Energy Storage Design Project – Feedback Form

May 20, 2020

Date Submitted: *2020/06/10*	**Feedback Provided By:** Company Name: TC Energy Contact Name: Charles Conrad Contact Email: [redacted]

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.

Topic	Feedback
State-of-Charge (SOC) Management: The IESO has proposed an SoC Management Lite approach that will provide the the same market access as a generator and account for the practical operating realities of a storage facility	• **TC Energy (TCE) is uncertain of the benefits of the SOC Management Lite proposed by the IESO:** • **In reviewing feedback from other stakeholders, TCE's conclusion is that stakeholders largely supported Self-Managed SOC and TCE tends to agree except in specific applications where ISO-Managed SOC makes sense for the overall IESO-Administered Markets (IAMs) efficiency (e.g., large storage applications participating in multiple IAM products every day.)** • **While the IESO has outlined benefits of SOC Management Lite, the IESO did not provide much in the way of detail on potential drawbacks or alternatives.** • **On SOC-Management Lite, there are a number of areas where more details are required before TCE can render a definitive opinion** o **The IESO has put forward no example calculations to demonstrate the benefits (or potential drawbacks) of SOC-Management Lite. For example, could the IESO demonstrate how SOC management would lead to better market outcomes for rate-payers both in the near-term and long-term?** o **A cost estimate by order of magnitude of SOC-Management Lite compared to Self-SOC Management and compared to ISO-Managed SOC (at least for a sub-set of large assets). At this design stage, high-level cost estimates can be very beneficial before moving forward with more detailed design. High level cost / benefit estimates could be put into three buckets: high potential for net benefits = recommend move forward with design**

Topic	Feedback
	decision; low or no potential of net benefits = recommend not more forward with design decision; or, unclear potential for net benefits = further analysis required. • **In short, while TCE believes SOC-Management Lite is likely a better option vs. Self-SOC management, TCE continues to support ISO-managed SOC (of necessity likely limited to larger ESRs by virtue of being more computationally intensive) vs SOC-Management Lite for all ESRs until further information and analysis is provided**
Market and Facility Registration: Storage facilities may either register as a dispatchable facility or, if less than 10 MW, a self-scheduling facility Storage facilities will be modelled as a single resource with the capability to inject, store and withdraw energy	• **In previous feedback, TCE has advocated for the IESO to treat energy storage resources (ESRs) uniquely and require all participants (above 1MW) to be dispatchable resources. The EPRI research (and IESO summary on slide 21) correctly points out that Self-SOC management is analogous to current treatment of dispatchable storage. The IESO has stated that a requirement for dispatchable treatment below 10 MW is out of scope in order to maintain equivalency with other technologies. TCE does not agree with this conclusion since the market rules have alternative treatments and constraints for different participant types. ESRs are unique and have a greater potential to impact IESO market operations. Requiring all ESR participants to be dispatchable and therefore follow the IESO's scheduling and dispatching processes should lead to lower costs overall.** • **TCE recommends that the IESO investigate a requirement that all ESRs registered in the IESO market be dispatchable, which would be a unique treatment compared to other participation types.**

Topic	Feedback
Offer Curve: Energy storage offer curves will be continuous over the charging and discharging range	• **TCE generally supports the Offer Curve design recommendation**
Price Setting: Dispatchable electricity storage resources should be able to set the market clearing prices for energy and operating reserve	• **TCE generally supports the Price Setting design recommendation**
Regulation Service: Similar to generators, storage resources will be enabled to provide multiple services including regulation, energy and operating reserve	• **TCE generally supports the Regulation Service design recommendation.** • **TCE requests further information and analysis on the benefit of AGC investments to enable full ESR participation, as we believe the benefits of full ESR participation in AGC could be substantial and should not be held back unless there are material reasons for doing so. In particular, what are the potential costs and timelines? What are the benefits and drawbacks? What are the limitations under different AGC tool upgrades?**

General Comments/Feedback:

- The IESO has indicated that energy storage inclusion in MRP is highly unlikely due to the priority of timelines and budget. TCE understands that market design evolution requires tough decisions that cannot address all issues at once; however, coordination of decisions made in MRP with the SDP is paramount so storage integration can occur cost effectively and with limited additional barriers being created. We believe that the benefits to the market of timely ESR integration will far outweigh the budgets required, so if budget constraints are a limiting factor, perhaps alternative funding or cost recovery / cost sharing measures could be explored.

- TCE recommends that each SDP meeting should include an update from the MRP team to discuss how potential SDP design recommendations might work with MRP design decisions, on an interim or temporary or permanent basis. At the same time, TCE recommends that the MRP decision should determine potential for ad-hoc implementation of storage integration using the tools and design decisions being made in MRP. This might not be applicable for all storage technology types, but could be helpful in moving storage integration forward while full funding commitment is not available. For example, the MRP detailed design includes a number of new operating and market participation constraints and limitations for hydroelectric resources (e.g., forbidden zones, energy limited resources, coordination between multiple resources on cascading rivers, etc.). Many of the proposed hydroelectric partipation requirements could easily be applicable to pumped storage without requiring significant additional investments or tool adaptions.
- With respect to the SDP engagement process, TCE recommends that the IESO seek more involvement from stakeholders beyond the current "IESO present, stakeholders provide feedback" framework. Specifically, the IESO could present stakeholders with the core problems and objectives the SDP is trying to solve, and request stakeholders present their own views for consideration. The IESO could then select which themes, recommendations, and concepts best align with addressing the issue using the selection criteria. This alternative approach would reduce the burden of solution identification for the IESO, bring more diverse viewpoints to the table, and ensure that adequate analysis and debate occurs before design recommendations are made.