Chuck Farmer
Vice President, Planning, Conservation and Resource Adequacy
Independent Electricity System Operator
1600-120 Adelaide Street West
Toronto, ON M5H 1T1

February 15, 2022

Dear Chuck,

This submission responds to the Independent Electricity System Operator's (IESO's) February 8, 2022 presentation, *LT RFP Engagement*.[1]

Power Advisory has coordinated this submission on behalf of a consortium of renewable generators, energy storage providers, and the Canadian Renewable Energy Association (CanREA) (the "Consortium"[2]).

Ontario Has Significant Supply Needs – Capacity and Energy Supply Needs

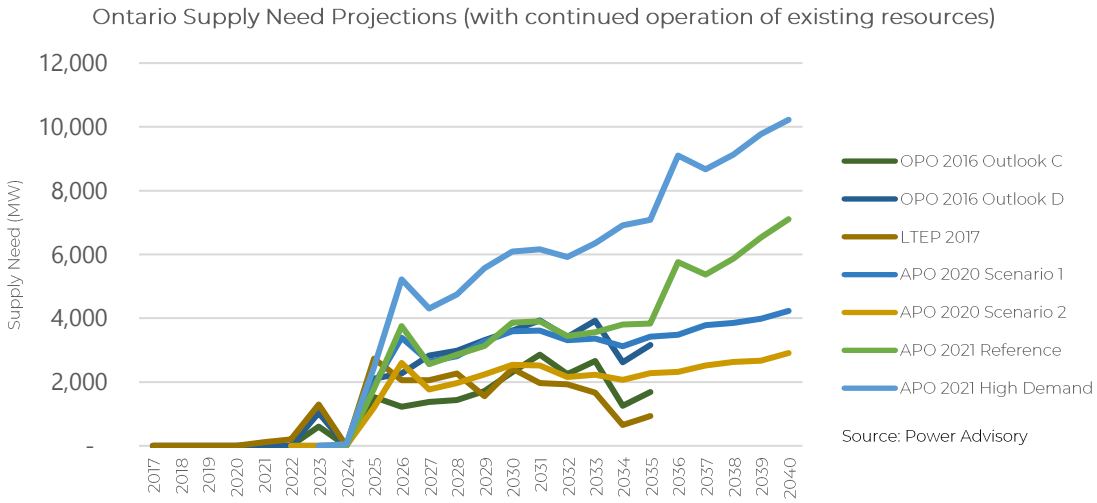
The Consortium continues to support IESO's Resource Adequacy Framework (the "Framework"), as adopted by the IESO Board of Directors in December 2020.

Within the Framework, the Consortium supports IESO's planned administration of Request for Proposals (RFPs) to execute long-term contracts for projects to be developed to meet Ontario's supply needs. As shown in the graph below, Ontario requires significant amounts of supply (capacity and energy) – capacity needs exist now and increase once the Pickering nuclear generation station retires before 2026, and energy needs emerge in the mid 2020s and increase through the late 2020s.

Since IESO's 2016 Ontario Planning Outlook to IESO's 2021 Annual Planning Outlook, each subsequent forecast has resulted in increasing supply needs. These needs are mainly being driven by forecasted increases in electricity demand (i.e., COVID related economic recovery, agriculture, mining, transportation electrification, etc.).

[1] See https://ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Long-Term-RFP

[2] The members of the Consortium are: CanREA; Axium Infrastructure; BluEarth Renewables; Boralex; Capstone Infrastructure; Cordelio Power; EDF Renewables; EDP Renewables; Enbridge; ENGIE; Evolugen (by Brookfield Renewable); H2O Power; Kruger Energy; Liberty Power; Longyuan; NextEra Energy Canada; Pattern Energy; Suncor; and wpd Canada.



Ministerial Directive on Procurement of Electricity Resources

On January 28, 2022, IESO posted a Ministerial Directive (dated January 27) regarding procurement of electricity resources.[3] The Consortium is pleased that the Ontario Minster of Energy specified in this Directive that "… LT RFP is designed to competitively procure new capacity by providing longer-term certainty to incent capital investment into building new resources, or major uprates, upgrades to expansions for existing resources while continuing to balance risk between ratepayers and electricity suppliers. The government understands that the length of contracts and the amount of capacity, electricity products and services procured will be key factors in ensuring long-term procurements attract private sector investment in a way that benefits ratepayers".

Two key areas of clarification are needed within IESO's Long-Term (LT) RFP relating to points made within the Directive: (1) how much supply will the first LT RFP (i.e., LT RFP 1) procure, considering direction to "procure at least 1,000 MW"; and (2) how will "primarily" be defined relating to direction to procure supply primarily on an unforced capacity (UCAP) basis.

Regarding the second area of clarification, the Consortium recommends that IESO not solely procure supply on a UCAP basis within LT RFP 1 and subsequent LT RFPs. As discussed in more detail later in this submission, procuring a bundled electricity product (e.g., energy, capacity) will lower costs to Ontario's electricity customers and will enable a greater number of projects to participate and compete within all LT RFPs towards meeting Ontario's supply needs.

[3] See https://www.ieso.ca/en/Corporate-IESO/Ministerial-Directives

LT RFP 1 Administration and Process

The Consortium recommends that IESO leverage off previous generation procurement initiatives (administered by IESO and the former Ontario Power Authority) towards using similar requirements from past Request for Qualifications (RFQs) within the LT RFQ 1. Previous RFQs were effectively consulted on with stakeholders in the past. However, IESO should focus on key changes regarding the development of projects relating to siting, permits and approvals, and stakeholder engagement (including engagement with Indigenous Peoples). Compared to developing projects 10 to 15 years ago, it will take longer to achieve site control, attain permits and approvals, and effectively engage with multiple stakeholders. Therefore, the LT RFQ 1 requirements need to take these facts into account.

While the Consortium understands why the RFQ step within the LT RFP 1 procurement initiative is being planned for, IESO should consider a step before finalizing LT RFQ 1. IESO should consider a non-binding Expression of Interest (EOI) or non-binding survey of projects that may reasonably participate within the LT RFQ 1/LT RFP 1, considering the tight timeline of commercializing projects by 2027 post execution of contracts in 2023. Project information compiled within an EOI or survey will help define key components that should then be included within the LT RFQ 1 and LT RFP 1.

LT RFP 1 Design Considerations and Recommendations

Listed below are high-level comments and recommendations relating to the LT RFP 1 design, including potential key terms and conditions.

- Slide 7 states "The LT I RFP is intended to help address the system reliability needs that emerge as early as 2025 by acquiring capacity from incremental new-build supply and storage resources; expansions to existing resources/assets are also under consideration" – Considering that results of the LT RFQ 1 are planned for by late 2022, this means that the LT RFP 1 will not be launched until 2023 with contracts then executed later in 2023. If supply is needed by 2025, the timelines are extremely tight for projects to achieve commercial operation based on contracts executed in 2023.

- Slide 7 states "To address both global system needs and more localized transmission security needs, the LT RFP I will seek to acquire capacity in the transmission zones east of FETT [Flow East to Toronto] and the West" – More clarity will be needed regarding locational needs (e.g., zones east of FETT, west zone, etc.) and how these needs may specifically be addressed within LT RFP 1.

- Slide 8 states "This approach [LT RFP 1] lays the foundation for a technology agnostic procurement that is open to resources able to satisfy all mandatory requirements" – Given supply needs identified for 2025 and LT RFP 1 supply need target of 2027, many technologies (e.g., hydroelectric generation projects, etc.) have development timelines well beyond 2025 and 2027 need dates. Therefore, as a practical matter, even if LT RFP 1 were to be "technology agnostic", some resources will not be able to participate. Therefore, the Consortium recommends that LT

RFQ 1 and LT RFP 1 be designed to enable participation from as many resources and technologies as practicable.

- The LT RFP Key Considerations on slide 10 include: (1) "at least 1,000 MW of new capacity with a minimum of 4+ hours of energy duration"; (2) "in-service as early as 2025 with preference to locations in the West and East of FETT"; (3) "minimum term length of 10 years+, options for longer commitments"; and (4) "capacity (UCAP) payment and revenue options for energy and Environmental Attributes" – The Consortium requests analysis and justification from IESO as to why a minimum of 4+ hours of energy duration may be a requirement within LT RFP 1.

- Building off key consideration #4 from slide 10, slide 12 states that "The IESO recognizes stakeholder concerns that energy revenues in a post-MRP [Market Renewal Program] energy market are difficult to forecast, as are revenues from monetizing environmental attributes" and "The IESO is open to working with stakeholders to ensure that the LT I Contract could provide additional revenue opportunities (while ensuring that resources have the right energy market incentives) in order to provide some certainty to proponents and ensure that the LT I RFP incentivizes sufficient new investment in Ontario" – The Consortium is pleased that IESO has acknowledged these points and looks forward to working with IESO and other stakeholders on why a bundled electricity product should be procured within LT RFP 1 and subsequent LT RFPs. The Consortium recommends that IESO not solely procure supply on a UCAP basis within LT RFP 1 (and subsequent LT RFPs) and should procure a bundled electricity product (at least energy and capacity). If IESO procures solely UCAP within any LT RFP, responding developers and their investors will need to provide relatively more equity financing to their projects which will result in a higher cost of capital – all due to market risks facing these projects (e.g., uncertain wholesale market revenues, etc.) which negatively impacts debt financing. The result of this will be developers and their lenders will price market risks (that cannot be hedged within Ontario given its market structure) into their project submissions which will result in more expensive projects rendering higher costs to Ontario's electricity customers.

LT Contract 1 Design Considerations and Recommendations

Listed below are high-level comments and recommendations relating to the LT Contract 1 design, including potential key terms and conditions.

- Slide 14 states "Options that the IESO is seeking stakeholder feedback on [regarding contract design and payment], include: (1) "An energy market "collar" to mitigate market risk. The "collar" could be set at a range that provides suppliers some certainty, while protecting ratepayers"; (2) "A contract for differences [CfD] approach or price thresholds in the contract, to provide similar certainty and ratepayer protection"; and (3) "Price adders or additional revenue opportunities for services beyond capacity + energy" – The Consortium is pleased that IESO is open-minded regarding LT Contract 1 design and payment. Payments under LT Contracts and design of LT Contracts represents deciding factors regarding participation within any LT RFPs. Therefore, the

Consortium recommends that IESO work closely with stakeholders to arrive at a workable LT Contract 1 design and payment framework. The Consortium notes that in 2016 the Government of Alberta (GOA) had initial plans to use the "collar" design for contracts within the Renewable Electricity Procurement (REP) program. Based on analysis from stakeholders contained within submissions to GOA and the Alberta Electricity System Operator (AESO), GOA and AESO changed plans and used a CfD design for all REP contracts (i.e., for three procurements – REP 1, REP 2, REP 3). This decision resulted in lower costs for Alberta's electricity customers – costs that would have been higher if the "collar" contract design was used.[4]

- Slide 15 states that "IESO is also considering options for providing certainty around the value of Environmental Attributes (EAs)" – The Consortium supports exploration of options relating to EAs. Clarity is needed regarding how EAs within the context of LT RFPs may relate to IESO's Clean Energy Credit (CEC) registry and framework stakeholder engagement initiative that will begin on February 24, 2022. The CEC registry and framework is planned to launch by January 2023.[5]

- Building off key consideration #3 from slide 10, slide 17 states that "In light of stakeholder feedback, the IESO proposes a minimum 10 year baseline and is open to working with stakeholders on options for providing longer term lengths" – The Consortium is pleased that IESO has moved off their original proposal of 7-year to 10-year contract terms. The Consortium recommends that the contract term should be on par with other contracting initiatives within other key jurisdictions (e.g., ranging from 15-year to 40-year), as project developers and investors have many options to deploy capital across multiple jurisdictions. Appendix A provides examples of present procurement and contracting initiatives from select key jurisdictions.

Additional Comments

The Consortium understands that Ontario requires new supply, as early as 2025, and contracting for resources to meet this need is of high importance. Therefore, "time is of the essence".

However, stakeholders require more time to provide meaningful commentary and recommendations to IESO in reaction to IESO's LT RFP related materials, positions, recommendations, etc. For example, IESO's deadline of February 15 to provide comments on the February 8 presentation is much too short. The Consortium recommends that stakeholders be given at least two weeks to provide submissions to

[4] Based on CfD contract design, weighted average contract prices from REP 1, REP 2, and REP 3 were $37/MWh, $38.69/MWh, and $40.14/MWh, respectively (see https://www.aeso.ca/market/renewable-electricity-program/rep-results/) – indicating total cost to customers from these projects. If GOA and AESO had used the $35/MWh "collar" contract design, customers would have paid at least $35/MWh plus weighted average Alberta wholesale energy market prices received by the contracted generators. Therefore, the CfD contract design resulted in a much cheaper solution for Alberta's electricity customers.

[5] See https://ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Clean-Energy-Credits

IESO with multiple opportunities for meetings with IESO alongside the LT RFP stakeholder engagement meetings.

Sincerely,

Jason Chee-Aloy
Managing Director
Power Advisory

cc:
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Shawn Cronkwright (IESO)
Barbara Ellard (IESO)
Brandy Giannetta (Canadian Renewable Energy Association)
Elio Gatto (Axium Infrastructure)
Roslyn McMann (BluEarth Renewables)
Adam Rosso (Boralex)
Greg Peterson (Capstone Infrastructure)
Paul Rapp (Cordelio Power)
David Thornton (EDF Renewables)
Ken Little (EDP Renewables)
Lenin Vadlamudi (Enbridge)
Michelle Dueitt (ENGIE)
Julien Wu (Evolugen by Brookfield Renewable)
Stephen Somerville (H2O Power)
JJ Davis (Kruger Energy)
Deborah Langelaan (Liberty Power)
Jeff Hammond (Longyuan)
Cheryl Dietrich (NextEra Energy)
Rob Campbell (Pattern Energy)
Chris Scott (Suncor)
Ian MacRae (wpd Canada)

Appendix A – Procurement and Contracting Initiatives from Select Key Jurisdictions

The following table provides select procurement and contracting initiatives within select key jurisdictions.

Aside from large MW development and investment opportunities in these jurisdictions, it is interesting to note that these opportunities are running alongside functioning wholesale electricity markets (e.g., Alberta, New York, UK). The point is, bundled electricity products are being procured via CfD contracts that are being used in conjunction with functioning wholesale electricity markets.

Jurisdiction	Select Recent Contracting Initiatives	Key Contract Design Features and Results	Commentary
Québec	• Evolugen/HQ – 263 MW Lièvre hydro (Feb/22) • HQ RFPs – (i) 300 MW (wind), (ii) 480 MW (renewables) (Jan/22) • Boralex/HQ – 200 MW Apuiat wind (Feb/21)	• 40-year term – Lièvre hydro • 20-year, 25-year, 30-year term – HQ RFPs • 30-yr term – Apuiat wind,	• "… Apuiat project will answer … increasing needs for energy to decarbonize our economy and that of neighbouring markets … also marks … important step in … relations with … Innu communities" – Sophie Brochu, President & CEO, HQ
Alberta	• Evolugen/Scotiabank – 40 MW solar (Feb/22) • TransAlta/Lafarge – 100 GWh/yr wind (Feb/22) • Public Works and Government Services Canada (PWGSC) 255,000 MWh/year RFP (wind, solar), re: federal government facilities located in Alberta (Jan/22) • 1,262 MW (Wind, Solar) Corporate PPAs (2021)	• 15-yr CfD Corporte PPA Evolugen/Scotiabank solar • CfD Corporate PPA TransAlta/Lafarge wind • PWGSC contracts for bundled energy and RECs, 23-yr term • CfD Corporate PPA terms range from 3-yr to 15-yr	• "… PPA will cover 25% … energy demands … agreement … is an important step to utilizing higher amounts of renewable electricity at our facilities" – Cailee Ellis, Head of Sustainability and Environment, Lafarge
New York	• NY Governor signed Climate Leadership and Community Protection Act (July/19), mandating Clean Energy Standard targets: (i) 6,000 MW of distributed solar by 2025, (ii) 3,000 MW storage by 2030; (iii) 9,000 MW off-shore wind by 2035	• NYSERDA RFPs/Contracts for indexed RECs (CfD structure) and contract terms up to 25-years (2020/21)	• As of Jan/22, contracted renewable generation projects to deliver ~54,000 GWh/yr, generating ~63% of New York's projected 2030 demand
UK	• Alongside wholesale electricity market, project developers bid for CfD Contracts in auctions, with technology-specific "pots" with supply allocations available to bidders (e.g., £200M offshore wind, £75M remote island wind, tidal stream, or floating offshore wind, and £10M "established" technologies, principally solar and onshore wind) • Government caps max. amount a project can bid for by setting administrative strike prices, lowest bids are all accepted until supply limit; auction is 'pay-as-clear' with all successful developers paid "strike price" for their projects • Most recent allocation round (Dec/21 – Jan/22) ensured developers had ample time to prepare bids – this was 4th allocation round since program launch (2013), this stable/predictable procurement process has resulted in program success by ensuring developers have confidence in long-term market opportunities – further reducing project lead times and costs		

POWER ADVISORY

IESO LT RFPs and Contracts – Rationale to Procure Bundled Electricity Product

Consortium of Renewable Generators, Energy Storage Providers, CanREA

February 14, 2022

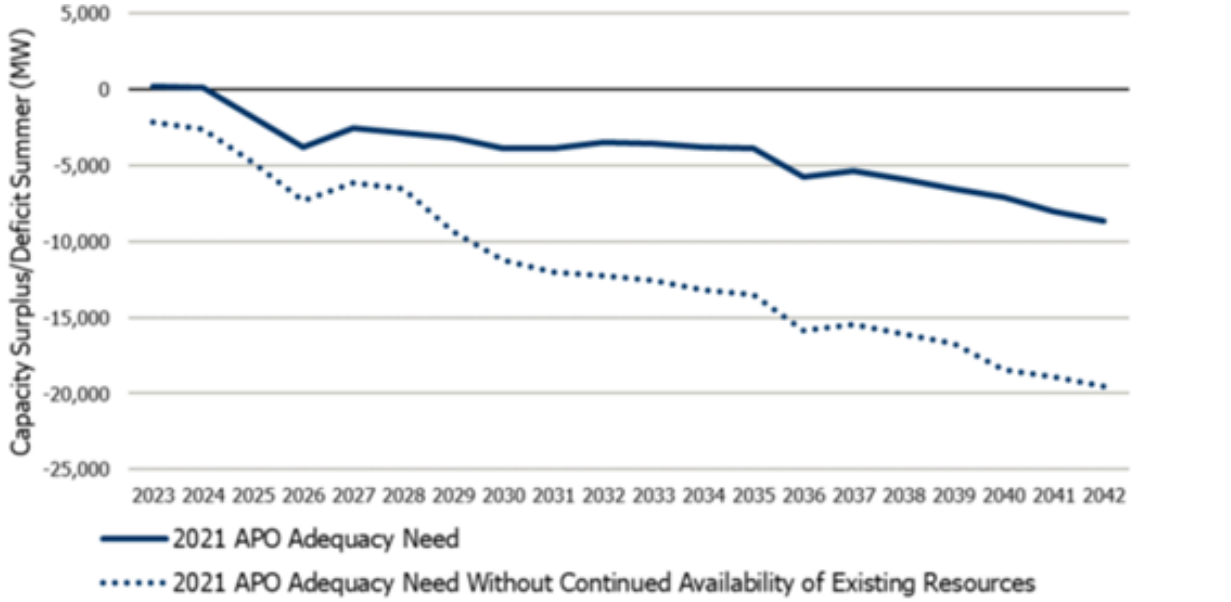
Background, Objective, Recommendation

- Rationale for IESO to procure bundled electricity product in LT RFPs
- Ministerial direction for IESO to procure "predominantly" UCAP in LT RFP 1
  - Not clear what "predominantly" means
  - Based on IESO February 8 presentation, Consortium pleased IESO open to procuring other electricity products (e.g., energy, etc.) additional to UCAP
  - Consortium, and other stakeholders, concerned procuring UCAP only will result in less participation/competition, potentially not meeting identified supply needs, high likelihood of higher project bid prices and costs to customers
- IESO identified significant supply shortfalls within APO 2021, therefore LT RFPs will need to procure new projects to be built to meet supply needs and other policy objectives (e.g., economic, environment, etc.)

Consortium recommends LT RFP 1, and subsequent LT RFPs, procure a bundled electricity product and not solely UCAP

Ontario Requires Supply – Need to Maintain Operating Resources and Build New Projects

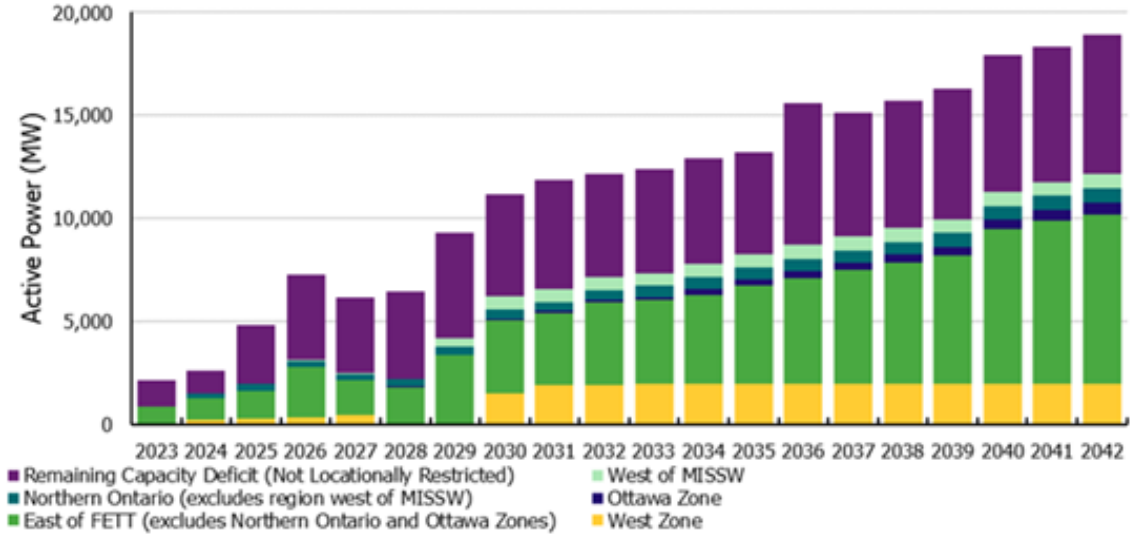
- Capacity shortfall emerges mid-2020s, even with all existing resources – shortfall increases if resources retire post expiry of contracts and/or electricity demand grows



Source: IESO 2021 APO

Ontario Requires Supply – Need to Maintain Operating Resources and Build New Projects

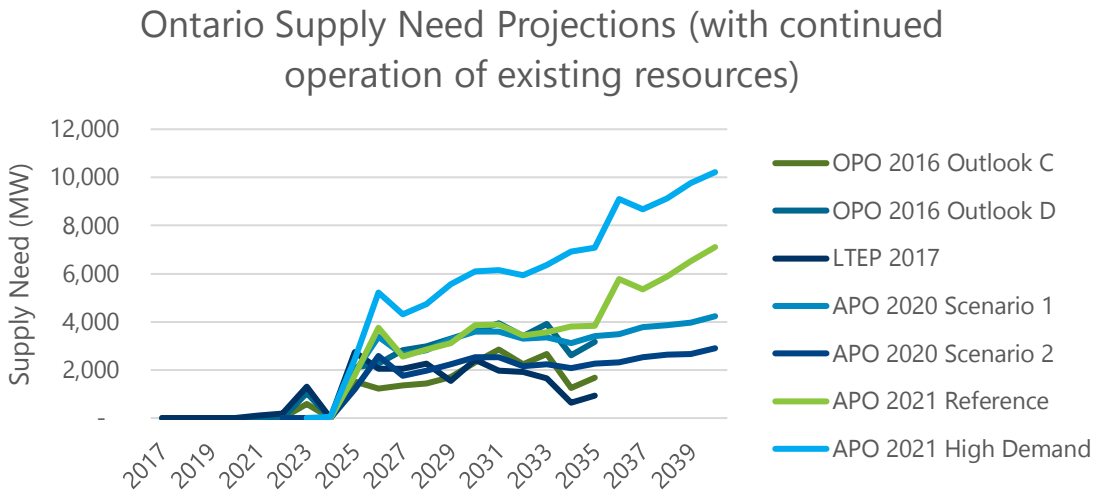
- Supply need emerges in different geographic locations– summer capacity needs by key locations shown below if resources retire post expiry of contracts



Source: IESO 2021 APO

Ontario Requires Supply – Need to Maintain Operating Resources and Build New Projects

- Supply needs increased with each subsequent IESO forecast– OPO 2016 to APO 2021
- Post retirement of Pickering NGS, up to 5,000 MW of new supply needed 2025/26– even if generators do NOT retire post expiry of contracts
- Capacity needs starting ~2025, energy needs starting ~2027 – energy needs driven by increasing demand
    - Demand increases driven by electrification, economic growth, etc., based on government decarbonization policies, etc.
- Design of LT RFPs and Contracts must recognize this – striving for procurement of reliable, cost effective, non-emitting supply



Source: Power Advisory

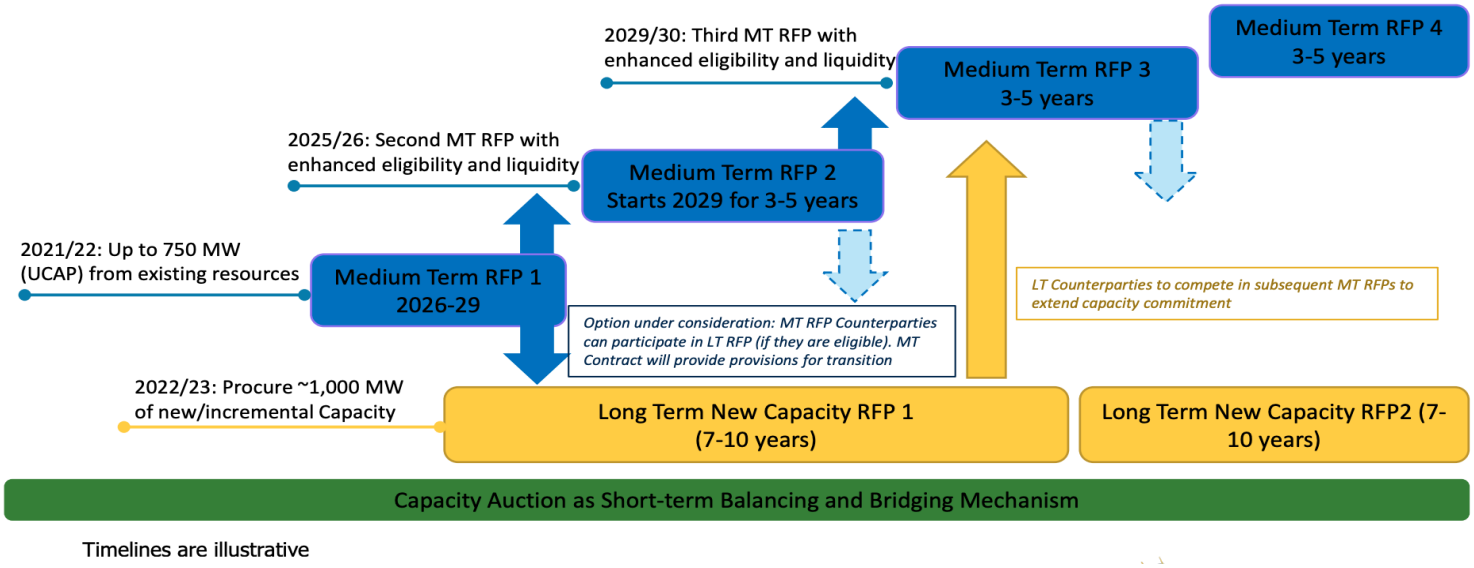
IESO LT RFPs and Contracts

IESO Plans for Design of LT RFP 1

- IESO announced 'cadenced' approach to procuring operating resources (expired contracts and not rate-regulated) and new projects to be built
  - MT RFPs and Contracts to procure operating resources
  - LT RFPs and Contracts to procure new projects to be built
- LT RFP 1 to procure at least 1,000 MW
  - IESO presently consulting with stakeholders on design of LT RFP 1 and Contract
  - IESO targeting at least 1,000 MW, Ministerial direction to procure "predominantly" UCAP
  - Based on IESO February 8 presentation, no final decisions have been made on design of LT RFP 1 and Contract, including potential to procure other electricity products (e.g., energy, etc.) additional to UCAP

IESO Planned Administration of MT and LT RFPs

Cadenced RFPs and Linkages



Timelines are illustrative

Source: IESO

Rationale to Procure Bundled Electricity Product in LT RFP

Challenges/Disadvantages of UCAP for VGs and Storage and Other Implications

- Significant discounting of supply from VGs and storage ignores economics of these projects
  - Projects will not be financed, therefore not built if CAPEX and OPEX cannot be recovered
- UCAP favors thermal generators (e.g., gas-fired generators), which are carbon emitting resources, penalizes many non-emitting resources (e.g., VGs, etc.)
  - Considering Ministerial direction to IESO (late 2021), not clear whether new gas-fired generation will be built
- For Ontario, procuring solely UCAP may result in lack of resource diversification and could create power system challenges
  - Potential overreliance on specific resources (e.g., gas-fired generation during peak demand periods, etc.).
  - Over emphasis on resource ability to supply during peak demand periods, not accounting for other reliability benefits
- Overall, procuring solely UCAP will not enable development of many non-emitting resources (e.g., VGs, storage, hybrids)

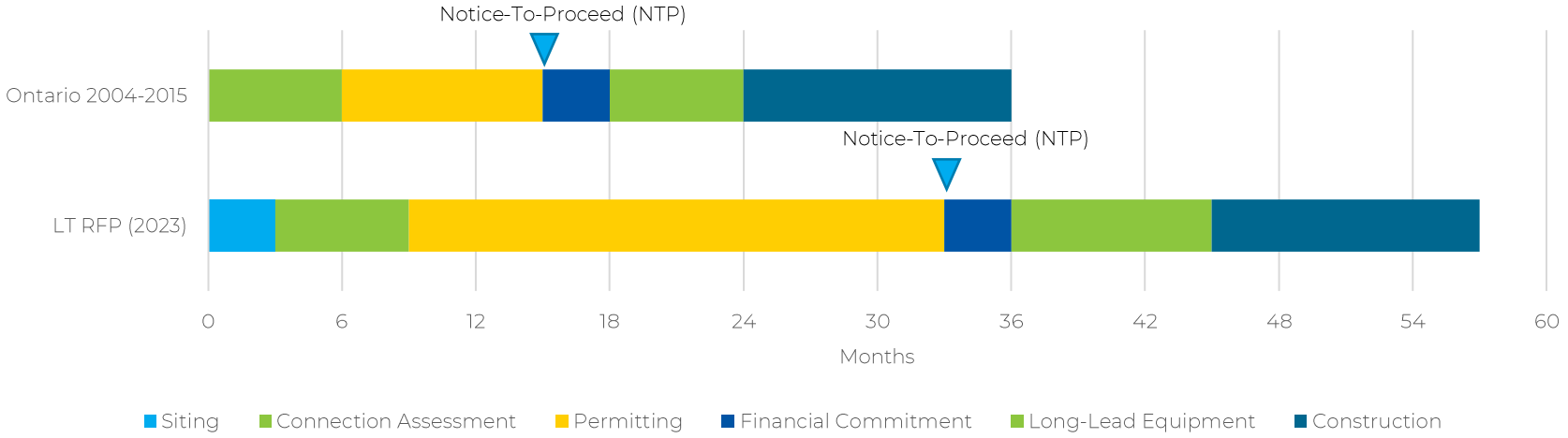
Reasons LT RFPs Should Procure Bundled Electricity Product and Not Solely UCAP

- Following points provide rationale for IESO to procure a bundled electricity product (i.e., energy, capacity, etc.) within LT RFPs and not solely UCAP
    1. Ensures Projects Get Built and Financed
    2. Addresses Wholesale Electricity Market Risks
    3. Increases Participation and Competition
    4. Lowers Costs to Customers
    5. Levelizes Project Development Options Given Competing Procurements in Other Jurisdictions
- Subsequent slides provide more information and rationale

1. Ensures Projects Get Built and Financed

- Contract revenues resulting from supply of bundled electricity product more stable and sufficient compared to Contract revenues solely for supply of UCAP
- Via a Contract that ensures stable and sufficient revenues, project developers will be more effectively able to:
  - Secure sites
  - Achieve permits and approvals, including grid connection agreements
  - Engage with stakeholders, including communities, Indigenous Peoples, interest groups, etc.
  - Fulfill their Duty to Consult with Indigenous Peoples
  - Finance projects
  - Secure supply chain
  - Timely construct and maintain projects for entire useful life
- For project finance lenders (e.g., equity, debt), stable and sufficient Contract revenues provide:
  - Fair and reasonable finance terms and conditions
  - Cost effective finance terms and conditions
  - Optionality to re-finance projects if warranted

Generation Project Estimated Development Timelines



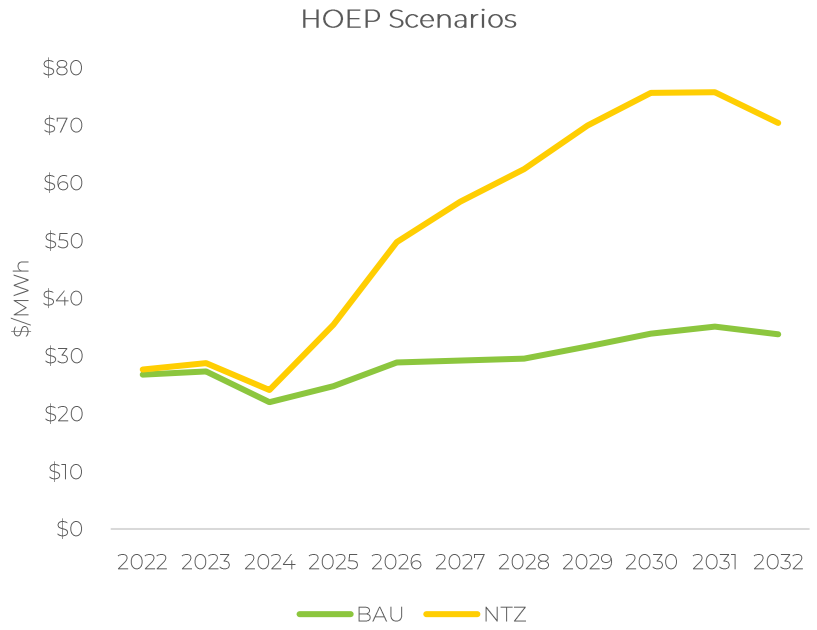
- Approx. 20 GW contracted and constructed from 2004-2015, under different development landscape
  - e.g., statutes were implemented to 'ease' achieving some permits and approvals (e.g., REA)
- Due to volume/intensity of project developments (2004-2015), statutes have changed (e.g., restoration of municipal authorities, etc.) to address significant concerns of multiple stakeholders (e.g., communities, municipalities, etc.)
- Project development timelines have now increased (particularly siting, permits/approvals, etc.) – reflecting concerns
  - Therefore, LT RFPs and Contracts must recognize these realities

2. Addresses Wholesale Electricity Market Risks

- Stable and sufficient Contract revenues address wholesale market risks
  - Contract design should strike balance of allocating risks between project developers/owners and customers
    - e.g., CfDs, revenue sharing with customers, etc.
- IAM relatively risky compared to other Canadian and U.S. markets for many reasons (e.g., market structure, frequent changes to market design/rules, government intervention, etc.)
- MRP will fundamentally reform IAM design/rules, creating very high level of uncertainties and market risks
  - New pricing regime (i.e., LMPs), new scheduling/dispatch regime (i.e., DAM, up to 27 hour LAP, etc.), new market power mitigation framework (i.e., Conduct and Impact Test)
  - Planned MRP implementation (November 2023) means projects procured under LT RFP 1 will face MRP uncertainties and market risks
- If LT RFPs solely procure UCAP, project proponents will need to address uncertainties and market risks– therefore, very high potential of limiting participation/competition and high bid prices (pricing uncertainties and risks)

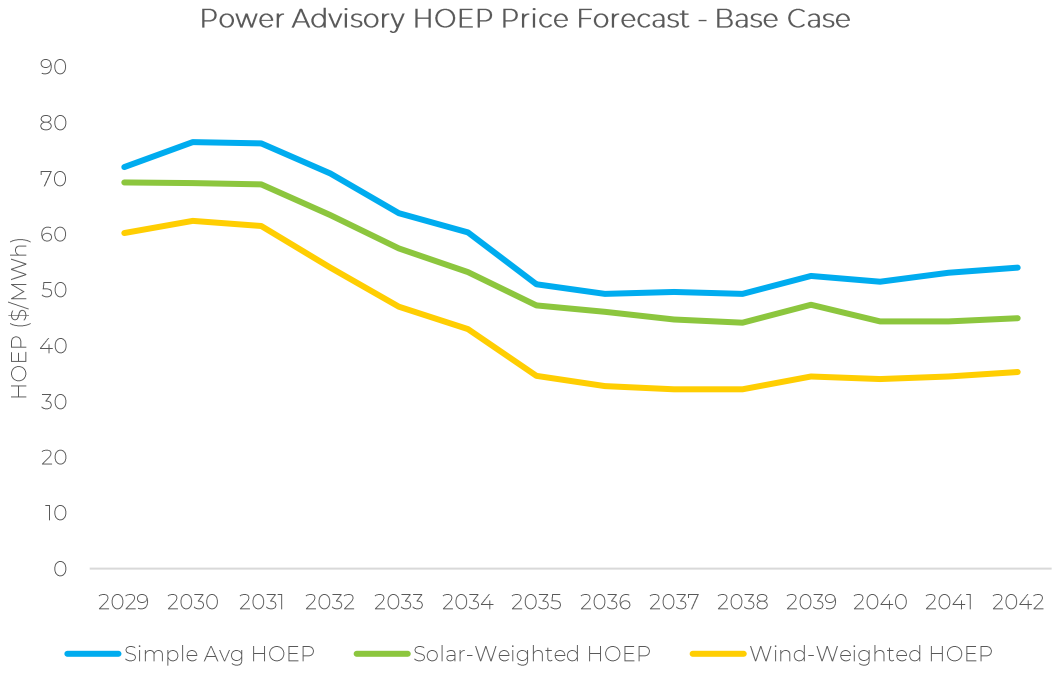
Example of Wholesale Market Risks – Carbon Pricing

- Carbon pricing example of wholesale market risk
- Current Ontario EPS threshold (370 CO_2e/GWh) exempts gas-fired generation from paying carbon prices – wholesale energy costs do not reflect carbon costs
- If EPS threshold lowered (e.g., similar to federal OBPS for new gas-fired generation), wholesale energy costs will include full cost of carbon – therefore increase costs
- Generation project financing typically conservative outlook for wholesale energy market revenues, will likely assume no reduction in EPS threshold
- Power Advisory forecasts HOEP under a Business-As-Usual (BAU) scenario with no EPS threshold reduction and a Net-Zero (NTZ) scenario with EPS threshold removed – HOEP prices diverge significantly



Wholesale Electricity Market Risks VG Price Discount

- Wholesale energy market revenues for VGs discounted compared to average wholesale energy market prices
    - Discount may increase in future if more VGs are developed
- HOEP forecast does not include LMP basis risk – which can further suppress realized wholesale energy market revenues
- Wholesale energy market revenues for VGs relatively more unstable compared to other resources



3. Increases Participation and Competition

- Stable and sufficient revenues from Contracts for supply of bundled electricity product will increase participation/competition within LT RFPs, compared to revenues from Contracts for only UCAP supply
- Considering projected supply needs (see slide 5), to maintain cost-effective reliability of Ontario's power system, LT RFPs should aim to ensure maximum project participation/competition– from as many resource types and technologies
- Since Ontario requires new supply in mid- to late-2020s, due to project development timelines, following resources will not be able to be built in time to meet supply needs and therefore not positioned to participate within LT RFP 1
    - Nuclear generation
    - Hydroelectric generation
- As stated on slide 10, considering Ministerial direction to IESO, not clear whether new gas-fired generation will be built, and this direction also contemplates a timeline for decarbonizing Ontario's power system
- Assuming nuclear, hydroelectric, and gas-fired generation projects do not participate within LT RFP 1, and even subsequent LT RFPs, LT RFPs and Contracts should be designed to ensure development of following resources:
    - VGs, storage, hybrids, DERs, DR

4. Lowers Costs to Customers

- Taking subsequent 3 points together (i.e., Ensures Projects Get Built and Financed, Addresses Wholesale Electricity Market Risks, Increases Participation and Competition), well designed LT RFPs and Contracts will lower costs to Ontario's electricity customers for following reasons
    - Project developers/owners exposed to less uncertainties and risks
    - Much higher certainty that supply needs will be met through procured projects
        - If supply needs not met, IESO (or other entities (e.g., Ontario government, etc.)) will still need to address these needs, which could result in relatively more costly projects/solutions – and leverage to build/deliver needed projects will then, on balance, be with project developers at that future point
- Subsequent slides provide examples of costs to customers based on different scenarios of potential LT RFP 1 results

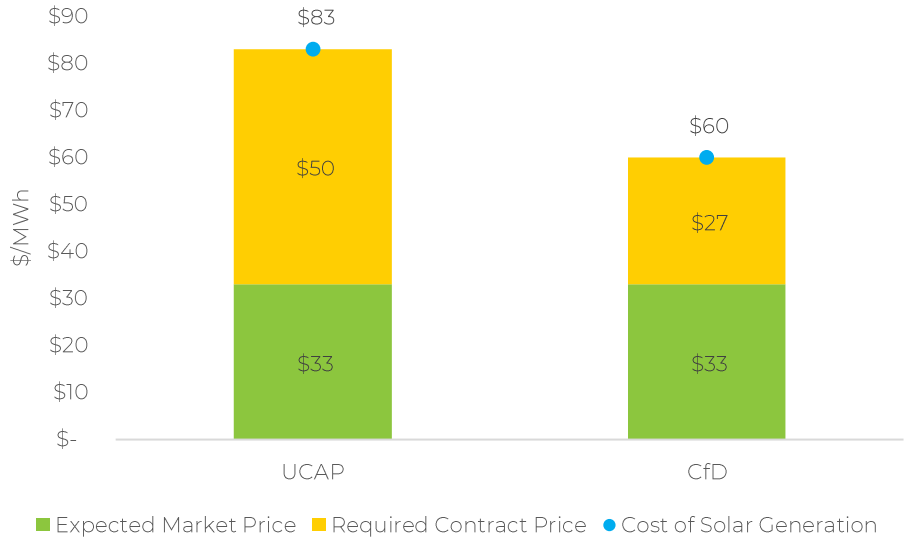
Examples of Costs to Customers – Cost of Capital for Fixed versus Variable Contract Payments

- UCAP Contract a fixed payment that does not change with wholesale market revenues;CfD Contract a variable payment that changes with wholesale market revenues protecting electricity customers while ensuring sufficient revenues to generators, etc.
- Due to increased level of cash flow certainty, CfD Contracts access lower cost of capital compared to UCAP Contracts
  - Under fixed payments (i.e., UCAP Contracts), project developers will need to provide more equity and accept higher debt costs
  - Wholesale market risks, as described previously, require higher ROE further increasing WACC

Cost of Capital Estimates	UCAP	CfD
% Debt	35%	80%
% Equity	65%	20%
Cost of Debt	6.0%	4.0%
ROE	12.0%	7.5%
WACC	**9.38%**	**3.90%**

- Generators, etc. cannot effectively hedge wholesale market risks due to structure of Ontario's electricity market (e.g., no liquid forward contracting opportunities with buyers, etc.), and other jurisdictions (e.g., Quebec, New York, etc.) presently providing more attractive and far less risky development opportunities largely due to RFP and Contract design

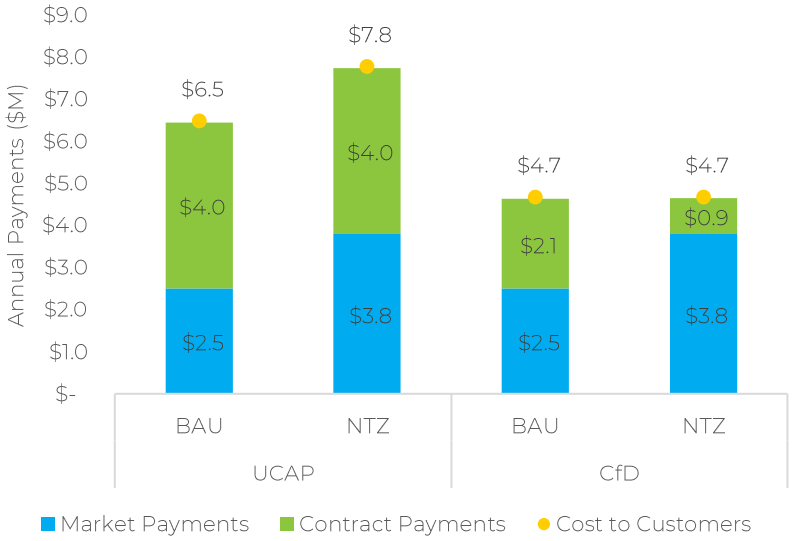
Example of Costs to Customers – Cost of Capital Impact on Cost of Generation



- With higher WACC under UCAP Contracts, cost of developing VGs (or any other resource) will increase– therefore requiring higher Contract payments with same level of expected future wholesale market revenues

Examples of Costs to Customers – Change in Wholesale Market Revenues

- If wholesale energy market prices increase higher than assumed for a project's bid price (e.g., BAU scenario vs. NTZ scenario), customers will pay more
- In this example, contract prices for both CfD and UCAP Contracts based on conservative wholesale energy market revenue forecast not including carbon costs passing through (i.e., BAU scenario)
- If wholesale energy prices rise to NTZ scenario, CfD Contracts protect customers and generators through contract design
- Under UCAP Contract, electricity customers pay more, as contract revenues fixed, developers receive higher wholesale energy market prices



5. Levelizes Project Development Options Given Competing Procurements in Other Jurisdictions

- Due to supply needs, government policy objectives, customer choices resulting in self procuring supply, Ontario in competition with other supply procurements within other key jurisdictions, for example:
  - Quebec
  - Alberta
  - New York
- Project developers, investors, lenders will compare opportunities across multiple Canadian and U.S. jurisdictions
- IESO should ensure LT RFPs and Contracts designed to compete with supply procurements within other key jurisdictions
- Subsequent slide provides further information on select procurements from other key jurisdictions, along with rationale why IESO LT RFPs and Contracts should be designed with specific terms and conditions to best ensure project participation from developers/investors that may otherwise direct their capital spending on procurements outside of Ontario

Comparison of Generation Contracting Initiatives Across Key Jurisdictions

Jurisdiction	Select Recent Contracting Initiatives	Key Contract Design Features and Results	Commentary
Québec	• Evolugen/HQ – 263 MW Lièvre hydro (Feb/22) • HQ RFPs – (i) 300 MW (wind), (ii) 480 MW (renewables) (Jan/22) • Boralex/HQ – 200 MW Apuiat wind (Feb/21)	• 40-year term – Lièvre hydro • 20-year, 25-year, 30-year term – HQ RFPs • 30-yr term – Apuiat wind,	• "… Apuiat project will answer … increasing needs for energy to decarbonize our economy and that of neighbouring markets … also marks … important step in … relations with … Innu communities" – Sophie Brochu, President & CEO, HQ
Alberta	• Evolugen/Scotiabank – 40 MW solar (Feb/22) • TransAlta/Lafarge – 100 GWh/yr wind (Feb/22) • Public Works and Government Services Canada (PWGSC) 255,000 MWh/year RFP (wind, solar), re: federal government facilities located in Alberta (Jan/22) • 1,262 MW (Wind, Solar) Corporate PPAs (2021)	• 15-yr CfD Corporte PPA Evolugen/Scotiabank solar • CfD Corporate PPA TransAlta/Lafarge wind • PWGSC contracts for bundled energy and RECs, 23-yr term • CfD Corporate PPA terms range from 3-yr to 15-yr	• "… PPA will cover 25% … energy demands … agreement … is an important step to utilizing higher amounts of renewable electricity at our facilities" – Cailee Ellis, Head of Sustainability and Environment, Lafarge
New York	• NY Governor signed Climate Leadership and Community Protection Act (July/19), mandating Clean Energy Standard targets: (i) 6,000 MW of distributed solar by 2025, (ii) 3,000 MW storage by 2030; (iii) 9,000 MW off-shore wind by 2035	• NYSERDA RFPs/Contracts for indexed RECs (CfD structure) and contract terms up to 25-years (2020/21)	• As of Jan/22, contracted renewable generation projects to deliver ~54,000 GWh/yr, generating ~63% of New York's projected 2030 demand
UK	• Alongside wholesale electricity market, project developers bid for CfD Contracts in auctions, with technology-specific "pots" with supply allocations available to bidders (e.g., £200M offshore wind, £75M remote island wind, tidal stream, or floating offshore wind, and £10M "established" technologies, principally solar and onshore wind) • Government caps max. amount a project can bid for by setting administrative strike prices, lowest bids are all accepted until supply limit; auction is 'pay-as-clear' with all successful developers paid "strike price" for their projects • Most recent allocation round (Dec/21 – Jan/22) ensured developers had ample time to prepare bids – this was 4th allocation round since program launch (2013), this stable/predictable procurement process has resulted in program success by ensuring developers have confidence in long-term market opportunities – further reducing project lead times and costs		

Conclusions and Recommendations for LT RFPs and Contracts

Conclusions and Recommendations

- **Ontario needs significant amounts of new supply** – **between 4,000 MW to 6,000 MW through early 2030s** – even if all resources (e.g., generators, storage, DR, etc.) maintain operations post expire of contracts, CA commitments, etc.
- **LT RFPs and Contracts must be designed to best ensure supply needs will be met**
- LT RFP 1 and Contract design needs clarity in details (e.g., terms and conditions, etc.), including other steps (e.g., RFQ)
- **Timelines to develop new generation projects have increased since 2004-2015** OPA/IESO procurement initiatives – LT RFP 1 Contracts planned to be executed in 2023 leaves only 4-years to reach COD (i.e., timelines suggested by IESO)
- **UCAP Contracts are more risky** than other Contract structures (e.g., CfDs), therefore **more costly to customers**
- Ontario in competition for project development, as many key jurisdictions have been, and preparing for, administering procurement processes – often for larger amounts of supply with favorable Contract design (e.g., at least 20-year term, CfD structure, etc.)

Consortium recommends LT RFP 1, and subsequent LT RFPs, procure a bundled electricity product and not solely UCAP

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