

January 17, 2018

Barbara Ellard
Director, Markets and Procurement
Independent Electricity System Operator
1600-120 Adelaide Street West
Toronto, ON M5H 1T1

Dear Barbara,

Power Advisory LLC has coordinated this submission on behalf of a consortium of renewable generators, energy storage providers, and industry associations (i.e., the "Consortium"). The members of the Consortium are: Algonquin Power; BluEarth Renewables; Boralex; Brookfield Renewable Power; Canadian Wind Energy Association; EDF EN; EDP Renewables; Enbridge; Energy Storage Canada; ENGIE; H2O Power; Kruger Energy; NextEra Energy Canada; Pattern Energy; Suncor; wpd Canada; and Canadian Solar Industries Association.

During the December 21, 2017 Independent Electricity System Operator (IESO) webinar discussing the forthcoming non-emitting resources (NERs) Request for Information (RFI), the IESO requested feedback from stakeholders regarding initial thoughts on the forthcoming NERs RFI scope, development, and timelines. This submission represents the Consortium's comments at this time.

Scope of NERs RFI

During the December 21, 2017 webinar, the IESO identified the NERs RFI as having the following two main objectives:

- Inform IESO and stakeholders, and support IESO's Market Renewal Program (MRP) scope of work to be delivered by the Market Renewal Working Group's (MRWG's) Non-Emitting Resource Sub-Committee (NERSC); and
- Provide information on maintenance/upgrades of existing NERs and development of new NERs, focusing on technical and commercial aspects regarding participation within Ontario's wholesale electricity market and ability to meet power system needs.

The Consortium supports the development and the objectives of the NERs RFI. The information the IESO will collect in response to the NERs RFI should be positioned towards providing key input on how Ontario will meet its future supply and system needs while also specifically helping to meet Ontario's climate change policy objectives.

The following sections provide constructive comments and recommendations regarding the development and timelines of the NERs RFI. Overall, if the NERs RFI is to result in useful technical submissions in order to effectively guide and inform the IESO and stakeholders, the IESO should provide additional power system information regarding Ontario's future needs and be clearer in indicating what information is being sought from RFI respondents.

Defining Ontario's System Needs Towards Understanding the Capabilities of NERs Meeting These Needs

In order to set technical context for the NERs RFI, the IESO should enhance the two main RFI objectives by relating them to Ontario's future power system needs. By doing so, this will provide needed context to RFI respondents with additional guidance towards preparation of their submissions.

For example, the following information should be provided by the IESO in context of the NERs RFI:

- More accurate identification regarding Ontario's future supply needs in accordance with the IESO's Ontario Planning Outlook (OPO) 2016 and the Ontario Government's Long-Term Energy Plan (LTEP) 2017 – based on the LTEP 2017, it appears that Ontario will require approximately 2,000 MW of capacity by the mid-2020s but this projected capacity requirement has not been explicitly expressed (i.e., projected quantity) either by the IESO or by the Ontario Government within any document;
- Further refinement of Ontario's projected capacity needs should be placed in context with enhancing system flexibility needs that the IESO has been discussing with stakeholders (e.g., need to increase regulation services to +/- 150 to 200 MW, need to increase 30-minute operating reserve (OR) by over 700 MW) – to the extent that the IESO wants to better understand the capabilities of NERs to provide flexible supply, then the IESO should define Ontario's system flexibility needs within the RFI itself; and

- Updated connection availability information organized by transmission zone/area, including connection availability via circuits, and other useful technical information helping to inform facility upgrades and/or expansion and new project development.

If the IESO and stakeholders are to better understand the capabilities and attributes of NERs and how NERs can help meet Ontario's future supply needs, the IESO should provide additional technical information helping to focus the objectives of the NERs RFI while providing additional guidance to RFI respondents, and not simply 'cast the net out wide' for submissions without providing additional technical guidance and requirements based on Ontario's projected system needs.

The planned NERs technical conference tentatively scheduled for March 2018 supports the above points and provides scope for discussion at this conference. The Consortium supports the planned technical conference and recommends that a summary report from the technical conference be provided to the MRWG by April/May 2018. This summary report should include commentary on the development of the NERs RFI by linking technical capabilities to NERs and how NERs can help to meet Ontario's power system needs.

Proposed Phased Approach and Timelines for NERs RFI

During the December 21, 2017 webinar, the IESO proposed that the NERs RFI will be administered within the following two phases in accordance with the timelines listed in the table below.

- Phase 1 – market-based information supporting MRP
 - Products and services that can be supplied by NERs
 - Barriers for participation within Ontario's wholesale electricity market
- Phase 2 – technical and indicative cost information
 - Development and construction information
 - Financial/commercial considerations
 - Indicative, non-binding capital and operating costs

RFI – Phase 1	RFI – Phase 2
February 2018 - Issue RFI Phase 1	August/September 2018 – Issue RFI Phase 2
March 2018 - NER-SC technical conference	September 2018 - NER-SC report to MRWG
April/May 2018 - Phase 1 RFI submissions due	December 2018 - Phase 2 RFI submissions due
July/August 2018 – Conclusion of Phase 1	Early 2019 – Conclusion of Phase 2

The Consortium recommends that the IESO consolidate the RFI into a single phase with final submissions due by mid-September 2018. With this recommended change in the deadline for submissions, the NERSC report on the findings from the NERs RFI and its submissions can be moved to October 2018.

The recommended timing to conclude the NERs RFI with submissions sent to the IESO by mid-September 2018 and the NERSC report sent to the MRWG by October 2018 will better line up with the NERSC work¹ and the finalization of MRP high-level design documents (i.e., high-level design documents for the energy and capacity workstreams)². This revised timeline will better ensure that all relevant findings from the conclusion of the NERs RFI can inform the work of the NERSC and the MRP high-level design process. The proposed IESO timelines will not capture important information from the Phase 2 submissions (e.g., development information, indicative cost information, etc.) within present NERSC and MRP timelines.

Scope and Requirement of NERs RFI

The Consortium recommends that the following six categories should comprise the information that respondents will need to provide in response to the NERs RFI.

1. General Supply Information
 - Non-emitting fuel type(s)
 - Geographic location/site of resource(s)
 - Project/facility size (MW) and amount of supply (MW and/or MWh)

¹ relating to Incentive Mechanisms phase (scheduled for Q3/18) (i.e., Phase 3 of the NERSC scope of work)

² which appear to now be scheduled for completion by the end of 2018

- Existing facility, facility upgrade or expansion, new project development(s)
- Any combination of non-emitting fuel types, technologies (e.g., energy storage), and/or projects/facilities (e.g., transmission)
- For upgrades, expansions, and new project development(s), timing, plans, and capability to begin construction (including connection lines and bulk transmission where applicable)

2. Benefits and Supply of Electricity Products

- Products that could be supplied (e.g., energy, capacity, ancillary services (identify which ones (e.g., OR, regulation, voltage support and reactive services, black start), etc.), environmental attributes (EAs) (e.g., renewable energy certificates (RECs), etc.)
- Capability to provide services not yet defined by IESO, but may be needed in the future (e.g., ramp, load following, etc.)
- Description of benefits to Ontario's power system that can be supplied by each identified product per identified resource(s) (e.g., resource adequacy and capacity, deliverability, operability, flexibility, etc.)
- Ability to provide additional benefits to Ontario's power system (e.g., flexibility, ability to help manage Ontario surplus baseload generation (SBG), resilience, security, etc.)

3. Connection and Deliverability

- Electrical location/site of resource(s) and connection/delivery point(s)
- Capability to deliver and supply electricity products
- Identification of existing or potential transmission congestion

4. Commercial Information

- Indicative term of electricity supply commitment(s) (e.g., years)
- Indicative price/costs (\$/MWh) (\$Cdn)
- Indicative capacity price/costs, assuming projects are fully supported by capacity payments (\$/MW/year) (\$Cdn)

5. Approvals and Engagement Plans

- Status of any applicable environmental plans, approvals, permits, etc.
- Status of any community and stakeholder engagement plans (including plans with Aboriginal peoples), including any declarations or agreements with

communities and/or stakeholders (including declarations or engagements with Aboriginal peoples)

6. Additional Information

- Comments on, and description of, any barriers to participating within Ontario's electricity market, including specific identification of existing barriers (e.g., IESO Market Rules, etc.) and recommended solutions to address barriers
- Recommended changes to the design of Ontario's wholesale electricity market for inclusion within MRP
- Recommendations on next steps post NERs RFI conclusion (e.g., Request for Proposals (RFP), etc.)

Within the stakeholder consultation process to develop the NERs RFI, results, conclusions, and potential post-RFI steps need to be discussed. Within the consultation, information relating to respondents' submissions needs to be discussed regarding what information can be made public and what information remains confidential. For example, information regarding indicative cost, development, and detailed connection and deliverability information will need to be reviewed for proprietor confidentiality.

Coordinating Scope of NERSC and NERs RFI

During the December 21, 2017 webinar, the IESO stated that the NERs RFI will support the work of the NERSC. However, it is unclear what exactly the role of the NERSC will be relative to the development of the NERs RFI (e.g., Which stakeholder engagement initiative will the development of the NERs RFI be consulted?). For example, the NERs RFI is not included as an agenda item for the January 22, 2018 NERSC meeting.

The Consortium recommends that the NERSC be the IESO stakeholder engagement initiative to consult on the development of the NERs RFI, supplemented by a few IESO webinars (or similar) that will include any stakeholders. This recommendation is supported by the NERSC being a sub-committee of the MRWG, where the MRWG is in best position to opine on matters relating to the NERSC and the NERs RFI relative to MRP. Therefore, the NERs RFI should be a standing agenda item for all NERSC meetings.

Further, it is imperative that any recommendations contained in reports developed by the NERSC factor in results of the NERs RFI and its submissions. This point supports the

Consortium's recommendations to collapse the proposed two-phase approach with submissions in response to the RFI sent to the IESO by mid-September 2018 and the NERSC report concluding the RFI to be sent to the MRWG in October 2018.

Conclusions and Proposed Next Steps

In closing, the Consortium supports the NERs RFI and applauds the IESO for undertaking this initiative.

The information gathered through this initiative will enable the IESO to make informed decisions towards helping to meet Ontario's future supply and system needs. Further, the IESO is correct in developing a NERs RFI, especially considering recent results from NERs procurement initiatives. For example, the Alberta Electricity System Operator's (AESO's) Renewable Electricity Procurement (REP) Round 1 resulted in contract awards in December 2017 for four wind generation projects totaling nearly 600 MW with an average price of 3.7 cents/kWh (\$Cdn). Even more recently, Xcel Energy announced median pricing (\$U.S.) received for the following proposed NER projects in Colorado: wind generation (1.81 cents/kWh); wind generation + solar generation (1.99 cents/kWh); wind generation + battery storage (2.1 cents/kWh); and wind generation + solar generation + battery storage (3.06 cents/kWh).

To enhance the scope of the NERs RFI towards better ensuring thoughtful and technically insightful submissions, the Consortium recommends that the IESO make the following key changes:

- Additional clarity and guidance is required regarding the purpose and objectives of NERs RFI, including sufficient technical information relating to Ontario's future power system needs (e.g., capacity, system flexibility, etc.) and connection availability;
- A summary report from the planned March 2018 technical conference should be provided to the MRWG by April/May 2018, including commentary on development of the NERs RFI by linking the technical capabilities of NERs and how they can help meet Ontario's power system needs;
- Collapse the two-phase approach into a single phase with final submissions sent to the IESO by September 2018 and the NERSC report sent to the MRWG by October 2018 regarding findings from the NERs RFI and its submissions;
- Additional clarity is needed regarding how results from NERs RFI could inform MRP high-level design, including how decisions will be made towards determining how

information from the NERs RFI submissions and any recommendations from the NERSC could inform MRP high-level design; and

- In addition to informing MRP high-level design, the results of the NERs RFI should also have potential (if warranted) to trigger a formal procurement initiative for electricity supply from NERs (e.g., RFP, etc.).

The Consortium will be happy to discuss the contents of this submission with the IESO and the NERSC at a mutually convenient time.

Sincerely,



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Managing Director
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cc:

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