Power Workers' Union Submission on the IESO's 2023 Annual Acquisition Report Approach

March 9, 2023

The Power Workers' Union (PWU) is pleased to submit comments and make recommendations to the Independent Electricity System Operator (IESO) regarding the objectives and focus of the planned 2023 Annual Acquisition Report (AAR). The PWU remains 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 that enhance the competitiveness of Ontario's economy.

The IESO held a webinar on February 23, 2023, to discuss its approach to the upcoming 2023 AAR that is planned for release in mid-year 2023. The IESO has invited stakeholders to comment on the topics raised at the webinar which included: (1) the ongoing participation of existing resources and gas-fired generation specifically, given pending contract expirations; and, (2) helping the IESO assess potential risks to future resource adequacy to better inform inputs to the analysis to be undertaken as part of the 2023 AAR.

The objective of the IESO's AAR is to address the needs as defined by the 2022 Annual Planning Outlook (APO) and slightly extend the planning horizon to 2035, which is a key milestone in its Pathways to Decarbonization (P2D) Study. However, the IESO has inferred that the P2D Study would be considered only as it considers the implications of the energy transition. While the PWU agrees that certain aspects of the P2D study are illustrative, such as the role of hydrogen-fueled thermal generation, the PWU believes that the demand implications of the P2D should be used to guide resource adequacy planning and acquisition. The IESO did not clarify the extent to which the AAR may adjust the planning criteria from the APO's demand forecast to include the higher demand growth from the P2D. This is a risk area that the PWU has previously drawn to the attention of the IESO.[1]

The goal of the Ministry of Energy's (MoE) current P2D Study consultation is to identify the near-term decisions required for the continued decarbonization of the provincial electricity grid, including addressing the IESO's own no-regrets actions. Since it is anticipated that the IESO will be fully informed by the findings of the Ministry's P2D consultation prior to the release of its AAR, the PWU offers the following recommendations to address the aforenoted demand risks:

1) The AAR should address the procurement approach for all generation needed to meet the P2D-projected 2035 demand, with appropriate assessment(s) of the risks.
2) The AAR should recognize the need for new non-emitting ***baseload*** supply as soon as possible, and that the procurement process should be immediately accelerated given the associated lead times.
3) The AAR should acknowledge that the IESO's electricity markets are not the best vehicle for procuring primarily fixed cost assets like nuclear, hydro, and existing renewables.
4) Procurement criteria for large infrastructure investments, such as for hydro and nuclear generation, should include the impacts on Ontario's economy, energy security and climate objectives.
5) The IESO should recognize that a new procurement approach requires a different paradigm than currently practiced at the IESO and identify the capabilities needed to address it.
6) Existing assets should be considered transition options and the resulting procurement strategies should be synchronized with the procurement of new baseload and the future of the Atikokan GS.

[1] PWU Submissions to the AAR and APO from 2021 to 2022; PWU Submission on the IESO's 2022 Annual Acquisition Report, April 27, 2022.

Recommendation #1 - The AAR should address the procurement approach for all generation needed to meet the P2D-projected 2035 demand, with appropriate assessment(s) of the risks.

The IESO's P2D study stated that "*for its part, the IESO will incorporate the many learnings from this report into its core work, including more explicitly addressing the risks of climate change and the ongoing energy transition in its planning and procurement processes*." This commitment was not evident at the IESO's February 23 Webinar regarding the role that the P2D will play in the AAR, i.e., how the findings of the P2D study and the Ministry's consultations will be addressed. At a minimum, the IESO should explicitly indicate how it will incorporate the P2D demand forecast in its planning for assessing future resource adequacy requirements.

The 2022 APO identifies a capacity gap of 7.5 GW in 2030 growing to over 11 GW by 2035.[2] The 2030 need is over 3 GW higher than the 2021 APO and 1.5 GW higher than the IESO's current procurement targets.[3] The P2D's 2035 winter peak demand is 2 to 11 GW higher than the APO's summer peak demand. Furthermore, the IESO's P2D may also underestimate demand for 2035. The P2D's exclusion of electrolytic hydrogen effectively underestimates incremental demand by 40%.[4] In addition, other Ontario economic growth factors: critical mineral strategy; EV sector investments; infrastructure build out; and, population growth due to enhanced immigration will push electricity demand higher than has been assumed in the P2D. Ignoring the urgent need to address this new demand growth provides further evidence of the IESO's decade long track record of underestimating the risks of higher demand and inadequately preparing Ontario to meet the emerging capacity needs.[5] As a result, there is wide spread acceptance that Ontario is at risk of brownouts.[6] The IESO's Stakeholder Advisory Committee (SAC) advised the IESO that it should consider developing a greater understanding of demand side trends to ensure it can identify needs in a timely manner.[7]

The IESO identified several "no-regrets" decisions in the P2D study. However, there are additional no-regret actions that should be taken. It is evident that the IESO has had no-risk options for immediately procuring significant new, non-emitting baseload supply for some time i.e., by assessing the demand types and related uncertainties. The PWU has previously suggested this approach to the IESO in earlier submissions.[8]

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[2] IESO 2022 APO data tables, summer capacity deficit Case 1 assuming committed resources.
[3] IESO Resource Adequacy material, June 2022, identifying the approach to procure ~6000 MW.
[4] IESO P2D Table 2; Strapolec, Electrification Pathways for Ontario, 2021.
[5] The IESO' forecast capacity gap for 2030 has grown from 3 GW in 2013 to 6 GW in 2022 and now 11 GW by 2035 in the P2D. More details are provided in Strapolec, Electrification Pathways for Ontario, 2021.
[6] Toronto Star; "Ontario must double down on energy storage to combat looming supply issues", Oct 7, 2022, argues that the IESO's plan for Ontario must "increase the use of natural gas to produce power and to go big into energy storage to avert a looming power crunch that could lead to rotating blackouts" and claiming Minister Smith said a "limited" increase in gas generation is necessary to avoid "emergency actions" such as blackouts and conservation appeals; Toronto sun, EDITORIAL: Ontario at risk of blackouts, Oct 10, 2022; Recent Ontario Energy Directive Takes Aim At Province's Looming Power Supply Gap – But At What Cost?, Feb 16, 2023 - mondaq.com.
[7] IESO SAC Meeting materials, March 2022.
[8] PWU submissions to the IESO Resource Adequacy consultations, 2020, 2021, 2022 based on analysis in Strapolec, Electricity Markets in Ontario, 2020; Strapolec, Electrification Pathways for Ontario, 2021.

Recommendation #2 - The AAR should recognize that Ontario needs new non-emitting ***baseload*** supply as soon as possible, and that the procurement process should be immediately accelerated given the associated lead times.

The IESO's P2D provided a "no-regret recommendation" to facilitate the acceleration of current efforts to acquire new, non-emitting supply and to begin the planning, siting and environmental assessment work needed for new nuclear, long-duration storage and hydroelectric facilities, as well as transmission infrastructure.

It does not appear that the IESO is undertaking its own proactive steps such as acting on the PWU's prior recommendation to "Immediately commence the procurement process for securing the resources required to meet the known infrastructure needs for Ontario's future energy system for 2030 and beyond – low-cost, low-carbon, long economic life span system assets."[9]

Baseload supplies must provide reliable electricity 24x7, 365 days per year. The IESO should undertake a procurement process that clearly identifies Ontario's need for the new baseload supply required by 2035 to meet new forecasted demand and to displace the gas-fired generation that would be needed post retirement of the Pickering Nuclear Generating Station.

While the total peak capacity of 38 GW needed by 2035 is similar in the IESO's P2D and Strapolec reports, the latter's analysis identifies that up to 8 GW of it is required new baseload. Given the pending federal Clean Electricity Regulation (CER) that aims to prohibit gas-fired generation post 2035, this new baseload supply will be required to be non-emitting. This represents a substantial procurement challenge for ensuring the future reliability of Ontario's electricity grid.

The IESO notes that all non-emitting baseload options take time to develop, be it nuclear, hydro, gas-fired generation with Carbon Capture Utilization and Storage (CCUS), or as postulated in the P2D, hydrogen-fired thermal generation with pipeline infrastructure from Alberta. It is worth noting that the IESO's P2D study ruled out the viability of CCUS in Ontario. Moreover, it is important that the IESO recognize that providing baseload supply from renewables still requires flexible back up from low carbon options such as gas-fired generation with CCUS (or hydrogen fueled), both of which involve long-lead times as well.

The IESO should ensure the findings of the Ministry of Energy's P2D consultations are expeditiously reflected in its next steps in preparing the process and criteria for baseload procurement of assets required to be in service by 2035 and reflect that in its upcoming AAR.

Recommendation #3 - The AAR should acknowledge that the IESO's electricity markets are not the best vehicle for procuring primarily fixed cost assets like nuclear, hydro, and existing renewables.

Since the last AAR, the focus of the IESO's procurement mechanisms has shifted from short-term capacity contracts to full 20-year contracts, effectively characterized by power purchase agreements. Experience to date clearly shows that the IESO's approach — segregated capacity and energy markets – does not yield successful procurements.

[9] PWU submission to the IESO on the 2022 AAR, April, 2022.

Analysis previously provided to the IESO predicted this outcome.[10] The fixed cost nature of non-emitting supplies, such as nuclear and hydro, requires a different approach to secure financing. The IESOs AAR should identify a different procurement approach for:

- Baseload supplies that must be available 24x7, with 40-60-year asset lives;
- Intermediate flexible supplies that can provide variable output as required; and,
- Peaking and reserve supplies required infrequently.

Each supply type will have different technical, performance, and operational requirements. The IESO'S procurement approach should also address the associated decommissioning and waste management streams associated with each resource.

Recommendation #4 - Procurement criteria for large infrastructure investments, such as for hydro and nuclear generation should include the impacts on Ontario's economy, energy security and climate objectives.

Previous PWU submissions to the IESO on its procurement approach for large scale non-emitting baseload supplies recommended the following additional procurement criteria:[11]

- Cost (total) to rate payers (e.g. integrated solution costs);
- Cost and schedule risks, including mitigation;
- Benefits and synergies for Ontario's electricity and energy systems:
    - Implications for transmission and distribution costs;
    - Impacts on reserve capacity;
    - Synergies with DER and the hydrogen economy, etc.;
- Economic growth for the provincial economy – in GDP, jobs, and tax revenues for government;
    - Implications for Ontario's industrial competitiveness of electricity / energy costs.
- Accelerated decarbonization of the economy;
- Security of domestic low-carbon energy supply;
- Strengthened industrial policy; and,
- Enhanced Innovation ecosystem within the broader economy

Recommendation #5 - The IESO should recognize that a new procurement approach requires a different paradigm than currently practiced at the IESO and identify the capabilities needed to address it.

The IESO's recalcitrant rejection of common-sense approaches to proven procurement practices for large scale infrastructure has led to a failed procurement process over the last year:

- Missed milestones
- Ill-proven attempts to develop new revenue models

[10] Strapolec, Electricity Markets in Ontario, 2020, PWU submission to the IESO in resource adequacy, 2020, 2021.
[11] PWU submissions on the AAR, 2021, 2022; Strapolec, Electricity Markets in Ontario, 2020; Strapolec, Electrification Pathways for Ontario, 2021; Green Ribbon Panel, Submission for the Ministry of Energy, Northern Development and Mines review of Ontario's long-term energy planning framework, 2021.

- Last minute procurement modifications
- Procurement outcomes below target

In addition to overcoming these challenges, the procurement criteria recommended above appear outside of the ability of the IESO to effectively embrace with its current practices. Recent media reports have suggested that procurement of such critical infrastructure requires capabilities not evident at the IESO and may even best be managed by Infrastructure Ontario.[12] The AAR should anticipate the processes required to optimize an effective procurement of long-lived critical infrastructure, such as nuclear and hydro, and address how the IESO may best support those processes.

Recommendation #6 - Existing assets should be considered transition options and the resulting procurement strategies should be synchronized with the procurement of new baseload and the future of the Atikokan GS.

The IESO has asked specifically for comments on extending the use of existing assets. These assets would include the natural gas fleet, hydroelectric facilities, grid-connected renewables, and the renewable biomass fuelled Atikokan Generating Station (GS). The PWU supports the IESO's extension of the life of Ontario's existing assets given the anticipated long lead times required for new non-emitting assets and the urgent near-term supply shortages facing the province as previously described. Furthermore, these shortages will continue for many years beyond 2035 until the pace of infrastructure development can be right-sized to meet demand.

The IESO is aware that some existing asset owners are interested in contract extensions for their assets but need time to plan the required investments. As part of its consultation on its procurement and contracting practices, the IESO has suggested various options for contract extensions:

- Run the assets to the existing economic end of life with minimal investment, which may be beyond the current contractual expiry date;
- Extending the life of an asset with modest investment; and,
- Refurbishing facilities with larger investment, which the IESO has suggested may be viewed as a new asset.

As the IESO has learned from its procurements over the last year, attempting to force-fit procurements into its electricity market structures for capacity will result in failure. Instead, the IESO should procure the assets assuming a maximum life for the asset to enable the owner to offer various options. The pending federal CER will constrain the participation of emitting resources. In addition to the criteria proposed in the PWU's Recommendation #4 above, the following two should be emphasized:

- Re-focus the IESO procurement approach on the need for the provincial electricity system to supply the anticipated demand; and,
- Renew and expand the operation of the Atikokan Generating Station.

1) *Re-focus the IESO procurement approach on the need for the provincial electricity system to supply the anticipated demand.*

[12] Recent Ontario Energy Directive Takes Aim At Province's Looming Power Supply Gap – But At What Cost?, February 16, 2023 - mondaq.com.

The IESO should refocus its current market-based solutions procurement approach to reduce planning and implementation cost risks.[13] The PWU has recommended three approaches to the IESO in the past, which should be applied to the process of renewing existing assets:

1. Procure resources to cost-effectively meet the demand types to be supplied;
2. Encourage integrated hybrid energy supply options; and,
3. Enable the integration of existing assets with new assets to achieve Ontario's transition to a Net Zero (NZ) electricity system.

Concentrating on specific demand types versus specific technologies will encourage innovative solutions that help the IESO reduce the inherent procurement risks in the energy transition to NZ. Innovators may be able to better optimize the operational risk equation in support of the IESO's goals.

Hybrid resources involve the integration of multiple energy resources by one bidder that are offered as a single energy system solution to meet a defined procurement objective. Such hybrid options could involve varying combinations of renewables, storage, gas, nuclear, DSM, hydrogen, and Tx/Dx, all combined to meet a specified demand type. In addition, integrated hybrid resources could leverage the aggregation of many distributed and smaller assets as envisioned by the aggregator models under development by the IESO.

Allowing public and private sector innovators to combine new and existing assets into integrated energy solutions that meet specified demand types over time is a better way to optimize schedule and cost risks while improving the overall system and economic outcomes. This would allow bidders to sustain the economic life of existing assets, such as gas plants and wind and solar farms, by incorporating them within hybrid solutions. This helps maximize the economic value of existing assets and helps mitigate the risk of delays in developing new infrastructure. Assets would become the accountability of the bidders, to control the operating parameters of their resources. This shift of risk to the bidders would equivalently reduce the overall planning and operational risk for the IESO. The ability to leverage existing resources could benefit the procurement of new large-scale infrastructure such as new nuclear, hydro and hydrogen.

Expeditious testing of the viability of these approaches with the broader energy stakeholder community is warranted e.g., Request for Expressions of Interest as previously suggested by the PWU.

2) Renew and expand the operation of the Atikokan Generating Station

The renewable biomass fuelled Atikokan GS is strategically located to play a critical role in helping Ontario mitigate the severity and duration of the province's emerging capacity gap.

Analysis shows that renewing the station's 200 MW capacity is the most cost-effective option for serving the needs of the northwest with low-emitting supply and reducing transmission costs.[14] This will be required to meet growing regional electricity demand forecasts—urban growth, development of mining in the "Ring of Fire" and better grid connections to First Nation and Metis communities.

[13] Strapolec, Electrification Pathways for Ontario, 2021; PWU submission to the IESO Resource Adequacy consultation, May 2021.
[14] Strapolec, Extending the operation of the Atikokan Generating Station, 2022; PWU submission to the IESO on the 2022 AAR

Renewal of this generating station for maximum benefit to the province is also more complex than a simple capacity procurement the IESO has pursued over the las year given the additional valuable advantages it offers such as the climate and economic benefits to the North and the opportunity to enhance the supply chain of locally produced biomass fuel. One hundred percent of the biomass fuel for Atikokan is sourced locally supporting jobs in local communities, First Nations and the forestry and transportation sectors. The PWU respectfully recommends that a Ministerial Directive be issued to the IESO to undertake negotiations with OPG to renew the station and explore the aforenoted hybrid option opportunities the Atikokan GS presents.

Closing

The multiple, evident risks to Ontario's low-carbon energy future in the IESO's current procurement strategy require immediate action. The PWU believes a paradigm shift is required in how Ontario secures its energy infrastructure to ensure and sustain a low carbon electricity system for the future.

The PWU has a successful track record of working with others in collaborative partnerships. 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. These recommendations will be communicated to the MoE as part of the consultation on the P2D report. The PWU looks forward to discussing these comments in greater detail with the IESO and participating in the ongoing stakeholder engagements.