ONTARIO ENERGY BOARD

IN THE MATTER OF the *Ontario Energy Board Act, 1998,* S.O. 1998, c. 15 (Sched. B);

AND IN THE MATTER OF a policy consultation aimed at ensuring the cost responsibility provisions for load customers in the Transmission System Code and Distribution System Code are aligned and facilitate regional planning and the implementation of regional infrastructure plans.

EB-2016-0003

SUBMISSIONS OF

ENERGY STORAGE CANADA

Introduction

(1) Energy Storage Canada (**ESC**) is an industry association representing a broad range of companies engaged in the energy storage industry across Canada. ESC is the only trade association in Canada solely focused on advancing the dynamic role of energy storage and building the market for the energy storage business.

(2) Energy storage solutions (**ESS**) are unique and offer multi-faceted benefits to the transmission and distribution systems (i.e., power system) in Ontario. ESS include different technology types (e.g., batteries, flywheels, power-to-gas, compressed air, pumped storage, etc.) that can offer a wide range of value propositions to the electricity sector. ESS can lower greenhouse gas emissions, defer power system upgrades, and increase grid resilience and grid efficiency. The benefits of ESS derive from the ability to act as either a load or a generator with the capability to quickly adjust output and consumption upon demand.

(3) ESC welcomes the opportunity to participate in this Ontario Energy Board (**OEB**) consultation on Regional Planning and Cost Allocation Review. ESC has reviewed the proposed amendments issued by the OEB to the Transmission System Code (**TSC**) and Distribution System Code (**DSC**) and understands that the guiding principles the OEB has used for this consultation are: Optimal Infrastructure Solutions; Beneficiary Pays; and being Open, Transparent, and Inclusive. ESC recognizes that the OEB established a Working Group comprised of various stakeholders to provide input to OEB staff on issues and potential solutions as part of the TSC and DSC amendment process.

(4) ESC's recommendations to the OEB fall into two general groupings:

- **Load shifting** where ESS increases the efficiency of the power system by withdrawing energy during off-peak periods (i.e., periods of low consumption from other consumers) and injecting energy during on-peak periods (i.e., periods of high consumption from other consumers). Load shifting can take many different forms currently and into the future (e.g., behind-the-meter peak management, transmission and distribution investment deferral, capacity product, ramping product, etc.). Load shifting ESS increases the efficiency of the transmission and distribution systems by operating opposite to normal system constraints (e.g., injecting energy when demand is high and withdrawing when demand is low). The design of demand charges should not penalize the efficiency benefits of load shifting ESS. ESC therefore recommends that the OEB consider time-based demand charges (e.g., demand charges during peak periods only) to remove the unfair treatment of ESS; and

- **Ancillary Service Provider (ASP)** where the fast responsiveness and flexibility of ESS is used to provide ancillary services (e.g., regulation, reactive power and voltage control, etc.) to maintain the reliability and stability of the power system. ASP ESS offer essential reliability services to all Ontario customers and therefore, based on the OEB's guiding principle of "beneficiary pays", ESC recommends that ASP ESS should be exempt from demand charges. Distributors hosting ASP ESS should receive compensation from the network pool for the use of their distribution system to host the essential reliability service being delivered.

(5) ESC has prepared comments and recommendations for the OEB's consideration on the following issues: (i) inconsistent cost responsibility treatment; (ii) including energy storage as a customer class in the definition of "customer" in the DSC; (iii) recognizing the efficiency benefits of energy storage; (iv) regional distribution solutions involving ESS; (v)

excluding ESS from triggering by-pass compensation; (vi) increasing the cost-effectiveness of ancillary service provision; and (vii) funding local choices.

Inconsistent Cost Responsibility Treatment

(6) The cost responsibility treatment by distributors and transmitters is inconsistent when applied to ESS, primarily because ESS may be viewed exclusively as a load or exclusively as a generator by these entities. The OEB should consider allowing distributors and transmitters to recover demand charges from all ratepayers for ASP ESS that is providing ancillary services. Ancillary services benefit all rate-payers and shifting the cost burden to the network pool would follow the beneficiary pays guiding principle.

(7) The existing demand charge framework can represent a significant cost element for ESS providing ancillary services and, in some cases, unfairly penalizes storage resources that are providing an essential reliability service to the power system. Generation-only ASPs do not have demand charges, even though those assets are using the power system for delivery of ancillary services; generation-only based ASPs use the transmission system without charge, while ESS are charged on withdrawal. Furthermore, there is precedence from the IESO for reducing or removing demand charges for energy storage resources providing ancillary services.[1] This topic has been an ongoing point of discussion in Ontario between the OEB and ESC and is actively being reviewed in other jurisdictions. ESC recommends that the OEB ensure fair treatment for resources providing essential services to Ontario's power system.

[1] See, for example, IESO's 2012 *Alternative Technologies for Regulation Request for Proposals*.

(8) If demand charges must be applied to ASP ESS, ESC requests that the OEB ensure consistent cost responsibility treatment. For example, consider an ESS that will be providing ancillary services and therefore is expected to potentially consume at its maximum capacity at least once during a given month (i.e., will have distributor and transmitter specific demand charges each month). The ESS could have connection costs for both the distribution system and the transmission system. A distributor may view the ESS as a load and calculate the capital contribution required from the ESS based on the distribution upgrade costs net of future demand charges (as per the Economic Evolution Model for load customers). However, a transmitter who owns and operates the transmission station may view the ESS as a generator and conclude that upgrades are required (e.g., transfer trip). Since the transmitter is viewing the ESS as a generator, the capital contribution is calculated without the benefits of netting future demand charges that the ESS is expected to incur (e.g., line connection rates and transformation connection rate). ESC believes this is an inconsistency that should be addressed. The capital contribution calculation should ensure that transmitters and distributers consider the operation of an ESS as both a load and generator and apply the appropriate approach when determining capital contribution requirements.

Definition of Energy Storage as a Customer in the DSC

(9) The OEB has proposed amending the DSC to be more clear and specific on the definition of "customer". The proposed OEB definition includes "generator, consumer, or embedded distributor". The updated definition does not explicitly include ESS, which can act as both a generator and a consumer, therefore a separate definition for energy storage should be included. The unique traits of ESS could potentially justify exemptions or special circumstances in the DSC to ensure the benefits of ESS are realized by the power system. The OEB correctly indicated that no application from a distributor has been submitted that

includes non-wire investments (e.g., energy storage) for local cost recovery.[2] ESC believes one of the barriers for a distributor considering an optimal solution to a local constraint that includes ESS is the lack of definition and treatment of energy storage in the DSC. ESC recommends that the OEB consider including energy storage as a specific customer class and explore the optimal treatment to ensure the maximum benefits from ESS are unlocked for Ontario's rate-payers.

Recognizing the Efficiency Benefits of Energy Storage

(10) One of the proposed DSC amendments addresses situations where there is a mix of load and generation customers on a distribution connection asset. The OEB proposes using name-plate capacity of a generator customer and non-coincident peak demand of a load customer to determine the amount of apportioned benefit and ultimately the amount of capital contribution required from each customer. As discussed, load shifting ESS can improve the efficiency of a connection asset by withdrawing energy when generation is high (or demand is low) and injecting energy when demand is high (or generation is low). Apportioning benefits based on name-plate capacity or non-coincident peak demand puts ESS at a disadvantage since the operation objective of ESS is to reduce the strain on the connection asset by acting counter to the actions of other customers. This disadvantage in turn creates a barrier to an optimal system solution.

(11) The OEB should consider special circumstances where an ESS is not required to fund a connection upgrade (or has decreased funding requirements) if the operation of the ESS is expected to benefit a connection asset with a mix of generation and load customers by

[2] EB-2016-0003, Notice of Proposal to Amend Code dated September 21, 2017, "Non-Wires Solutions – No Mechanism for Local Cost Recovery", pages 35-36.

charging during low demand time and discharging at peak. Because a connection upgrade could be smaller and lower cost or a new connection asset could be deferred due to ESS, ESS should have only partial funding requirements for the connection upgrade. There are projects being built today that are being held back by this precise barrier therefore these potential exemptions will directly facilitate new technological developments (e.g., energy storage) that support the evolution to a dynamic distribution system.

Regional Distribution Solutions involving ESS

(12) The IESO presented, during the Working Group process, the concept of avoiding higher cost upstream transmission connection upgrades and leveraging the regional planning process through the use of a location distribution company (**LDC**) Feeder Transfer. ESC commends the IESO on this proposed approach and agrees that the concept benefits all customers and maximizes the outcome of regional planning. ESC recommends the LDC Feeder Transfer concept be extended to ESS that avoid the need for upstream transmission connection upgrades for multiple distributors.

(13) Consider, for example, a situation where a third-party ESS could provide demand reduction within one distributor's service territory and reduce the need to upgrade the transmission lines serving the distributor and neighbouring distributors. The OEB should support distributors funding such an investment if the regional planning process determines that it is the optimal solution. Similar to the LDC Feeder Transfer concept, distributors could reach an agreement to fund an ESS project jointly and receive rate-regulated recovery for the agreement with the ESS. The amount of rate-regulated revenue to fund the ESS could be based on the value of that avoided transmission upgrade cost through a credit for the

avoided incremental capacity cost, which in turn could be applied against the connection costs of the ESS (i.e., similar to how future demand charges can offset connection costs).

Exclude ESS from Triggering Bypass Compensation

(14) The OEB has proposed the addition of section 3.5.2 to the DSC that specifies the situations where bypass compensation from a customer is not required. The actions listed are renewable generation, energy conservation, energy efficiency, and load management activities. ESS is an action that can be both an energy efficiency and a load management activity. The OEB identifies net metering as an example of a load management activity; however, it is not clear whether behind-the-meter ESS is also considered an appropriate load management activity. ESC recommends that the OEB clearly and specifically label ESS as an action a customer could take that would not trigger bypass compensation.

Increasing the Cost-Effectiveness of Ancillary Service Provision

(15) The provision of ancillary services (e.g., regulation) maintains system stability for the benefit of all customers in Ontario. As the OEB has recognized, the distribution system is evolving and becoming more dynamic (e.g., no longer limited to delivering electricity to consumers). This has introduced the potential for system-wide services (e.g., ancillary services) to be installed within the distribution system. Connection asset costs are passed on to customers through the ASP ESS contract with the IESO. The result is that the cost of the connection asset is included in the ASP ESS project's economics and therefore recovered at a higher rate of return than would be applied to network pool assets of a rate-regulated utility (e.g. a transmitter). This situation is not optimal for customers, since it results in a higher cost of ancillary service. Instead, the OEB should consider defining the connection assets for ASPs

as network assets to reduce the cost of ancillary service provision and to align with the beneficiary pays guiding principle.

Funding Local Choices

(16) Stakeholder engagement that results in optimal solutions for a local community are important aspects of social infrastructure development (e.g., electricity networks). The OEB has indicated that "premium solutions" with broad local community support should be addressed on a case by case basis, in an adjudicative process, rather than through a change to the TSC and DSC. ESC supports this approach for integrating optimal local solutions. Even though ESS can be cost-effective compared to traditional wires solutions, ESC believes that ESS can be more reliable, sustainable and have lower social impact on local communities. We would like to highlight a very notable local project where Metrolinx, the provincial transit agency, determined that a battery storage solution was a better approach compared to gas-fired generation for the Eglinton Crosstown transit project. This is an example of an inclusive community engagement that yielded a procurement of a cost-effective, sustainable, and reliable non-wires solution. ESC recommends that the OEB continue to monitor and consider the value of "premium solutions" for Ontario’s electricity system.