To the members of the Energy Transition Panel:

We would like to thank the IESO for the opportunity to comment on Pathways to Carbonization ("the report"). Our comments are general impressions and not comprehensive. We acknowledge the complexity of resolving the issues where divergent stakeholders hold differing solutions. There is no "silver bullet." We appreciate the need to move swiftly while engaging stakeholders and the importance of "galvanizing collaboration." The IESO plays a central role in moving Ontario to a new paradigm where we will live in a world without carbon emissions.

We've just experienced a pandemic and suspended sectors of the economy for years due to an emergency and lives being at stake. Now at least 34 municipalities in Ontario have declared a climate emergency based on mainstream science[1] and have asked the province to phase out gas for electricity production. The federal government has set a target of a net zero electricity grid by 2035, in line with other national governments. [2]

Concerns with the Process

The IESO Board of Directors and the Electrification and Energy Transition Panel would benefit from the addition of professionals with experience in operating and planning large electrical systems that rely on zero emission and renewable technologies like wind, solar or distributed energy.

IESO decisions in the recent past are concerning. It made no financial sense for the Ontario government to cancel the contract to purchase cheap dispatchable hydro power from Quebec, which in 2016 was hailed as saving our province millions of dollars.[3] Subsequently, the IESO report states "we have used cost as a key determining factor" and that more gas plants are needed to avert blackouts, entailing imported blue hydrogen from Alberta. In comparison, the state of New York has contracted

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[1] The science is clear. To keep the 1.5-degree limit within reach, we need to cut global emissions by 45 percent this decade... First and foremost, we must triple the speed of the shift to renewable energy. That means moving investments and subsidies from fossil fuels to renewables, now.
— António Guterres, United Nations secretary general https://www.un.org/sg/en/node/262859

Ontario Municipalities that have endorsed gas power phase-out

[2]https://policyoptions.irpp.org/magazines/september-2022/clean-electricity-genuinely-net-zero/

[3] Hydro deal with Quebec to save Ontario electricity grid $70M | CBC News

inexpensive power from Quebec while eliminating coal fired plants and has instituted a moratorium on new gas generation.

New gas generation may become unusable[4] when the federal government enacts emission caps leaving Ontario taxpayers on the hook. Premier Ford notes in the budget that "clean energy has become an economic imperative as companies around the world want to invest in jurisdictions with affordable, reliable and clean energy." It's notable that the hard won contract for the Volkswagen battery plant in St. Thomas comes with a corporate commitment by Volkswagen for 100% renewable energy in all its North American plants by 2030.[5] There are numerous companies who hold the same commitment and either wish to invest or have already invested in Ontario.

Poor choices in this report

Blue hydrogen has never been produced at scale and has expensive distribution challenges.

> *"The oil and gas sector is pushing for governments to invest in fossil fuel derived hydrogen as a way to create new markets for their products as the world transitions away from oil. There is little scientific or economic evidence that investing in fossil hydrogen production can make a meaningful and cost-effective contribution to achieving a zero emissions economy."*[6]

Blue hydrogen is to be produced in Alberta and shipped to Ontario. By comparison, the IESO has chosen not to import inexpensive hydro power from Manitoba claiming that transmission would be too costly. It would be useful to compare the cost of transmission from Manitoba with the cost of importing blue hydrogen from Alberta or with the cost of investing in geo-exchange which uses the geologic expertise of the oil and gas sector to produce clean electricity.[7]

New nuclear

The problems with Ontario's cost and schedule overruns with nuclear power are well known. There is no reason to assume that new nuclear plants, with untried and untested

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[4] https://environmentaldefence.ca/2022/12/15/statement-from-keith-brooks-environmental-defence-programs-directoron-the-iesos-pathways-to-decarbonization-report/

[5] The federal government's clean energy support allows Ontario to fully decarbonize its power grid and attract more companies to the province.

[6] A Renewable Hydrogen Strategy for Canada

[7] https://www.eavor.com/technology/

technology, or the current refurbishings, will come in on budget or on schedule. In addition, the report's costs do not factor the additional cost of solving the problem of nuclear waste or of decommissioning the plants at the end of their lives.[8] Because nuclear cannot be relied on to meet the urgent need to cut fossil fuel emissions within the prescribed timelines, it makes economic and ecological sense to build more renewables.

New Gas

On Jan. 1, 2030 about 33% of our existing gas-fired electricity generation capacity will still be under contract to the IESO.[9] These gas plants will be on standby for emergencies, mitigating blackouts. We need a moratorium on the export of any gas-fired electricity.[10]

Missing from this plan

Offshore wind - lift the moratorium

The report has chosen not to challenge Premier McGuinty's 2011 moratorium on offshore wind. The province's own study from 2008 finds over 60 sites with the potential for 34,500 MW of power,[11] equal to the new generation that the IESO report says is required. The expected capacity factor is 50%. This moratorium no longer makes sense. Offshore wind technology has improved since 2008 and potential capacity is likely larger.[12]

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[8]https://www.thestar.com/news/canada/analysis/2023/05/04/the-problemswith-canada-and-ontarios-new-push-for-nuclear-energy.html

[9] Ontario Clean Air Alliance Getting Ontario to a Zero Emission Electricity Grid by 2030

[10]https://www.cleanairalliance.org/wp-content/uploads/2022/01/Zero-Emissions-Report-2022-jan-19-v_01.pdf (p.9); In 2019 Ontario exported approximately 3.4 billion kWh of gas-fired electricity. This represents 35% of the total output of Ontario's gas plants in 2019. https://www.cleanairalliance.org/wp-content/uploads/2020/04/OCAA-2019-GFG-Export-Est-Apr-2020-v4.pdf

[11] IESO report: "at least 17,000 megawatts (MW) of non-emitting forms of capacity and 1,600 MW of energy conservation would be needed to take the place of 11,000 MW of natural gas generation capacity"

[12] Analysis of Future Offshore Wind Farm Development in Ontario

Onshore Wind

Why cap onshore wind at 15,800 MW? While the Pathways study (p. 12) cites “site quality, regulatory requirements and distance to transmission infrastructure,” the study also cites much greater wind power from sources as diverse as Enbridge, the David Suzuki Foundation and the Government of Canada with anywhere from 22,000 MW to 84,000 MW (appendix A, tab 7).

Distributed Energy Resources (DER)

The report says “Given our mandate, this assessment focuses only on the bulk power system – i.e., high-voltage transmission lines, generation and interconnections with neighbouring jurisdictions". It is not clear why distributed energy resources are omitted. The Pathways report (p. 13) acknowledges that DERs have the potential to help meet future demands. The IESO’s report, “Ontario’s Distributed Energy Resources (DER) Potential Study” (DERPS), cites energy capacity of up to 61% of peak demand in the summer and 40% of peak demand in the winter. Investment in transmission deferral alone is in the order of 2,400 – 4,150 MW. DER requires incentives to reach its potential and that can be found by investing a portion of the savings to transmission and new generation.[13] Additional savings can be invested in storage.

A good example of distributed energy is the new policy in France which requires solar panels on large parking lots. “French parking lots could soon generate as much electricity as 10 nuclear power plants, [with] a law … requiring canopies of solar panels to be built atop all substantial lots in the country.” [14] Parking lots are close to buildings and EV charging loads. Local generation minimizes the need for additional distribution infrastructure, while providing shade.

Winter Peak

Electrification of HVAC in buildings is expected to increase demand and shift peaks to winter. Members of the Boltzman Institute have stated that Ontario would be unable to power a large-scale conversion to air source heat pumps.[15] Longer term, some of this demand can be mitigated by investing in district energy, using shared geo-exchange and using waste heat in sewage and industrial operations. Some northern European

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[13] (Ontario’s Distributed Energy Resources (DER) Potential Study, Dunsky Energy + Climate, 2022)

[14] New French law will blanket parking lots with solar panels | Financial Post

[15] Private correspondence, Boltzman Institue “The IESO has severely underestimated the power demand of air source heat pumps on very cold days; they have assumed that product improvements will result in the performance at -20 C matching performance at 0 C, but that is contrary to the laws of thermodynamics. It is not credible that Ontario would be able to power a large-scale conversion to air source heat pumps.”

countries have done so for decades. Developing district energy needs to commence immediately because it requires long lead times, especially in urban transit nodes where high density has been mandated by the province.

Transmission

The key goal is to make investments that avoid the need for transmission. When unavoidable, we can speed up transmission development by selling transmission capacity to low-income stakeholders who then receive discounts on their electricity bills. Others are doing this.[16] This contributes to a just transition and galvanizes collaboration.

Efficiency, Conservation and Demand Management

We believe incentives for efficiency, conservation and demand management should play a much greater role. They are underused.

Federal Funding

The federal government is providing $50 billion of funding for "non-emitting electricity generation systems" like wind, concentrated solar, hydro, wave and tidal projects. The province can use this funding to lower the cost of renewable energy. This is likely not factored into IESO's cost estimates. Some have concluded that the federal government's clean energy support allows Ontario to fully decarbonize its power grid.[17]

[16] As practiced by Citizens Energy Corporation, in the US
[17] Accepting federal funds would give Ontario the clean energy advantage in needs,

Conclusion

Reliance on new nuclear and blue hydrogen as pillars of the system, along with hydro and large scale nuclear, will likely mean that their delay or failure will saddle us with gas and its attendant carbon far into the future. There are well known resources at our disposal and funding from the federal government. The IESO can and should take the lead in pressing them into service quickly and in great supply. As the report says, wind, solar and hydroelectric are available and understood. The IESO should press harder with these tools and combine them with distributed energy. This combination is less likely to disappoint. It is the better path to decarbonization.

Toronto East End Climate Collective