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?	**Study Period and Further Opportunity -** Toronto Environmental Alliance (TEA) supports the decarbonization framework proposed in Ontario Clean Air Alliance (OCAA)'s report 'Getting Ontario to a Zero-Carbon Electricity Grid by 2030'.[1] Therefore, for all of the proposed assumptions in each of the tables provided (Policy, Demand, Potential Resource Options), we strongly encourage adopting an accelerated gas generation phase-out date, by 2030 instead of 2035. (e.g. Natural Gas fired Electricity Generation Allowance Benchmark (EPS) 'tapering to 0 tonne CO2e/GWh by 2035' should be 'tapering to 0 tonne CO2e/GWh by 2030'.) Further, the assumption under pathways to 'Evaluate policy opportunities to enable net zero emissions by 2050 or earlier timeframe' should be "as soon as possible", not "by 2050". **Carbon Prices** - It is important to use policy-determined carbon pricing as a base assumption, however the IESO's modelling should also assign weighting within the models to accurately reflect the marginal cost and savings of decarbonizing our economy. For example, the City of Toronto's TransformTO Net Zero Strategy technical models indicate that the community-wide investment needed to decarbonize the City of Toronto is approximately $146 billion, however by 2040 the annual investment becomes net negative, as savings from earlier investments are realized.[2] The City of Toronto's Net Zero Strategy technical model also revealed that taking early action now saves money in the long run; the net present value of the Net Zero by 2040 Scenario is $135 million less than that of the Net Zero by 2050 Scenario[3], a difference of 1%. "In other words, achieving net zero by 2040 ends up costing less than achieving net zero by 2050."

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?	**Moratorium timeline** - As noted above, TEA strongly encourages adopting an accelerated complete gas generation phase-out date, by 2030 instead of 2035. (e.g. the assumption "100% of sales of new clothes drying equipment for residential buildings to be zero emissions by 2035" should be "by 2030, or sooner")

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Resources

Topic	Feedback
Are the assumptions indicated reasonable and comprehensive in terms of scale and timing?	**Load Participation - 'Max Number of Activations'** - It is unclear whether limits on the number of annual demand response activations per year would be imposed by technical constraints or policy decisions. Given the emissions-reduction potential of demand response, by increasing overall system efficiency, lowering aggregate system capacity requirements, and mitigating emissions-intensive gas plant ramp-ups to meet peak loads), the number of activations should not be unnecessarily constrained. **Energy efficiency** - there should be no cap on the price of energy efficiency purchased by the IESO.

Topic	Feedback
Are there additional data sources that we should consider	**Transportation** - The assumption that municipal heavy vehicles will be 100% electrified by 2040 should also incorporate municipalities' interim targets, including for example, Toronto's TTC has commited to be 50% zero emissions by 2028-2032 and 100% zero emissions by 2040.[4]

Topic	Feedback
Are there other considerations for the IESO?	Per the recommendations made by Ontario Clean Air Alliance (OCAA), the decarbonization study should also analyze costs & benefits of: ● returning gas plants' GHG pollution back to 2017 levels as soon as possible ● 100% of the gas plants' GHG pollution is subject to the federal carbon tax ● IESO purchases all available energy efficiency, wind, solar energy resources available at prices below the price of purchasing nuclear ● IESO purchases all Distributed Energy Resources (DER) that costs less than nuclear electricity ● IESO maximizes its purchases of Quebec waterpower via existing transmission lines before it dispatches gas-fired generation ● future expansion of transmission capacity to Quebec ● the model should include the full potential of bi-directional EV chargers ● following the completion of the transition to 100% zero emissions energy generation by 2030, a small number of gas plants may be left on standby reserve so that they may provide emergency backup power, if needed in response to extreme conditions ● thermal storage technology, as is being incentivized for use alongside residential heat pumps in Nova Scotia and Quebec ● the study should not assume RNG or hydrogen are used for space and water heating, and should not assume new nuclear ● the outcomes of the study should be expressed in $/MWh, as opposed to as gross figures, which will make the cost savings of electrification more clear

General Comments/Feedback

Toronto Environmental Alliance (TEA) appreciates the opportunity to attend the IESO's February 24, 2022 engagement webinar and to provide feedback on the preliminary Pathways to Decarbonization assumptions in this submission.

Toronto Environmental Alliance is supportive of approaches to energy policy and grid decarbonization that:

- Accelerate the phase-out of GHG-emitting energy sources as rapidly as possible
- Prioritize energy conservation and energy efficiency, including demand response, before new generation
- Prioritize renewable energy over more polluting sources
- Mitigate pollution, contamination and waste
- Promote social equity and distributes costs fairly, so that polluters pay and cost burdens aren't placed on vulnerable and marginalized communities
- Ensure democratic policies and processes for energy system design and development, and ensures that communities get the benefits of energy projects in their communities

TEA supports the recommendations in Ontario Clean Air Alliance's report 'Getting Ontario to a Zero-Carbon Electricity Grid by 2030' [5], and the calls by 32 Ontario municipalities representing 60% of Ontario's population to completely phase out gas-fired electricity generation [6].

In addition to the Ontario municipalities who have endorsed gas power phase-out, there are numerous governments, regions and international businesses that are setting similar targets, and that have reached or committed to 100% renewable energy. Stanford University Professor Mark Z. Jacobson has summarized these achievements and commitments as of 2020.[7] Ontario is not alone in making this transition, and these jurisdictions and organizations can provide some insights into how a primarily renewable source energy grid can be designed and managed for 100% uptime and reliability [8], and accomplished in the near-term.

The model should be weighted to account for risks and benefits of each energy source that go beyond emissions and cost, including risks and benefits to future generations. Today's financial models generally use discount rates that indicate that future generations are worth less than current generations. Intergenerational justice demands that we conduct full risk assessments including fuel extraction and waste containment risks, and in light of that the model should assume no new nuclear builds, and the gradual phase-out and decommissioning of Ontario's aging nuclear power facilities.

For conservation, energy efficiency, and renewable energy, there should be a weighting for benefits including: price stability; the potential to create good, green jobs; material efficiency and resource conservation; short development timelines; and the potential of renewable energy generation to supplement farming revenues [9,] and the benefits of cleaner air, water and soil, and better respiratory health for Ontarians.

Sources:

1. Ontario Clean Air Alliance, *Getting Ontario to a Zero-Carbon Electricity Grid by 2030*, 2022. https://www.cleanairalliance.org/wp-content/uploads/2022/03/Zero-Emissions-Report-2022-feb-25-v_02.pdf. Accessed 15 March 2022.
2. City of Toronto. *TransformTO Net Zero Framework Technical Report*, p104, Figure 52. Year-over-year investments and returns over the Do Nothing scenario, 2020 - 2050, 0x40 Scenario www.toronto.ca/legdocs/mmis/2021/ie/bgrd/backgroundfile-173759.pdf. Accessed 15 March 2022. (Note: The Net Zero by 2040 Strategy (0x40 Scenario) was adopted by Toronto City Council December 15, 2021, app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2021.IE26.16)
3. City of Toronto. *TransformTO Net Zero Framework Technical Report*, p17, 3. Taking early action now saves money in the long run, 2021. www.toronto.ca/legdocs/mmis/2021/ie/bgrd/backgroundfile-173759.pdf. Accessed 15 March 2022.
4. "Hybrid buses and eBuses" https://www.ttc.ca/riding-the-ttc/TTC-Green-Initiatives. Accessed 15 March 2022.
5. Ontario Clean Air Alliance. *Getting Ontario to a Zero-Carbon Electricity Grid by 2030*, 2022. https://www.cleanairalliance.org/wp-content/uploads/2022/03/Zero-Emissions-Report-2022-feb-25-v_02.pdf. Accessed 15 March 2022.
6. "Ontario Municipalities that have endorsed gas power phase-out", Ontario Clean Air Alliance www.cleanairalliance.org/ontario-municipalities-that-have-endorsed-gas-power-phase-out/. Accessed 15 March 2022.
7. Jacobson, M.Z., "Countries, States, Districts, Counties, Cities, Towns, and International Businesses That Have Reached or Committed to 100 Percent Renewable Energy in One or More Energy Sectors Plus Eight Proposed U.S. Laws/Resolutions to go to 100 Percent" *100% Clean, Renewable Energy and Storage for Everything,* Cambridge University Press, New York, 427 pp., 2020. web.stanford.edu/group/efmh/jacobson/WWSBook/WWSBook.html
8. Jacobson, M.Z., "Zero air pollution and zero carbon from all energy at low cost and without blackouts in variable weather throughout the U.S. with 100% wind-water-solar and storage", *Renewable Energy,* https://web.stanford.edu/group/efmh/jacobson/Articles/I/21-USStates-PDFs/21-USStatesPaper.pdf
9. Intergovernmental Panel on Climate Change. *Climate Change 2022; Impacts, Adaptation and Vulnerability; Summary for Policymakers.* https://report.ipcc.ch/ar6wg2/pdf/IPCC_AR6_WGII_SummaryForPolicymakers.pdf. pSPM-19, SPM.B.5.1., 2022.