Hybrid Stakeholder Engagement Supplementary Material

Stakeholders have requested that some of the points discussed in the hybrid webinar on September 21st, 2021 be shared through a supplementary document to assist their understanding of the risks and opportunities of each of the models in order to provide meaningful feedback. Table 1 below elaborates on the risk items listed in slide 25 of the presentation.

Table 1 | Risk Discussion

Element	Interim Storage Model with Generator Resource	Single Resource with Non-Dispatchable Load Model
New OEB licence class required	An OEB licence class for hybrids does not currently exist; however, a hybrid facility with a generator and storage asset could get a Generation licence and a storage licence.	
New data entries for registration needed	Not a concern.	Some changes to IESO's customer database would be needed to enable the single resource model. It would not be a large project but the project would still compete for internal resources.
New settlements processes needed	Under the current rules, all energy that flows into the storage asset will be charged uplift and global adjustment (GA), regardless of whether the energy came from the on-site supply or from the grid. That market participant may argue that uplift and GA should not be charged on energy that was generated from the on-site supply because it did not use the grid. The high level design would look at this point in more detail with respect to uplift and determine the appropriate solution and	The single resource model is similar to a behind the meter type arrangement so uplift and GA would not be charged on energy from the on-site supply, but they would be charged on energy transferred from the grid. If the single resource model is used, the storage asset would not meet the definition of an "electricity storage facility" in the GA regulation because it shares a wholesale meter with another generation source.

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	implementation, although keep in mind that the GA regulation may also need updates to account for hybrids. If the ISM+G model is used, the storage asset could be classified as an "electricity storage facility" in the GA regulation and get the settlement treatment specified in the regulation. This model becomes more attractive as stored grid-supplied energy increases.	This model becomes more attractive as stored self-supplied energy increases.
Unintended market consequences	Inaccurate forecasts due to various circumstances could influence pre-dispatch prices as well as the dispatch. Using the centralized forecasting solution and analyzing active power output and forecasts can mitigate this risk.	The non-dispatchable load (NDL) is flexible for the market participant but it complicates modelling on the system operator's side. That NDL's real-time energy withdrawals would not be fully predictable, and the errors can cause impacts in the pre-dispatch timeframe which could affect market outcomes if the load is of material size. This issue would have to be explored further in a high level design and may need a market system tool change to solve.
Day-ahead market after Market Renewal	Both models are compatible with the day ahead market after the market renewal project is implemented.	
New capacity qualification process needed	Modifications to the capacity qualification process are relatively simpler for the ISM+G model, since one can apply the storage qualification process to the storage part and other generator qualification process to the other supply source,	The capacity qualification process would need a relatively more complex change because the storage and other supply source are acting as one resource. Due to the additional flexibility of being able to manage the resources behind the meter, this participation model can potentially have higher

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	and then take into account the connection capacity.	capacity value than the other foundational model.
Complex power system study modelling	The ISM+G model would behave correctly in models because all of the resources are explicitly represented in the model.	The single resource model would require some scripts to disaggregate the single resource into its constituent parts to keep stability studies and potentially real-time modelling accurate.
New contracting terms required	Since IESO has not contracted for a hybrid to provide services to the grid, aside from a pilot project, some legal work would need to be done to ensure that the appropriate contract terms are in place.	