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APPrO
ASSOCIATION OF
POWER PRODUCERS
OF ONTARIO

October 20, 2020

APPrO Resource Adequacy Feedback for IESO

Key Highlights:

1. APPrO supports and is pleased with the IESO's overall Resource Adequacy ("RA") direction. Procuring over 3 timeframes seems appropriate.
2. Allocation of risk as it relates to either a shift in demand or technological improvements should not be borne by investors as this will only increase costs.
3. Transparency and good planning are critical to the success of any RA procurement mechanism(s).
4. RA should be based on system needs, not asset types.
5. APPrO is encouraged that the IESO continues to view contracts as an important procurement tool for RA. APPrO sees this as the appropriate mechanism for the mid- and long-term. For resources requiring capital intensive investment, contracts are the best-suited procurement tool because they can be designed to efficiently allocate risk while attracting competitive capital needed for investment.
6. Further work is required to determine how to bridge those assets that will be needed in 2028, but have contracts expiring prior to the implementation of the new RA mechanisms. Capacity auctions are not an appropriate bridging mechanism.

General Comments:

APPrO is pleased to submit its comments to the Independent Electricity System Operator ("IESO") regarding the first meeting September 28th re-launch of the RA ("RA") Stakeholder Engagement. APPrO has been a frequent participant in RA issues over the past several years. The IESO has all of APPrO's earlier comments and this submission builds on the themes and issues in those.

APPrO supports the re-launch of the RA stakeholder engagement, and welcomes the general thrust of the IESO's direction as laid out in the most recent documents. APPrO believes that the outcome of this stakeholder engagement has the potential to lead to a "pragmatic RA strategy to ensure Ontario's electricity supply needs are met safely and reliably at the lowest possible cost to customers recognizing Ontario's specific electricity market characteristics¹". A robust electricity system requires ongoing investment to maintain existing assets and build new assets

¹ From the High-Level Ontario Resource Adequacy Framework created by a coalition of Ontario supply-side associations (AEMA, APPrO, CanREA, The Consortium, OEA, OWA)

as they are required. New assets require a pool of available developers and investors with necessary expertise, capital and appetite to participate in the Ontario market now and in the future. It is APPRO's hope that the RA consultation and its conclusions will provide the necessary clarity for current asset owners and prospective investors. Ontario requires the commitment, expertise and capital of incumbents and new entrants to meet Ontario's unique short-term, mid-term and long-term resource needs. Whether currently participating in Ontario, or considering investing in its future, all investors will assess opportunities and the RA Framework with the expectation that it will fairly balance the allocation of risk between ratepayers and generators.

Please do not hesitate to contact me should you have any questions

Sincerely,

A handwritten signature in black ink, appearing to read "David Butters", is written over a horizontal line. The signature is stylized and cursive.

David Butters
President & CEO

APPPrO Resource Adequacy Feedback² for IESO

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6. Further work is required to determine how to bridge those assets that will be needed in 2028, but have contracts expiring prior to the implementation of the new RA mechanisms. Capacity auctions are not an appropriate bridging mechanism.

General Comments:

The IESO has multiple RA tools from which it can choose, and each one characterized by its unique allocation of risk between investors and ratepayers. The selection of RA tools requires careful consideration and can only be done after thorough analysis with public consideration of the available data and conclusions.

Furthermore, owners and investors will want to be assured going forward that their interests and investments are well protected by a governance structure - including dispute resolution process with a preference for commercial arbitration given the nature of the agreements between parties - that ensures that they can rely on future revenues from these markets. Consequently, the governance and decision-making regime including will need to be fairer, more robust and transparent than it currently is.

Fundamentals that Must be Considered

1. For an electricity system to be robust and successful, it must work adequately for everyone:
 - a. Ratepayers
 - b. Owner/Operators
 - c. Government/Public
 - d. Equity Providers & Lenders
 - e. System Planners & Operators
2. If any group is persistently aggrieved, the integrity of the system will be questioned, and significant problems will arise. Hence, a "pragmatic RA strategy to ensure Ontario's electricity supply needs are met safely and reliably at lowest possible cost to

² Individual APPPrO members will likely submit their own comments reflecting their particular circumstance.

customers recognizing Ontario's specific electricity market characteristics" will need to be established.

3. In the past, Ontario has sought to balance several, sometimes competing outcomes:
 - a. Expected cost to ratepayers
 - b. Potential variability of cost to ratepayers
 - c. Security of supply
 - d. Flexibility of supply (i.e., load-following capability)
 - e. Environmental impacts such as air and water emissions, land use footprint, flora and fauna disruption, etc.
 - f. Socio-economic development (e.g., industrial policy, regional employment, domestic research and development, etc.)
4. Ontario currently has a flexible and diverse portfolio of electricity generation assets:
 - a. Nuclear, large and small hydro, gas-fired, biomass-fired, wind, solar photovoltaic, combined heat and power, etc.
 - b. Also, electricity storage assets such as batteries and pumped hydro, and demand management programs
5. No single asset type is "best" across all outcomes simultaneously
6. There is no single metric for all outcomes (i.e., not all outcomes can be fairly measured in dollars)
7. Making choices about RA tools in this complex environment is fraught and should be approached cautiously and collaboratively.

Based on a review of the IESO's RA Framework presentation, it appears that the IESO has largely accepted that these principles must be considered.

Assets and RA Tools

1. RA is about whether there are sufficient incentives for suppliers to invest in the resources needed to provide a reliable supply of electricity.
 - a. A robust electricity system requires ongoing investment, both to maintain existing assets, and to build new assets as they are required.
 - b. Ontario currently has a variety of asset owners, with electricity supply assets of many different types.
 - c. The owner of every existing asset faces a recurring choice: continue to invest in the asset, liquidate it, or convert it to other uses if they are economically beneficial.
 - d. A myriad of factors plays into decisions in each case, including the amount of re-investment required, the value of underlying land, the longevity of location rights, continued access to the grid, alternative uses for investor capital, etc.
2. The need for new assets from time to time requires a pool of available developers and investors with the necessary expertise, capital and desire to participate in the Ontario market in the future.
 - a. This availability is not a given, since developers face global opportunities for their time, capital and expertise.

3. There are multiple RA Tools currently in use in different markets around the world, and each tool distributes risk differently between investors and ratepayers, and is likely to emphasize different outcomes for an electricity system.
 - a. The selection of a RA Tool makes the selection of certain asset types more likely, and places boundaries on the expected costs of those assets over time, so the selection of RA Tools is a fundamental one in assessing system costs.
 - b. No matter what the RA tool that is ultimately implemented, the foundation for successful procurement is robust and transparent planning.

Tool	Description	Sample Jurisdiction	Type of Capital
Energy Market (Real time)	Payments at clearing price for energy provided	Alberta, Texas, Australia	Merchant Risk
Capacity & Ancillary Services Market (typically annual)	Payments at clearing price for committed capacity/services	PJM, New England, New York, UK*	Merchant Risk
Energy Contract	Clearing or bilateral price for energy provided over a specific term	Many jurisdictions, very common for Renewables	Project/Infrastructure (depending on length of term)
Capacity & Ancillary Services Contract	Clearing or bilateral price for capacity or services committed over a specific term	Many jurisdictions, very common for "must run" assets and ancillary services	Project/Infrastructure (depending on length of term)
Regulation	Typically rate of return regulation for monopoly electricity service	Many US Jurisdictions, Nova Scotia, OPG nuclear and large hydro	Utility
Supplementary Tools			
Subsidy	Cash or tax support for capacity constructed or energy delivered	Many jurisdictions, very common for Renewables	Based on the underlying market, not the subsidy
Portfolio Requirement/Credits	Government-created market for required amounts of renewable energy	Many US States	Based on the underlying market, not the credits

* Note: UK Capacity Market currently suspended due to legal challenge

Figure 1 Resource Adequacy Tools in Use

4. From a ratepayer and “public good” perspective, RA arrangements should be tailored to ensure that the most cost-efficient portfolio of assets is deployed in the province
 - a. Different tools will be required for different classes of assets (new vs. existing, flexible vs. intermittent, etc.)
 - b. Cost-efficiency must be measured over the long-term, to properly take into account the dynamic effects of tool selection and deployment. The figure below outlines how risks are distributed among asset risks and adequacy tools. Different tools distribute asset risks in particular ways, as between capital providers and consumers, i.e. Capital Availability is at its lowest and Cost of Capital is at its highest under conventional energy markets and US-style capacity markets. Whereas Capital Availability is at its highest and Cost of Capital is at its lowest where procurement tools such as those being deployed in Ontario are in effect, i.e. contracts for difference around energy and capacity contracts.

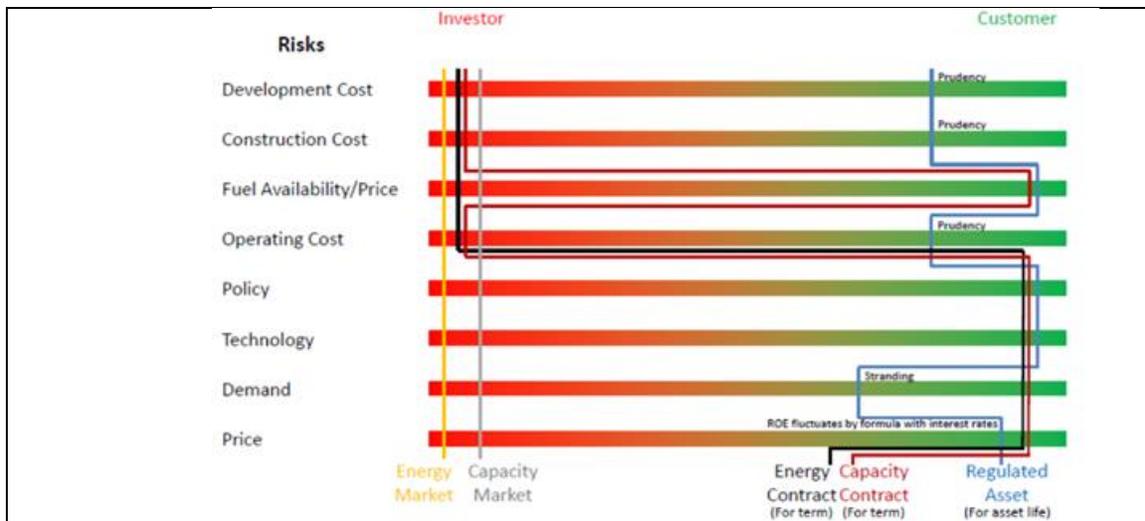


Figure 2 Asset Risks and Adequacy Tools

Scenario Analysis, Cost Estimation and Choices

1. Every jurisdiction has unique features, and these must be taken into account when considering options.
2. The expected cost of RA tools in a particular jurisdiction depends on a host of features and characteristics that are specific to it, so costs cannot be assumed to be comparable.
 - a. Market size, liquidity, bilateral activity such as financial hedges, availability and experience of investors and more; all play a role
 - b. Government's ability to affect the market, and its history of doing so, is a critical risk factor (multi-jurisdiction markets are inherently more insulated from direct government intervention, for example)
3. Long-term scenario-building is required for analytical purposes, to take into account the dynamic effects of tool selection, deployment and investment recovery
 - a. Over time, investors will seek to build into their pricing models costs as they were experienced, so short-term vs. long-term comparisons between RA Tools may result in different rank-ordering of cost outcomes
4. Also, existing assets face the same cost of capital as new assets because re-investment is still an investment.
5. Capital availability and costs should be expected to vary *significantly* as between different adequacy arrangements
 - a. Capital availability has profound effects on the degree of asset competition within a market, and the likelihood of achieving optimally efficient outcomes, particularly over the longer term
 - b. For a capital-intensive industry such as electricity generation, differences in the cost of capital can have very significant impacts on the annual burden to be borne by ratepayers
6. Cost of capital, which is strongly affected by the choice of RA Tools, is worth considerable focus given the capital-intensive nature of electricity generation assets

- a. Traditional tools can be deployed, such as comparable and precedents analysis, as well the Capital Asset Pricing Model
- b. All estimates require careful attention to assumptions being made, as these will fundamentally affect the conclusions reached.

Generally, APPrO supports competitive, RFP-type processes that result in a contract both for existing assets coming off contract and the addition of new long-term resources (except for existing rate regulated and contracted nuclear and large hydro). Terms, operational incentives, off-ramps and other contract features can be designed to provide flexibility and balance risk between the supplier and the ratepayer.

IESO Questions

Principles
Are there other principles that should be considered (refer to slide 12)?

- **Efficiency**-focus on efficient outcomes to reduce system costs
- **Competition**-provide open, fair, non-discriminatory competitive opportunities for participants to help meet evolving system needs
- **Implementability**-work together with our stakeholders to evolve the market in a feasible and practical manner
- **Certainty**-establish stable, enduring mechanisms that send clear, efficient price signals

APPrO largely supports the use of the principles the IESO has proposed; however, they should be modified to properly reflect the scope of the RA framework. For example, Efficiency, under the RA Framework, should be understood as a critical element of overall risk allocation.

Appropriate Risk Allocation: The RA Framework should seek to allocate risk (e.g. permitting, operations, fuel delivery, pricing, sovereign) to those parties best positioned to manage the risk in question. This principle drives efficiency in investment and is critical to the success of the RA Framework. Different RA Tools allocate each risk differently between investors and ratepayers, and these differences may lead to differing outcomes with respect to system costs and so the selection of the RA tool is a critical factor in successful RA execution. Generally speaking, the RA tools and timeframes considered allocate risk as described below:

- Short time horizon tools – Energy Markets, Capacity Markets tend to transfer more risk to investors
- Long time horizon tools – Long-term contracts, Regulation tend to transfer more risk to ratepayers
- Some tools, such as government subsidies and other policies such as “portfolio requirements”, can supplement or amend the effects of an underlying RA system
- For investors, high risk environments are considered “Merchant”, while lower risk will allow for “Infrastructure” or “Utility” capital
- Merchant capital is less available, and more expensive than the alternatives
- Risks are fully allocated as between ratepayers and investors by the features of the asset itself, and the RA arrangements; however, investors can then use other tools to try and mitigate risks they have to bear, through, for example, insurance and diversification
- Both of these in general require a significant amount of available information, and liquidity in the market

- **Transparency**- accurate, timely and relevant information is available and accessible to participants to enable their effective participation to meet system needs

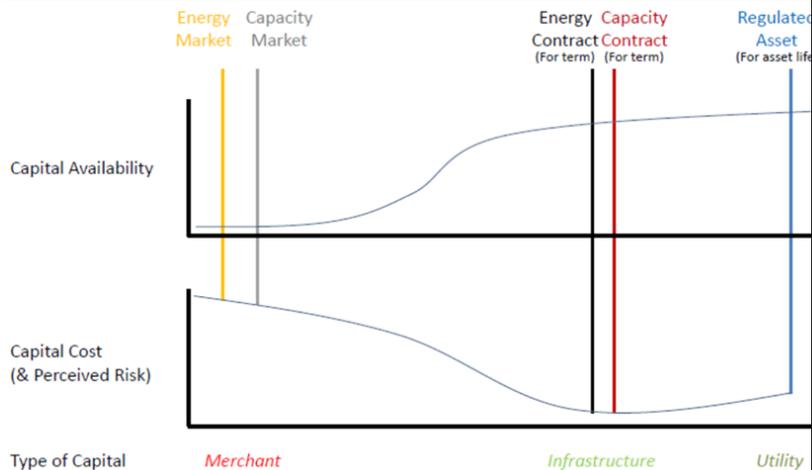


Figure 3 Risks, Tools and Capital

Transparency

APPPrO has consistently argued for much improved transparency and openness in decision making by the IESO.

As Ontario considers tools to procure RA over multiple timeframes, the success of the new RA tools will depend on whether investors believe they can rely on future revenues from these tools and that there is a certain predictability and stability to same.

- For example, recent discussions about possible intake of “large unsolicited project proposals” will require substantially more detail about how the intended process will work, including integration into planning and consideration of a cost/benefit approach.
- Similarly, the results of any contract renegotiations arising from the Charles River Associates Contract Review should also be open and transparent.

Finally, the way in which the ultimate Framework will affect capital availability and the cost of that capital must be considered in the analysis. Ultimately, RA is about how existing assets are operated and for how long, as well as whether incumbents and potential entrants consider building new assets. For this reason, a thorough understanding of capital cost and capital availability for electricity assets is required, as is an understanding of the practical impacts of the choice of RA tools on different asset types, market participants and investors. Investment in electricity assets is a capital-intensive undertaking, and so the impact of the RA Framework on the cost of capital will figure prominently into the success of the RA Framework. To the best of APPPrO’s

	<p>knowledge, this work has yet to be undertaken by the IESO but should be as part of the RA Framework design.</p> <p>Clearly, the IESO and stakeholders will want to delve deeper into these <i>very high-level</i> principles to ensure that they are sufficiently robust, encompassing and articulated. Without this further work, there is a risk that no common understanding amongst stakeholders and the IESO will be established and the principles will be ineffective in guiding discussion.</p>
<p>Proposed High-level Framework (refer to slide 22)</p> <ul style="list-style-type: none"> • Do these three capacity acquisition timeframes (commitment and forward periods) provide sufficient options for meeting the needs of your resource type? • Which option(s) are most suited to your resource type? • Based on timing when various mechanisms are going to be available, do you see timing gaps when a resource needs a mechanism before that mechanism is ready? 	<p>The three capacity acquisition timeframes (short-, medium-, and long-term) appear to provide sufficient options to meet needs for differing resource types.</p> <p>APPrO’s membership includes assets which are mostly suited to the medium and long-term mechanisms.</p> <p>APPrO is supportive of competitive mechanisms with a sufficiently long commitment period as we understand this approach will usually result in the lowest cost to ratepayers. However, in addition to determining which competitive mechanisms to use, the RA Framework needs to outline the approach to bridge the gap between currently expired or expiring contracts to the implementation of the new RA tools.</p> <p>In general APPrO views that using the Capacity Auction as the foundation for medium- and long-term mechanisms will not yield the lowest cost for customers. Further it is not an effective bridging tool for contracts expiring prior to the implementation of the new RA mechanisms.</p> <p>Further engagement is needed to assess options and develop a detailed proposal for the mechanisms that best serve all stakeholders.</p>
<p>Engagement Plan (Refer to slide 33):</p> <ul style="list-style-type: none"> • What else needs to be considered in discussions on 	<p>In keeping with the theme of openness and transparency, the IESO should release the draft RA Framework and seek additional feedback from stakeholders prior to submitting the Framework to the IESO Board for approval. Slide 31 of the presentation deck is</p>

<p>the high-level framework?</p> <ul style="list-style-type: none"> • What needs to be considered in future engagement phases to develop the details of the mechanisms in the framework? • What other areas need to be discussed with stakeholders to operationalize the framework? 	<p>unclear if stakeholders will have an opportunity to comment after this initial round.</p> <p>Further, the timeframe for discussion should be extended to early 2021. This will align the publication of this stage of the RA Framework with the IESO’s Annual Planning Outlook, proposed to be published in January 2021.</p> <p>In order to proceed with investments, stakeholders need to understand the approach used to determine the size of each of the Target Capacity categories (outlined on Slide 26) and the degree of flexibility to adjust this size: annual auctions, competitive mechanisms, programs and government policies / directives. These amounts are assumed to change on a periodic basis, and it would make sense to have these outlined in the IESO’s Annual Planning Outlook.</p> <p>As an example, the Capacity Auction planned for December 2020 has 0 MWs allocated to the winter season and only 700 MWs allocated for the summer season. It is understood that this is a balancing auction with terms intended to transfer risk from ratepayers to suppliers. In addition, the COVID pandemic has significantly reduced demand, however, the historical supply base of demand response participants will not continue to participate or invest in this auction if there is not at least a base level of capacity (a floor MW) allocated to this mechanism going forward. This also applies to merchant generators or energy storage facilities who may need to sustain their existence from the energy market only, simply because there is a gap before the next capacity procurement mechanism is initiated.</p> <p>It appears the categories for Programs and Government Policies are roughly 40% of the total Target Capacity. Although illustrative, it would be helpful to have a clear definition of these categories along with the range of MWs that may be associated with each. One option may be to have a collar for each of these categories. The financing cost of investment will be greater if there is uncertainty on how government policies will impact the amount of procurement under the competitive mechanism category.</p> <p>Embedded in the Market Renewal Program is the concept of locational pricing and the need to incent investment in either supply or load through economic forces to the appropriate area. Is the IESO considering running locational procurement mechanisms or pricing capacity differently based on its location on the Transmission Grid or does the design plan for one cleared capacity price for Ontario.</p>
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	<p>Considerations for future engagements:</p> <ul style="list-style-type: none">• Trigger Criteria to launch mid- and long-term procurement processes• Cost of capital expectations based on proposed RA procurement mechanisms• Sizing criteria or target capacity criteria in each of the procurement processes• Term of commitment for mid- and long-term procurement process• Eligibility requirements for participation in each of the mid- and long-term procurement processes• Form of contract for mid- and long-term procurement processes• Locational procurement mechanisms• Appropriate length of forward period for mid- and long-term procurement processes• Revenue sufficiency analysis for the Ontario market
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