POWER WORKERS' UNION

October 20, 2020

Independent Electricity System Operator
1600-120 Adelaide Street West
Toronto, ON
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Via email to engagement@ieso.ca

Re: Resource Adequacy Engagement

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The Power Workers' Union ("PWU") represents a large portion of the employees working in Ontario's electricity industry. Attached please find a list of PWU employers.

The PWU appreciates the opportunity to provide input on the Resource Adequacy Engagement. The PWU is a strong supporter and advocate for the prudent and rational reform of Ontario's electricity sector and recognizes the importance of low-cost, low-carbon energy to the competitiveness of Ontario's economic sectors.

The PWU believes that IESO processes and initiatives should deliver energy at the lowest reasonable cost while stimulating job creation and growing the province's gross domestic product (GDP). We are respectfully submitting our detailed observations and recommendations.

We hope you will find the PWU's comments useful.

Yours very truly,

Jeff Parnell
President

List of PWU Employers

Abraflex (2004) Ltd.
Alectra Utilities
Algoma Power
Aptum
Atlantic Power Corporation - Calstock Power Plant
Atlantic Power Corporation - Kapuskasing Power Plant
Atlantic Power Corporation - Nipigon Power Plant
Atura - Halton Hills Generating Station
Atura - Napanee Generating Station
Atura - Portlands Energy Centre
Atura – Brighton Beach Generating Station
Bracebridge Generation
Brookfield Power Wind Operations
Brookfield Renewable Power - Mississagi Power Trust
Bruce Power Inc.
Canadian Nuclear Laboratories
Cochrane Telecom Services
Compass Group (Bruce NPD)
Comapss Group (Pickering NGS)
Compass Group (Darlington NGS)
Corporation of the County of Brant
Covanta Durham York Renewable Energy Ltd.
Electrical Safety Authority
Elexicon Energy Inc.
Enwave Windsor
EPCOR Electricity Distribution Ontario Inc.
Erth Power Corporation
Erth Holdings Inc
Ethos Energy Inc.
Great Lakes Power (Generation)
Greenfield South Power Corporation
Grimsby Power Incorporated
Halton Hills Hydro Inc.
Hydro One Inc.
Hydro One CSO
Hydro One Sault Ste. Marie
Independent Electricity System Operator
Inergi LP
InnPower
Kinectrics Inc.
Kitchener-Wilmot Hydro Inc.
Lakeland Power Distribution
Laurentis Energy Partners
London Hydro Corporation
Milton Hydro Distribution Inc.
New Horizon System Solutions
Newmarket -Tay/Midland Hydro Ltd.
Nuclear Waste Management Organization
Ontario Power Generation Inc.
Orangeville Hydro Limited
PUC Services
Quality Tree Service
Rogers Communications (Kincardine Cable TV Ltd.)
Sioux Lookout Hydro Inc.
SouthWestern Energy
Synergy North Corporation
Tillsonburg Hydro Inc.
Toronto Hydro
TransAlta Generation Partnership O.H.S.C.
Westario Power

PWU Submission on Resource Adequacy Engagement

October 20, 2020

The Power Workers' Union (PWU) is pleased to submit comments and make recommendations to the Independent Electricity System Operator (IESO) regarding their September 28, 2020 Resource Adequacy Engagement webinar. The PWU is a strong supporter and advocate for the prudent and rational reform of Ontario's electricity sector and recognizes the importance of planning for low-cost, low-carbon energy solutions to enhance the competitiveness of Ontario's economy.

The PWU supports the IESO's focus on developing procurement mechanisms in addition to a Capacity Auction. Since the beginning of the Incremental Capacity Auction (ICA) consultations, the PWU has expressed concerns about a capacity auction being Ontario's sole mechanism for procuring the province's energy resources given the supply gap that must be addressed reflects up to 50% of Ontario's future capacity needs. Furthermore, since capacity auctions highly favour natural gas fired generation, the approach could increase Ontario's exposure to North American-priced fuel risks and result in higher emissions. Alternative mechanisms are needed to enable the procurement of non-emitting resources. These kinds of resources typically are capital intensive, involve longer lead times, and require additional financial incentives to be competitive.

The IESO has indicated that its proposed procurement framework will explore different procurement mechanisms that could address their requirements related to three timeframes:

- **Short-term:** Annual requirement fluctuations identified from the IESO's planning outlooks will be procured via a yearly capacity auction. This helps mitigate over/under procurement risks. Generally, these resources will be Demand Response (DR), imports, certain existing generation, and storage resources.[1]
- **Medium-term:** Capacity shortfalls identified in the Planning Outlooks for periods beyond three-years are to be procured either through an enhanced capacity auction that has longer forward periods and multi-year commitments, or through a Request For Proposal (RFP) contracting process. These procurements would occur as required based on planning criteria triggers. Resources will generally be existing resources that have material re-investment costs needed to extend capability, or new builds that can meet forward period requirements.
- **Long-term:** Needs identified in Annual Planning Outlook (APO) that are forecast to emerge beyond five years will be procured through RFP/contracts. Longer term commitments are necessary for capital intensive assets or those that require longer lead times. Resources would include new build or major upgrades to existing resources and consider attributes beyond capacity.

The IESO indicates that the design for these mechanisms will be complete by 2024/2025 to procure capacity to meet Ontario's energy needs for 2028/2029 and beyond. This consultation is intended to provide feedback to the IESO regarding these procurement mechanisms to meet Ontario's short-term to long-term needs in the most cost-effective manner.

[1] The IESO did not define "certain existing generation". It is inferred that this may mostly be existing gas-fired generation

The PWU continues to advocate for the transparent conveyance of information about Ontario's future energy needs to stakeholders. This will enable both stakeholders and the IESO to perform evidence-based analysis and determine what the most cost-effective procurement mechanisms are for meeting Ontario's energy and other related policy objectives.

The PWU makes the following recommendations to the IESO:

1. Understand the characteristics of Ontario's energy demand and reflect this in the types of required supply to be procured;
2. Understand the timeframe over which the demand needs will materialize and how this may impact procurement;
3. Use a sensitivity analysis on the demand forecast to guide decisions regarding the most cost-effective procurement mechanism to be used;
4. Identify and clarify other policy considerations associated with the different procurement mechanisms; and
5. Consider procurement mechanisms and their efficacy for meeting short-term and long-term needs.

Recommendation #1: Understand the characteristics of Ontario's energy demand and reflect this in the types of required supply to be procured

The IESO's current demand characterization by timeframe is limited to the identification of overall capacity resource adequacy. This forecast does not consider the nature of supply required to meet demand variability during the day.

Demand for electricity varies daily based on weather, business hours, and residential usage. It is also affected by seasonal variations. The electricity system procurement approach must ensure that supply is available to meet this fluctuating demand.

Ontario's existing nuclear and hydro assets currently provide flexible, low-carbon baseload electricity. The procurement question being considered does not relate to those assets, but to current suppliers with expiring contracts and or are approaching the end of their economic life.

The IESO's forecast shows that 50% of Ontario's total future capacity will be subject to the procurement approach currently being developed. In addition to the aforenoted baseload supplies, Ontario's future electricity demand will require additional baseload, intermediate and peaking resources. As Figure 1 illustrates, a clear understanding of these multiple requirements is a prerequisite for procuring the most efficient and cost-effective resource solution.

- **Baseload Demand:** Resources (e.g., nuclear, hydro) that are required to generate at all times throughout the year.
- **Intermediate Demand:** This form of demand varies on a daily, weekly, and seasonal basis. Meeting this demand with flexible resources presents the greatest number of options but also presents significant cost and reliability/resilience risks. Nuclear and hydro currently provide much of the flexibility required to accommodate the seasonal and day to day fluctuations in demand. With its operational flexibility, Ontario's natural gas fleet is ideally suited for addressing the inconsistent and sometimes difficult to predict hourly fluctuations in demand.

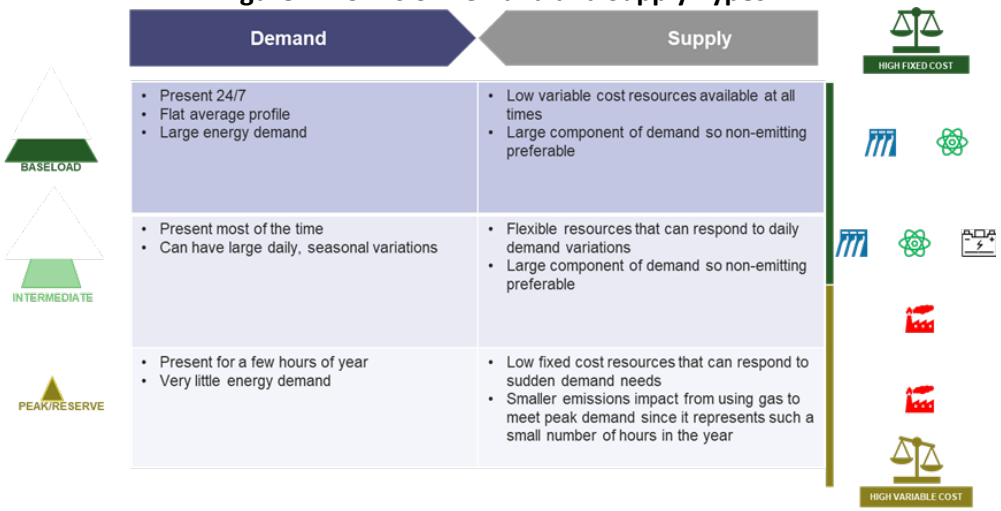
With their relatively lower fixed costs and higher variable costs, natural gas-fired generation is well matched to capacity auction procurements. In contrast, all emerging non-emitting alternatives to gas-fired generation, such as wind, solar and storage, as well as new hydro and nuclear resources, have high fixed costs and negligible variable costs. This makes them unsuitable to auction-based procurement mechanisms.

On their own, the operating modes of these latter resources are not ideally suited to accommodate intermediate demand variations. Hydroelectric production has and can effectively meet some of Ontario's intermediate demand needs, but is somewhat constrained by water availability, the configuration of generating stations and dams on a river, water management plans and the hydrological cycle. Currently, Ontario's existing nuclear assets are being equipped with needed additional flexibility to help address these issues. Solar and wind resources are particularly challenged as their intermittent output is dependent on the weather and affected by geography.

Notwithstanding, all of these emerging resources could be paired with storage to improve their ability to meet intermediate demand, albeit with varying degrees of performance and reliance on backup supplies.[2] Alternatives to natural gas-fired generation for supplying intermediate demand could be facilitated if the procurement process were to seek integrated energy solutions, an option that is not well suited to capacity auctions.

- **Peak Demand:** Resources procured to meet these conditions are rarely called upon to meet peak demand. To be financially viable, such assets must be able to sit idle for over 95% of the year. Peaking natural gas plants have typically been the best match as their low-fixed cost enables cost-effective operations at low capacity factors.

Figure 1: Forms of Demand and Supply Types



Generally, building high-fixed cost resources require longer-term contract commitments and are best procured through an RFP/contract, while resources with high-variable cost are procured through short-term contracts, such as the capacity auction.

[2] Strategic Policy Economics, "Renewables-Based Distributed Energy Resources in Ontario", 2018

To advance the understanding of all stakeholders, the IESO should fully characterize the types of demand that Ontario will need in the future. This will better inform stakeholders about the capacity that must be procured by each type of mechanism.

Recommendation #2: Understand the timeframe over which the demand needs will materialize and how this may impact procurement

Planning a procurement requires a full understanding of the nature of the demand to be supplied, as well as when it is expected to emerge and its duration. For example, capacity auctions typically secure supply resources for a 12-month period. This makes them a good option for meeting Ontario's temporary needs such as while the nuclear fleet is undergoing refurbishments. Other, more cost-effective integrated energy solutions will be required to meet sustained shortfalls over longer periods of demand.

IESO forecasts clearly indicate that the retirement of the Pickering Nuclear Generating Station by 2025 will remove 3,000 MW of baseload supply from Ontario's electricity system. This is in addition to significant shortfalls in intermediate supply as other capacity retires through to 2028.

Clearly defining the timeframe for Ontario's procurement needs on an ongoing basis is important given the lead times required to secure cost-effective and robust solutions.

Recommendation #3: Use a sensitivity analysis on the demand forecast to guide decisions regarding the most cost-effective procurement mechanism to be used

As the IESO has noted, the demand uncertainty associated with long-term forecasts must be managed. Uncertainty will always exist in a forecast and realizing the benefits of long-term contracts may be subject to much of that risk. However, with the size of Ontario's supply gap that must be procured representing 50% of the needed total capacity, most components of the demand forecast are known with confidence.

It is important to transparently characterize where demand uncertainty is greatest. This relative degree of uncertainty is well known by the IESO, a simple proxy is the gap between the low and high scenarios that the IESO has published in its past planning outlooks.

The uncertainty analysis should be applied to each of the three demand forms separately. This will define how much of each type of supply could be procured with confidence via longer-term contracts. The most "uncertain" parts of each demand type could be procured via shorter-term capacity auctions or contracts. This would give the IESO the flexibility of discontinuing the use of these resource should the forecast demand not materialize. Such an approach allows the optimal matching of the supply requirements to the most-suited procurement mechanism. For example, assuming the 100% certainty of a twenty-year, 100 MW annual peak supply, the most cost-effective procurement would be a multi-year or longer-term capacity contract versus the yearly capacity auction, despite this being a peak demand need. The longer-term contractual certainty would lower the risk premiums relevant to the supply.

Recommendation #4: Identify and clarify other policy considerations associated with the different procurement mechanisms

The IESO has appropriately allowed for policy consideration in the procurement process. The energy system represents over $20B in annual spending by rate payers in Ontario. This amount of money being spent on electricity, which is considered to be a public good, emphasizes that the degree to which this asset is effectively leveraged can do much to advance Ontario's economy and the interests and well-being of all Ontarians. For example, climate change is becoming an increasingly important public policy issue, and needs to be addressed through the electricity system, so allowing for these policies within the procurement process will ensure a cost-effective transition to a lower-carbon electricity/energy system. Furthermore, policies that keep as much of the $20B spend inside Ontario, can generate significant economic prosperity for the province.

As the alternative procurement mechanisms are being defined, the IESO should consider related policy considerations that could affect procurement decisions. These could be addressed with the government and be transparently communicated to stakeholders and ratepayers. Examples of broader policy considerations include emissions targets, recycling/waste management, economic targets, jobs, fuel security, and innovation potential.

The relevance of climate policy to electricity system planning is significant. Climate policy objectives will bear on the acceptability of Ontario's long-term commitments to gas-fired generation that are implied by the IESO's capacity auction mechanism. This is an opportunity for the IESO to consider the non-capacity value of electricity systems in its procurement strategy. The timeframe and long-term sustained needs underpinning such procurements should also consider these broader policy implications. Such considerations are especially important as a required procurement increases in size and delivery timeframe.

Recommendation #5: Consider procurement mechanisms and their efficacy for meeting short-term and long-term needs

A transparent and evidence-based understanding of the demand for electricity and relevant policy consideration will facilitate the identification of the optimal procurement option mechanisms available to Ontario.

Baseload and intermediate needs require resources that will be operating for long, extended periods of time throughout the year and, depending on carbon characteristics of the fuel being used, have the greatest potential to impact on climate change. Ontario's procurement mechanisms should enable non-emitting resources to reduce emissions. All non-emitting resource options are capital intensive suggesting that a targeted RFP approach to procurement would be the most cost effective.

Peaking needs require resources that are on standby, but do not generate for much of the year – this is the quintessential definition of a capacity product, emissions intensity is not as relevant. A capacity auction can efficiently procure these resources driven by the objective to secure the lowest fixed cost.

A targeted RFP approach will allow more fulsome specification of the needs to be addressed and enable the evaluation of procurement proposals on emissions, transmission needs, ancillary services, economic impact, or fuel security. For example, the IESO is considering options to enable both grid-level Energy

Storage and distribution-level distributed energy renewables (DERs) to provide benefits beyond capacity and energy. Developing a procurement approach that allows all resources to be evaluated fully would allow the best matching of resources for meeting the province's needs at the lowest cost.

Closing

The PWU has a successful track record of working with others in collaborative partnerships. We look forward to continuing to work with the IESO and other energy stakeholders to strengthen and modernize Ontario's electricity system. The PWU is committed to the following principles: Create opportunities for sustainable, high-pay, high-skill jobs; ensure reliable, affordable, environmentally responsible electricity; build economic growth for Ontario's communities; and, promote intelligent reform of Ontario's energy policy.

We believe these recommendations are consistent with, and supportive of Ontario's objectives to supply low-cost and reliable electricity for all Ontarians. The PWU looks forward to discussing these comments in greater detail with the IESO and participating in the ongoing stakeholder engagements.