

Feedback Form

Ramp Rates for Battery Energy Storage System Facilities – July 22nd, 2026

Feedback Provided by:

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Date: July 31, 2026

To promote transparency, feedback submitted will be posted on the Ramp Rates for Battery Energy Storage System Facilities page unless otherwise requested by the sender. If you wish to provide confidential feedback, please mark “Yes” below:

- ☐ **Yes – there is confidential information, do not post**
- ☐ **No – comfortable to publish to the IESO web page**

Following the posting of Ramp Rates for Battery Energy Storage System Facilities, the Independent Electricity System Operator (IESO) is seeking feedback from stakeholders on the proposed changes.

Please submit feedback to engagement@ieso.ca by July 31st, 2026. Please use subject: *Feedback: Ramp Rates for Battery Energy Storage System.*

General Comments/Feedback

Energy Storage Canada (ESC) appreciates the opportunity to provide feedback on the IESO's July 22, 2026 engagement regarding the proposed 100 MW/minute ramp-rate requirement for Battery Energy Storage System (BESS) facilities. As Ontario prepares for ~3,500 MW of storage by 2030, ESC supports efforts to maintain system balance and NERC compliance, while ensuring new requirements are transparent, technically justified, and operationally workable for storage operators. This submission responds to the questions posed in the IESO's engagement memo and reflects ESC's ongoing priorities: clarity, predictability, and alignment with the broader ERP design.

Operational Rationale for the Ramp-Rate Requirement

The IESO's presentation clearly demonstrated how instantaneous ramping can create over- and under-generation within a 5-minute interval, contributing to ACE deviations and increased reliance on regulation service. ESC agrees that fast-ramping behaviour must be managed as storage penetration grows, and the context provided was helpful in illustrating the underlying system-balancing challenge.

At the same time, ESC believes the justification for selecting a 100 MW/minute limit requires further development. While the IESO explained why a ramp-rate requirement is needed, the explanation of why this specific threshold resolves the issue was limited. The proposed approach relies on a facility-level cap that restricts the technical response time of BESS facilities without requiring any evolution of IESO tools, dispatch processes, or market mechanisms. Although this makes the solution straightforward for the IESO to implement, it places additional technical and financial complexity on market participants and may not reflect the full range of potential options. ESC encourages the IESO to clarify whether alternative or more enduring approaches were explored, including solutions that leverage the ERP single-resource model rather than relying solely on a static facility-level limit.

ESC also recommends publishing sensitivity analysis showing how different ramp-rate thresholds affect ACE performance and regulation usage. As more storage enters service, a structured review cycle would help ensure the requirement remains appropriate and responsive to evolving system conditions.

Assessment of Commercial Impact

The IESO's initial analysis, based on August–October 2025 data, found that only 6% of intervals required movement and that the maximum lost-revenue impact was approximately 0.24% of total BESS compensation. ESC appreciates this transparency but does not believe the estimate reflects how current or future BESS facilities will operate.

The dataset represents a narrow operating window: only three months of data, no winter or spring volatility, and only two facilities above 100 MW at the time. By 2028, Ontario is expected to have more than ten facilities above this threshold and nearly 3,000 MW of contracted storage. Dispatch frequency, magnitude, and revenue exposure will be materially different in a system with much higher storage penetration and more pronounced load and renewable variability.

A facility-level ramp-rate limit may also constrain revenue during high-value real-time intervals, particularly when strong LMPs drive large dispatch movements. The diversity of operating strategies across the fleet, including hybrid configurations and more aggressive cycling, may lead to impacts not captured in the initial analysis.

For these reasons, ESC does not believe the 0.24% estimate reflects how existing or future BESS facilities will operate. ESC recommends revisiting the commercial impact assessment using a full year of data and forward-looking simulations that reflect future fleet composition. ESC also requests clarity on how the ramp-rate limit will interact with the ERP single-resource model, where ramp rates will be embedded directly in dispatch data submissions and State-of-Charge modelling will drive dispatch outcomes.

Implementation Considerations

ESC sees several areas where additional guidance is needed to ensure consistent implementation across the fleet.

Under the current two-resource model, ramp-rate limits are applied through facility-level controller settings. Under the future ERP single-resource model, ramp rates will instead be embedded directly in dispatch data submissions. ESC requests clarity on how these parameters will interact with State-of-Charge forecasts, MaxSoC/MinSoC constraints, multi-interval optimization, and EMS behaviour, particularly as facilities transition to the new model.

ESC also requests more detail on compliance expectations, including telemetry resolution, tolerance bands, and treatment of inadvertent deviations caused by inverter behaviour or EMS latency. Some facilities may require EMS or inverter updates to implement ramp-rate limits, and ESC encourages the IESO to clarify whether any technical standards or certification requirements will accompany the Market Rule amendments.

Given the capabilities of modern storage systems, ESC also encourages the IESO to consider whether the ERP single-resource model could support a more flexible approach, one that allows resources to ramp at or near their technical capability while still maintaining system balance. ESC would welcome clarity on whether the IESO has evaluated solutions within the ERP framework that preserve fast-response characteristics rather than constraining them through a static facility-level limit.

Additional Issues for Consideration

ESC recommends that the IESO establish a regular review cycle for the ramp-rate requirement to ensure it remains appropriate as system conditions evolve and storage penetration increases. ESC also requests greater clarity on transition timing, including when the requirement will apply to existing facilities and how implementation will align with the ERP single-resource model.

ESC reiterates the importance of enhanced data transparency, which will be essential for participants to validate settlement outcomes and better understand how dispatch behaviour interacts with ramp-rate constraints. In addition, ESC emphasizes that a more comprehensive dataset analysis, covering a full year of operations and reflecting future storage penetration, will be critical to fully understand both the financial and operational impacts of the proposed requirement.

Project-Specific Practical Implications

ESC members have identified several practical considerations that were not discussed during the webinar. Hybrid facilities may experience unique interactions between variable generation and storage ramp-rate limits, particularly when rapid changes in renewable output coincide with dispatch instructions for storage.

Large multi-unit BESS sites may also require clarity on how a facility-level ramp-rate limit applies across multiple inverter blocks or resource groupings. More detailed guidance will be important for facilities composed of several BESS units operating as a single aggregated resource. For example, operators need clarity on how a 100 MW/min facility-level limit would be applied when multiple BESS units are dispatched together, and how the limit should be interpreted if one unit is offline while others remain available. These scenarios introduce operational complexity that must be managed through EMS logic and control systems, and may affect how quickly ramp-rate limits can be implemented in practice.

Differences in EMS design, inverter behaviour, and facility-level control strategies may also influence how ramp-rate limits interact with market participation strategies such as arbitrage, regulation, or operating reserve. ESC encourages the IESO to engage directly with operators to ensure implementation guidance reflects real-world facility configurations and the practical challenges associated with managing ramp-rate limits across multi-unit or hybrid facilities.

Overall, ESC appreciates the IESO's proactive efforts to address system-balancing challenges associated with fast-ramping storage resources. While the operational rationale for a ramp-rate limit is clear, ESC believes additional analysis, transparency, and implementation guidance will be essential to ensure the requirement is effective, equitable, and aligned with the future ERP single-resource model.

ESC looks forward to continued collaboration with the IESO and welcomes further discussion on the topics raised in this submission.