Feedback Form

Pathways to Decarbonization – February 24, 2022

Feedback Provided by:

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Following the February 24 engagement webinar, the Independent Electricity System Operator (IESO) is seeking feedback from stakeholders on the items discussed during the webinar. The webinar presentation and recording can be accessed from the engagement web page.

Please submit feedback to engagement@ieso.ca by **March 16**. Please attach research studies or other materials for consideration by the IESO to support your submission.

If you wish to provide confidential feedback, please submit as a separate document, marked "Confidential". Otherwise, to promote transparency, feedback that is not marked "Confidential" will be posted on the engagement webpage.

Policy

Topic	Feedback
Are the assumptions indicated reasonable and comprehensive in terms of scale and timing?	Click or tap here to enter text.

Topic	Feedback
Are there other considerations for the IESO?	Click or tap here to enter text.

Demand

Topic	Feedback
Are the assumptions indicated reasonable and comprehensive in terms of scale and timing?	Click or tap here to enter text.

Topic	Feedback
Are there other considerations for the IESO?	Click or tap here to enter text.

Resources

Topic	Feedback
Are the assumptions indicated reasonable and comprehensive in terms of scale and timing?	Click or tap here to enter text.

Topic	Feedback
Are there additional data sources that we should consider	Click or tap here to enter text.
Are there other considerations for the IESO?	Click or tap here to enter text.

General Comments/Feedback

APPrO supports the development of the IESO's Pathways to Decarbonization study ("P2D") given stated provincial and federal policy goals, and the importance of achieving net-zero goals by 2050 or sooner. The overall framework is reasonable.

We understand IESO's inclination to limit the policies in the shorter time-frame Moratorium Modelling to those that are already legislatively enacted or announced in detail. However, if market dynamics and the general thrust of federal policy indicate that a policy is reasonably foreseeable, there may be a solid rationale for adding it.

Ontario already has one of the lowest carbon intensity electricity grids in the world. This is a significant advantage to build upon as we work collectively to reduce economy-wide emissions. This fact must be acknowledged in this work and the IESO should model the effects of leveraging this low-cost and low emitting electricity to decarbonize Ontario's economy more broadly as such a scenario may prove that maintaining and leveraging existing assets would have a net benefit to driving down overall emissions in Ontario while maintaining a reliable and cost-effective electricity grid.

At the same time, maintaining a reliable and flexible electric system through this transition means managing electric system development to enable electrification while keeping the cost of delivered electricity affordable. Expensive electricity has the potential to damage the competitiveness of Ontario's broader economy, and undermine efforts to decarbonize the wider economy.

The wise use of our existing supply assets until the end of their operating life in conjunction with consideration of how the IESO administered market might evolve to provide the right investment signals to ensure timely and prudent acquisition of new, cleaner resources will be vitally important in the drive to net zero.

Lastly, given the tight timelines and consequently the limited opportunities for feedback, it would be beneficial if the IESO could develop a workplan to share with stakeholders, which includes a table of contents of the report. This information would provide stakeholders an additional opportunity to work collaboratively with the IESO in shaping the report.

1) Other Comments

    a) Use of extra-jurisdictional data (e.g., US NREL) is likely unrepresentative/inaccurate compared to Ontario-specific circumstances.

        i) The NREL ATB may provide a reasonable trajectory for resource costs over time for some of the generating technologies, however Ontario costs are usually materially different such that a simple application of an exchange rate does not do justice to the differences in labour and material costs. E.g., some renewable capacity factors at the high end (onshore wind @ up to 52%) appear unrealistic

        ii) IESO could, with the agreement of developers, use their firsthand knowledge of resource costs to inform the starting point from which costs can escalate. Recent input price escalation due to supply disruption and non-electricity sector demand may suggest different trajectories on a case-by case basis.

iii) Holding workshops with developers and market participants may be of great assistance in arriving at reasonable real-world cost assumptions for resources. Speaking with banks that have been financing power projects in Ontario would also be an excellent (and efficient) source of guidance on project costs.

2) Need to consider actual supply economics not just contracted costs

    i) This should be subject to further discussion in a workshop-type setting, and reviewed in the study mid-point

3) As the Stakeholder Advisory Committee's "Challenge Statement Urgency and Timing of New Resources" working group has highlighted, "the impacts of international resource supply chains and resource security are areas of growing importance and should be considered in meeting future system needs". The technology-specific Resource assumptions include numerical scoring of Technological Readiness Level, and Commercial Readiness, but does not include scoring of Supply Chain Security. As recent previously unthinkable pandemics and the war in Ukraine have highlighted, depending on far-flung supply chains (especially in potentially unstable or sanctionable jurisdictions) for technology and fuel has tangible reliability implications. A scoring of technologies and their associated resource and fuel inputs for domestic content would be a useful addition.

4) For the IESO to perform its modeling and present its findings in the most helpful manner to government, policy makers and market participants, it should recognize that there are a range of economic options to achieve net zero for Ontario's system that are likely to be informed by future reliability needs, changing supply and demand fundamentals, and technological breakthroughs that could drive reductions in the cost of generation and storage technologies. These should be carefully considered via a robust working groups process.

5) It will be important for P2D success for all participants to work together as a team, without undue emphasis on particular technologies or specific corporate outcomes, recognizing that the IESO cannot solve this matter on its own.

6) Need to reflect federal 2030 Emissions Reduction Plan, when it is released (end of Q2 or early Q3) as well the recently released federal Clean Electricity Standard Discussion Paper.

7) It is important to underscore the critical role that gas fired generation (GFG) currently plays in maintaining reliability of the electricity system. Currently, GFG can provide continuous energy when needed as it is generally available year-round under all weather conditions, once online it is flexible and can be ramped up or down quickly to follow load or meet unexpected changes of the availability of other generators and lastly, GFG facilities also provide other reliability services, such as those that help maintain and stabilize voltage and frequency on the grid.

    a) As acknowledged in the IESO's October 7, 2021, Decarbonization and Ontario's Electricity System report, currently there is no like-for-like replacement supply that can offer similar operating characteristics of gas generation. As such, these assets should be relied upon until the end of their useful life or until such time that there is a suitable, proven and cost-effective technology that provides the same flexible characteristics to the system that gas-fired generation provides today.

8) Storage

   a) Different storage types have different attributes. The P2D assumptions appear to mix technology types together.

   b) Cycling assumptions maybe high and would have an impact on battery degradation.

   c) Concerns that NREL FOM data is bundled with VOM, which leads to unrealistic capacity factors.

9) Imports

   a) A reliance of up to 3,300 MW of firm imports from Quebec will require significant transmission upgrades. Can the IESO confirm that the cost of the expansion of the transmission system to accommodate the maximum volume of firm MW from Quebec will be modelled?

      i) It is worth noting that recent media reports[1] suggest that Hydro-Québec is having difficulty meeting the expectations of industrial projects with large energy needs and warns proponents against the risk of taking its electricity for granted.

   b) The current assumptions document does not have an annual capacity cost associated with firm imports. Can the IESO confirm what capacity cost it will be assigning to firm imports?

[1] "Pour les promoteurs industriels, fini le buffet à volonté chez Hydro-Québec", Le Journal de Montreal, January 19, 2022