Feedback Form

Enabling Resources Program (ERP) - Storage and Co-located Hybrid Integration Project

Meeting Date: July 24, 2025

Feedback Provided by:

Name: Julien Wu

Title: Director, Regulatory Affairs

Organization: Brookfield Renewable

Email: [redacted]

Date: Aug 21, 2025

Following the **July 24, 2025**, engagement webinar, the Independent Electricity System Operator (IESO) is seeking feedback on the items discussed during the webinar. The presentation and recording can be accessed from the engagement web page.

Please submit feedback to engagement@ieso.ca by **August 21, 2025**. If you wish to provide confidential feedback, please submit it as a separate document, marked "**Confidential**." Otherwise, to promote transparency, feedback that is not marked "Confidential" will be posted on the engagement webpage.

General ERP Feedback:

Feedback on the engagement approach, meetings, or the S/H Project in general?	Brookfield Renewable appreciates the opportunity to provide feedback. From the directives of the Ministry of Energy and Mines dated June 12, 2025, and June 26, 2025, we understand that Ontario will procure significant energy and capacity resources to meet its growth. As such, we fully support the IESO's ERP Storage and Co-located Hybrid Integration Project to better optimize energy and storage resources. From the IESO's July 24 presentation (slide 23), we understand that a "co-located resource" would consist of two distinctly metered resources, including a dispatchable storage resource and a separate generator resource. In short, the co-located model, such as a battery sharing the same interconnection point as a wind facility, is the current design priority. In addition, the July 24 webinar makes it clear that the IESO is currently focused on operational and market-side improvements of the co-located model (e.g., better State of Charge estimation, and adopting the Single resource model for storage devices…).

	IESO that the LT2-Window 2 RFP is fast approaching, as it is expected to take place in Q3/4 2026. In this RFP, existing wind resources will be able to offer and compete as repowered facilities. In other words, owners of existing wind facilities looking to participate in the Window 2 RFP are already initiating planning and permitting work, and deciding whether adding a storage device to their repowered facilities would be technically feasible and economically rewarding. As Ontario is expected to need more energy and capacity resources to meet its future needs, we urge the IESO to prioritize and consider <u>all</u> design elements, not just operational and market-based optimizations, that would <u>enable existing wind facilities to offer repowered projects with storage pairings.</u> As Ontario currently holds over 5GWs of installed wind capacity, the addition of storage resources to these wind facilities' existing infrastructure can be the most economical and non-intrusive way to build the capacity resources necessary. For example, an existing wind farm looking to repower can share its interconnection point, physical delivery room, transmission assets, road access, with a new storage device. These new storage

devices can be offered, along with a repowered wind project, as early as the Window 2 RFP in 2026. If successful, the construction of a repowered wind project and a storage device can occur simultaneously to minimize costs and shorten the project timeline.

While it is possible for a repowered wind project to be initiated first, and for a co-located storage device to be added later in a subsequent RFP, it would be a missed opportunity if both projects cannot be optimized in their planning, bidding, and construction at the same time.

It should also be noted that many wind facilities own their transmission infrastructure (e.g., sub-station) that connect them to the IESO-administered grid. In this situation, a co-located, repowered wind and battery project sharing the same privately-owned interconnection infrastructure can only be offered by the same proponent.

As an experienced wind asset owner and operator, we are very optimistic that repowered wind projects can be paired with storage devices and succeed in RFPs. However, wind assets owners currently do not have the support and information necessary to model and offer a

repowered wind facility with a storage device.

To wit, slide 19 of the July 24 webinar clearly relegates important matters required to model a repowered wind and storage project to Batch 2 of the consultation. The co-located model under consultation is a step in the right direction, but does not go far enough to explore the best ways to help co-optimize and plan for combined generator and storage resources. Examples that would help include a new "Energy+Capacity" Contract type that would enable the optimization of a wind resource rendered highly dispatchable with the addition of a battery, or clarifications regarding the Connection and Registration process that would allow a storage resource to share the same interconnection point capability as a wind resource.

Slide 58's timeline also suggests that changes will not be implemented in time for participation in the Window 2 RFP.

Moreover, we understand that the IESO will work on an "integrated" model in the future, where a generator resource and storage resource can share the same interconnection point and be treated as a sample resource and under the same contract. However, we

	suggest that there is an interim model, situated between the co-located model and the integrated model, that the IESO should consider. In this interim model, a generator resource and a storage resource will share the same interconnection point room in an optimized fashion, but still be treated as separate entities. For example, a 200MW wind facility is currently located behind an interconnection point sized at 200MW. Under the current rules, a 20MW storage resource cannot be added behind this interconnection point, because the wind facility already takes up the total interconnection point capacity. The addition of a 20MW storage resource would therefore trigger System Impact Assessments and transmission upgrades, hence increasing project costs and complexity. However, given that the wind facility is an intermittent resource, this interim model would (with the appropriate contract performance obligations and penalty safeguards) allow the 200MW wind facility to share the 200MW interconnection room with a 20MW storage resource, knowing that both resources do not need to be injecting at the same time. In this scenario, the IESO and the transmitter would not need to conduct costly and lengthy system studies and upgrades required to

Topic	Feedback
	increase the interconnection point's capacity—the existing 200MW interconnection room can be immediately leveraged to add capacity to the grid. Again, Ontario currently holds over 5GWs of wind resources on its grid, and much of their interconnection rooms are not fully used. We encourage the IESO to explore this interim model as an immediate and least-cost way to increase our system's capacity resources. We welcome further conversations with the IESO on this topic. In sum, we believe that not enabling repowered wind facilities to offer in the Window 2 RFP with storage resources would be a missed opportunity for Ontario's resource adequacy needs and for ratepayer interests. As such, we encourage the IESO to prioritize Contract designs and Connection and Registration rules in its consultation. The IESO should also consider the interim model so that existing wind facilities can offer their repowered project with a storage pairing in the Window 2 RFP in 2026, without triggering transmission room upgrades.

Storage/Hybrid Project Feedback:

Topic	Feedback
Telemetered SoC: Required for calculations in PD and RT timeframes. This value is expected to inform the IESO of the injection capability of the resource in MWh and therefore should account for any losses. Current performance requirements will continue, with data sent every 4 seconds to the IESO. Do MP's have concerns or foresee challenges with this requirement?	Click or tap here to enter text.
OR Offers: Are there concerns about OR provided by storage being branched from withdrawal to injection?	Click or tap here to enter text.
Ramp Rates: Do you have feedback on the 100 MW/min static ramp rate and utilizing a standardized approach to dispatch?	Click or tap here to enter text.
CycleDEL: Is CycleDEL sufficient to limit the cycling for storage in Phase 1? What is the expected default setting?	Click or tap here to enter text.

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Exceeding Min/Max SoC limits: Do you anticipate needing to exceed min/max SoC limits for specific market opportunities, or just maintenance and what are the typical min/max limits – is this a fixed/static value that can be derived for registration? Frequency and magnitude of exceeding these limits? Are there equipment concerns from this, what are the specific concerns (faster equipment aging/degradation, other)?	Click or tap here to enter text.
Derates: Do you have feedback on the derates that the IESO is considering; specifically, what requirements need to be set ensure that these are used sporadically? Will there be separate derate values for injection and withdrawal? Will MPs need to derate their SoC limits? Does this only require update to max SoC limit which will result in overall SoC reduction? How frequently does the MP need to update the round-trip efficiency?	Click or tap here to enter text.

Topic	Feedback
Uprates: Any feedback on this concept of utilizing "uprates" to support maintenance? Any conditions or requirements that the IESO may need to consider when developing its process to allow uprates? Are there any other operational or market participation considerations that need to be considered?	Click or tap here to enter text.

General Comments/Feedback

Click or tap here to enter text.