



January 8, 2024

BY EMAIL: engagement@ieso.ca

Ms. Lesley Gallinger
CEO, Independent Electricity System Operator
Toronto, Ontario

Dear Ms. Gallinger:

Re: IESO’s Proposed Renewable Energy Procurements

I am writing to provide the Independent Electricity System Operator (IESO) with the Ontario Clean Air Alliance’s analysis and recommendations with respect to the IESO’s proposed renewable energy (wind, water, solar and bioenergy) procurements.

We think the goal of this procurement should be to triple Ontario’s solar and wind capacity by 2035 in keeping with the recent objective endorsed by the Government of Canada at the COP 28 negotiations. We also think it is time for Ontario to end its unnecessary and outdated moratorium on offshore wind power.

As shown in Table 1 below, the IESO is proposing to contract for 5,000 megawatts (MW) of renewable electricity generation capacity with commercial operation dates between 2029 and 2034.

Table 1: Proposed Renewable Energy Procurements¹

Long-Term Request for Proposals (RFP)	RFP Launch Date	Target Commercial Operation Date	Procurement Target
LT2	2025	2029-2031	2,000 MW
LT3	2027	2032	1,500 MW
LT4	2029	2034	1,500 MW
Total		2029-2034	5,000 MW

¹ IESO Resource Adequacy and Long-Term 2 RFP Engagement, (December 13, 2023), page 20.
<https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Long-Term-RFP>

According to the IESO, its procurements will be open to: a) *new* renewable generation facilities; and b) *existing* renewable generation facilities whose contracts expire between 2026 and 2034. Existing facilities will be eligible for a renewed contract if they increase their generation capacity by 20% relative to their existing contract capacity.²

Between 2026 and 2034, 5,000 MW of the IESO’s existing renewable electricity (wind, solar and bioenergy) contracts will expire.³ As a result, the IESO could achieve its 5,000 MW procurement target by re-contracting for 4,150 MW of capacity from existing facilities that have *increased* their capacity by only 850 MW.

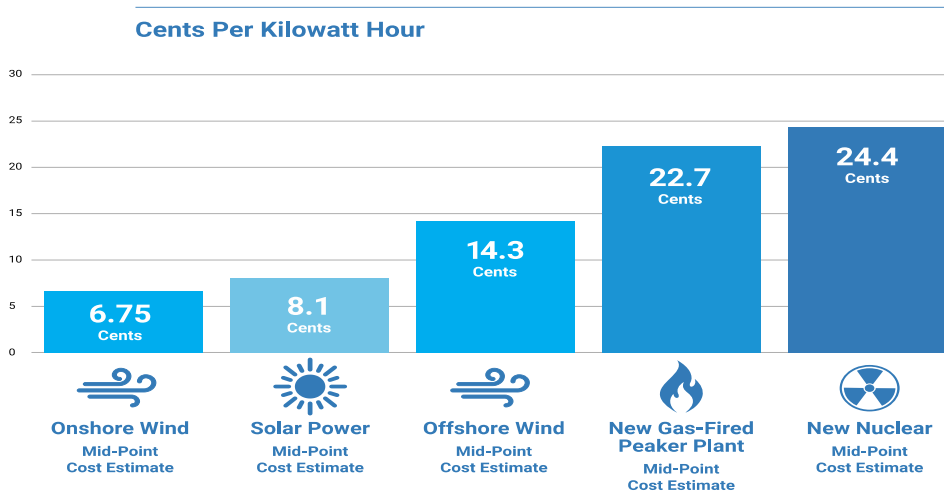
This small increase (850 MW) in renewable energy capacity would be equivalent to approximately 10% of Ontario’s existing wind and solar capacity.⁴

To put 850 MW of *new* renewable electricity capacity in additional context, it is worth noting that the Government of Ontario is planning to contract for 1,500 MW of *new* gas-fired generation capacity and 6,000 MW of *new* nuclear capacity at the Bruce and Darlington Nuclear Stations.

The Least-Cost Options

Figure 1 compares the costs of new wind, solar, gas and nuclear electricity.⁵ It doesn’t make sense to build new gas plants and new nuclear reactors when wind and solar can keep our lights on at much lower cost.

Figure 1 | Ontario’s Electricity Options: A Cost Comparison



² IESO Resource Adequacy and Long-Term 2 RFP Engagement, pages 25 & 28.

³ IESO, 2022 Annual Planning Outlook, Data Files, Figure 7; <https://www.ieso.ca/en/Sector-Participants/Planning-and-Forecasting/Annual-Planning-Outlook>

⁴ 2022 Annual Planning Outlook, Data Files, Figure 7.

⁵ <https://www.cleanairalliance.org/a-picture-is-worth-billions/>

Phasing-Out Gas Power ASAP

As Table 2 below shows, the construction times for new solar and wind projects are three months to one year.

Table 2: Construction Times for Solar and Wind⁶

Residential Rooftop Solar PV	3 months
Utility-Scale Solar PV	9 months
Onshore wind	12 months
Offshore wind	12 months

In contrast, according to the IESO, new nuclear reactors can take 10 to 15 years to build.⁷

In short, new wind and solar generation can help Ontario phase-out gas power much more quickly than new nuclear generation.

Harmonizing with Quebec

In 2023 Hydro Quebec released its *Action Plan 2035: Towards a Decarbonized and Prosperous Quebec* which calls for Quebec to meet 100% of its future electricity needs by investing in energy efficiency and demand management, renewables and storage.

When the Wind Doesn't Blow and the Sun Doesn't Shine

Since the wind doesn't always blow and the sun doesn't always shine, wind and solar energy must be combined with storage options that can transform these variable energy sources into firm 24/7 sources of electricity supply.

The Government of Ontario is planning to procure at least 2,500 MW of storage from stationary storage options (e.g., large batteries) located in Ontario. However, there are also lower cost storage options that Ontario should pursue.

⁶ Lazard, *Lazard's Levelized Cost of Energy Analysis – Version 16.0*, (April 2023), pages 37 & 38.

⁷ IESO, *Pathways to Decarbonization*, (December 2022), page 4.

According to a Massachusetts Institute of Technology report, the lowest cost storage option for Ontario's electricity system is Quebec's hydro-electric reservoirs.⁸ For example, when our wind power production is above average, our surplus wind energy can be exported to Quebec to keep the lights on in Montreal, and Hydro Quebec can store more water in its reservoirs. Conversely, when our wind power production is below average, Hydro Quebec can use the extra water in its reservoirs to produce electricity for export back to Ontario. In short, by integrating our wind generation with Hydro Quebec's reservoirs, we can convert variable wind energy into a firm 24/7 source of electricity supply for Ontario.

The total storage capacity of Hydro Quebec's reservoirs (228 billion kilowatt-hours⁹) is 1.6 times greater than Ontario's total electricity consumption in 2022 (137 billion kilowatt-hours).

The IESO has identified how we can increase our access to Hydro Quebec's reservoirs by 7,500 MW by upgrading our transmission links with Quebec at Chats Falls (2,000 MW), Ottawa (2,000 MW), Beauharnois (2,000 MW) and Cornwall (1,500 MW). All of these upgrades can use existing Hydro One transmission corridors.¹⁰

Our electric vehicles' (EVs) batteries are another storage option for wind and solar energy. When combined with bi-directional chargers, our EVs can store surplus energy when renewable generation is high and return power to the grid when renewable generation is below average. In 2030, the total storage capacity of our EVs' batteries will be more than double the capacity of our gas plants.¹¹

Ontario's Electricity Procurement Needs by 2035

According to the IESO, due to rising electricity demand and the expiration of existing electricity supply contracts, Ontario must procure an additional 50 billion kilowatt-hours (kWh) of electricity generation per year by 2035 to keep the lights on.¹²

Nevertheless, as we have noted above, the IESO is proposing to procure only 5,000 MW of renewable energy generation capacity, which would produce only 12.5 billion kWh of electricity

⁸ Emil Dimanchev, Joshua Hodge and John Parsons, *Two-Way Trade in Green Electrons: Deep Decarbonization of Northeastern U.S. and the Role of Canadian Hydropower*, Massachusetts Institute of Technology Center for Energy and Environmental Policy Research (2020)

⁹ Pierre-Olivier Pineau, Chair in Energy Management, HEC Montreal, *The State of Energy in Quebec and its Implications for Canada*, PowerPoint Presentation for June 28, 2023 Sustainable Energy Initiative Webinar at York University.

¹⁰ IESO, *Ontario-Quebec Interconnection Capability: A Technical Review*, (May 2017) and IESO, *Review of Ontario Interties*, (October 2014).

¹¹ Ontario Clean Air Alliance, *Vehicle-to-Building/Grid Integration*, (November 2021).

¹² IESO *Resource Adequacy and Long-Term 2 RFP Engagement*, page 10.

per year.¹³ That is, only 25% of our future electricity needs. This does not make sense since renewable energy could meet 100% of our future electricity needs at a much lower cost than new gas plants or new nuclear reactors.

Ontario could obtain 50 billion kWh of renewable electricity per year by 2035 by: a) re-contracting with the 5,000 MW of *existing* renewable energy capacity whose contracts will expire between 2026 and 2034; and b) contracting for 15,000 MW of *new* renewable energy capacity.

Recommendation #1

To keep our lights on at the lowest possible cost, Ontario should procure 100% of its new electricity supply from renewable energy.

Recommendation #2

Ontario should procure sufficient renewable energy supplies to phase-out gas power by 2035 or sooner.

Thirty-five (35) Ontario municipalities, that represent almost 60% of Ontario's population, have passed resolutions calling for the phase-out of gas power by 2030 or as soon as possible.¹⁴ To put this challenge in context, it is important to remember that in September 2002, when coal-fired electricity was providing Ontario with about 25% of its electricity, the Ernie Eves Government promised to phase-out coal-fired electricity generation by 2015. Ontario achieved a complete coal phase-out eleven and a half years later in April 2014.

In 2022, gas power was responsible for 10.2% of Ontario's electricity supply.¹⁵

¹³ The IESO's analysis assumes that 2,000 MW of renewable energy generation capacity will produce 5 billion kWh of electricity per year. *IESO Resource Adequacy and Long-Term 2 RFP Engagement*, pages 7, 9 & 11.

¹⁴ <https://www.cleanairalliance.org/ontario-municipalities-that-have-endorsed-gas-power-phase-out/>

¹⁵ <https://www.oeb.ca/sites/default/files/2022-supply-mix-data-update.pdf>

Recommendation #3

Great Lakes wind power projects should be eligible to receive renewable energy contracts subject to environmental assessment reviews that demonstrate that their potential adverse impacts have been minimized, and that ongoing monitoring of their impacts on birds and bats will be in place.

In February 2011 the McGuinty Government imposed a moratorium on offshore wind power to permit “further scientific research” so that future decisions could be based “on the best available scientific data”.¹⁶ The Ontario Ministry of Natural Resources subsequently undertook studies on the impacts of offshore wind farms on fish and fish habitat. The studies found that offshore wind farms could be implemented with minimal aquatic impacts.¹⁷

Great Lakes offshore wind power has the potential to produce more than 151 billion kilowatt-hours of electricity per year, which is more than 100% of Ontario’s total electricity consumption in 2022.¹⁸

Recommendation #4

To lower our electricity costs, phase-out gas power by 2035 and create good jobs, Ontario should triple its wind and solar capacity by 2035.

Currently, the IESO has 8,200 MW of wind and solar capacity under contract. In the absence of upcoming wind and solar procurements, the IESO’s contracted wind and solar capacity will fall to 1,700 MW by 2035.¹⁹ Therefore to triple our wind and solar capacity by 2035, the IESO must contract for a total of 22,900 MW of existing and new capacity.

Canada was among the countries at the recent COP28 climate conference that endorsed an objective of tripling renewable energy generation capacity by 2030.²⁰

Yours sincerely,



Jack Gibbons

¹⁶ Government of Ontario News Release, “Ontario Rules Out Offshore Wind Projects”, (February 11, 2011).

¹⁷ <https://www.ontario.ca/page/research-related-renewable-energy-projects>

¹⁸ Ontario Clean Air Alliance Research, *Great Lakes Wind Power: Now is the Time*, (April 2023), page 5.

¹⁹ *2022 Annual Planning Outlook*, Data Files, Figure 7.

²⁰ <https://www.cop28.com/en/global-renewables-and-energy-efficiency-pledge>