Energy Storage Design Project – Feedback Form

May 20, 2020

Date Submitted: *2020/06/09*	**Feedback Provided By:** Company Name: Ontario Power Generation Contact Name: Denise Zhong Contact Email: ███████████

Following the May 20, 2020 Energy Storage Advisory Group (ESAG) meeting to discuss the Energy Storage Design Project, the IESO is seeking feedback from participants on whether the design proposals captured within the presentation offer pragmatic solutions for the participation of energy storage in the IESO Administered Markets in the long-term. The IESO will work to consider feedback and incorporate comments as appropriate and post responses on the engagement webpage.

The referenced presentation and design document can be found under the May 20, 2020 entry on the ESAG webpage.

Please provide feedback by June 10, 2020 to engagement@ieso.ca. Please use subject: *Feedback: Energy Storage Design Project*. To promote transparency, this feedback will be posted on the ESAG webpage unless otherwise requested by the sender.

Thank you for your time.

General Comments/Feedback:

Ontario Power Generation (OPG) appreciates the opportunity to provide feedback on the recent Energy Storage Working Group (ESAG) webinar, which was presented by the IESO on May 20, 2020.

OPG fully supports that Energy Storage Resources (ESRs) should be able to compete on a level playing field with other supply sources in the IESO Administered Market (IAM) today and in the future. Therefore it is disappointing to learn that the IESO has decided not to integrate the Long-term Energy Storage Design Project (SDP) within the Market Renewal Project (MRP).
OPG understands that there are many factors as to why this decision was made (such as timelines, budgets, staffing etc…), however if the intent is to be inclusive for ESRs to participate fairly within the IAM, the proposed Long-term SDP should be factored into the market redesign in order to minimize additional costs to potentially change tools after-the-fact. If the Long-term SDP cannot be integrated with MRP it will undoubtedly lead to barriers when making the necessary changes to ensure appropriate design criteria for ESRs in the future.

OPG supports most of the design criteria proposed for the Long Term Energy Storage Design project, but the lack of integration between certain IESO initiatives (SDP, EPOR-E, EMS SCADA Upgrade etc…) and MRP causes significant concerns around the effectiveness and the ability to make these changes to enhance ESRs ability to participate fairly in the IAM.

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State-of-Charge (SOC) Management:	OPG agrees with utilizing a SoC Management option that will allow market and operational flexibility in order to accommodate a variety of different storage technologies. With this in mind, OPG supports the option of utilizing a SoC Management Lite approach, as it will allow participants to adjust the amount of
The IESO has proposed an SoC Management Lite approach that will provide the the same market access as a	control they would like the IESO to have. OPG supports a SoC management

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generator and account for the practical operating realities of a storage facility	option that allows participants to manage their parameters and offers in accordance with what suits their needs. In addition, OPG believes the IESO should allow for participants to be entirely Self–SoC managed within the SoC Management Lite approach. This will allow storage facilities that are inherently complex in nature, and are influenced by a variety of external factors to be solely managed by the market participants. An option of allowing for "Infinite-SoC" within the SoC Management Lite option would allow participants to manage all of their parameters while still being able to partake as a storage resource in the market. The SoC Management Lite framework allows market participants' to manage risk and opportunity while ensuring reliability of the grid. Participants should be given a choice as to whether they would like to optimize their ESRs in DAM/RT, or if they would prefer the IESO to do it.
Market and Facility Registration:	OPG supports the recommendation that ESRs should have the ability to register
Storage facilities may either register as a	as a 'storage resource'. These resources are inherently different from 'generators'
dispatchable facility or, if less than 10	and 'loads', and this new resource model will allow them to be accurately
MW, a self-scheduling facility	reflected in the market. Given the technologies are diverse and evolving for ESRs,
Storage facilities will be modelled as a	the IESO should also monitor the MW limit given for storage resources to register
single resource with the capability to	as dispatchable or self-scheduling, and look to adjust that limit if it causes

inject, store and withdraw energy	significant barriers for ESRs. One of the issues of integrating these new resource models after the MRP is that the DSO would need to recognise that resources can not receive a conflicting Day- ahead/Real-Time financially binding schedule for both generators and loads in the same hour. These SDP design features should be incorporated concurrently

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	with upcoming DSO designs or run the risk of potentially facing roadblocks and additional costs in the future.
Offer Curve: Energy storage offer curves will be continuous over the charging and discharging range	As OPG mentioned in our previous feedback, continuous offer curves provide a technically straightforward option for ESRs. Allowing continuous offer curves accurately reflects the ability of ESRs in to offer (positive) and bid (negative) into the IAMs. OPG would like the IESO to investigate how continuous offer curves can be implemented effectively in the interim design period as well. Participants should be able to offer and bid with a resource into the market with the IESO ensuring there are no overlapping schedules. The interim design plans to incorporate a 'no-overlapping rule', but is there a way, without making costly changes to the DSO, to eliminate the possibility of simultaneous/infeasible dispatch instructions to charge and discharge at the same time? As an example, is it possible for the IESO to investigate manually blocking load offers submitted by a resource when it's scheduled to generate for a given hour and vice versa? As it stands the onus falls solely on the market participants offer/bid strategies. Figuring out a way to ensure resources are scheduled effectively within their full operating range would significantly reduce barriers for ESRs to participate in the Market for the Interim period.

Price Setting:	OPG agrees that an ESR should be able to set MCP for energy and operating reserve. ESRs will have the option of offering energy, operating reserve and other ancillary services, by that virtue alone they should be able to set price.
Dispatchable electricity storage resources should be able to set the market clearing prices for energy and operating reserve	

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Regulation Service: Similar to generators, storage resources will be enabled to provide multiple services including regulation, energy and operating reserve	OPG firmly believes there needs to be a more effective way for the IESO to tri-optimize energy, operating reserve and AGC, and this should apply to all generators and ESRs. The IESO should continue to look into tool enhancements where all resources could provide AGC and Operating Reserve at the same time, this would ultimately lead to a more effective and efficient market. OPG is encouraged that the IESO's SCADA EMS Upgrade project will include a number of design changes that will better incorporate storage facilities into the AGC tool, as well as enhance all resources ability to provide regulation services. However, OPG again encourages that the IESO SCADA EMS Upgrade project needs to work concurrently and be incorporated into the MRP, to ensure proper integration of these changes in both the DSO and the AGC Tool. As it stands, if both tool upgrades occur without integration there will be a disparity between the AGC tool and the DSO. The AGC Tool will be designed to be able to properly model storage facilities, but the DSO Tool will still have two resources model, which will most certainly lead to inefficiencies, and the inability to take full advantage of the AGC Tool enhancements.

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