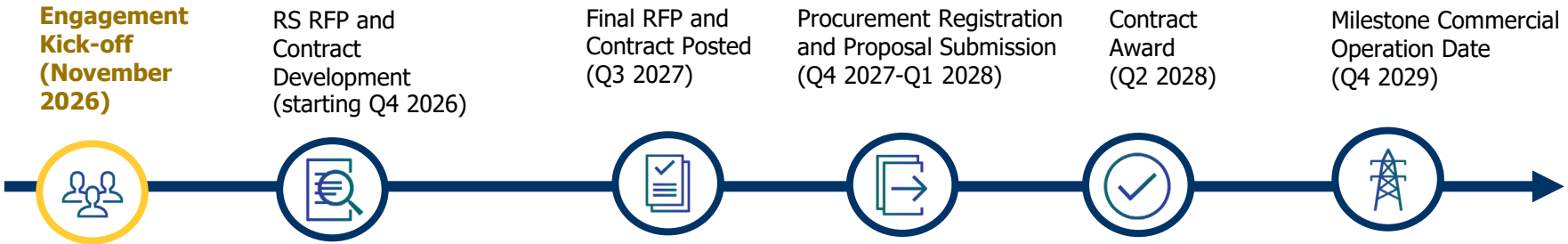
ERP SHIP Phase II – Scheduling Framework

- Currently, the IESO schedules resources for regulation on an as-offered basis.
- A new regulation resource scheduling framework is being designed that will select resources for scheduling based on a defined set of considerations; reliability and cost-based selection are both being explored.
- This framework would apply to all contracted regulation resources in the pre-DAM timeframe and is required for the future when available regulation supply exceeds the regulation requirement.
- The IESO will provide more detail on the proposed scheduling framework in a future engagement.

Timelines and Next Steps

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Proposed Procurement Timelines



**Dates provided in the timeline are subject to change*

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Further Stakeholder Feedback Requested

- In addition to feedback on the materials presented today, the IESO is seeking input from stakeholders to understand:
  - Challenges/barriers to resource participation in the RS RFP (e.g., cycling-related degradation, warranty limitations, interactions with current contract requirements).
  - Capabilities, limitations, and operating costs of different eligible technology types.
  - What features of the regulation opportunity would help inform investment decisions and incentivize participation in the procurement.

Next steps

- The IESO invites stakeholder **feedback on the materials presented today by December 2, 2026**, using the feedback form posted on the website.
- The IESO will hold the next RS RFP engagement session in January 2027 and will present further details on key design elements.
- Stakeholders are encouraged to participate in related engagements, including the Enabling Resources Program (ERP) and Updates to Regulation Services Testing and Evaluation.
- Feedback forms can be submitted to engagement@ieso.ca and general questions can be directed to RS.RFP@ieso.ca

Thank You

ieso.ca

1.888.448.7777

customer.relations@ieso.ca

engagement@ieso.ca

@OntarioIESO

linkedin.com/company/IESO

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Appendix

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Telemetry and IT Requirements for Regulation Service Providers

- Market Rules Chapter 5, Appendix 5.1, Sections 1.1.1 and 1.1.2
- Market Rules Chapter 4, Section 7.3 and 7.3A
- Market Rules Chapter 4 Appendices 4.15, 4.19, 4.24, and 4.25
- Market Manual 6: Participant Technical Reference Manual, Sections 3 and 4

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Control System Performance Requirements for Regulation Service Providers

- Market Rules Chapter 5, Appendix 5.1, Sections 1.1.6 and 1.1.7
- Market Manual 6: Participant Technical Reference Manual, Sections 3 and 4
- Market Rules Chapter 4, Appendix 4.2, Categories 1, 2 and 3, and associated requirements:
  - NERC standards MOD-027 and PRC-024
  - Ontario Resource and Transmission Assessment Criteria (ORTAC)
- Market Manual 1.6: Performance Validation
- IESO Form 58, Form 69 and Form 70

Ramping Requirements for Regulation Service Providers

- Market Rules Chapter 5, Appendix 5.1, Sections 1.1.3, 1.1.4
- Market Rules Chapter 5, Sections 4.4.2

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Testing Requirements for Regulation Service Providers

- Market Rules Chapter 5, Section 4.9.2.6

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Regulation Capacity Requirements

- Market Rules, Chapter 5, Appendix 5.1, Section 1.1.4 and 1.1.5.

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