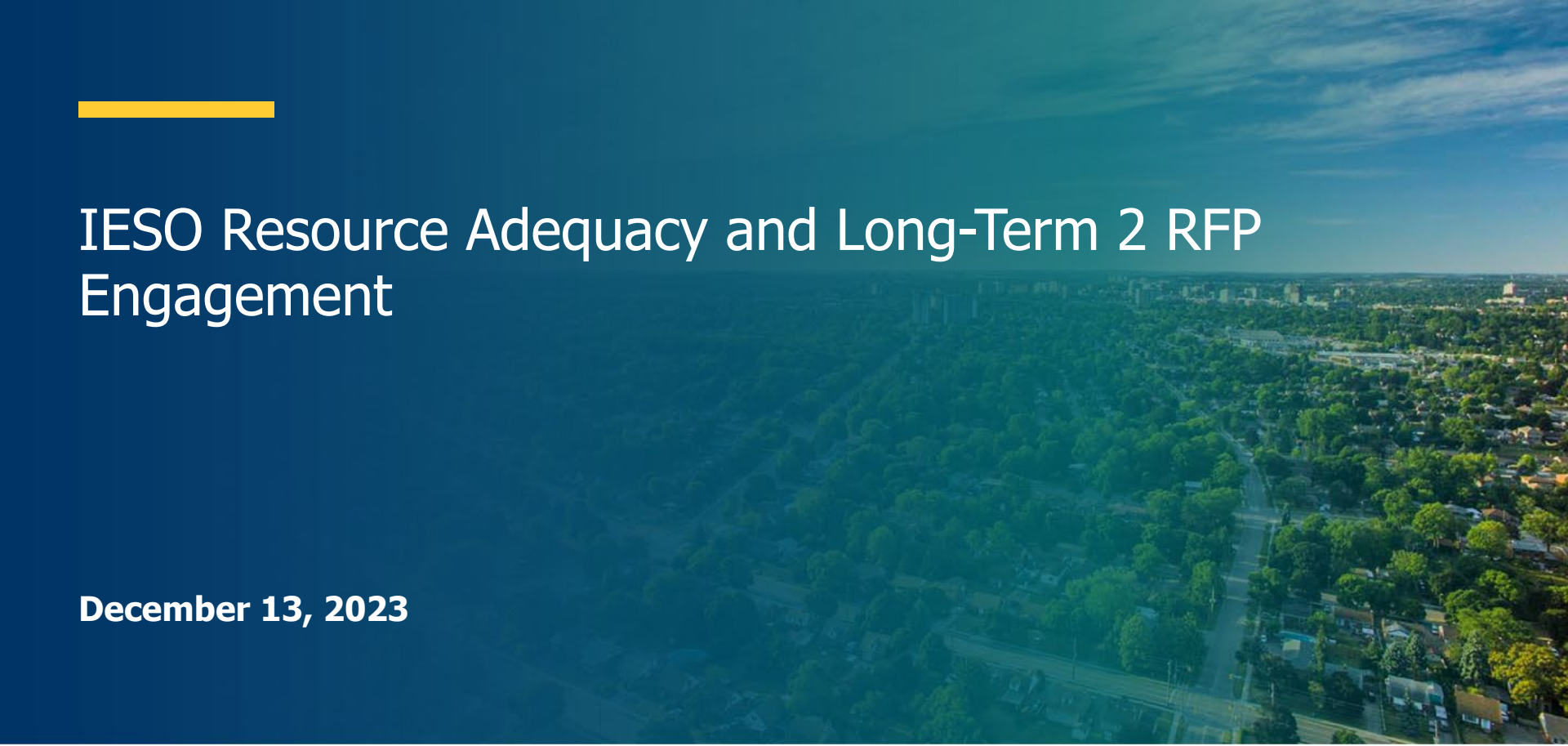
IESO Resource Adequacy and Long-Term 2 RFP Engagement



December 13, 2023

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Purpose

1. To provide an overview of Ontario's emerging system reliability needs and how upcoming cadenced procurements will help to competitively acquire energy and capacity to meet those needs
2. To formally kick-off the LT2 RFP engagement and provide a high-level overview of the expected procurement design, revenue model, and deliverability considerations

Agenda

1. Overview of Emerging System Reliability Needs
2. Resource Adequacy Framework and Cadenced Procurement Approach
3. LT2 RFP Resource Eligibility and Timelines
4. LT2 RFP Design Considerations
5. LT2 RFP Revenue Model
6. Stakeholder Feedback and Next Steps

Status Update

LT1 RFP

- Final RFP and contract are posted
- Proposal submission deadline was December 12, 2023
- Targeting announcement of Selected Proponents in Q2, 2024

LT2 RFP

- **Today:** Engagement kick-off
- Selected proponents targeted for Q2, 2025
- Indicative schedule and key considerations presented on subsequent slides

FUTURE PROCUREMENTS

- The IESO is committed to undertaking a series of cadenced procurements to meet energy and capacity needs throughout this decade and into the 2030s

Overview of Emerging System Reliability Needs

Ontario's Emerging System Needs: Overview (1)

- The energy transition is moving forward at a rapid pace to support population and economic growth and climate change goals. With new supply on track to meet demand peaks mid-decade, the IESO is now addressing overall **energy needs** going into the 2030s and beyond
- The IESO's 2022 APO details that by the end of this decade Ontario will see energy needs emerge and grow sharply; this is driven by growth in demand, as well as the retirement of the Pickering nuclear station and policy considerations such as the proposed Federal Clean Electricity Regulation (CER)
- With contributions from previous and in-flight actions, and subject to upcoming federal and provincial policies, the IESO sees a need for approximately **5 TWh** of energy beginning at the end of the decade and growing through the 2030s

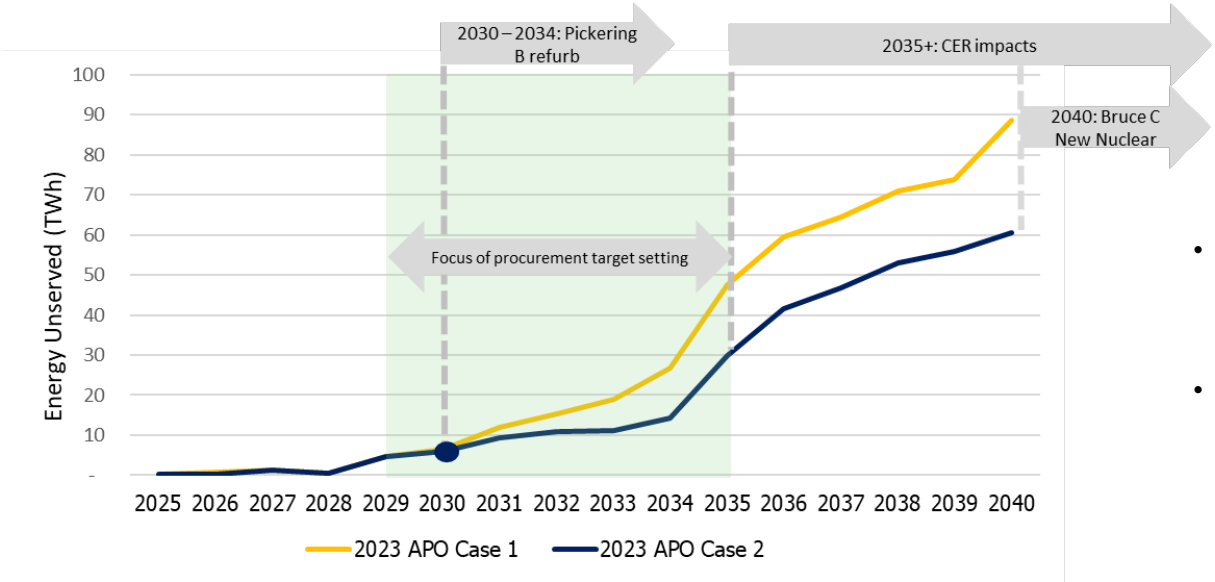
Ontario's Emerging System Needs: Overview (2)

- A number of procurement actions will need to be executed for both existing and new resources to ensure the IESO can meet needs by 2030 and prepare for a larger energy transition next decade
- Targets for the next procurement will be largely driven by these energy needs, which begin to emerge in 2029
- The upcoming 2023 APO will focus on procurement targets for the 2029-2034 period. Post-2035 targets will be dependent on significant decisions that are expected to become clearer later in 2024 (Federal Clean Electricity Regulations, Pickering B refurbishment decision)

Ontario's Emerging System Needs: Procurement

- In order to meet the energy needs identified in the upcoming 2023 APO, the IESO will need to procure approximately **2,000 MW** (installed capacity) of **energy** producing resources by 2030.
- This energy need is in addition to the capacity procured by the E-LT1 and LT1 RFPs, as well as medium-term procurements. The target for the LT2 RFP is expected to be further refined, but it should be noted:
  - The target (in terms of installed capacity) is an approximate representation of the volume of resources that will need to be procured, based on their expected production profiles;
  - The IESO may also need to provide further granularity on any additional capacity need to be met through the LT2 and MT2 procurements.

Re-cap: Ontario's Emerging System Needs: Energy



- **Case 1** shows need with no re-commitment of existing resources when contracts end
- **Case 2** accounts for impact of actions from Powering Ontario's Growth (Small Modular Reactors, etc.)

Summary

Emerging energy need: Forecasts project a need for approximately **5 TWh** of energy beginning in 2030 and expected to grow significantly through the 2030s

LT2 RFP procurement focus: The LT2 RFP will focus on meeting system needs in the 2030 to 2034 timeframe, with an anticipated target of **~2,000 MW**

Participation in the LT2 RFP: The LT2 RFP will be open to all non-emitting resources that can inject energy into the market, be fully operational by the milestone date for commercial operation (COD) and meet potential financial and experience requirements

Resource Adequacy Framework and Cadenced Procurement Approach

Resource Adequacy Framework Overview

The IESO has developed, implemented, and evolved its Resource Adequacy Framework (RAF) to ensure that it has multiple tools available to meet emerging and growing resource adequacy needs

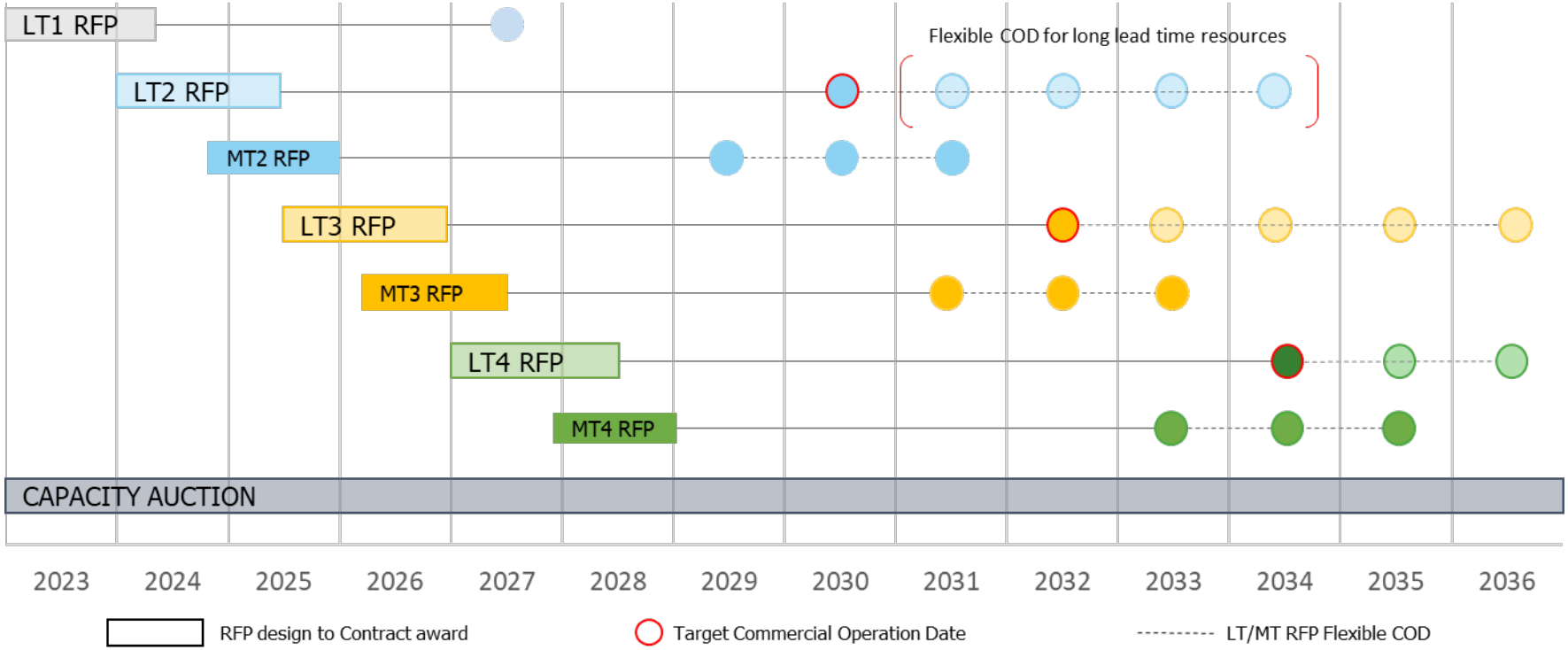
Capacity Auction	**Medium-Term Procurements**	**Long-Term Procurements**	Programs	Bilateral Negotiations
Balances fluctuations in capacity needs from one year to the next. Executed on an annual basis	Provides new and existing resources with greater certainty through longer forward periods and flexible 5- year commitments	Incentivizes investment in new and re-powered resources with long forward periods and commitments	Meets electricity policy objectives in a more targeted manner as directed	Secures resources where a need exists that cannot be addressed in a practical and timely way through competitive processes

Cadenced Long-Term and Medium-Term Procurements

The IESO is planning to implement a cadenced and predictable approach to long-term (LT) and medium-term (MT) procurements. Initial plans involve executing LT procurements on a **2-year cycle**, with the potential for running MT procurements on a similar timeline in-between LT procurements

- **Long-Term procurements** are intended for **new-builds and re-powered facilities** and would offer longer term contracts (e.g., 20 years)
- **Medium-Term procurements** would offer an opportunity for both **new or existing resources** to obtain a medium-term contract (flexible 5-year term), providing an avenue for participation until the next LT RFP, or subsequent MT RFP

Illustrative Procurement Timelines



Benefits of a Cadenced Approach (1)

Moving to a cadence of frequent medium-term and long-term procurements in an integrated manner, with established minimum procurement targets, will:

- Enhance visibility and commitment to subsequent procurements, providing better planning opportunities to developers, including those with long-lead time projects (further details are provided on *slide #70*)
- Eliminate the "one chance" associated with one-off large-scale procurements; also allows multiple opportunities to re-bid unsuccessful projects
- Provide more opportunity to engage with communities, build partnerships and seek support as electricity infrastructure development in support of population and economic growth, continues to increase in Ontario

Benefits of a Cadenced Approach (2)

Further benefits include:

- Empowering developers to make informed business decisions on existing resources, whether that be continuing operations with existing assets or exploring re-powering opportunities
- Providing developers and the IESO with the increased flexibility to adapt to macroeconomic trends and policy evolution
- Enabling the IESO to adapt to changing system needs, while capturing technology advances and cost reductions
- Avoid overbuilding by procuring supply in increments and adjusting targets as circumstances change

Medium-Term 2 (MT2) RFP Considerations (1)

Medium-term procurements will be open to both new-build resources and existing resources seeking additional revenue certainty to continue operations.

- **Revenue model:** The IESO proposes that the MT2 RFP utilize the same revenue model as the LT2 RFP (*described later*), while recognizing that some facilities might be better served with the capacity-style MTC I Contract
  - The IESO will be open to feedback on offering both types of contracts, based on eligible resources and system needs
- **Interaction between LT and MT:** The IESO is considering the linkages and sequencing between the LT RFPs and the MT RFPs
  - The IESO will be open to feedback on the timing between upcoming LT and MT RFPs

MT2 RFP Considerations (2)

Potential targets: The targets for the MT RFPs would be confirmed after assessing the participation in the LT RFP. Depending on eligibility and need, the IESO is considering including a provision that would allow for the procurement targets to be set as a **percentage of the installed capacity** of eligible resources (i.e., 75% of 1,000 MWs of eligible existing resources = 750 MW target) – while adjusting the target based on new-build resources seeking to participate.

- This is premised on the Resource Adequacy Framework continuing to ensure competition drives cost-effective outcomes by offering numerous avenues for participation, including the Capacity Auction, which can serve as a source of revenue and a bridge to subsequent opportunities

Cadenced Approach in Practice

- Based on early indications, the IESO will need to procure approximately **2,000 MW** (installed capacity) of energy producing resources to be in service by the end of the decade
- The IESO will likely require two successive **1,500 MW** procurements on a **2-year cycle** to address additional needs emerging in the late 2030s, pending additional study
- Pending additional analysis, the IESO proposes that minimum procurement targets can be set in the following manner:

Long-Term RFP	RFP Launch Date	Target Commercial Operation Date	Procurement Target* (for energy needs)	Additional Capacity Needs
LT2	2025	2029-2031	2,000 MW	TBD
LT3	2027	2032	1,500 MW	TBD
LT4	2029	2034	1,500 MW	TBD
TOTAL		**2029-2034**	**5,000 MW**	**TBD**

*Targets are indicative; the upcoming APO will provide firm guidance for the upcoming long-term procurement targets.

Other Considerations

- The IESO recognizes that other tools such as the bridging (i.e., extending contract terms to align with the start dates of other acquisition mechanisms, where the proponent is successful, as was the case in the MT I RFP) and contract term extensions may continue to play a role in this framework
  - The IESO is open to considerations on how best to employ bridging and extensions in order to facilitate the success of the Resource Adequacy Framework

Summary: RAF and Cadenced Approach

Procurement cadence: Initial plans involve launching long-term procurements approximately on a **2-year cycle** to meet ongoing system needs. Medium-Term procurements will be offset in timing and can be expected to follow a similar cycle

Mutual benefits: Regular, predictable procurements with minimum targets to provide more opportunities to developers and allow the IESO to modify procurement targets as conditions change. This also creates opportunities for **long-lead time** resources to participate in long-Term procurements

Multiple Options: Cadenced approach provides suppliers with a variety of options, both on timing and term, and can select those that suit their projects

Request for Feedback

The IESO is seeking feedback on:

- The cadenced nature between upcoming LT and MT RFPs
- The proposed offering of both capacity style and new revenue model style of contracts, based on the eligible resources and system needs
- The proposed target setting approach for upcoming MT RFPs
- How best to employ bridging and extensions to contracts to facilitate the success of the Resource Adequacy Framework

LT2 RFP Resource Eligibility and Timelines

Resource Eligibility

For the LT2 RFP the IESO expects to procure **non-emitting, energy producing resources that are enabled in the IESO-administered markets**; including new-build resources and repowered facilities. Long lead time resources may also be considered in the LT2 RFP.

New-Build Resources	Repowered Facilities
• New generation facilities • DERs (enabled in IESO markets) • Long lead time resources	• Eligible repowered existing facilities • Long lead time resources

Resource Eligibility Considerations

The IESO has taken the following considerations into account in planning the eligibility for the upcoming LT2 RFP:

- **Non-emitting resources:** For the LT2 RFP, the IESO has been asked by the Ministry of Energy to review the role of existing assets and new non-emitting electricity resources that can be in-service by 2029 including wind, solar, hydroelectric, storage and bioenergy
- **Energy needs:** To meet system needs, the LT2 RFP will need to acquire resources with energy-producing profiles
- **In-service by 2030:** Resources must be able to be deployed by the end of the decade. The proposed milestone date for commercial operation ("milestone COD") is May 1, 2030

New-Build Resources

New non-emitting generating facilities that can provide energy to the grid, are expected to be eligible for the LT2 RFP. The IESO proposes that this also include:

- New distributed energy resources (DERs) that are enabled in the IESO markets by the milestone date for commercial operation, are expected to be eligible to participate in the LT2 RFP
- New generating facilities that require longer lead times for project development (e.g., waterpower generation) are expected to be enabled to participate in the LT2 RFP to help address future needs, or prepare for participation in future long-term procurements via the cadence described earlier.

Repowered Facilities

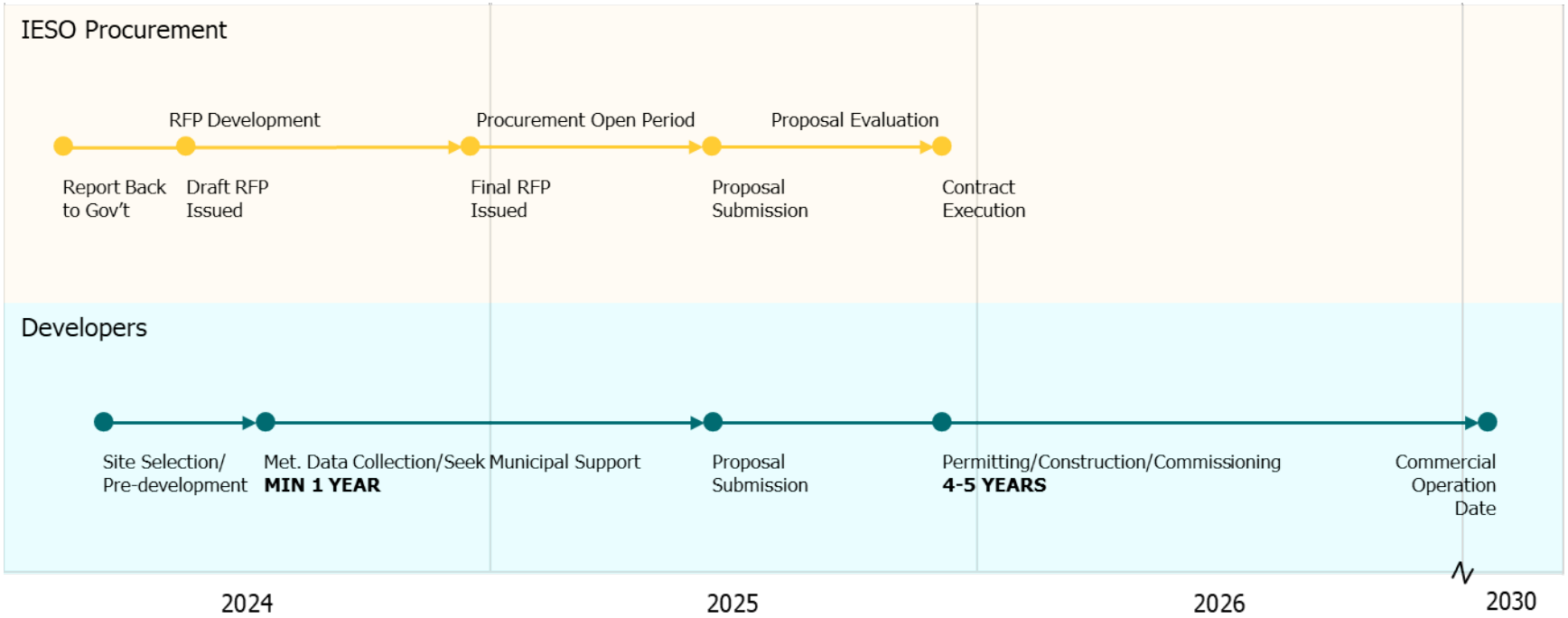
- There is an opportunity for existing eligible resources (including long-lead time) with contracts expiring between 2026-2034 to repower and compete in upcoming LT RFPs, thus providing additional cost-effective energy beyond their current lives
- The IESO will be seeking to establish thresholds to determine the eligibility of a facility as a repowered facility (e.g., full or partial repowering), including a potential minimum capacity increase over existing contract capacity (e.g., +20 %), so as to obtain more energy to meet system needs. A resource with minimal facility changes, and no additional capacity provided, would not be considered a repowered facility.
  - **Full Repowering:** Example – Install new and more technologically advanced wind towers and generators with higher power output using existing site and interconnection
  - **Partial Repowering:** Example – Upgrade certain substantial components of existing wind towers

Distributed Energy Resources (DERs)

The IESO is looking to allow new-build DERs to participate in the LT2 RFP, provided they are enabled in the IESO markets by the milestone date of commercial operation

- Through the Enabling Resources Program, aggregated DERs are expected to be enabled to participate in IESO markets. Revised implementation timelines expected to be announced in Q1 2024
- Information regarding the IESO's goal, objectives, initiatives and timing for DER integration into the IESO's wholesale market is detailed in the DER Roadmap
- Potentially eligible DERs would need to meet the requirements of the LT2 RFP (i.e., become a market participant, non-emitting, energy producing)

LT2 Timeline



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Summary: LT2 Procurement Eligibility and Timelines

Resource Characteristics: Non-emitting, energy producing resources, enabled in the IESO-administered markets

Resource Eligibility: New-build resources (including eligible new-build DERs), repowered facilities, long lead time resources

Timelines:

- Proposed milestone date for commercial operation is May 1, 2030
- Commercial operation dates for potential long lead time resources would be flexible to account for longer development timelines and would impact subsequent procurement targets

Request for Feedback

The IESO is seeking feedback on:

- General feedback on resource eligibility and timelines
- Is there interest in repowering opportunities for existing facilities?
- What considerations should be taken into account regarding the repowering of different resource types?
- How should the optimal threshold for what constitutes a partial or fully repowered facility be determined?
- What considerations should be taken into account for new-build DERs?
- Is there interest and opportunities for uprates and/or expansions at existing facilities?

LT2 RFP Design Considerations

Qualification for the LT2 RFP

- Given the stringent timelines for the LT2 RFP, the IESO is proposing to **not include an RFQ** or qualification stage prior to the LT2 RFP, as was the case prior to the E-LT1 and LT1 RFPs
- However, noting the continued reliability-based nature of upcoming procurements, the IESO recognizes that it is crucial that those participating in procurements have the financial wherewithal and experience required to participate and undertake project development
  - To assess proponent experience, the IESO will endeavour to introduce certain elements into the RFP that evaluate necessary experience requirements (i.e., mandatory team member experience)
  - In lieu of a financial wherewithal assessment, the IESO is proposing the use of a significant proposal security

Project Siting Considerations

Several policy drivers may influence project siting for the LT2 RFP:

- In response to the Minister's letter dated July 10, 2023, the IESO is considering the implications of limiting development on prime agricultural lands (CLI Class 1-3) for new build projects
- In response to the Minister's letter, the IESO is also considering ways to enable participation of projects in northern Ontario
- To do so, and enable additional development opportunities, the Ministry of Energy and IESO are working with the Ministry of Natural Resources and Forestry (MNRF) to enable development on Crown Land
- The Ministry of Energy and IESO are also working with the Ministry of Environment, Conservation and Parks to ensure clarity around environmental approval requirements and permitting processes for new and existing projects

High-Level LT2 RFP Structure

Over the last two years, the IESO, Indigenous communities, municipalities, and stakeholders have worked collaboratively to develop the E-LT1 and LT1 RFPs. The LT2 RFP will build on this work but evolve to reflect the specific nature of the procurement (i.e., energy).

Mandatory Requirements

Rated Criteria

Deliverability Process

High-Level LT2 RFP Structure: Mandatory Requirements

Mandatory Requirements

Rated Criteria

Deliverability Process

Overview of Mandatory Requirements (1)

Proponents can expect to see many of the same mandatory requirements as in recent long-term procurements. Further details are still to be developed; however, the following is a high-level overview of expected mandatory requirements:

- **Long-Term Reliability Project**
  - Market Participant, non-emitting, new-build or repowered
- **Indigenous and Community Engagement**
  - Indigenous and community engagement will continue to be a mandatory requirement under LT2 RFP. The IESO may look to evolve the engagement requirements compared to those utilized under the E-LT1 and LT1 RFPs

Overview of Mandatory Requirements (2)

- **Local Governing Body Support**
  - The IESO intends to make obtaining municipal support ahead of proposal submission a mandatory requirement (discussed further in the following slide), while evidence of Indigenous support will be required if the project is located on Indigenous lands (to be defined in the RFP)
  - The IESO will continue to conduct targeted outreach with municipalities and communities to offer support and information on the procurement process, as well as to seek their input into the design of the LT2 RFP and how community support can most effectively be provided
- **Project Readiness**
  - IESO is considering including requirements that assess project maturity and readiness

High-Level LT2 RFP Structure: Rated Criteria

Mandatory Requirements

Rated Criteria

Deliverability Process

LT2 RFP Proposed Rated Criteria

- Rated criteria, together with the proposal price, help to form the evaluated proposal price used to rank projects in the evaluation phase of the RFP
- Rated criteria enable the IESO to incent certain technical traits or policy benefits from proposals and as such are unique to each procurement
- The IESO will be assessing the rated criteria used in the LT2 RFP to assign additional value beyond what is considered mandatory and meet additional policy objectives. At a minimum, the LT2 RFP is expected to award rated criteria points for:
  - **Indigenous community participation**: The IESO proposes that the mechanism for valuing Indigenous community participation be the one that was utilized in the LT1 RFP, with exact rated criteria points to be determined.

Example: LT1 RFP Indigenous Community Participation

Indigenous Community Participation	Rated Criteria Points Available	Additional Rated Criteria Points Available if Indigenous Participation Comes from a Community where the Project is Located	Total Points Available for Indigenous Community Participation
Indigenous Economic Interest that is equal to or more than 50%	3	3	6
Indigenous Economic Interest that is equal to or more than a 25% but less than 50%	2	2	4
Indigenous Economic Interest that is equal to or more than a 10% but less than 25%	1	1	2
Indigenous Economic Interest that is less than 10%	0	0	0

LT2 RFP: Indigenous Community Participation

Consistent with LT1 Design: The LT2 RFP is expected to build upon the Indigenous participation mechanism utilized in the LT1 RFP, including some of the location based rated criteria for Indigenous participation

Open to feedback: An example of the LT1 RFP Indigenous community participation rated criteria is shown on the previous slide, however it should be noted that the IESO will be seeking input from both Indigenous communities and stakeholders as it seeks to finalize this design element for the LT2 RFP

High-Level LT2 RFP Structure: Deliverability Process

Mandatory Requirements

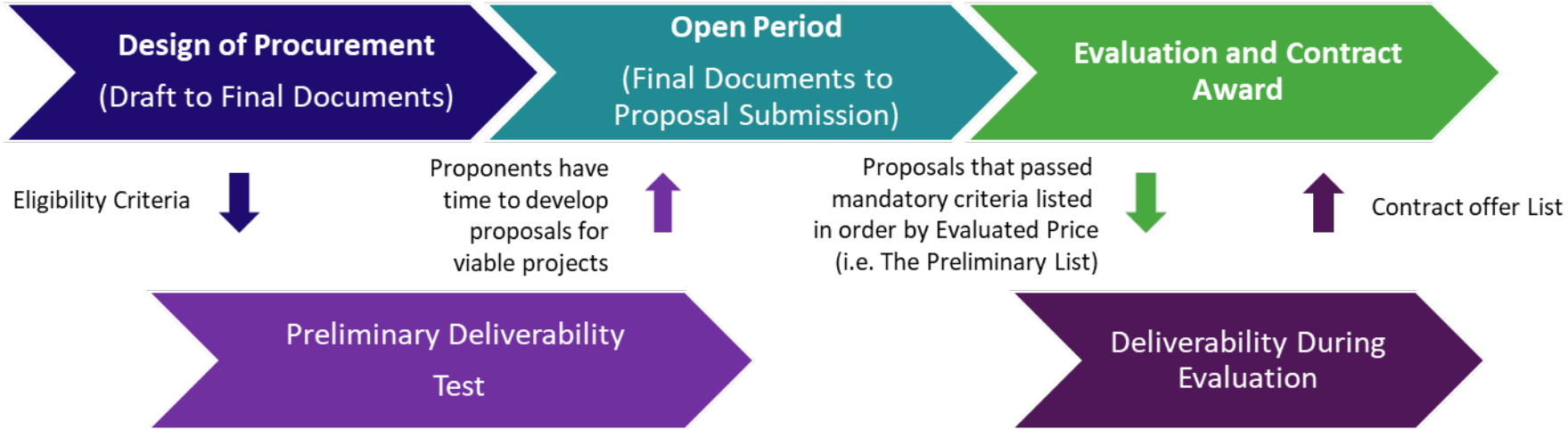
Rated Criteria

Deliverability Process

Purpose of a Deliverability Process

- Procured resources can only address Ontario's **reliability needs** (energy and capacity) if they are **deliverable**
- Deliverable means that there are no material **transmission and/or distribution system constraints** that would prevent a proposed project from effectively addressing the **reliability needs**
- **System constraints** could include insufficient transmission system capacity, insufficient distribution system capacity, or short-circuit levels that exceed equipment capabilities
- A **Deliverability Process** ensures that procured resources are deliverable

Looking Back – Approach for E-LT1 and LT1



Deliverability Process for LT2

- LT2 addresses primarily an energy need
- Hence, for LT2, the approach for ensuring procured resources are deliverable will be different from past procurements, which addressed primarily a capacity need
- The concern is not whether a proposed project can provide its contracted capacity during peak system conditions
- The question that will drive the Deliverability Process for the LT2 RFP is whether transmission constraints will limit the amount of energy a proposed project can provide

Proposed LT2 Deliverability Process

- All other factors remaining the same, this Deliverability Process recognizes that projects that can provide energy unrestricted by transmission constraints are more valuable than projects restricted by transmission constraints and, so, this procurement must consider these constraints
- The IESO is contemplating a Deliverability Process comprised of two steps:
  1. Provide early **system congestion information** ahead of proposal submission and as early as possible to inform investment/siting decisions
  2. Conduct a **deliverability evaluation** for projects as part of the Proposal Evaluation stage

System Congestion Information

- Unlike the Preliminary Deliverability Test that was carried out for E-LT1/LT1, this process will not result in a "pass/fail" determination
- This process is envisioned to provide congestion information that:
  - Allows proponents to decide on a location for their project
  - Helps proponents establish their Proposal prices, given the proposed revenue model, to account for potential constraints
- The IESO will be engaging shortly with proponents on what information they need from the IESO and when they need that information

LT2 Deliverability Evaluation

- As part of the Proposal Evaluation stage, a deliverability assessment will be completed to confirm that the project can effectively contribute to meeting the reliability needs intended to be addressed by LT2
- These assessments will be performed for each project, in order of their Evaluated Price, until the procurement targets are reached
- These assessments will consider energy congestion, short-circuit ratings of breakers, transmission line ratings and other factors
- The methodology for carrying out these assessments will be finalized and communicated before Proposals are due

Other Considerations

- The Transmitter and LDCs, as applicable, will also need to support the development of System Congestion information and carry out assessments as part of the Deliverability Evaluation for LT2
- The IESO will be engaging with LDCs and Transmitters to determine how they will participate in this process

Request for Feedback

- What early **system congestion** information do proponents need to guide them in choosing the location of their projects?
- When would proponents need **system congestion** information in the procurement cycle?
- Do you have any general suggestions for how to approach **deliverability evaluation** for LT2?

Summary: LT2 RFP Design Considerations

Similar structure to previous Long-Term RFPs: The LT2 RFP will not include a qualification stage but will include mandatory requirements and rated criteria to form proposal evaluation

Municipal & Indigenous Support: Evidence of municipal support and Indigenous support (as applicable) will be mandatory ahead of proposal submission, but would be removed from rated criteria points for municipal consent only

Deliverability: A new process will be designed, likely quite different from previous processes, and updated documents will be posted in due course

Request for Feedback

In addition to general feedback on LT2 RFP design considerations, the IESO is seeking specific feedback on the following:

- The impacts that agricultural land-use limitations may have on project development
- What evaluation criteria can be utilized to evaluate project readiness, given tight timelines and reliability needs
- Input from both Indigenous communities and stakeholders on proposed mechanism for valuing Indigenous participation
- Are there any other rated criteria that should be considered?

LT2 RFP Revenue Model: Enhanced Power Purchase Agreement (PPA)

Ontario's Experience with Legacy PPAs

Financing projects: PPAs that pay a fixed price on a $/MWh basis have been widely used in energy procurements and have proved effective in financing and developing projects. However, IESO experience has shown that operational profiles have not always aligned with system needs and price signals.

Operations in practice: As the system operator, the IESO must balance the grid during periods of surplus baseload generation. One of the actions the grid can take is to dispatch down excess generation, such as wind power, at times of lower demand. Under a traditional PPA, this has necessitated payments for this foregone energy.

Enhanced PPA: High-Level Concept

Recognizing the strengths legacy PPAs have had in attracting investment, the IESO has built on these designs and developed a proposal for an Enhanced PPA for the LT2 RFP, which maintains the **revenue certainty** suppliers value and encourages **active and efficient energy market participation**:

- Determining **deemed energy revenues** at a resource's Day-Ahead nodal or locational marginal price (LMP)
- Calculating a top-up paid by the IESO to the supplier (if/when necessary) to meet revenue requirements, based on the difference between deemed energy revenues (day-ahead) and the supplier's monthly revenue requirement, otherwise known as a **Grid Reliability Payment (GRP).**

A similar model is used in New York by NYSERDA and was identified by stakeholders during the E-LT1 RFP engagement process.

Enhanced PPA Benefits

- Applying lessons learned from legacy PPAs, the Enhanced PPA will provide suppliers with **revenue certainty** required to drive investment
- Will leverage the **efficiencies of the renewed market**, by utilizing the Day-Ahead Market (DAM) to calculate deemed revenues, while leveraging real-time locational price signals; producing energy when it is most valued and not contributing to surplus conditions when it is not
- The Enhanced PPA aims to serve as a **building block** for subsequent long and medium-term procurements, where the design can be evolved as the renewed market takes form and additional efficiencies can be realized (i.e., further locational drivers, additional price sensitivity, hybridization of resources)

How it Works in Practice

Step 1: Suppliers submit a **proposal price** that reflects the project's revenue requirement, **annual production factor** over the contract duration, **contract capacity**, and **location**

Step 2: Based on these inputs, the IESO determines monthly energy revenues a facility ought to have earned in the energy market over a month, based on the day-ahead market price at their nearest node (locational marginal price) and submitted production factor

Step 3: The IESO provides a top-up to the supplier in the form of a **Grid Reliability Payment** when their deemed energy revenues are less than their monthly revenue requirement

Key Inputs of the Model

Before expanding on how the proposed Enhanced PPA revenue model works, below is an overview of key variables that would need to be submitted by proponents to the IESO ahead of proposal submission.

Energy Production Factor (%): A metric provided by proponents, representing anticipated energy production 24/7 over a year that takes into account curtailment, e.g. 0.3.

Contract Capacity: is a contractually agreed resource MW rating (together with energy production factor, this establishes the committed MWh volumes in the contract).

Calendar hours per month: The above concepts are multiplied by the number of hours per calendar month.

Proposal Price ($/MWh): Provided as a product of the proponent's revenue requirement, based on their **Energy Production Factor** and **Contract Capacity.**

Grid Reliability Payment Calculated

Grid Reliability Payment $_{monthly}$ =

(Contract payment settled monthly)

Revenue Requirement $_{monthly}$

(Proposal Price x Production Factor x Contract Capacity x Calendar hours per month)

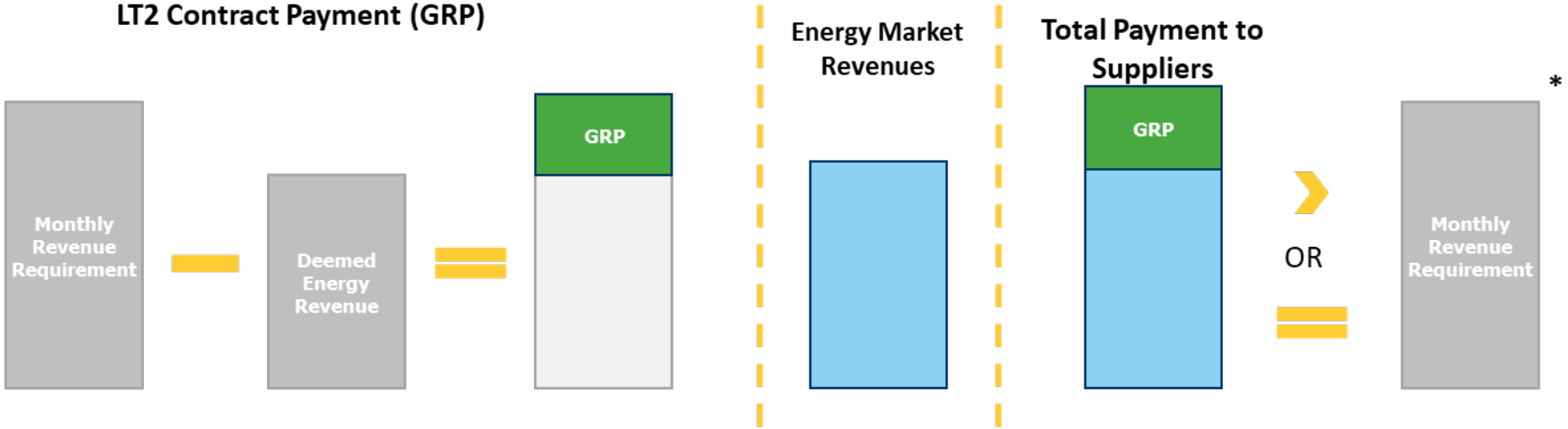
– Deemed Energy Revenue $_{monthly}$

(Day Ahead Market Price $_{monthly\ average}$ x Production Factor x Contract Capacity x Calendar Hours Per Month)

Illustrative Example

The IESO will deem monthly energy revenues (monthly DA-LMP) for a resource and determine if and how much of a **Grid Reliability Payment** is required to bridge monthly revenue requirements.

While suppliers would operate in the energy market and keep all revenues earned there.



 *If Energy Market Revenues are equal to or higher than Deemed Revenues

Proposal Price Example

The Proposal Price submitted by proponents should take into account their facility's **contract capacity and production factor**; representing their monthly revenue requirement on an effective / MWh basis.

- For example (assuming 730 hours/month):

Monthly Revenue Requirement	Contract Capacity (MW)	Production Factor (%)	**Proposal Price ($/MWh)**
$ 876,000	100	30%	**$40**

- Proposal prices as such could enable the IESO to conduct like-for-like proposal evaluation, picking the lowest priced proposal.

Mechanics Explained

- The use of the day-ahead average nodal price to calculate deemed revenues leaves up-side with suppliers as they earn revenues in the energy market; this is crucial for any resources able to shift production into high priced hours in real-time, or whose production was not scheduled in the day-ahead but was needed in real-time.
- Suppliers providing combinations of a low production factor and/or high proposal price would be disadvantaged in proposal evaluation as they are indicating the need for a higher GRP, to meet their revenue requirements
- Suppliers submitting higher production factors and/or low proposal price, are signaling that they expect to capture greater revenues through the energy market, thus needing less GRP to meet their revenue requirements

Revenue Outcomes

	Scenario	Revenue outcome	Notes
A	Deemed revenue = actual market revenue	Equal to monthly revenue requirement	
B	Deemed revenue > actual market revenues	Supplier earns less than monthly revenue requirement	Downside risk to supplier if the supplier does not meet deemed revenues
C	Deemed revenue < actual market revenues	Supplier earns more than monthly revenue requirement	Supplier keeps upside as the IESO does not look at actual market performance

Summary: Revenue Model

Revenue Certainty: The Enhanced PPA revenue model provides suppliers with predictable earnings, decoupling from seasonal market fluctuations.

Market Efficiency and Operational Benefits: Incentivizes resources to align operations with market signals, promoting system reliability and responsiveness to market prices.

Grid Reliability Payment: Ensures any revenue shortfalls, between deemed and monthly revenue requirements, are bridged by the IESO via a GRP.

Feedback is welcomed on the proposed revenue model. The IESO intends to provide additional information in the coming months.

Long Lead Time Resources

Enabling Long Lead Time Resources

Integration with cadence: Long lead time resources will be enabled in long-term procurements by allowing them to participate in an upcoming procurement (e.g. LT2 RFP) while coming into service at a date after its own milestone date for commercial operation (e.g. COD 2034)

- The cadenced approach allows for long lead time resources to prepare for and participate in the procurement that is best suited to them and their technology.
- The IESO may need to adopt a **bifurcated approach** to the procurement where long lead time resources are evaluated separately from other resources with their own procurement target.
  - **Stream 1:** Technologies able to meet the 2030 COD, e.g., wind, solar
  - **Stream 2:** Long lead time resources, e.g., waterpower

Enabling Long Lead Time Resources (2)

- To allow for a long lead time resource to participate in the LT2 RFP, the IESO could consider setting a stand-alone target for this stream (e.g., 500 MWs based on expressed interest)
- For example, with a target of 500 MWs for Stream 2 (long-lead time resources) the IESO procures two resources whose contract capacity totals 580 MWs (allowing for the marginal proposal), with a commercial operation date of 2034
- The IESO would in this case reduce the procurement target for the long-term procurement with the corresponding milestone COD, in this case LT4 (2034), by the 580 MWs procured
- Target setting will need to be considerate at maintaining sufficient investment opportunities in future LT RFPs while enabling participation for long-lead time resources

Request for Feedback

- Does the proposed approach to enabling long-lead time resources enable meaningful participation or sufficient certainty?
- What additional considerations should the IESO contemplate for enabling broader participation from long-lead time resources?

Feedback and Next Steps

Next Steps

- The IESO invites interested parties to provide written feedback by **January 15, 2024**
- The IESO will aim to hold a follow up engagement, and is open to 1:1 meetings, prior to submitting its report back to government in March, 2024
- The IESO will also be meeting with communities to seek their feedback, on two occasions in January/February 2024
- All written feedback should be submitted to engagement@ieso.ca

Thank You

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