

Non Emitting Resources Subcommittee

July 2018: Response to Stakeholder Feedback

Following the July 24, 2018 Non Emitting Resources Subcommittee (NERSC) stakeholder meeting, the IESO invited stakeholders to provide comments and feedback to help advance efforts of the group.

The IESO received feedback from the following stakeholders:

- Energy Storage Canada
- OPG
- Ron Tolmie

This feedback has been posted to the [NERSC webpage](#).

Note on Feedback Summary

The IESO appreciates the feedback received from stakeholders. This stakeholder feedback, along with the comments provided at the stakeholder engagement sessions, is important to the collaborative approach the IESO has committed to. All feedback received has been noted and will be considered as the work of the NERSC moves forward. Below, the IESO has provided a summary table which outlines responses in respect of specific feedback or questions for which an IESO response was required at this time.

Stakeholder comments and IESO responses

Design Element	Stakeholder	Feedback	IESO Response
Participation	Energy Storage	In the IESO's presentation on Slide 22, a chart outlines "Services NERs are technologically able	The table referred to on slide 22 of the July 24 th , Phase 1 update is intended to

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	Canada	to provide". One key contribution missing is "Load Services" which energy storage is capable of providing unlike other technologies listed on the chart. ESA would argue that Load Services represent a service/value to the system that is consistent with energy, capacity, regulation, OR, and flexibility. As "load" is not currently a defined service, we could accept seeing the chart including "dispatchable load capability". Slide 20 also omits load services as a potential service in a new market along with environmental attributes and flexibility.	illustrate, at a high-level, services that are commonly procured to meet needs at the transmission level.
Market Efficiency	Energy Storage Canada	The NERSC modelling exercise should be able to account for a range of resource types and sizes, including the unique characteristics of storage such as load and generation. As part of this, on Slide 24 "Challenges for Capital Intensive Projects", ESC maintains that the IESO should look at all possible supply/capacity scenarios, including those resources with longer lifespans and operating horizons. By using the term "capital intensive", the IESO is only looking at these resources from one perspective: shorter-term cost. It ignores the economies of scale and lower long-term costs associated with capital intensive resources (e.g., nuclear and large-scale hydro). If the overall economics are advantageous to the ratepayer, why would these resources not be considered in the "foreseeable	The NERSC modelling exercise does not intend to make assumptions about the future supply mix above and beyond the existing fleet of resources. Rather, as a starting point the model will take a supply mix and demand outlook informed by IESO planning exercises and determine a lowest cost solution to meet energy, capacity, ancillary service, and other system needs. Furthermore, all capital costs used in the model will be levelized over an assumed economic lifetime. This approach will be consistent across resource types, including storage, whose load and generation characteristics will also be

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		future"?	incorporated in the model.
Market Efficiency	OPG	<p>At this meeting, the IESO indicated that there were a number of modeling exercises underway with a common theme to provide insights into the future market. These included: 1) long term planning needs 2) capacity requirements for the Incremental Capacity Auction and 3) future markets under NERSC. Although the purpose of the IESO's presentation was to seek feedback on the NERSC modeling exercise, we would like to highlight the overlap between these three initiatives and request that the work be integrated. These initiatives have similar objectives to illustrate the robustness of the analysis under a number of scenarios and to explore system impacts of market evolution. With this in mind, we would like the IESO to implement a process that coordinates and aligns inputs, assumptions and reporting of the work. It is understood that the analysis itself may be different for each initiative, depending on its focus and the group conducting the work, but the underlying fundamentals should be the same.</p>	<p>Because the NERSC modelling exercise is assessing a unique set of future scenarios developed with stakeholders to test specific questions, the IESO does not believe there is a need for the data within this exercise to align perfectly with that of other planning exercises. The NERSC modelling exercise will, however, use other IESO planning efforts as the jumping off point to explore the specific questions being addressed through NERSC. Furthermore, the IESO will ensure that assumptions across its various modelling exercises are appropriately consistent. More detailed assumptions will be shared with stakeholders at the next NERSC meeting and stakeholder feedback will be sought.</p>
Market	OPG	OPG would like the NERSC modelling exercise	The NERSC modelling exercise could

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Efficiency		<p>to address market and customer impacts associated with potential contract extensions for facilities currently under contract with a change in operating terms and conditions. There is a possibility that the existing contracts could be extended by approximately 10 years in addition to or perhaps in lieu of the ICA. As part of this scenario, it would be beneficial to explore the impact of different operating and environmental incentives that could be included in the proposed contract extensions to increase the value of these resources to the system and the ratepayer. Additional capacity will still need to be procured in the mid 2020s either under a contract or an ICA mechanism.</p>	<p>incorporate a change case within the “Low net demand” scenario to explore the market and customer impacts associated with a higher level of contracted resources. The base assumption of resources under contract in the “Low net demand” scenario is 60%, however, the change case could assess market and customer impacts if 80%, or even 100% of resources remain under contract.</p>
Market Efficiency	OPG	<p>OPG would like the NERSC modelling exercise to address impacts associated with a smaller ICA that does not include new build resources. Participants in this auction would be primarily demand response, interties and potentially any existing capacity or uprates over and above current contracted facilities. The existing Demand Response Auction framework could be used as the base for the design of this auction using terms of one year. It could also be designed as a spot auction to balance changes in demand forecasts within the year thereby minimizing the costs to carry unneeded capacity. New build, because of its development and</p>	<p>This exercise will take the initiatives under Market Renewal as a given. The purpose of the exercise is to help stakeholders understand how they could participate under these and potential additional future market mechanisms across a range of plausible scenarios. This includes modelling the ICA design that is under development today and exploring the types of incremental capacity that the ICA might attract across different scenarios.</p>

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		<p>financial investment horizon, would be compensated under a different mechanism such as contracts. Existing contracts could be extended for their remaining life with perhaps different incentives.</p>	
Market Efficiency	OPG	<p>OPG would like the NERSC modelling exercise to address impacts associated with the marginal contribution to the summer peak of higher levels of non emitting resources. This explores the marginal contribution to the summer peak of different levels of installed non emitting resources. Currently installed solar generation has already shifted the peak demand hour to later in the day when less daylight is available. Future additions of solar generation will have further diminishing value in terms of peak contribution. Wind has a small contribution to summer peak, further incremental wind generation at some point will also have a diminishing return on a marginal basis. Energy storage can assist with solving this issue but it also has diminishing returns and eventually gas generation will be required to meet the net system peak. This situation is exasperated with short duration batteries, which will lead to further shifting of peaks, preventing energy storage to fully contribute during the time of the new peak. If these facilities are charged with CCGTs on the margin (which is one future</p>	<p>Capacity contributions for solar, wind, and storage will be modelled dynamically to reflect how those values change at various levels of penetration.</p>

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		forecast) there may be insufficient spread between on and off peak prices to recover efficiency losses and non-energy charges. The analysis should identify a range of incremental capacity for these resources that would bring value to the market and customer.	
Market Efficiency	OPG	OPG would like the NERSC modelling exercise to address impacts associated with competition and dispatch of supply if low cost non emitting must-run resources set the market clearing price. There is the possibility that a low demand scenario in the Northwest or Northeast zone of Ontario combined with a constrained E-W tieline could result in a significantly greater amount of supply than load. If this supply consists of low marginal cost resources that must run due to regulatory, safety or equipment reasons, the locational marginal price could settle at a value of say -\$2000 / MWh. Although some of these resources may have some limited flexibility to be spilled or shutdown, this scenario would explore the situation where these facilities must operate. The analysis should assess market impact, how the market design should dispatch these resources all converging at the same price and the type of resources that may need to be built (supply and transmission / distribution) or ancillary products / programs developed for Ontario.	The modelling exercise will maintain the resource specific price floors in place for contracted resources, in addition to reflecting the must-run offer behaviour of non-dispatchable resources. Preliminary findings of the modelling will be discussed at an upcoming NERSC meeting. Any potential market challenges highlighted by this exercise will be considered in ongoing efforts on market evolution.

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Market Efficiency	OPG	OPG would like the NERSC modelling exercise to address market impacts associated with stranded asset costs and reliability impacts due to high distributed energy resource penetration and resulting different operation of the IESO Grid. This addresses "sector disruption" scenarios where increasing amounts of distributed energy resources leads to stranded generation and transmission costs, and necessitates different dispatch methods by the IESO. The impact to the reliability of the market, the total system cost required to achieve comparable reliability to today, the value that customers place on reliability and required changes in policy should be assessed.	The NERSC modelling exercise will explore market and total system cost outcomes associated with higher levels of distributed energy resources. An assessment of these outcomes will help to inform discussion on what the IESO and stakeholders should consider if we trend towards a high distributed resource future.
Market Efficiency	Ron Tolmie	Electricity markets should not be examined in isolation from the other energy markets, for example the energy used for heating and cooling our buildings and the energy used for transportation. Exergy stores provide solutions for three Ontario challenges: 1) how we heat and cool our buildings as a thermal supply system like exergy stores would lead to a large reduction in electricity demand. 2) How we supply electricity as exergy stores can reduce the large peak demands that occur in the summer and winter. 3) How we switch to EV's as exergy stores used for heating could create a large network of fast-charging stations.	The scope of the NERSC modelling exercise is to test the robustness of the future energy, capacity, and ancillary services markets across a range of plausible scenarios. Detailed assumptions of the exercise, including resources built into the model will be discussed at the next NERSC meeting.

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