



Proposal for alternative contract design for energy storage resources: IESO LT1 RFP and Additional Mechanisms Engagement

INTRODUCTION

The Canadian Renewable Energy Association (CanREA) proudly represents over 200 businesses active across Ontario's wind energy, solar energy and energy storage industries, including many companies actively seeking to participate in the IESO's forthcoming RFP processes. We have developed and refined the following comments based on extensive discussion with our members, who have provided expert perspectives from their experience in developing energy storage resources in many other markets in North America and internationally. This proposed storage contract design represents the consensus position of CanREA's members.

CanREA understands that the primary need that the Long-term 1 (LT1 RFP) and Expedited (ERFP) processes aim to meet is an emerging capacity need, and that as such the IESO aims to design a contract that pays resources for their ability to provide a capacity product. The IESO has proposed that the LT1/ERFP Contract include a mechanism to modify future fixed contractual capacity payments based on average energy market prices at the time, with proponents allowed the option to bid a % adjustment to their fixed payment if average energy market prices (based on locational marginal pricing) are below or above a set threshold.

However, average energy market price is not a practical basis for a price hedge for an energy storage system (ESS), which provide value both to the asset owners and to the energy system as a whole by optimizing their charging and discharging strategies in response to energy price volatility. For this reason, the proposed capacity payment modifier would not be a feasible incentive for ESS participation in the LT1/ERFP procurement. CanREA presents the following alternative contract design specifically for ESS for the IESO's consideration.

QUALIFICATION AND CAPACITY ALLOCATION

CanREA recommends that the forthcoming procurements include two specific contract payment streams:

1. Stand-alone storage resources, and storage resources that are part of a hybrid facility using the co-located participation model
2. All other technologies, including integrated hybrid facilities

CanREA further recommends that the IESO establish an official target that a majority of contracted capacity for the Expedited RFP and LT1 RFP be awarded to energy storage resources, either in stand-alone or hybrid configuration. While we understand that the IESO is seeking a diversity of technologies and applications to come forward, CanREA would emphasize that there is inherent value for the IESO and for Ontario ratepayers in maximizing the participation of energy storage specifically. Energy storage is poised to play an integral role in Ontario's electricity system going forward, and given the unique characteristics of Ontario's market, a well-designed contract structure of the kind we are here proposing is critical to unlocking the long-term benefits to the province's energy system that only storage can offer. Energy storage will make an essential contribution to maintaining Ontario's clean electricity advantage by enabling more effective integration of variable wind and solar generation as well as optimizing the efficient delivery of the province's baseload hydropower and nuclear resources. Energy storage will also greatly enhance overall system resiliency and flexibility, and its extremely low impact on local communities is such that it can be safely deployed exactly where it can offer the greatest locational value.

It is also important to note that unlike thermal generation assets, the operating costs of energy storage would be fixed over the duration of the contract term, thus ensuring that future ratepayers would not be adversely affected by carbon pricing impacts or fuel cost increases. At present, the Government of Canada is moving forward with implementing the Clean Electricity Regulations targeting a net-zero electricity grid by 2035. Under this forthcoming regulatory framework, a generation unit commissioned in 2025 or after would be subject to current electricity sector policies (the federal phase-out regulations for unabated coal, the federal performance standards for new natural gas, and carbon pricing) until January 1, 2035, and from then on, the CER and its performance standards and the associated financial compliance component would replace current electricity sector policies.

The stated objective of these policies is to deter any unabated new fossil fuel-fired generation in Canada:

The decision to commission a new unit after 2025 will need to take into consideration the CER obligations. As continued operation after 2035 will require the installation of abatement technology, these units will need to resolve the financial implications of having to comply with the CER obligations even in their initial project development.¹

The CER establishes that up until 2035, any regulated thermal generation facilities operating in Canada will be subject to a declining supply of free compliance credit allocations, until there is a full exposure to the carbon price by 2030, at which time it will be \$170, and potentially higher by 2035. After 2035, these facilities would be required to abate nearly all of their emissions in order to continue operating, as there will be a near-zero emissions performance standard, meaning that they will not be permitted to continue operating without CCUS. Aside from the capacity payments that proponents may bid for these resources, it will be important for the IESO to consider the potential impact to ratepayers of allowing for these facilities to pass on future compliance costs through their participation in the wholesale market.

¹ Government of Canada: "Proposed Frame for the Clean Electricity Regulations" (July 26, 2022) – Available from: <https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/publications/proposed-frame-clean-electricity-regulations.html>

FINANCIAL SETTLEMENT

The LT1 Contract would be a fixed price contract that pays for capacity based on a “pay-as-bid” approach, with an additional option for proponents to modify capacity bids based on an Energy Price Spread Adjustment. Proponents who do not wish to hedge the volatility risk, or anticipate earning most of their revenue through ancillary services, could choose to enter a capacity payment-only bid with zero Energy Price Spread Adjustment.

Energy Price Spread Adjustment Calculation:

On a daily basis, calculate:

- *R = Average of highest priced continuous four-hour segment within the capacity window as defined in the contract in the day based on Day-Ahead LMP*
- *C = Average of lowest priced continuous four-hour segment outside the capacity window as defined in the contract in the day based on Day-Ahead LMP*
- *E = Round trip efficiency as bid by the proponent*
- *OM = Variable O&M costs as bid by the proponent*
- *MGA = Monthly Global Adjustment charges*
- *MU = Monthly Uplift charges*

Daily Adjustment =

$$4 \times \max \left[0, \left(R - \left(\frac{C}{E} \right) - OM \right) \right]$$

On a monthly basis, calculate:

Monthly Spread Adjustment =

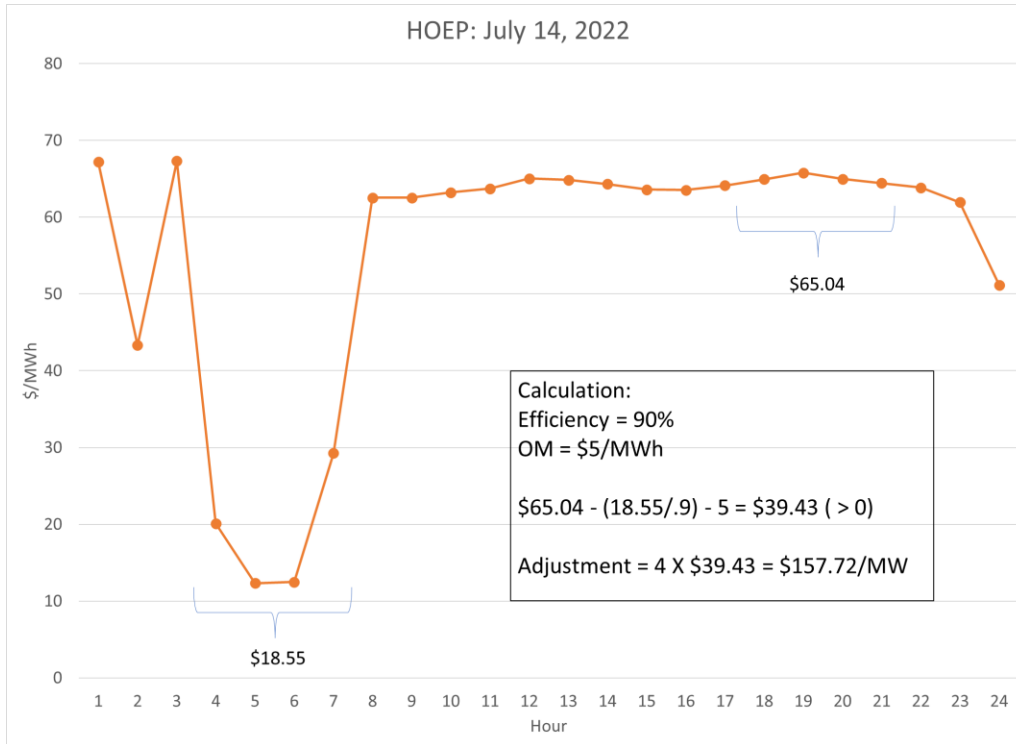
$$\max \left[0, \left(\sum (\text{daily adjustments}) - MGA - MU \right) \right]$$

Monthly Payment from IESO to proponent =

$$\max [0, (\text{Capacity payment} - \text{Monthly Spread Adjustment})]$$

Example:

Using the Hourly Ontario Energy Price for July 14, 2022 as a stand-in for the Day-ahead LMP, we find that a stand-alone lithium ion BESS with a round-trip efficiency of 90% and maintenance costs of \$5.00 per MWh would have the Capacity Payment reduced by \$157.72 per MW due to the Spread Adjustment.



Under a Capacity plus Energy Price Spread Adjustment contract, the Capacity Payments to energy storage will always be reduced as long as the difference between the average highest-price and average lowest-price hours exceeds the cost of charging and discharging the storage resource over the course of the month.

This contract design will benefit both the IESO and storage proponents. The IESO will benefit from a hedge against increased price volatility, from more competitive capacity payment bids from proponents, and from a more efficient market with resources incented to respond to market price signals as compared to a scenario with greater reliance on capacity payments. Proponents will benefit from additional investment certainty, and from the ability to calculate a more accurate capacity offer because volatility price risk is hedged. This will help to increase competition by facilitating participation from those proponents who would be otherwise unwilling to carry the price volatility risk.

EVALUATION

RFP responses should be evaluated on a total cost basis, with spread adjustment estimated from IESO modelling. Total cost should also be used to compare storage costs with RFP responses from other technologies.

CAPACITY PRICE INDEXING

CanREA welcomes the IESO's recognition of the current global supply chain and cost pressures facing proponents. To reduce the risk of non-delivery, as is occurring in other markets in North America, the IESO should consider offering proponents the option to have a proportion of their capacity price offer indexed for a time period between bid submission and COD. Offering a voluntary indexing option based on a key industry benchmark (e.g. US Federal Reserve Producer Price Index: Battery Manufacturing²) or basket of indexes could help to protect the IESO from proponents being unable to fulfill supply contracts due to increases in capital costs. This approach has the benefit of reducing the likelihood of project attrition, while also passing along to ratepayers any market price reductions that may occur after contracting. CanREA is currently engaging with our members to determine an optimal indexing approach and will follow up over the coming weeks to share more detailed recommendations on this point.

Contact:

Nicholas Gall
Director - Ontario,
Canadian Renewable Energy Association
(CanREA)
ngall@renewablesassociation.ca

Leonard Olien
Director - Energy Storage,
Canadian Renewable Energy Association
(CanREA)
lolien@renewablesassociation.ca

² US Federal Reserve Producer Price Index by Industry: Battery Manufacturing – Available from:
<https://fred.stlouisfed.org/series/PCU3359133591>