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November 13, 2018

Dear Alexandra and Chuck,

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<sup>1</sup>"). This submission comments on the Independent Electricity System Operator's (IESO's) 2018 Technical Planning Conference presentation that was delivered at a stakeholder engagement meeting on September 13, 2018 and in accordance with the planned development of Incremental Capacity Auctions (ICAs).

More specifically, comments are provided below organized by the following topic areas:

- Need for accurate, robust, and transparent power system planning data and information;
- Scope of IESO power system planning outlooks and scenario analyses;
- Lessons learned from existing U.S. Capacity Markets with application to ICAs; and,
- Potential for supplemental procurement mechanisms that can help meet Ontario's future supply needs and coordination with ICAs.

### **Need for Accurate, Robust, Transparent Power System Planning Data and Information**

The Consortium commends the IESO on their September 13, 2018 Technical Planning Conference. At this stakeholder engagement meeting, we were pleased that the IESO

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<sup>1</sup> The members of the Consortium are: Algonquin Power; Axiom Infrastructure; BluEarth Renewables; Boralex; Brookfield Renewable Power; Canadian Wind Energy Association; Capstone Infrastructure; Cordelio Power; EDF Renewables; EDP Renewables; Enbridge; Energy Storage Canada; ENGIE; H2O Power; Innergex; Kruger Energy; NextEra Energy Canada; Pattern Energy; Suncor; wpd Canada; and, Canadian Solar Industries Association.

acknowledged the need for more frequent power system planning meetings with stakeholders and plans for more frequent power system planning reports of various time horizons.

The Consortium supports the IESO's plan to: (i) transform the present 18-Month Outlook to an outlook with a longer term (i.e., up to 60-months forward), including multiple scenarios; and, (ii) produce annual long-term plans (e.g., 10-years, 20-years).

Additional and more frequent power system planning reports from the IESO will help market participants (MPs), electricity customers, and other stakeholders to better plan their businesses, investments, and electricity consumption. As a result, more efficient and informed decisions can be made.

The Consortium understands that one of the reasons why the IESO is expanding the scope of its planning reports is to support future ICAs. We agree with this rationale and encourage the IESO to disclose and disseminate needed power system data and information that is accurate, robust, and transparent. This data and information will be essential for MPs and potential investors to determine whether or not to participate in future ICAs, in accordance with meeting Ontario's power system resource adequacy needs. Based on the Consortium members' experience within other wholesale electricity markets, including Capacity Markets, the following is a list of power system data and information that the IESO will be required to produce ahead of ICAs, and therefore be supported and consistent within IESO power system planning reports (e.g., 60-month outlooks, 20-year outlooks, etc.):

- Gross, net, and grid energy demand forecasts (all-of-Ontario, zones);
- All inputs and variables used to forecast energy demand;
- Methodologies and models used to forecast energy demand;
- Methodologies and models used to determine reserve margins (all-of-Ontario, zones);
- Methodologies and models used to determine transmission zones and capacity zones (if different to transmission zones);
- Supply capacity by individual resource facilities for all MPs and other resources as applicable (e.g., distribution-connected);
- Total supply capacity (all-of-Ontario, zones);
- Schedules for refurbishment of nuclear generating units, with updates as applicable;
- Schedule for retirement of nuclear generating units, with updates as applicable;
- Schedules for generating units applied and approved to de-register from the IESO-Administered Markets (IAM), with updates as applicable;
- Schedule of contract expiries for generation facilities and other resources;

- Schedules and in-service dates for resources in development, with updates as applicable;
- Supply adequacy/resource capability assessments by individual facilities and units for all MPs and other resources, and projects being developed (e.g., unforced capacity (UCAP));
- IESO-Controlled Grid (ICG) security constraints and transfer capability impacting energy production by individual facilities and units, with updates as applicable;
- Transfer capabilities of all interconnections, with updates as applicable; and,
- Import and export capabilities, with updates as applicable.

To support development of IESO's power system planning reports and future ICAs, the Consortium recommends that the IESO establish standing committees or working groups for: (i) demand forecast related areas; and, (ii) supply adequacy related areas including security constraints and transfer capabilities regarding the ICG and interconnections.

The Consortium notes that similar standing committees or working groups exist within U.S. wholesale electricity markets that administer Capacity Markets<sup>2</sup>. These standing committees or working groups keep MPs, electricity customers, and other stakeholders continuously informed regarding important power system data/information and plans. They also inform respective Independent System Operators (ISOs)/Regional Transmission Organizations (RTOs) as to how Capacity Markets should evolve to best meet resource adequacy needs, along with informing any other supplemental resource procurements (e.g., contracting for ancillary services, etc.).

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<sup>2</sup> New England: The New England Power Pool (NEPOOL) Participants Committee (PC) is the principal governing body through which the members of NEPOOL act as an organization. This PC seeks to ensure the representation of all MPs, coordinate and clarify input to ISO-New England, and facilitate formation of consensus positions that have both practical and legal significance to the administration of New England's wholesale electricity market and power system. The PC considers and acts on such matters including recommendations for installed capacity requirements and related values. See: <https://www.iso-ne.com/committees/participants/participants-committee/>

New York: ICAP Working Group See:

[http://www.nyiso.com/public/markets\\_operations/committees/meeting\\_materials/index.jsp?com=bic\\_icapwg](http://www.nyiso.com/public/markets_operations/committees/meeting_materials/index.jsp?com=bic_icapwg), and

Market Issues Working Group See: [https://www.nyiso.com/public/committees/documents.jsp?com=bic\\_miwg&2017-08-24](https://www.nyiso.com/public/committees/documents.jsp?com=bic_miwg&2017-08-24)

PJM: The Markets and Reliability Committee (MRC) ensures the continuing viability and fairness of the PJM wholesale electricity market as well as the reliable operation and planning of the PJM grid. The MRC works with PJM and other committees on matters related to the reliable and secure operation of the PJM system, ensures the fairness of PJM markets, and reviews proposed changes to the rules and procedures of the Operating Agreement. See:

<https://www.pjm.com/committees-and-groups/committees/mrc.aspx>

## **Scope of IESO Power System Planning Outlooks and Scenario Analyses**

The scope of the IESO's present 18-Month Outlook reports provide a very useful short-term forward view of the reliability of Ontario's electricity system, security of the ICG, and resource adequacy to meet Ontario's needs. The IESO's plans to extend the 18-month outlook to up to 60-months with scenario analyses should at least be produced on a semi-annual basis, if not continuing to be released on a quarterly basis.

The IESO's plans to produce an annual long-term outlook report (e.g., 10-years, 20-years) should closely follow the scope and methodologies of Integrated Resource Plans (IRPs)<sup>3</sup>. IRPs will provide Ontario's market with an optimized outlook on system needs and how these needs could be cost effectively and reliably met while taking into account policy objectives.

To enhance annual long-term outlook reports, in addition to a base-case scenario, the following scenarios should be analyzed:

- Decentralization and increases in distributed energy resources (DERs);
- Carbon pricing and declining capacity and energy production from relatively higher carbon emitting resources;
- Increases in non-emitting resources (NERs);
- Potential changes to retirement and/or refurbishment schedules for nuclear generating units; and
- Potential changes to capacity and energy imports and exports, based on economics and demand/supply balance within neighboring markets and jurisdictions.

## **Lessons Learned from U.S. Capacity Markets with Application to Planned ICAs**

Capacity Markets are not administered by all ISOs/RTOs and do not exist in jurisdictions without wholesale electricity markets. Therefore, many provinces and states across Canada and the U.S. do not rely on Capacity Markets to ensure resource adequacy and supply needs.

Capacity Markets are contentious. During the recent *Future of Power Markets Summit* held in early September 2018 in Washington, DC, many divergent views were expressed by senior

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<sup>3</sup> Similar in scope and methodologies to the former Ontario Power Authority's (OPA's) 2007 Integrated Power System Plan (IPSP) and IRPs produced by utilities for regulatory approvals (e.g., BC Hydro, etc.).

electricity executives regarding the efficacy of Capacity Markets<sup>4</sup>. Issues with Capacity Markets are not new and are well known. This is why the U.S. Federal Energy Regulatory Commission (FERC) has held technical conferences on the design and efficacy of Capacity Markets<sup>5</sup>.

For example, ISO-New England's (ISO-NE's) Capacity Market (i.e., Forward Capacity Auction (FCA)) has undergone many significant design and rule changes over the last several years in an effort to improve FCAs<sup>6</sup>. The most recent example is the FERC-approved Competitive Auctions with Sponsored Policy Resources (CASPR) design and rule changes to future FCAs<sup>7</sup>. CASPR will add a secondary auction to FCAs to facilitate the transfer of capacity supply obligations from existing capacity resources, which commit to permanently de-register from ISO-NE's wholesale electricity market, to new state-supported resources (e.g., renewable generation contracted by utilities resulting from state policies).

There are two important overarching points to be made regarding ISO-NE's CASPR changes to FCAs. First, CASPR represents ISO-NE's attempt to more effectively integrate resources that receive revenues through long-term contracts (or other mechanisms) with utilities and government agencies via state policies. This, in theory, will help improve FCA prices and revenues for resources without such long-term contracts. Second, the FERC's March 9, 2018 decision represented a very narrow approval, where of the five presiding Commissioners one voted in favor, one voted in favor with caveats, one voted against, one abstained, and one didn't render a clear decision<sup>8</sup>. Therefore, the FERC's decision was clearly not close to being unanimous, therefore clearly reflecting present issues and tensions regarding broad acceptance on the efficacy of Capacity Markets.

Similar issues are being experienced in the PJM wholesale electricity market. In early October 2018, PJM filed a pair of proposals to reform its Capacity Market (i.e., Reliability Pricing Model

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<sup>4</sup> See <https://www.rtoinsider.com/capacity-markets-frr-mopr-99362/>

<sup>5</sup> See FERC staff discussion paper at <https://www.ferc.gov/CalendarFiles/20130826142258-Staff%20Paper.pdf> and <https://www.ferc.gov/CalendarFiles/20130823115125-AD13-7-000TC1.pdf>

<sup>6</sup> Key design and rule changes include, but not limited to: multiple changes to shape and slope of demand curve; additional capacity zones; pay-for-performance and penalties; multi-year commitment period for new resources

<sup>7</sup> See [https://iso-ne.com/static-assets/documents/2018/03/er18-619-000\\_3-9-18\\_order\\_accept\\_caspr.pdf](https://iso-ne.com/static-assets/documents/2018/03/er18-619-000_3-9-18_order_accept_caspr.pdf)

<sup>8</sup> <https://www.ferc.gov/CalendarFiles/20180309230225-ER18-619-000.pdf>

(RPM)) with the FERC<sup>9</sup>. This recent filing represents PJM's revisions for a capacity re-pricing plan that the FERC had previously rejected in June 2018.

Under both proposals, PJM proposes to remove state-subsidized resources (e.g., nuclear generators receiving state ordered payments, etc.) from RPMs and institute a price floor for resources that remain. In one of the proposals, PJM proposes to boost capacity prices for the remaining resources to address price-suppressive effects by removing subsidized resources all together from RPMs.

The above examples and their issues need to be considered during the Capacity Workstream detailed design stakeholder consultations for planned ICAs. Rather than using these examples as reasons why ICAs should be designed to integrate Ontario's contracted and rate-regulated resources similarly to what's being done in ISO-NE and being proposed in PJM's proposal, the Consortium recommends that these examples and other known Capacity Market issues<sup>10</sup> should steer the IESO towards simplifying the present contemplated draft high-level design (HLD) components that have been consulted on with stakeholders to date. That is, given present controversies with Capacity Markets combined with proposed fundamental changes to their design, the IESO should at least initially design ICAs practically to meet Ontario's supply needs.

The Consortium agrees that the "incremental" element of ICAs is prudent for Ontario because resource adequacy in the IAM is mainly being addressed by contracted and rate-regulated resources along with some conservation and demand management (CDM). Therefore, considering the IESO's recent planning update provided on September 13, 2018, indicating an approximate capacity need of 1,400 MW in 2023<sup>11</sup> and then 3,700 MW in 2025, ICAs should be

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<sup>9</sup> See <https://www.utilitydive.com/news/pjm-recasts-capacity-repricing-in-market-reform-filing-at-ferc/538752/>, and <http://www.rff.org/blog/2018/pjm-and-iso-ne-tackle-capacity-market-reform-did-they-succeed>

<sup>10</sup> For example, the ISO-NE FCAs have gone through frequent design and rule changes since its inception and each of these changes has been met with controversy. Some of the main design and rule changes over the last five years include: multiple changes to the demand curve (i.e., changes in shape and slope, inclusion of marginal reliability impact, multiple changes to cost of new entry calculations, inclusion of distributed solar energy production, etc.); changes to increase timelines of commitment period and forward period; offer price rules applied to some resources (e.g., contracted renewable generators) acting somewhat like capacity floor prices; and, pay-for-performance penalties for resources that do not meet supply obligations.

<sup>11</sup> At the IESO's September 12, 2018 ICA stakeholder consultation meeting, the IESO stated that the first ICA is now planned for 2023 (see slide 17 in the September 12, 2018 presentation titled Incremental Capacity Auction (ICA) Participation Model - The Vision located at: <http://www.ieso.ca/en/sector-participants/market-renewal/market-renewal-incremental-capacity-auction>). Therefore, given the revised timing for the first ICA, the IESO acknowledged

more simply designed to directly meet relatively small capacity needs. This should be so especially given very few contracts with generators will expire before 2025.

Because ISO-NE's FCAs and PJM's RPMs essentially 'clear' all installed and planned capacity resources towards meeting each control area's resource adequacy requirements, the designs and rules of these Capacity Markets should arguably be more detailed in an attempt to ensure effective procurement of many different resources with many different characteristics and requirements. This simply will not be the case within the IAM – at least for the initial ICAs while most generators are contracted and prohibited to participate in the ICA. Therefore, the Consortium recommends a simplified design<sup>12</sup> for at least initial ICAs that could evolve over many years when a more diverse resource mix will need to be accounted for as contracts with generators of multiple resource types expire in the late 2020s through to the 2030s.

### **Supplemental Procurement Mechanisms Can Help Meet Ontario's Future Supply Needs Coordinated with ICAs**

In addition to announcing Ontario's future capacity needs as referenced above, at the September 12, 2018 ICA and the September 13, 2018 Technical Planning Conference stakeholder engagement meetings, the IESO stated that "Until auction [ICA] has a proven track record, there is recognition that large capital new build may be less likely to participate"<sup>13</sup>.

The above points suggest that MPs, electricity customers, and stakeholders should begin to work with the IESO to design supplemental procurement mechanisms. In addition to mechanisms the IESO may use by way of the Market Rules (e.g., purchasing emergency energy, etc.), the IESO should be open-minded to entering into contracts under specific conditions. These conditions can be guided by principles and criteria to determine when contracts could be used to meet Ontario's resource adequacy requirements and supply needs.

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that the projected 1,400 MW capacity need for 2023 will not be met by an ICA and alternate procurement will be required.

<sup>12</sup> For example, seasonal obligations are currently proposed which adds requirement for development of Summer and Winter demand curves. Also, multiple rebalancing auctions are likely not needed given relatively small size of auctions. Further, multiple capacity zones with multiple demand curves will not be initially required.

<sup>13</sup> See slide 49 in the September 12, 2018 presentation titled Incremental Capacity Auction (ICA) Participation Model - The Vision located at: <http://www.ieso.ca/en/sector-participants/market-renewal/market-renewal-incremental-capacity-auction>

The Consortium notes two important points in support of the use of contracts.

First, contracts are a key mechanism within all wholesale electricity markets. Bilateral contracts enable development of resources to meet power system needs, resource adequacy requirements, and buyer choices/preferences. For example, utilities (e.g., Load-Serving Entities (LSEs)) typically enter into bilateral contracts to meet their resource adequacy obligations on behalf of their load customers, and some utilities enter into bilateral contracts for certain electricity products (e.g., environmental attributes) as an economic way to meet specific objectives. Another example exists where corporations looking to secure their own supply needs, including specific electricity attributes, enter into bilateral contracts<sup>14</sup>. Due to Ontario's electricity market structure and regulatory framework, bilateral contracting is very illiquid and does not project to becoming sufficiently more liquid at this time. Therefore, contracts should remain to be a viable tool for the IESO towards achieve objectives of securing cost-effective, reliable power, while providing the additional benefit of procuring for multiple products and services (e.g., energy, environmental attributes, etc.).

Second, contracts afford greater certainty and stability which enables hedges to supply costs and multiple project financing options. For example, non-recourse debt-financing of projects can result in cost-effective financing, which in turn can lower 'all-in' electricity project costs. This point, coupled with declining production costs of many resources, results in very competitive and cost-effective contract prices. In fact, some of these contract prices are lower than forward electricity prices, therefore indicating clear savings for electricity customers. Listed below are some recent Canadian examples of contracted resources along with contract prices.

- In December 2017, the Alberta Electricity System Operator (AESO) concluded a Request for Proposals (RFP) under the Renewable Electricity Program (REP) that competitively contracted four projects totaling approximately 600 MW. The weighted average contract price was \$37/MWh resulting in the lowest ever contract prices for wind energy supply in

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<sup>14</sup> Bilateral contracts between corporations and renewable energy suppliers have been increasing – see <https://pv-magazine-usa.com/2017/03/20/solar-goes-corporate-the-rise-of-the-bilateral-ppa/>, <http://there100.org/re100>, and <https://www.greenbiz.com/blog/2014/07/11/GM-HP-Walmart-others-demand-simpler-buying-renewables>



Canada<sup>15</sup>. At the time of executing these contracts, this average contract price was lower than the forward price for electricity in Alberta.

- In October 2018, SaskPower announced the results of its most recent RFP and indicated that the weighted average bid price for the 29 proposed wind energy supply projects was \$42/MWh and that the winning project was well below this average<sup>16</sup>. It is the Consortium's understanding that without costs of interconnection, the average price was \$37.50/MWh.

The above points guide the Consortium's recommendation that the IESO should consider the use of contracts as a cost-effective supplemental mechanism to help meet Ontario's resource adequacy and supply needs. Further, contracts can be designed in such a manner to be best integrated with the IAM and also cost-effective (e.g., contract-for-differences around wholesale energy prices). This supplemental procurement mechanism could be coordinated with ICAs as the secondary mechanism to meet applicable needs, driven by clear principles that support the IESO mandate to supply reliable, and cost-effective power for Ontario.

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

Sincerely,



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Power Advisory LLC

cc:

Leonard Kula (IESO)

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<sup>15</sup> See <https://www.aeso.ca/market/renewable-electricity-program/rep-round-1-results/>

<sup>16</sup> See <https://www.saskpower.com/about-us/media-information/news-releases/potential-renewables-to-build-200-megawatt-wind-power-facility-near-assiniboia>

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