JULY 21, 2026

IESO Engagement Days

Pseudo-Unit (PSU) Updates: Review of Proposed Market Rule Amendments

Independent Electricity System Operator (IESO)

ieso
Connecting Today. Powering Tomorrow.

Disclaimer

This presentation and the information contained herein is provided for informational purposes only.

The IESO has prepared this presentation based on information currently available to the IESO and reasonable assumptions associated therewith, including relating to electricity supply and demand. The information, statements and conclusions contained in this presentation are subject to risks, uncertainties and other factors that could cause actual results or circumstances to differ materially from the information, statements and assumptions contained herein.

The IESO provides no guarantee, representation, or warranty, express or implied, with respect to any statement or information contained herein and disclaims any liability in connection therewith. In the event there is any conflict or inconsistency between this document and the IESO market rules, any IESO contract, any legislation or regulation, or any request for proposals or other procurement document, the terms in the market rules, or the subject contract, legislation, regulation, or procurement document, as applicable, govern.

Territory Acknowledgement

The IESO acknowledges the land from where we are delivering today's webinar is the traditional territory of many nations including the Mississaugas of the Credit, the Anishnabeg, 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 the traditional territories across the province, which include those of the Algonquin, Anishnabeg, Ojibwe, 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

Agenda

- Recap of Current PSU Design Limitations
- Proposed Dispatch Scheduling Optimization (DSO) Enhancement with Red-Line Documents
    - **Item 1:** Combustion Turbine (CT) outages and allocation of Steam Turbine (ST) derates
    - **Item 2:** Derates and constraints below PSU Minimum Loading Point (MLP)
    - **Item 3:** Ramp rates when CT and ST come online at different times.
- Next Steps and Timelines

ieso
Connecting Today. Powering Tomorrow.

Background

- Following the launch of the renewed Market in May 2025, specific discrepancies were identified in how PSU resources were being scheduled, which resulted in infeasible schedules under certain situations.
- Workarounds for these discrepancies were implemented in June 2025 to minimize the impact (see PSU Resources Interim Workarounds)
- The proposed enhancements to the DSO scheduling of PSU resources will eliminate some of those interim workarounds
- This engagement session provides an overview of the required corrections to the formulas and proposed market rule amendments

Recap of Current PSU Design Limitations

- Derates on the ST are allocated pro-rata amongst all PSUs at a station that has offers submitted without accounting for the availability status from CT outage slips.
- Derates or constraints applied on CT or ST below the DSO engine's calculated MLP results in PSU dispatch to 0 MW [applies to Non-Quick Start (NQS) resources as well]
- Delayed ST ramp relative to CT causes ramp rate discrepancies

ieso
Connecting Today. Powering Tomorrow.

Enhancement 1: CT outages and allocation of ST derates

ieso
Connecting Today. Powering Tomorrow.

Enhancement 1: Example

Given a 3x1 PSU plant (200MW per CT, 450MW ST) and the percentage share of ST is equal across all PSUs.

Scenario: One CT is forced out of service with an outage slip and the ST total capacity is derated to 300MW. All three CTs kept offers in.

- **Current outcome:** The derated ST 300MW capacity is split amongst all CTs with offers present – i.e. does not consider outage slips. The available two PSUs would have a capacity of 200MW + (300MW/3) = 300MW each
- **Proposed change:** the available two PSUs would have a capacity of 200MW + (300MW/2) = 350MW each

Enhancement 1: Market Rule Amendment Summary

Proposed Market Rule Amendments	Description
Added Sections: 22.2.2A (Appendix 7.5), 15.2.2A (Appendix 7.5A), 10.2.2A (Appendix 7.6), 22.3.5.2A (Appendix 7.5), 15.3.5.2A (Appendix 7.5A), 10.3.5.1A (Appendix 7.6)	These new sections have been incorporated to clarify the treatment of derates and constraints of ST in Day-Ahead Market (DAM), Predispatch (PD), and Real-Time (RT). Specifically, they establish the eligibility criteria that a PSU must meet, so that the prorating of the most limiting ST maximum constraint or ST derate across associated PSUs and CTs is applied.
Modified Sections: 22.2.3.1.2 (Appendix 7.5), 22.3.5.3 (Appendix 7.5), 15.2.3.1.2 (Appendix 7.5A), 15.3.5.3 (Appendix 7.5A), 10.2.3.1.2 (Appendix 7.6), 10.2.3.1.6 (Appendix 7.6), 10.3.5.2 (Appendix 7.6)	These sections have been adjusted so that the prorating logic only applies when conditions set out in the newly added sections are met.

Note: Appendix 7.5 is the DAM timeframe, 7.5A is the PD timeframe and, 7.6 is the RT timeframe

Enhancement 1: Market Rule Amendment Summary

Proposed Market Rule Amendments	Description
Modified Section: 10.2.3.1.5 (Appendix 7.6)	This section was modified to apply CT derates for the associated PSU, when the derate or constraint is below the MLP and the PSU is not operating in single cycle mode.
Added Section: 10.2.3.1.5A (Appendix 7.6)	The added section was introduced to capture the scenario where the PSU is operating in single cycle mode or the associated ST is offline.
Modified Section: 22.2.3.1.1 (Appendix 7.5), 15.2.3.1.1 (Appendix 7.5A), 10.2.3.1.1 (Appendix 7.6)	These sections have been modified to incorporate logic for calculating the amount of offered energy attributed to the ST portion. Specially, when a PSU is flagged to operate in single cycle mode, it will now affect the offered energy attributed to the steam turbine portion.
Modified Section: 10.2.3.1.3 (Appendix 7.6)	This section was modified such that a PSU is no longer deemed unavailable when either: The CT capacity is below its MLP; or the ST capacity associated with the PSU is below its MLP.

Note: Appendix 7.5 is the DAM timeframe, 7.5A is the PD timeframe and, 7.6 is the RT timeframe

Enhancement 2: Derates and constraints on CT or ST below DSO's calculated PSU MLP

ieso
Connecting Today. Powering Tomorrow.

Enhancement 2: Example

Given a 3x1 PSU plant (200MW per CT, 450MW ST, 110MW 1x1 ST MLP) and the percentage share of ST is equal across all PSUs.

Scenario: One CT is forced out of service with an outage slip and the ST total capacity is derated to 200MW. All three CTs kept offers in.

- **Current outcome**: The derated ST 200MW capacity is split amongst all CTs with offers present - i.e. does not consider outage slips. PSU's ST allotment is 200MW/3 = ~66MW. This is below its 1x1 ST MLP, causing the PSU to be dispatched to 0MW.
- **Proposed change**: ST derated capacity is split only for CTs online. Thereby, PSU's ST allotment is 200MW/2 = 100MW. This is still below the 1x1 ST MLP however DSO will respect it. The two available PSU capacity will be 200MW +100MW = 300MW

ieso
Connecting Today. Powering Tomorrow.

Enhancement 2: Market Rule Amendment Summary

Proposed Market Rule Amendments	Description
Added Section: 10.3.3.2 (Appendix 7.6)	This section was added to define the logic for when a PSU is not operating in single cycle mode and either the maximum constraint or maximum offered quantity is below the MLP. In these circumstances, the real-time calculation engine will adjust the maximum constraints of the associated CT (CTMax) and ST (PRSTMax) accordingly.
Added Section: 10.3.3.2.1 (Appendix 7.6)	Building upon Section 10.3.3.2, this section was added to define the conditions and corresponding logic when the associated CT is online while the ST is offline.
Added Section: 10.3.3.2.2 (Appendix 7.6)	Building upon Section 10.3.3.2, this section was added to define the conditions and corresponding logic when both the associated CT and ST are online.
Added Section: 10.3.3.2.3 (Appendix 7.6)	Building upon Section 10.3.3.2, this section was added to define the conditions under which the associated CT and/or ST is not yet online but have a confirmed future startup time. Specifically, this section outlines how the calculated maximums shall be applied in the advisory intervals.

Enhancement 3: Ramp rates when CT and ST come online at different times.

ieso
Connecting Today. Powering Tomorrow.

Enhancement 3 Example

Given PSU1 ramp up rates:
5MW/min @ 50MW breakpoint, 0.2MW/min @ 75MW breakpoint

Scenario: PSU1 CT (G1) syncs using the first ramp rate breakpoint of 5MW/min until it reaches the 50MW. Once CT reaches 50MW, ST syncs.

- **Current outcome:** ST ramp rate applied is based on ST output (i.e. '0'MW). Hence ST ramp of 5MW/min is applied.
- **Proposed change:** ST ramp rate is based on total PSU output (i.e. 50MW). Hence ST ramp of 0.2MW/min is applied.

ieso
Connecting Today. Powering Tomorrow.

Enhancement 3: Market Rule Amendment Summary

Proposed Market Rule Amendments	Description
Modified Section: 10.3.4.1 (Appendix 7.6)	This section was modified to include the condition that the steam turbine resource is online.
Modified Section: 10.3.4.2 (Appendix 7.6)	This section was modified to include the condition that the steam turbine resource is offline.
Modified Section: 10.3.4.3 (Appendix 7.6)	This section was modified to include the condition where the steam turbine resource is online -- the logic where the PSU is deemed unavailable if the CT's maximum constraint is below it's MLP no longer applies. Instead, the real-time engine will calculate a PSUMax based on the CT and ST respective high operating limits below MLP.
Modified Section: 10.3.4.4 (Appendix 7.6)	This section was modified to include the condition when the ST is offline.
Added Section: 5.6.1.6 (Appendix 7.6)	This section was added to incorporate logic which determines the initial energy schedule based on the latest dispatch instruction when operator intervention has caused deviations from the original dispatch schedule.
Added Section: 8.6.2.3 (Appendix 7.6)	This section was added to incorporate logic for if a NQS's minimum constraint, maximum constraint, or derate is below the MLP. The RT calculation engine will respect that constraint and ramp rates in the dispatch and advisory intervals until that constraint or derate is removed or has ended.

Next Steps and Feedback

ieso
Connecting Today. Powering Tomorrow.

Submitting Feedback

- The IESO is requesting written feedback via the **IESO's Feedback Form** (available on the PSU engagement webpage)
  - Feedback is being requested by **August 7, 2026**
- Please submit the feedback form to IESO Engagement at engagement@ieso.ca

Next Steps

Timing	Engagement Activity
~~May 21, 2026~~ ✓	~~Public Engagement Session~~
~~June 5, 2026~~ ✓	~~Request for Feedback~~
July 21, 2026	Public Engagement Session
August 7, 2026	Request for Feedback
September 15, 2026	Technical Panel (TP) Education
October 13, 2026	TP Vote to Post
November 10, 2026	TP Vote to Recommend
December 10, 2026	IESO Board Consideration
February 2027	Target Implementation

Questions?

ieso
Connecting Today. Powering Tomorrow.

Thank You

ieso.ca

1.888.448.7777

customer.relations@ieso.ca

engagement@ieso.ca

@IESO_Tweets

facebook.com/OntarioIESO

linkedin.com/company/IESO

ieso
Connecting Today. Powering Tomorrow.