

## Summary and Commentary on the Energy Storage Recommendation Report from the IESO

Date: January 21, 2019

For parties interested in: Energy Storage and innovation in Ontario

### CONTEXT

- Independent Electricity System Operator (IESO) released “Removing Obstacles for Storage Sources in Ontario” report<sup>1</sup> on December 19, 2018 based on consultation with its Energy Storage Advisory Group (ESAG).
- The report focuses on identified obstacles and mitigating strategies to help ensure fair competition of energy storage resources in the Ontario electricity market.
- IESO makes a series of recommendations to support the mitigating strategies in the report; recommendations are for the IESO as well as the Ontario Energy Board (OEB) and the Ministry of Energy, Northern Development and Mines (MENDE).

### BACKGROUND

As outlined in their Long-Term Energy Plan (LTEP) Implementation Plan, the IESO established the ESAG to “Identify potential obstacles to fair competition for energy storage with other technologies in the delivery of services and, where appropriate, propose mitigation strategies”<sup>2</sup>. The ESAG<sup>3</sup> was launched in April 2018 to advise, support and assist the IESO in evolving policy, rules, processes and tools to better enable the integration of storage resources within the current structure of the IESO-administered markets (IAM). The objectives of the ESAG are to:

- Support the IESO’s work to identify obstacles to fair competition for energy storage resources;
- Provide input to the IESO’s work plan and/or list of priorities to address storage related issues and opportunities; and
- Advise, consult and coordinate discussions on issues which may affect storage participation in the existing IAM.

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<sup>1</sup> The report can be found here [http://www.ieso.ca/-/media/Files/IESO/Document-Library/engage/esag/Removing-Obstacles-for-Storage-Resources-in-Ontario\\_20181219.pdf?la=en](http://www.ieso.ca/-/media/Files/IESO/Document-Library/engage/esag/Removing-Obstacles-for-Storage-Resources-in-Ontario_20181219.pdf?la=en)

<sup>2</sup> The IESO’s LTEP Implementation Plan, “Putting Ontario’s Long-Term Energy Plan Into Action”, can be found here <http://www.ieso.ca/-/media/Files/IESO/Document-Library/ltep/IESO-ltep-implementation-plan.pdf>

<sup>3</sup> The ESAG website contains meeting materials, stakeholder feedback and the recommendation report - <http://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Energy-Storage-Advisory-Group>

## Energy Storage Advisory Group

The ESAG met monthly to identify potential barriers to energy storage, develop criteria and principles for assessment of the barriers, and finally develop mitigating strategies to the barriers. The ESAG and IESO identified thirty-five (35) obstacles to energy storage's fair competition in the Ontario electricity market. The identified obstacles were sorted by the IESO based on those that were in scope (and would have a mitigation strategy developed) and those obstacles that were out of scope for the LTEP implementation plan objective.

### Criteria for Identified Obstacles and Principles for Mitigating Strategies

The IESO applied criteria to each identified obstacle to determine if a barrier was in scope to develop a mitigating strategy. The main criteria question was:

- "Is storage prevented from, or burdened in, competing with other technologies in the delivery of services that they are otherwise capable of providing?"

A "yes" to this criterion implies that the issue under consideration is an obstacle and warrants mitigation. If the answer to the main criteria was not clear, the IESO applied two additional test questions:

- 1) Are Ontario's electricity market rules, codes and regulations able to accommodate the evolution and competition of new technologies such as storage resources? and
- 2) Is the treatment of storage resources, with respect to regulatory and market charges consistent with the intent of those charges?

A "No" to either of these testing questions implies that the issue is an obstacle and warrants mitigation. Of the 35 obstacles identified by the ESAG, 15 were determined by the IESO to be in scope and appropriate to develop mitigating strategies for. A summary of the obstacles identified can be in a table at the end of this client note.

Mitigating strategies were developed under the guidance of the Market Renewal Program (MRP) Guiding Principles. The MRP is a comprehensive enhancement to Ontario's wholesale electricity market design, addressing known issues with the market design. The principles of MRP are:

- Efficiency - lower out-of-market payments and focus on delivering efficient outcomes to reduce system costs
- Competition – provide open, fair, non-discriminatory competitive opportunities for participants to help meet evolving system needs
- Implementability - work together with our stakeholders to evolve the market in a feasible and practical manner
- Certainty - establish stable, enduring market-based mechanisms that send clear, efficient price signals

- Transparency - accurate, timely and relevant information is available and accessible to market participants to enable their effective participation in the market

### **IESO's Storage Report 2019**

The report issued by the IESO provides a summary of the identified obstacles and mitigating strategies discussed with the ESAG. The report makes recommendations to remove barriers for energy storage resources in Ontario. The recommendations were not limited to activities solely under IESO's mandate, many of the recommendations require action by the OEB and MENDE.

The recommendations were divided into two categories. The first addresses lack of clarity in Ontario's electricity regulatory framework (i.e., Market Rules, codes, legislation and regulation) related to energy storage resources. The second category focuses on specific concerns within the regulatory framework. A summary of the recommendations can be in the table at the end of this client note.

### **Next Steps**

The report in IESO's view meets the requirements of the LTEP Implementation Plan to address barriers and identify mitigating strategies for energy storage resources in Ontario. The ESAG is considered a valuable forum for discussion of energy storage issues and evolution, therefore the IESO intends to continue convening the ESAG throughout 2019. The focus for the IESO in 2019 will be two-fold. First, creating and implementing a plan for the integration of storage into wholesale market products and regulation services. Second, creating and implementing a plan for the interface between the wholesale market and distribution-connected storage. The first meeting in 2019 for the ESAG is planned for February 6.

### **Power Advisory Commentary**

The IESO should be commended for the establishment of the ESAG and the engagement activities performed in 2018. In Power Advisory's opinion, the 35 obstacles identified by the ESAG represent the vast majority of issues that energy storage has with the Ontario regulatory framework and represents a comprehensive list of barriers to tackle. Continuation of the ESAG into 2019 will hopefully maintain the momentum for change that is required to maximize the value of energy storage resources for the Ontario power system and ultimately Ontario rate-payers.

That being said, the IESO recommendation report falls short in many areas. First and foremost, electricity market design across the US is preparing to change due to Federal Energy Regulatory

Commission (FERC) Order 841. Order 841<sup>44</sup> requires independent system operators (ISOs) and regional transmission organizations (RTOs) to revise their tariffs (i.e., rules) to accommodate the fair and equal participation of energy storage resources. The Order is pushing ISOs/RTOs to consider and adopt market design and rule changes to support participation models for energy storage sources that allow their full capabilities to be offered to the market. By in large ISOs and RTOs have been able to develop market design changes they believe can meet the Order 841 requirements. If the IESO intends to “move with the US” as the energy storage recommendation report claims is an objective, the IESO should be providing the ESAG with detailed commentary on the Order 841 proposals. Specifically, the IESO should be summarizing the ISOs/RTOs proposed market design changes, describing how applicable those changes are to the IAM and identify what restrictions exist with the current system tools (e.g., dispatch scheduling and optimization (DSO)). The IESO is the most knowledgeable entity on the IAM capabilities and limitations, they should be doing more to inform stakeholders about the opportunities and constraints as they relate to changes being pondered in other markets.

Second, the IESO is undertaking a comprehensive market redesign through the MRP. A key question from ESAG members at the launch of the ESAG was how the IESO would ensure recommendations from the stakeholder group would be included in the MRP process. The recommendation report fails to identify specific recommendations for inclusion in the MRP on behalf of the ESAG findings. Related, the MRP has not included an engagement stream for energy storage resources in their stakeholder outreach<sup>55</sup>. It is not clear how market design changes for energy storage resources are to be included in the MRP design decisions. In the report the IESO does not clearly state whether they have considered if the recommendations are within or outside the MRP scope. As high-level design documents for different MRP projects (i.e., single-schedule market, enhanced real-time unit commitment, and day-ahead markets) transition to detailed design throughout 2019, now is the time to consider market design elements that support fair competition for energy storage in the IAM. If the recommendations in the report are considered outside the MRP scope, the IESO should clearly state as much. In addition, the IESO should describe how an alternative market design change mechanism would operate in parallel to the MRP process. The IESO as the organization responsible for MRP and ESAG should be leading this charge on behalf of energy storage resources, Ontario’s power system and ultimately Ontario’s rate-payers.

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<sup>44</sup> At a high-level, Order 841 instructs ISOs and RTOs to adjust their market design in the following ways: 1) Eligible to provide all capacity, energy, and ancillary services that energy storage resources is technically capable of providing; 2) Energy storage resources can be dispatched and can set wholesale clearing price as both buyer and seller; 3) Account for physical and operational characteristics of energy storage resources; and 4) Minimum energy storage resource size requirement does not exceed 100 kW

<sup>55</sup> See MRP Energy Engagement Plan from the IESO from November 22, 2018. No energy storage resources specific education or awareness session was offered -<http://www.ieso.ca/-/media/Files/IESO/Document-Library/engage/mrp/mrp-energy-dd-engagement-plan.pdf?la=en>

Third, the IESO states in the report “Enabling innovation and competition of newer technologies is central to the IESO’s innovation and efficiency agenda”. The IESO is developing an innovation roadmap<sup>6</sup> to facilitate an internal and external dialogue on the evolution of Ontario’s electricity and broader energy sector as it relates to IESO’s mandate<sup>7</sup>. The report lacks details about how its recommendations are applicable to the innovation roadmap process. The IESO should describe what barriers and mitigating strategies for energy storage are aligned with activities in the innovation roadmap. How the recommendations in the report meet the priority activities in the innovation roadmap would also be helpful for energy storage stakeholders.

Finally, many of the recommendations in the report require coordination or action with the OEB and MENDE. The report provides no guidance on prioritization of the recommendations for the other entities. Further, the IESO provides no strategy for moving the recommendations forward with those entities and only offers the ESAG as a forum to continue discussion. The IESO, as the system operator and ESAG lead, should be more proactive in supporting recommendations in the report. For example, for recommendations that involve further discussion with stakeholders, the IESO could put forward their commentary or analysis about the issue to help to frame the discussion. This approach would also be helpful in providing context to the other responsible entities and provide clarity to all stakeholders where the process stands and what the key focus is.

## CONCLUSION

The ESAG is a forum with a broad representation of stakeholders (i.e., distributors, technology providers, project developers, policy makers, regulators, financiers and market operators). It is an opportunity for those stakeholders to gain knowledge about the limitations of the current market design and market tools with respect to energy storage. It is also an opportunity for the IESO to learn about the evolving capabilities and applications of energy storage resources. With shared knowledge, the IESO and ESAG should be able to develop in depth recommendations for changes to the Ontario regulatory framework that leverage stakeholder feedback and experience in other jurisdictions. The electricity sector is rapidly changing and it is widely believed that energy storage resource will play an important role in maintaining the safe, reliable and cost-effective principles of the electricity sector through this potentially volatile transition. The recommendation report provides a helpful starting point for the barriers that energy storage resources must overcome; however, more in-depth analysis, engagement and integration with other regulatory framework activities is needed.

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<sup>6</sup> Further details on the innovation roadmap can be found here <http://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Innovation-Roadmap>

<sup>7</sup> See IESO’s 2019-2021 business plan for further details on the IESO mandate <http://www.ieso.ca/en/Corporate-IESO/Corporate-Strategy-and-Business-Planning/Business-Plan>

**Recommendation Group 1: Lack of Clarity in Ontario’s Regulatory Framework**

<b>Recommendation</b>	<b>Details</b>	<b>Responsibility</b>
Review and Amend the IESO Market Rules	The IESO should review and amend its Market Rules, where possible, to clarify the participation of storage resources in IESO-administered markets.	IESO
Review the OEB Codes	The OEB should review its Codes to consider energy storage participation and its regulatory framework, including processes and requirements for connections. This work may be undertaken in the context of broader initiatives outlined in the OEB’s Business Plan, such as the initiative to enable DERs.	OEB
	Pending a comprehensive review of its Codes, the OEB could provide information on how to interpret the existing requirements in the Codes with respect to energy storage resources.	OEB
Consider Energy Storage in Ontario Legislation and Regulation	The Government of Ontario should consider the role of energy storage both as part of any new legislation and regulations or amendments to existing legislation and regulation and within Ontario Regulations 124/02 and 442/01, which refer to the gross revenue charge and rural and remote rate protection plan surcharge.	MENDE

**Recommendation Group 2: Specific Concerns with Ontario’s Regulatory Framework**

Recommendation	Details	Responsibility
Consider the Market-Efficiency Impact of Applying Wholesale Uplift Charges	The IESO should lead further discussions to consider the potential impacts to market efficiency resulting from the application of uplift charges. These discussions should be coordinated with design changes as part of the IESO’s market renewal initiatives.	IESO
Review Application of Transmission and Distribution Charges	As the application of transmission and distribution charges is a complex and multi-faceted problem that involves cost allocation and rate design, the OEB should lead further discussions on this issue.	OEB
Clarify the Use of Forecast Revenues from Distribution and Transmission Rates as an Offset to Connection Costs	To the extent that there is an inconsistent application of the DSC and TSC for energy storage facilities when it comes to connection costs, the OEB should provide clarification on the intention and expected application of these provisions.	OEB
	The OEB should also ensure stakeholders are aware of the process for filing complaints regarding incorrect application of rules.	OEB
Provide a Clearer Framework for Including Storage Assets in Rate Base	With new potential cost-effective options to meet needs, the OEB should provide the sector with greater clarity on how to include options such as cost-effective energy storage in the rate base.	OEB
Address the Incentive for Distributors to Favour Capital Investments	The OEB should consider emerging alternatives for service provision, such as energy storage, in its planned review of utility remuneration.	OEB
Develop Guidance for Storage Resources Providing Multiple Services to Different Entities	Recognizing that storage can provide services behind-the-meter and at the distribution and transmission levels, the OEB should develop guidance on providing multiple services to different entities.	OEB
	The IESO should lead discussions with the storage community to better understand the breadth of wholesale market services that energy storage could provide and how to integrate this into the current IESO-administered markets.	IESO
	Given the interconnected nature of these recommendations, the IESO suggests that further discussions should include engagement with the ESAG.	IESO
Review the Application of the Gross Revenue Charge	Since Gross Revenue Charges has tax policy and other considerations, the Ministry of Energy, Northern Development and Mines and the Ministry of Finance should lead further dialogue and review of the application of the GRC to pumped hydro storage.	MENDE

Recommendation	Details	Responsibility
Review the Application of the RRRP Program Surcharge	Given that this charge deals with government programs and policy, the Ministry of Energy, Northern Development and Mines should lead further dialogue and review of the appropriateness of applying the Rural and Remote Rate Protection surcharge to storage.	MENDE
Clarify the Resources that Transmitters and Distributors can Own and Operate	The Ministry of Energy, Northern Development and Mines should give consideration to creating a similar provision for transmitters as that in Section 71(3) of the OEB Act provides in respect of distributors.	MENDE

Obstacles Identified by ESAG (numbers are reference to ESAG original obstacle listing)

<b>In Scope for ESAG 2018</b>
No. 1 (lack of clarity in IESO market rules)
No. 7 (application of IESO uplifts)
No. 8 (application of IESO admin fee)
No. 9 (application of IESO capacity based demand response charge)
No. 10 (application of transmission charges)
No. 11 (application of distribution charges)
No. 12 (application of gross revenue charges)
No. 13 (application of other regulatory charges)
No. 14 (no clear role for energy storage in Ontario legislation and regulations)
No. 25 (perceived inequity between charges applicable to rate-based assets vs. privately owned)
No. 26 (lack of clarity for energy storage interconnections)
No. 19 (lack of clarity in OEB codes)
No. 15 (energy storage definition in OEB act)
No. 29 (lack of clarity in safety and interconnection standards)
No. 24 (clearer framework for rate basing)
<b>Continued Discussion in 2019 thru ESAG or Other</b>
No. 23 (monetizing indirect benefits)
No. 22 (revenues from multiple services)
No. 3 (storage participation in OR)
No. 4 (optimize regulation service for energy storage)
No. 18 (lack of awareness of energy storage capabilities)
No. 5 (IESO DSO)
No. 21 (No aggregation model for energy storage)
No. 20 (lock-down of bids/offers prior to real-time dispatch)
No. 2 (minimum size threshold for market participation)
No. 27 (SCADA requirements for smaller scale energy storage)
<b>Not in Scope</b>
No. 35 (lack of nodal / congestion pricing)
No. 6 (application of global adjustment)
No. 32 (no clear procurement process for large scale storage resources)
No. 33 (policy certainty on ICI program)
No. 17 (price signals for residential and small business customers)
No. 16 (energy storage ineligible for IAP)
No. 34 (better stakeholder engagement for policy changes)
No. 31 (metering to become market participant is expensive)
No. 28 (lack of siting information available to third parties)
No. 30 (LDCs ability to monitor signals from storage)