Stakeholder Feedback and IESO Response

ERP Storage and Co-located Hybrid Integration Project

Following the February 5, 2026, ERP Storage Project engagement session, the IESO invited participants to provide comments and feedback on the materials presented by February 24, 2026.

The presentation materials and stakeholder feedback submissions have been posted on the ERP's Storage Project webpage for this engagement.

Please reference the material for specific feedback as the below information provides excerpts and/or a summary only.

If you have any questions or concerns, please contact engagement@ieso.ca.

The following participants submitted feedback that is summarized in the tables below:

- Ontario Power Generation
- Power Advisory (On behalf of the ESR Consortium)

Connection and Registration

Stakeholder Feedback	IESO Response
Net creditor status: Participants enquired how long a storage participant must demonstrate net creditor behavior and what specific records qualify to obtain a reassessment of physical market prudential obligation.	• The IESO will evaluate the criteria on how to define a Single Model Storage Resource (SMSR) as a net creditor. All storage resources will continue to be required to provide Prudential Support. • A resource must be able to demonstrate net-creditor behaviour for **at least 6 consecutive months and up to a year,** before submitting a request to rescind their prudential obligation. The prudential team will evaluate their request and decide of their status based on their invoices for those months.
Daily Cycles registration parameter: The IESO states that Daily Cycles will not be used by the Dispatch Scheduling Optimizer (DSO) but will inform operational planning. Participant feedback seeks a clearer explanation of how this value will be used so participants can provide the right information and finalize design choices.	• The Daily Cycles registration parameter is being removed from the current Connection and Registration design due to redundancy with CycleDEL.
Internal Service Load (ISL) definition: Clarify whether ISL should reflect the technical maximum internal consumption or a Market Participant's (MP) estimate of maximum expected consumption.	• The ISL parameter provided by Market Participant during the registration process will be used as the maximum ISL that a resource can submit as Daily Dispatch Data (DDD); therefore, the technical maximum internal consumption may be entered as the ISL parameter during the registration process if the MP feels this is appropriate • The submitted DDD ISL will be validated against the registration value. Market Participants should ensure that their registered ISL will be a value high enough to permit entries as part of their daily dispatch data, if looking to utilize this optional parameter. An MP's estimate of maximum

	expected ISL consumption for the day may be submitted as DDD. • For example, if a Market Participant registers an ISL of 2 MW; however, on a cold day needs to submit a higher ISL of 3 MW to adequately model their State of Charge (SoC), the submitted ISL will be rejected. As a result, Market Participants are expected to register the maximum value they believe they will need to adequately model SoC.

Dispatch Data and Other Inputs

Stakeholder Feedback	IESO Response

Mandatory Initial SoC (ISoC) in DAM:
 	
Stakeholders re-iterated concerns about submitting ISoC in DAM. The concern is financial exposure for MPs related to divergence between estimated ISOC values used to produce financially binding DAM schedules, and the actual ISOC at the start of real-time (RT) operation.
 	
Coupled with physical withholding rules that hold capacity available until HE23, stakeholders believe this limits a storage operator's ability to align RT SoC with the DAM estimate.
 	
Stakeholders recommend that physical withholding apply to total MaxSoC (MWh) rather than on Maximum Active Power Capability (MAPC) requirement (MW) on an hour-by-hour basis.
	• To model SoC in DAM the IESO requires an initial SoC estimate. The IESO will require MPs to submit as a mandatory daily dispatch parameter for DAM scheduling based on the technical constraints of the storage resource.
	
	• Participants have the flexibility in DAM to account for various operational considerations, which enable them to manage and mitigate their financial exposure.
	
	  ○ MP are permitted to submit any ISoC they deem appropriate in DAM. This could be a low or high ISoC value to reflect their level of risk.
	  ○ MPs can utilize their offers to economically schedule the withdrawal portion of the offers which will also dictate whether the resource receives day-ahead schedules to withdraw.
	  ○ Participants can also utilize the CycleDEL to exercise their level of risk in DAM scheduling for their injection schedules.

	• **Why use MAPC instead of MaxSoC as Reference Quantity (RQ):** MPM will not have information about MaxSoC dispatch data submission as DAM RQ V1 report is published before the DAM submission window, hence MaxSOC cannot be used. DAM RQ V2 and RTM RQ V1 reports are published 14 days after dispatch day. The concept of RQ is that the MP should be submitting injection offers based on "available capacity". The DSO will incorporate submitted MaxSoC at the time of scheduling. Therefore, MPM will continue to use MAPC (minus derates) as the estimate of "available capacity". Please refer to the MPM section for further details on Physical Withholding.
Hourly adjustments to Max/Min/Absolute SoC parameters: Stakeholders seek precise limits on how much and how often the SoC limits can be changed without requiring a valid reason code and confirmation that all SoC values can be set to zero during planned or unplanned outages.	• **Absolute Limits:** Absolute SoC limits are expected to be the largest bounds that the MP wishes to be scheduled or dispatched to. This is, in most cases, equivalent to the technical/absolute availability of the resource. These are not adjustable but set the validations to permit maneuverability of the resource. • **Validation rules for normal conditions:** Dispatch parameters MaxSoC and MinSoC will undergo non-financial data validations, i.e. the extent to which they can adjust their SoC ranges will be limited in the absence of outages or derates. Under normal conditions, the **dispatch parameter MaxSoC** cannot be lower than the **Registered MaxSoC** beyond 30% of the Registered MaxSoC, unless there is an outage or derate-related "valid reason" submitted with it. **Dispatch parameter MinSoC** cannot be increased by more than 30% of the Registered MaxSoC when compared to the Registered MinSoC. Refer to Figure 4 here for visual representation (*Dispatch Data and Other Inputs Design Memo, Feb 5, 2026*). In the example, the registered Absolute MaxSoC is 100% (1000 MWh), and the registered MaxSoC is 80% (800 MWh). The dispatch parameter MaxSoC can be as

	high as 100%, but it cannot be lower than the registered MaxSoC by more than 30% of the 800 MWh, i.e. 240 MWh. Similarly, on the lower end, the submitted MinSoC dispatch parameter cannot be higher than the registered MinSoC by more than the same 240 MWh. • **Validation rules for abnormal conditions:** When there is a "valid reason" for compressing the SoC operating range of the resource, the dispatch data MaxSoC can be anywhere between (and including) Absolute MaxSoC and dispatch data MinSoC. Similarly, dispatch data MinSoC can be anywhere between (and including) Absolute MinSoC and dispatch data MaxSoC. Refer to Figure 5 here for visual representation. • **Valid Reason:** An outage or derate reason code can be submitted either during initial submission or revision of the dispatch data, if the MP requires to reduce their SoC operating range to reflect partial outage or derate. • **Full vs partial outage:** For partial outages / derates, the MP may adjust their SoC limits as per the above validation rules. For a full outage, the MP must submit an outage in the Control Room Outage Window (CROW), which will automatically set its operating limits (in MW) to 0. The resource will be deemed unavailable through that method. The MP should **NOT** simultaneously submit MaxSoC and MinSoC to 0 MWh to denote that the resource is offline. While returning to service, the resource should ensure that their updated SoC ranges are accurately reflected in the dispatch data. Similarly, the MP should ensure that when returning to service, SoC telemetry is accurate and within its SoC limits to prevent forced schedules from injecting or withdrawing to respect the respective SoC limit. For example, if the resource has a range of 100 MWh MaxSoC and a 10 MWh MinSoC, the MP should keep the resource at that range when at full outage. If the MP had to discharge the battery

	completely while on outage, the MP should ensure that the MinSoC is adjusted to 0 MWh to avoid the DSO scheduling the resource to charge 10 MWh to return it to the MinSoC.
Dispatch expectations when SoC limits change: If MaxSoC is reduced (e.g., from 100 MWh to 80 MWh) for a particular dispatch hour, does the IESO intend to compel discharge of the "excess" 20 MWh? Stakeholders say that discharge should be left to be managed by participants via their bidirectional offer.	• If the MP's SoC is above 80 MWh, the DSO may force a discharge up to the maximum injection offer of the MP. The DSO would require logic to verify the impact of the change in the MP's SoC range on the anticipated SoC. The IESO is exploring this logic, but it creates additional computational requirements on its calculation engine, creating potential difficulties with implementation. • With planned derates, the MP may need to ensure that their resource is within the new limits to avoid the DSO scheduling them uneconomically. With unplanned derates the expectation is that in most cases, the real-time telemetered SoC will reduce with the reduction in SoC range and therefore already be within the new SoC limits. As soon as practical, the MP should adjust their dispatch data to correspond to the new SoC range of the resource. In addition, if the MP is at risk of having their SoC go beyond the SoC ranges of the resource prior to the SoC limit changes taking effect, they should utilize a CROW power derate to avoid withdrawing or injecting above or below the new SoC limits. E.g. the resource is fully charged, has an SoC of 100 MWh, range of 100 MWh MaxSoC and a 10 MWh MinSoC, if an unplanned outage results in a an immediate reduction to 80 MWh SoC (assumes that SoC Max should be reduced), the MP should put in a CROW derate to their withdrawal range to avoid schedules on withdrawal side of the resource, and attempt to update their MaxSoC as soon as possible if this outage is expected to continue.
Outage capability — capacity and energy: The ERP must allow full or partial outages to reduce: 1) injection/withdrawal capacity (MW) and 2) stored energy/duration (MWh or SoC), down to	• Power derates (MW) will be facilitated through the normal outage submission process in CROW and shall be applicable to either or both the withdrawal and injection ranges.

zero where needed. Stakeholders believe that SoC and capacity parameter controls presented may enable this but requests confirmation.	• The IESO is exploring corresponding SoC limits (MWh) being managed using hourly or daily dispatch data submissions for MaxSoC and MinSoC in its Market Information Management (MIM) system.

Settlements

Stakeholder Feedback	IESO Response
Without the specifics on Make Whole Payments (MWP) and other key settlements elements, the stakeholders are unable to provide meaningful settlement feedback.	• The IESO will publish a draft MWP design memo for our upcoming stakeholder engagement, and we will be looking for feedback from MPs to finalize that design.

Market Power Mitigation (MPM)

Stakeholder Feedback	IESO Response
Financial Reference Level (FRL) design: Using prior year same month averages to represent charging costs exposes storage to weather and market differences year to year. Stakeholders propose tying charging costs to current-day Day-Ahead Market (DAM) maximum or current day Pre-Dispatch (PD) maximum prices for DAM FRLs. The Real Time (RT) reference levels should be automatically adjusted based on the same day or next day PD maximum prices.	• The IESO is working to update the charging cost and opportunity cost components of the FRL design. FRL design will be shared with stakeholders for feedback. Once finalized, FRL design will be incorporated in version 2 of the MPM design memo.
Feedback on the ex-ante mitigation examples in the MPM design memo: With respect to Table 3 and Figure 2 of the Feb 5 MPM Design Memo, stakeholders seek clarity on whether the reference levels	• The figures relate to application of ex-ante mitigation scenarios in both DAM and PD timeframes. The sample reference level curve with multiple laminations was included as a generalized example as it is technically possible to

apply to DAM / PD only and not RT. They recommend the IESO to reflect that a storage energy offer reference level is a single static daily $/MWh per hour, not a curve that rises across PQ blocks; and to remove mitigation depictions for withdrawal since the IESO has stated withdrawals should not be mitigated.	have multiple laminations within reference level of a resource. The IESO will update sample figures with flatline reference level curves as requested in the next update of the design memo.
Edge case for ex-ante mitigation: With respect to Table 3 and Figure 2 of the Feb 5 MPM Design Memo, the reference levels would force injection at a price lower than the bid to withdraw, contradicting the principle that withdrawal isn't mitigated and causing lost withdrawal opportunity, misalignment with future obligations, potential inability to meet DAM schedules or contract requirements. The stakeholders ask the IESO to ensure a mitigated offer cannot be below the highest withdrawal bid.	• The IESO will retain the currently published approach and appreciates the feedback received. • Increasing the reference level above the highest withdrawal price could expose the market to gaming risks and could result in excessive MWPs. • This treatment would also provide SMSRs with an advantage in avoiding market power mitigation that is not afforded to other technology types. No other resource type has the ability to bump-up reference level using their submitted offers. Hence, the published approach provides consistency and fairness to the market. • The IESO is developing an enhanced FRL methodology that will more accurately reflect charging costs and opportunity costs. Under this revised design, the calculated FRL values are expected to be substantially higher than those produced under the existing design (i.e. average historical monthly cost), making the scenario described by the stakeholder unlikely to occur. • Finally, the IESO does not prescribe how an MP must structure its energy offer curve. MPs may submit a charge-only offer if they intend solely to charge, and the IESO does not restrict this bidding approach.
Physical withholding conduct tests: The IESO indicates hourly tests. Today's rule for Dual Model Storage Resources (DMSRs) requires making the Reference Quantity (RQ) available at least one hour per day. If the IESO intends to change this	• As per Chapter 11 definition, "reference quantity value" means "an IESO-determined estimate for the quantity of energy or operating reserve that a market participant would have submitted for a resource if it were subject to unrestricted competition".

to hourly (with overnight exemptions), it should justify the change and consider negative impacts. Operators might be unable to prioritize withdrawals to meet next day SoC/ISoC needs.	• These values are calculated prior to the DAM window, and for the RTM timeframe, prior to the dispatch day based on the information available to the IESO at the time. • Hourly RQs for SMSRs are established to ensure consistent application of RQs and conduct testing across all other technology types. Physical withholding remains a discretionary assessment conducted by the IESO MACD division. Should such an assessment be initiated, the MP will be provided an opportunity to submit relevant information for physical withholding assessment. The IESO would like to re-emphasize the point that physical withholding is not an automated charge. • With respect to the single-hour assessment applied to DMSRs, this design is based on the fact that the IESO has no visibility into SoC for these resources.
Implications for 8-hour storage: With 8-hour minimum duration storage, even "overnight exemptions" won't give enough time to charge; operators may need more than eight hours of withdrawal to reach MaxSoC, so hourly availability requirements would worsen SoC management challenges.	• Thank you for the feedback. The IESO does not dictate bid/offer strategy for the MPs. MPs have full control over bid/offer submissions. Long duration storage resources will have the flexibility to also charge in any hour outside the "overnight exemptions".
Auxiliary Energy Consumption pricing basis: Similar to FRL charging costs, using previous year average purchase prices is inappropriate; a nearer term price basis should be used.	• The IESO is working to update the charging cost and opportunity cost component of the FRL design.

Request for Enhanced Market Data Publication

Stakeholder Feedback	IESO Response

Requested data to enable analysis and strategy: ERP changes will shift dispatch, pricing, and settlement, especially for storage. That is only possible with better market data transparency. The submission also suggested the IESO as lagging other ISOs/RTOs in data disclosure, based on its own jurisdictional review. This would allow stakeholders to validate whether ERP driven changes are behaving as intended, diagnose inefficiencies, and back test optimal bid/offer strategies. The request is for the following detailed, node level data: • Energy offers and bids • Non-dispatchable load assumptions • Assigned and observed load at each node • Richer dispatch and scheduling inputs/outcomes	• Thank you for the request. As noted previously in response to this request, this is not in scope of ERP.

External Reports

Stakeholder Feedback	IESO Response
The stakeholders recommend that the IESO consider sharing charge data with MPs, in addition to the discharge data that is already available through the IESO's "GenOutputCapability" report to enhance market efficiency, provide additional insights into resource adequacy and improve planning & forecasting.	• Thank you for your feedback. As part of ERP, the charge data will be included either as part of the "GenOutputCapability" report, or in a similar new report.