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The Honourable Todd Smith
Minister of Energy
77 Grenville St
Toronto, ON

Subject: Pathways to Decarbonization

Dear Minister Smith,

Thank you for the opportunity to provide comment as you consider the analysis provided by the IESO in its Pathways to Decarbonization Study.

Evolugen currently owns and operates 49 renewable energy facilities in Ontario, including 21 hydroelectric facilities, 4 wind farms, and 24 solar sites with a total installed capacity of 1,448MW. Evolugen is the Canadian platform of Brookfield Renewable Partners L.P. (Brookfield Renewable) a globally diversified, multi-technology, pure-play renewable energy company. As a renewable energy leader, Evolugen provides sustainable solutions designed to accelerate the transition to a low-carbon future in Canada.

This consultation is timely. Ontario is entering a period of new electricity system needs, driven by increasing demand and the possible retirement of the Pickering nuclear plant. In addition to the comments below, we also support the submission and recommendations made by the Canadian Renewable Energy Association.

Since the last major system renewal (brought on by the retirement of coal generation), non-emitting technologies have become more efficient, more reliable and less costly. Furthermore, federal investment tax credits for clean energy generation and clean technologies provide a rare opportunity to modernize and increase the province's generating capacity at a reduced cost to ratepayers.

Ontario stands favorably in contrast to other North American regions when it comes to constructing a net-zero electricity system that is big enough, economically viable, and entirely dependable for promoting extensive electrification. However, the challenge is significant and cannot be overcome through gradual pushes. Initiating this transformation immediately is crucial to ensure success.

In addition to starting on the IESO's "no regrets" actions immediately, we emphasize the need for the following:

1. Developing a specific program to recontract existing wind generation.
2. Launching rolling RFPs for renewable energy and non-emitting capacity to meet increasing demand.

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3. Giving Independent Power Producers in collaboration with First Nations the first opportunity to develop hydro in northern Ontario.
4. New transmission

Recontract Existing Wind Generation

Ontario's first wave of wind farms are approaching the end of their contracts and expected useful life. This provides the province with an opportunity to expand generation at significantly less cost than new greenfield wind farms.

A repowered wind turbine not only boasts enhanced productivity in terms of output compared to its older counterparts, but also offers considerable cost savings and minimizes disturbance to the environment. This is made possible by utilizing existing civil infrastructure of the asset, by refurbishing or replacing mechanical (e.g. blades/gearboxes) / electrical components (e.g. generators). Repowering can be completed at a cost of ~$1.0M / MW compared to ~2.0M / MW for a new wind farm. Depending on site specific engineering recommendations, new turbines may be larger and can generate more energy on a similar footprint.

To ensure that Ontario does not lose this existing energy we recommend the IESO develop a recontracting program (similar to the small hydro program) over the next 1-2 years. This framework will provide firms with the financial certainty required to undertake the engineering studies and community consultation needed to keep these assets operating for another 20-30 years. Furthermore, with supply chains challenged, this headway is required for firms to acquire the materials and labour required to keep gaps in generation to a minimum.

More renewable energy

Quebec has announced plans to add nearly 12,000MW of new wind capacity to its grid by 2045. This represents a quadrupling of today's installed wind capacity. We recommend that Ontario set a similarly ambitious goal and announce a long-term and predictable sequence of rolling RFPs (every 2-3 years) to meet the increasing energy demand. This will provide developers with the planning horizon needed to develop projects at the lowest cost.

Wind is a natural addition to Ontario's grid:

- More wind capacity enables hydroelectric power stations to prioritize capacity and dispatchability over energy production. In the long run, we anticipate that many hydroelectric dams will either refurbish their operations or implement on-site storage solutions to increase capacity, thereby replacing natural gas generation. As the lowest cost generating type – a surplus of wind generation will be required to make hydrogen via electrolysis, which will also replace some of the demand for natural gas.

- Wind generation is more consistent at night, which aligns well with EV charging and allows the province to offer special (ultra-low) overnight tariffs to incentivize widespread adoption of EVs.

To facilitate this expansion of wind – we recommend that the IESO and Hydro One release and maintain a comprehensive map with areas where integration to Ontario's grid is possible and where long-term demand is forecast (similar to what was released by Hydro-Québec). This will allow firms to only concentrate development efforts (including outreach to municipalities) on areas where projects are needed and deliverable.

More non-emitting capacity

The penetration of affordable renewable energy will require more non-emitting dispatchable resources and capacity to meet demand during peak times. Significant advancements in the electricity sector include the emergence of battery energy storage systems (BESS) and their capacity to store intermittent power generation, releasing it during peak demand periods. As the costs of BESS continue to decline, it will facilitate the expansion of intermittent energy generation sources.

While the majority of the storage systems that bid into the IESO LT1 RFP and E-LT1 RFP were lithium-ion batteries, several other types of storage systems that offer longer discharge are under development and will increase the benefits storage can provide to the grid.

We recommend the province continues to incentivize the procurement of non-emitting capacity.

Hydroelectric

We recommend the Ministry of Energy design a policy framework to allow for IPPs and First Nations to jointly develop new hydro sites in northern Ontario. For new hydro to be built, developers will need significant land tenure and long-term contracts priced significantly higher than the legacy hydro price in Ontario.

There is also a meaningful opportunity to retrofit existing hydro to increase capacity via improved turbines, water management, and other technologies. Hydro-Québec has already started work on three of its hydroelectric dams to add 128MW of installed capacity with the goal of adding 2000MW by 2035 via upgrades.

Evolugen is presently replacing a turbine at its Red Rock facility that will increase the facility's capacity from 41MW to 48MW. This extra 7MW will be dispatchable and produce additional energy. Currently, the IESO does not provide incentives for uprates. We recommend that the IESO enhance financial incentives, using existing procurement streams such as RFPs and re-contracting Programs, for companies to improve their existing dams.

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Transmission

New transmission corridors are paramount to enable the expansion of all the resources listed above. We are already seeing the impact that a relative shortage of transmission in Northern Ontario is having as many quality storage projects cannot be integrated into the grid. We recommend the province accelerate work with Municipalities and Indigenous Leadership to identify new corridors for transmission and launch an ambitious project to get these built.

Conclusion

Access to clean energy at an affordable cost is becoming a key determinant of jurisdictional competitiveness. To maintain its position of leadership, it is critical that Ontario lean on its legacy nuclear, wind, and hydroelectric assets and rapidly build out the resource types that are quickest to bring online, and are least expensive (wind, solar, storage). Policy predictability is critical for projects to have community support, be delivered on time, and at the lowest possible cost.

Evolugen would be pleased to discuss with you and your staff how we can action these recommendations.

Sincerely,

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Vice-President, Government & External Relations

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