MAY 23, 2024

# Long-Term 2 RFP Stakeholder Engagement

Morning Session

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# Purpose

As a follow-up to the announcement of the LT1 RFP results on May 9, and the LT2 RFP stakeholder engagement sessions on April 4 and 18, this session will:

1. Provide a recap on Ontario's emerging system needs and the resource adequacy framework.
2. Provide further clarity on the different procurement streams, including resource eligibility and timelines.
3. Provide update on collaboration with MNRF to enable projects on Crown Land.

# Morning Agenda

1. LT1 RFP Results Recap
2. Resource Adequacy Framework and Cadenced Procurement Approach
3. LT2 RFP Energy Stream
4. LT2 RFP Capacity Stream
5. Long Lead Time Resource Procurement
6. MT2 RFP Energy and Capacity



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# Afternoon Agenda

1. LT2 RFP Preliminary Connection Guidance Follow-Up
2. E-PPA Revenue Model
3. E-PPA Energy Market Settlement Examples
4. LT2 Contract Provisions
5. Crown Land Discussion with Ministry of Natural Resources and Forestry (MNRF)
6. Engagement Plan
7. Next Steps



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# LT1 RFP: Results Recap



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# Recap: Procurements to Date

| Mechanism | Result (MW) | Resource Types | Commitment |
|---|---|---|---|
| Same-Tech Upgrades | 286 | 7 natural gas facilities | Contract extensions to 2035 |
| E-LT1 RFP | **Total of 1,177**<br>882 storage<br>295 non-storage | 15 storage projects<br>2 natural gas facilities | ~20 year contracts, starting as early as 2025, ending in 2047<br>Natural gas contracts end in 2040 |
| LT1 RFP | **Total of 2,194**<br>1,784 storage<br>410 non-storage | 10 storage projects<br>2 natural gas facilities<br>1 biogas project | ~20 year contracts, starting no later than 2028, ending in 2048<br>Natural gas contracts end in 2040 |

# Recap: LT1 RFP High Level Results

The LT1 RFP sought to competitively procure 2,518 MW of year-round contract capacity from dispatchable new build and eligible expansion resources. As announced on May 9, the results of this procurement are:

| | Number of Proposals | Maximum Contract Capacity (MW) |
|---|---|---|
| Proposals Received | 48 | 6,911.73 |
| Non-Storage Proposals Selected | 3 | 410.69 |
| Storage Proposals Selected | 10 | 1,784.22 |
| **Total Proposals Selected** | **13** | **2,194.91** |

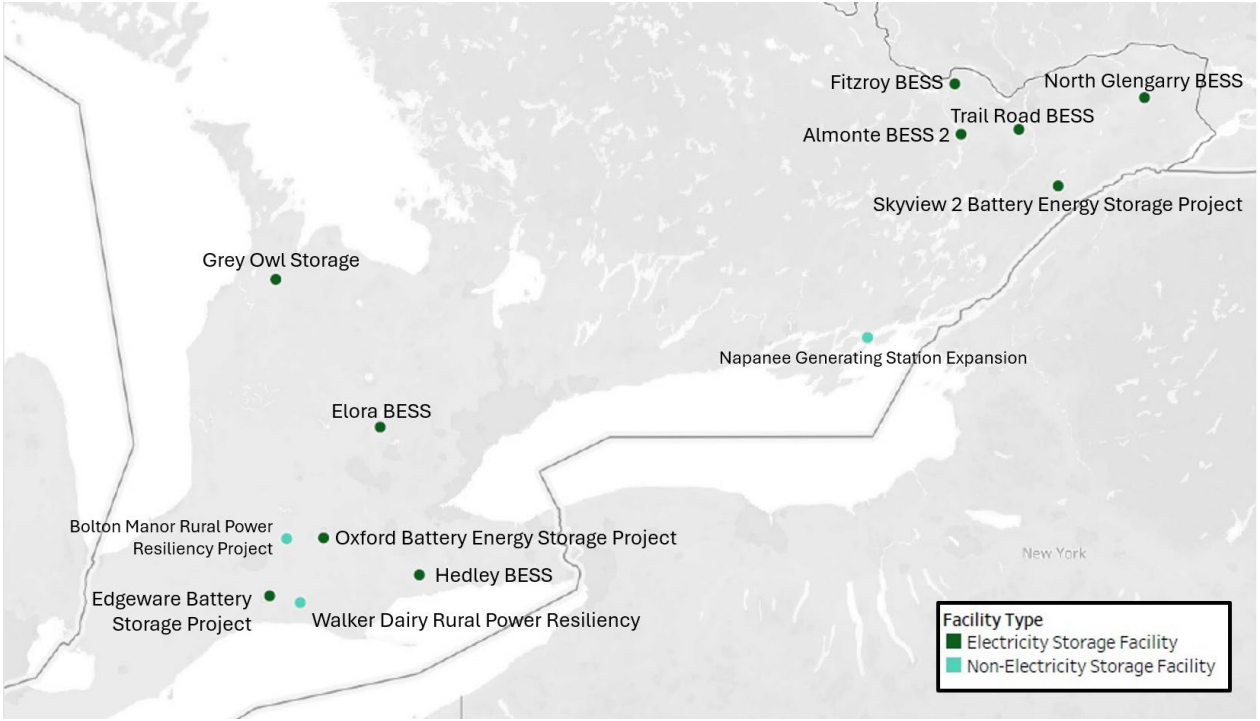
# LT1 RFP Key Insights – Successful Proposals

| | Non-Storage | Storage | Total |
|---|---|---|---|
| Successful Proposals | 3 | 10 | 13 |
| Provided Municipal Support Resolution* | 3 | 9 | 12 (92%) |
| 50% or more Indigenous Participation | 0 | 9 | 9 (69%) |
| Weighted Average Price** | $1,681.14 MW/business day | $672.32 MW/business day | |

* Where no Municipal Support Resolution was provided at Proposal Submission, it is still required post contract award.

** Weighted Average Price of selected proposals.

# LT1 Selected Proposal Project Locations



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# Resource Adequacy Framework and Cadenced Procurement Approach



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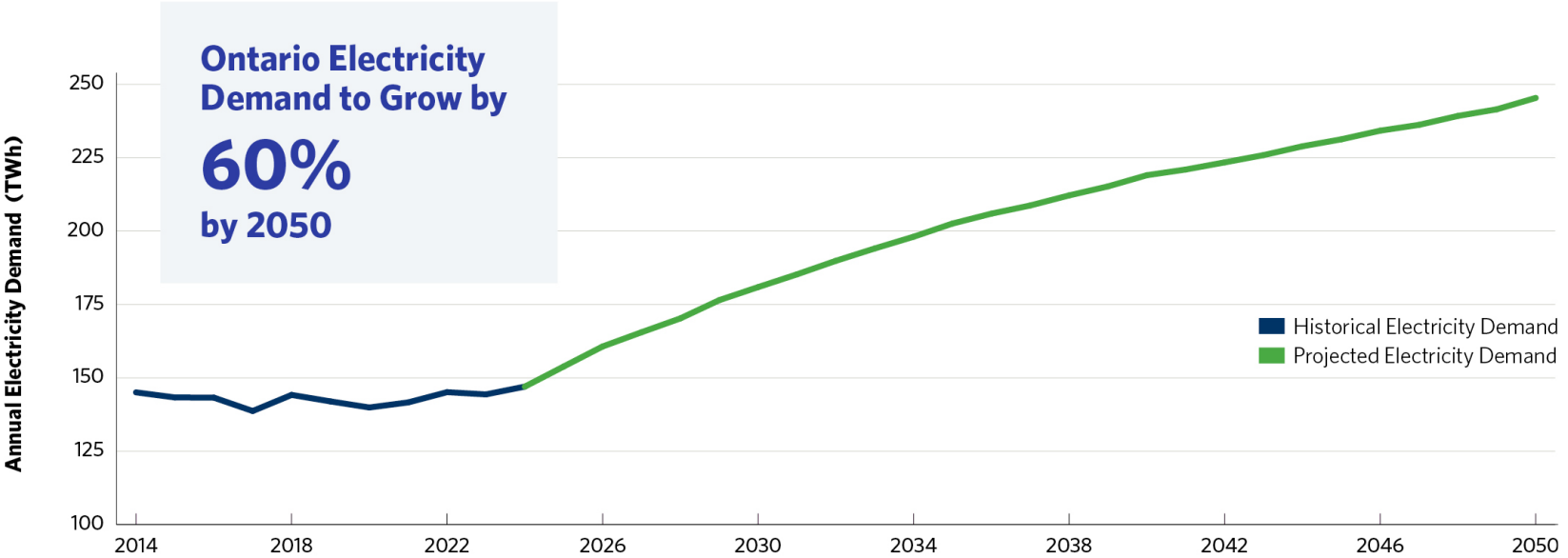
# Recap: Anticipating Future Needs



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# Recap: Resource Adequacy Framework

- To help address this growth the IESO has developed, implemented, and evolved its Resource Adequacy Framework (RAF) to ensure it has multiple acquisition mechanisms available to meet emerging and growing resource adequacy needs.
- The RAF incorporates the mechanisms that will be used meet reliability needs in all time frames: short, medium and long-term; in a manner that facilitates the transition to a more competitive acquisition environment that better aligns with evolving system needs.



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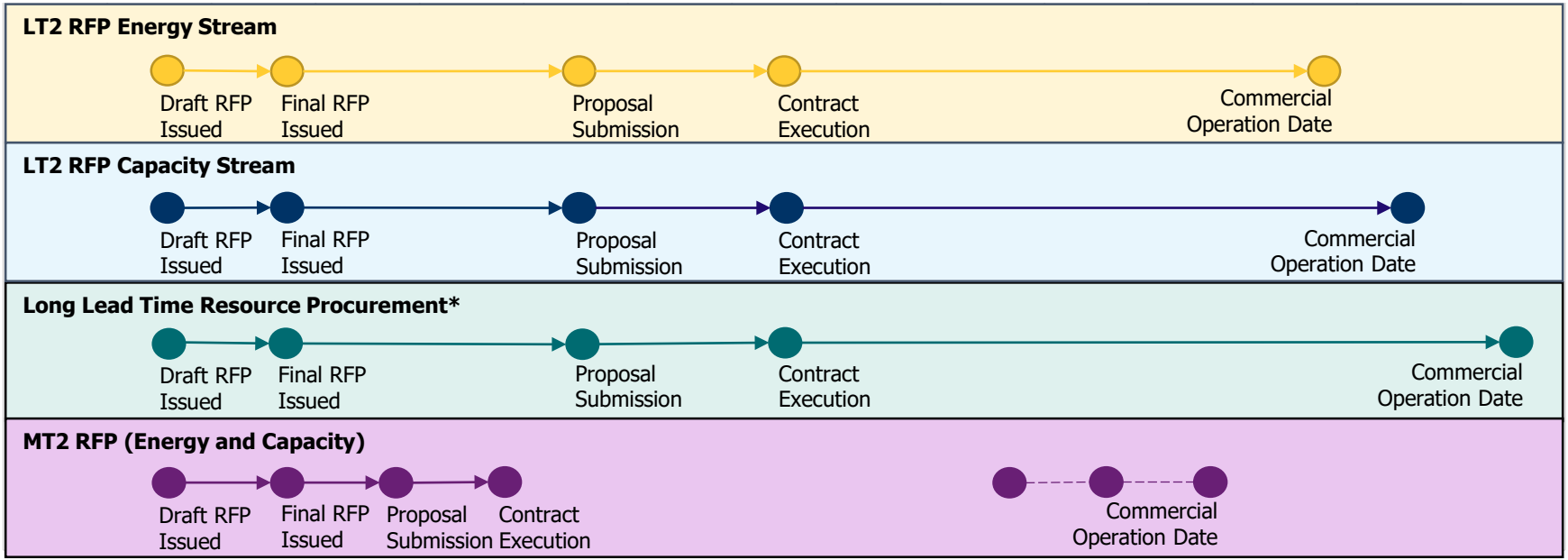
# Recap: RAF Acquistion Mechanisms

| Capacity Auction | Medium-Term | Long-Term | Programs | Bilateral Negotiations |
|---|---|---|---|---|
| • Balance fluctuations in capacity needs from one year to the next<br>• Executed on an annual basis | • Provides resources greater certainty through longer forward periods and flexible 5-year commitments<br>• Cadenced process will provide IESO flexibility to adjust to changes in system needs and adapt processes to lessons learned | • Secures reliability services from resources with long forward periods or commitments, such as new-build facilities | • Meets electricity and 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 (i.e. when needs are urgent and/or must be satisfied by supply in a specific location) |

# LT2 and MT2 RFP Streams and Illustrative Timelines




*Timelines under consideration based on stakeholder feedback



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# Procurements Under Development

| Mechanism | Target | Resource Types | Commitment |
|---|---|---|---|
| MT2 RFP (2025) | Energy: TBC<br>Capacity: TBC | Existing energy and capacity resources that are uncontracted or coming to the end of their contract term | 5 year contracts starting May 2027, May 2028 or May 2029 |
| LT2 Energy (2025) | 5 TWh (~2,000 MW) | Energy-producing Market Participants over 1 MW, including repowered/refurbished facilities | 20 year contracts starting in 2030 |
| LT2 Capacity (2025) | 500-1,000 MW | Capacity-based Market Participants over 1 MW | 20 year contracts starting in 2031 |
| Long-Lead Time (2025) | 500-1,000 MW | Energy and capacity resources with long-lead times | 40 year contracts starting in 2034-2035 |

# Future Procurements

| Mechanism | Target | Resource Types | Commitment |
|---|---|---|---|
| MT 3/4/5… | Energy: TBC<br>Capacity: TBC | Existing energy and capacity resources that are uncontracted or coming to the end of their contract term | Flexible 5 year contracts |
| LT3 Energy (2027) | 1,500 MW (TBC) | Energy-producing Market Participants | TBC - 20 year contracts starting in 2032 |
| LT3 Capacity (2027) | TBC | Capacity-based Market Participants | TBC - 20 year contracts starting in 2032 |
| LT4 Energy (2029) | 1,500 MW (TBC) | Energy-producing Market Participants | TBC - 20 year contracts starting in 2034 |
| LT4 Capacity (2029) | TBC | Capacity-based Market Participants | TBC - 20 year contracts starting in 2034 |

# LT2 RFP Energy Stream



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# LT2 RFP Energy Stream

**Resource Eligibility:** New or refurbished/expanded non-emitting energy producing resources enabled in the IESO-administered markets (e.g. wind, solar, hydroelectric, bioenergy).

**RFQ:** In lieu of a qualification stage, the IESO will continue to use a significant proposal security, and may include certain experience requirements in the RFP.

**Procurement Target:** The IESO is seeking to procure **5 TWh** (~2,000 MW installed capacity) to be in service by 2030.

**Contract Term:** 20 years.

**Revenue Model:** Enhanced PPA (E-PPA).

# LT2 RFP Energy Stream

**On-going Design Considerations:** The IESO is continuing to work with relevant ministries such as, MNRF, MECP, OMAFRA, MMAH and ENERGY, to receive clear policy direction (e.g. project siting).

**Rated Criteria:**

- Indigenous Community Participation: IESO proposed similar mechanism as the LT1 RFP with exact rated criteria points to be determined – final model to be designed collaboratively with both stakeholders and Indigenous communities.

**Deliverability:** A single deliverability test will be performed during proposal evaluation.

**Municipal Support:** Will be required at proposal submission.

# Resource Eligibility - DERs

- DERs > 1 MW that are market participants continue to be eligible to participate in LT procurements.
- Stakeholders have identified risks and unknowns for aggregated DERs and DERs < 1 MW, given the status of the IESO's Enabling Resources Program (ERP) and timing considerations vis a vis the LT2 RFP.
- As such, the IESO is considering limiting eligibility for the LT2 RFP to DERs > 1 MW and working toward better alignment for the LT3 RFP.



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# Resource Eligibility - Repowered Resources

- IESO remains open to repowered/refurbished resources that are able to meet all obligations in the LT2 contract.
- Some stakeholders have raised concerns about challenges to repowering, particularly wind developers.
- The IESO commits to working with stakeholders to address any barriers to repowering for the LT3 RFP, while seeking additional feedback from other resources types for the applicability in the LT2 RFP.
- Any resource that is nearing the end of its commitment and does not believe the timing is right for repowering should participate in the MT2 RFP.

# LT2 RFP Capacity Stream



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# LT2 RFP Capacity Stream

- Beyond the 5 TWh of emerging energy needs, the IESO has been evaluating potential capacity needs that may need to be addressed through the LT2 RFP and subsequent procurements.
- Based on the results of the LT1 RFP, the updated capacity forecasts published in the latest APO, the IESO is planning to proceed with a capacity stream for the LT2 RFP.

# LT2 RFP Capacity Stream

**Resource Eligibility:** **New** non-emitting capacity resources (e.g. storage, bioenergy, hydrogen).

**Procurement Target:** The IESO is seeking to procure ~**500-1,000 MW** to be in service by 2031.

**Contract Term:** 20 years.

**Commercial Terms:** The IESO is proposing that these terms will substantively remain the same as the LT1 Contract.

**Non-Commercial Terms:** Other RFP and contract terms, such as engagement requirements and Indigenous participation, will be harmonized with the LT2 Energy Stream RFP and contract.

# LT2 RFP Capacity Stream

**Deliverability:** The IESO is considering a similar approach to deliverability as the LT2 RFP energy stream, whereby the IESO would provide early connection guidance and only test for deliverability during proposal evaluation. Further details regarding deliverability will be provided this afternoon during the preliminary connection guidance follow-up.

# Long Lead Time Resource Procurement



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# Long Lead Time Resource Procurement

- In its Report Back to the Minister, the IESO responded to the Minister's request to consider how long lead time resources could be considered in its procurement efforts.
- The IESO recommended a **separate procurement stream** for long lead time resources to be run in conjunction with the LT2 RFP to enable resources with longer development timelines to come into operation at a later date.
- The proposed long lead time resources stream will seek to procure resources with certain systems benefits or strategic characteristics beyond those procured under other long term procurements.

# Long Lead Time Resource Procurement

**Resource Eligibility:** **New** non-emitting resources known to have long development lead time, enabled in the IESO-administered market (e.g. hydroelectric generation and long-duration storage).

**Procurement Target:** ~500 -1,000 MW to be in-service by 2034-2035.

**Contract Term:** 40 years.

**Commercial Terms:** Capacity style (i.e.,LT1 Contract) for capacity, E-PPA for energy.

**Non-Commercial Terms:** To be developed with stakeholders – expect broad policy objectives (e.g. community engagement, Indigenous participation) to be consistent with LT2 Energy/Capacity, though particulars may differ.

# Long Lead Time Resource Procurement

**Deliverability:** No preliminary deliverability test; given long lead times and strategic values of resources, the IESO will seek to evaluate proposals in manner that accounts for project alignment with planned transmission buildout or paid upgrades. The IESO to provide more detail in coming months.

**Evaluation:** Like-for-like basis, regardless of contract chosen using a singular and more flexible methodology.

A well understood and stakeholdered evaluation model will be key to driving competition in this procurement . The evaluation model may include certain system benefit criteria (i.e. duration, flexibility etc.) that would augment pricing/cost inputs.



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# Subsequent Long Term Procurements

- The IESO believes that the cadenced procurement approach continues to provide investment opportunities for those seeking to develop long lead time assets, beyond the Long Lead Time Resource Procurement.
- Parties should continue to consider subsequent long term procurements (i.e., LT3, LT4 RFPs) for investment as they may also include certain elements that align with the characteristics of the Long Lead Time Resource Procurement (i.e., valuing longer durations for storage, targeting alternative technologies etc.).

# MT2 RFP



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# MT2 RFP and Contract

- The focus of the MT2 RFP is meeting Ontario's energy needs by competitively recommitting resources coming off contract, which in the case of the MT2 RFP largely entails variable generators.
- The IESO has previously communicated that it would run concurrently with the LT2 RFP.
- In response to stakeholder feedback, specifically the need for early investment certainty and perceived challenges around repowering, the IESO is further considering accelerating the timeline of the MT2 RFP to be run in advance of the LT2 RFP.

# MT2 RFP and Contract

**Resource Eligibility**: Existing resources enabled as market participants with contracts expiring between 2026-2029.

**Procurement Target**: The IESO is still working to finalize procurement targets.

**Contract Term**: Flexible 5 year term with bridging options similar to the MT I RFP.

**Capacity Contract Terms**: The IESO proposes the contract be based off of the MTC I / LT1 Contracts.

**Energy Contract Terms:** The IESO proposes the contract be based off of the LT2 contract (i.e., E-PPA).

**Evaluation:** Separate process for energy and capacity resources relying primarily on a price-based evaluation.

**Contract Start Dates:** Depending on existing contract expiry, MT2 contracts will start  May 1 2027, May 1 2028, May 1 2029.

# Summary of Upcoming Procurements

| | LT2 RFP Energy Stream | LT2 RFP Capacity Stream | Long Lead Time Resource Stream | MT2 RFP |
|---|---|---|---|---|
| **Product** | Energy | Capacity | Long Lead Time Resources | Energy and Capacity |
| **Target** | ~2,000 MW / 5 TWh | ~500-1,000 MW | ~500-1,000 MW | TBD |
| **Proposal Submission** | Mid-2025 | Mid-2025 | TBD | Early 2025 |
| **Eligible Resources** | New non-emitting energy producing resources | New non-emitting capacity producing resources | New non-emitting long lead time resources (e.g. new-build hydro or long duration storage*). | Existing resources enabled as market participants with contracts expiring between 2026-2029 |
| **Revenue Model** | Enhanced PPA | Capacity Contract (i.e. LT1 Contract) | Energy: Enhanced PPA<br>Capacity: Capacity Contract | Energy: Enhanced PPA<br>Capacity: Capacity Contract |
| **Contract Term** | 20-year | 20-year | 40-year | 5-year |
| **Commercial Operation Date** | 2030 | 2031 | 2034/2035 | May 2027,2028,2029 |

*Long duration storage technologies limited to those requiring long lead times.

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# Long-Term 2 RFP Stakeholder Engagement

Afternoon Session

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# Purpose

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1. Provide a recap on Ontario's emerging system needs and the resource adequacy framework
2. Provide further clarity on the different procurement streams, resource eligibility and timelines
3. Provide update on collaboration with MNRF to enable projects on Crown Land

# Recap Morning Agenda

1. LT1 RFP Results Recap
2. Resource Adequacy Framework and Cadenced Procurement Approach
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# LT2 RFP Preliminary Connection Guidance Follow-Up



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# Background

As mentioned during previous LT2 RFP webinars, the IESO is developing a Deliverability Process for the LT2 energy stream comprised of two steps:

- **Preliminary guidance information –** presented 1st version April 18th and received feedback to be discussed today.
- **Evaluation Stage Deliverability test –** to be performed for each project submitted to the RFP as part of the Proposal Evaluation stage, based on their evaluated price, until the procurement targets are met.

# Themes from April 18th Webinar Feedback (1)

The main feedback on the Guidance document and the IESO's actions include:

- Better visibility and description of the geographical location of the equipment and limitations described in the Guidance document would be needed.
  - We are working with HONI to provide better information, including mapping for the transmission system.
- The contracted LT1 projects would need to be reflected in the Guidance document.
  - We are already developing a version 2 of the document, which will reflect the updated information.

# Themes from April 18th Webinar Feedback (2)

- Circuit limitations are too restrictive.
  - Exploring the possibility to expand the size of injection into the 115 kV and 230 kV circuits. Any new limits will be reflected in the Guidance document version 2.
- IESO and HONI should address system limitations (e.g., short circuit, protection).
  - IESO and HONI are working together to find solutions to address short circuit level concerns at the stations listed and remove them from the restrictive list. Solutions are often very complex (e.g., fix one issue and others show up), or pose risk to system reliability and/or customers.
  - All transmission reinforcements with an in-service in 2030 or before have been included in the Guidance document.
  - Reinforcements with an in-service date beyond 2030 will be included in subsequent RFPs.

# Themes from April 18th Webinar Feedback (3)

- Conduct pre-submission feasibility studies.
  - The Guidance document is supposed to provide enough information such that feasibility studies or pre-deliverability studies are not necessary.
  - In addition, we will offer consultations to the interested developers, on demand.
- Allow bids to include the cost of transmission upgrades that would make a project deliverable.
  - Upgrades that would make projects deliverable are generally bulk system upgrades that require significant studies to confirm the optimal solutions, and longer lead times to implement, that would likely result in delay of in-service dates and energy delivery.

# LT2 Energy Stream Next Steps

- Formal response to April webinar feedback targeted for May 30th.
- Update Guidance document to reflect LT1 RFP results and to address feedback from stakeholders - June 10 planned release date.
- Develop the Evaluation Stage Deliverability Test Methodology.
  - To follow completion of Guidance Document version 2 – targeting a draft for end-July.
- Conduct Pre-submission Consultations:
  - Coordinated through Engagements (engagement@ieso.ca)
  - Questions/agenda must be submitted in advance
  - Limit discussions to guidance provided in the document

# LT2 RFP – Capacity Stream Deliverability

- With the conclusion of the LT1 RFP and announcement of a 500-1,000 MW capacity stream for the LT2 RFP, the IESO considered how best to approach deliverability testing for capacity resources in that procurement.
- The IESO is contemplating that, instead of utilizing the preliminary deliverability testing process from the E-LT1 and LT1 RFPs, early guidance information on preferred locations for LT2 projects would be provided ahead of proposal submission to better inform project siting; while deliverability testing would still occur at the proposal evaluation stage.
- The IESO is considering using the results of the LT1 RFP in conjunction with the expected transmission upgrades to provide additional information on the preferred locations for LT2 capacity.

# LT2 RFP Deliverability Process Feedback

We are seeking feedback on the actions to address April webinar feedback, version 2 of the Guidance Document, and most specifically on the LT2 RFP capacity stream delivery approach we are proposing.

# LT2 RFP E-PPA Revenue Model



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- **Submitted values as part of proposal**
- **Values calculated as part of contract settlement**

# Recap: Total Monthly Revenue under E-PPA

| | |
|---|---|
| **Monthly Revenue Requirement** | **= Proposal Price * Annual Imputed Production Factor * Contract Capacity * # of hours in the settlement month** |
| Deemed Energy Market Revenue | = Forecast Weighted Average Price (FWAP)[1] * Monthly Imputed Production Factor * Contract Capacity * # of hours in the settlement month |
| Grid Reliability Payment (Contractual Payment) | = Revenue Requirement – Deemed Energy Market Revenue |
| Actual Energy Market Revenue | =[DA LMP * DA Quantity] + [RT Price * (RT Quantity – DA Quantity)] |
| **Total Monthly Revenue** | **Grid Reliability Payment + Actual Energy Market Revenue** |

[1]For wind and solar suppliers only. Other non-emitting resources will deemed using a simple average price

# Recap: Deemed Energy Market Revenues

**Monthly Imputed Energy Production Factors** will be used to deem energy market revenues for all suppliers.

**Wind and Solar resources will be deemed using a** Forecast Weighted Average Price (FWAP) based on quantities associated with their IESO DA Centralized Forecast and DAM LMPs (with negative prices set to 0).

**All other non-emitting resources (i.e. hydro, bio energy) will be deemed using a** simple average of their DAM LMPs (with negative prices set to 0).

# E-PPA Feedback

**What we've heard:**

- **Need for greater protection against DA to RT settlement risk:** Suppliers of wind and solar facilities have asked the IESO to consider ways of mitigating the potential risk of buying back unmaterialized DAM schedules in the RTM at higher RTM prices.



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# Considerations

- Participants are in the best position to manage the uncertainty associated with their next-day production. Participating in the day-ahead market will encourage participants to manage and reduce their forecast uncertainty between day-ahead and real-time.
- That said, the IESO recognizes that assessing the materiality of the DA to RT settlement risk may be challenging for some developers, given their lack of experience with day ahead-markets and in the absence of historical pricing data between the DA and RT markets, in Ontario.
- The IESO is therefore considering a solution that shares some of this DA to RT risk with proponents of wind and solar facilities in the LT2 RFP.

# Alternate Proposal: Protected E-PPA Model (1)

The IESO is proposing a modification to the E-PPA model that **shares some DA to RT settlement risk for wind/solar suppliers** by capping potential DA to RT losses using a modified energy market settlement applied ex-post in each hour based on the following DAM offer submission behavior:

| Supplier offer is < IESO DA Centralized Forecast Quantity | Supplier offer is ≥ IESO DA Centralized Forecast Quantity |
|---|---|
| **The IESO will protect [60%] of the DAM settlement as determined using the supplier's DAM offer and DA LMP** at the location of the facility*<br><br>* When the supplier's total energy market settlement is less than [60%] of their DAM settlement. | **The IESO will protect [60%] of the DAM settlement as determined using the IESO centralized forecast and DA LMP** at the location of the facility*<br><br>* When the total energy market settlement (using the IESO DA Centralized Forecast) is less than [60%] of the DAM settlement (using the IESO DA Centralized Forecast). |

# Alternate Proposal: Protected E-PPA Model (2)

**Available for the LT2 RFP only:** the "protected" version of the E-PPA is not expected to be offered in future energy procurements, once the DAM has established a track record.

**Optional:** The IESO is considering making the Protected E-PPA an option that proponents would select in their proposal.

**Rated criteria points:** If the Protected E-PPA is optional, the IESO is considering awarding rated criteria points to those proposals that do not select the Protected E-PPA or other incentive mechanisms.

# Protected E-PPA Model: How it works (1)

## Step 1: Establish the DAM offer quantity that will be used to evaluate whether a modified energy settlement is required

- The model establishes the DAM offer quantity electing the minimum of the DAM offer submitted by the supplier and the IESO Centralized Forecast quantity for that hour.

## Step 2: Determine the DAM Settlement and Total Energy Market Settlement associated with the DAM offer quantity

- The model determines the DAM settlement and total energy market settlement for the hour using the DAM schedule based on the offer quantity established in Step 1, the RT IESO forecast and LMPs at the location of the facility.

# Protected E-PPA Model: How it works (2)

**Step 3: Determine if the modified settlement equation is applied for that hour**

- The model compares the total energy market revenue from step 2 against [60%] of the DAM settlement determined in step 2.
- The modified settlement equation is applied in that hour when the total energy market revenue is less than [60%] of the DAM settlement.



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# Protected E-PPA Model: How it works (3)

## Step 4: If the modified settlement equation is not applied

In these hours, energy market revenues are calculated in the same manner as the E-PPA model using the two-settlement equation applicable to all suppliers under the renewed market:

$$Total\ Revenue = GRP + \sum_{h} \left[ P_{DA,h} \times Q_{DA,MP,h} + P_{RT,h} \times \left( Q_{RT,A,h} - Q_{DA,MP,h} \right) \right]$$

Where P is location marginal price, Q is MWh quantity, DA subscript denotes day-ahead, RT subscript denotes real-time, MP subscript denotes submission by market participant, A subscript denotes actual, and h subscript denotes hour.

# Protected E-PPA Model: How it works (4)

**Step 4 (ctd.): If the modified settlement equation is applied**

In these hours, the supplier's energy market revenues (A) are modified by subtracting the market settlement calculated in step 2 (B) and adding [60%] of the DAM settlement calculated in step 2 (C):

$$Total\ Revenue = GRP$$
$$+ \sum_{h} \left[ P_{DA,h} \times Q_{DA,MP,h} + P_{RT,h} \times \left( Q_{RT,A,h} - Q_{DA,MP,h} \right) \right] \quad \text{A}$$
$$- \sum_{h} \left[ P_{DA,h} \times Min\left( Q_{DA,IESO,h}, Q_{DA,MP,h} \right) + P_{RT,h} \times \left( Q_{RT,IESO,h} - Min\left( Q_{DA,IESO,h}, Q_{DA,MP,h} \right) \right) \right] \quad \text{B}$$
$$+ \sum_{h} \left[ (1 - RiskCap) \times P_{DA,h} \times Min\left( Q_{DA,IESO,h}, Q_{DA,MP,h} \right) \right] \quad \text{C}$$

Where P is location marginal price, Q is MWh quantity, DA subscript denotes day-ahead, RT subscript denotes real-time, MP subscript denotes submission by market participant, IESO subscript denotes IESO forecast, A subscript denotes actual, and h subscript denotes hour.



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# Considerations

- In certain instances, use of the modified settlement equation could result in the total energy market revenues of a supplier being less than the energy market revenues that they would have earned without use of the modified settlement equation.
- In these instances, the IESO is considering setting the total energy market revenue of the supplier equal to the revenue that would have been earned without the modified settlement equation.

# LT2 RFP E-PPA Energy Market Settlement Examples



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# Overview

- The following examples look at how a supplier would be settled in the energy market in one hour and assumes that a supplier has elected to be settled using the Protected E-PPA approach at the time of LT2 RFP proposal submission.
- The examples assume that the entire DA offer quantity (supplier or IESO DA Centralized Forecast) is scheduled in DAM.
- The examples show only the energy market settlement as the Grid Reliability Payment under the Protected E-PPA approach and Non-Protected E-PPA approach would be the same.



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# Example 1: Supplier DAM offer = IESO DA Centralized Forecast Quantity with RTM production shortfall

**Step 1: Establish the DAM offer quantity**
DAM offer quantity = min(IESO, MP) = 10 MW

**Step 2: Determine the Energy Market Revenue and Protected DAM settlement associated with the DAM offer quantity from Step 1**
energy market revenue = -$200
protected DAM settlement = 60% * ($200)
= $120

**Step 3: Determine if the modified settlement equation is applied in that hour**

Yes, -$200 < $120

Market Settlement using IESO DA Centralized Forecast

| IESO Q,DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| 10 MW | $20 | 0MW | $40 | $200 | -$400 | -$200 |

Market Settlement using MP DAM Offer

| MP Offer Q,DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| 10 MW | $20 | 0MW | $40 | $200 | -$400 | -$200 |



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# Example 1 continued:

**Step 4: Calculate the energy market settlement**
In this case, the Protected E-PPA settlement equations will be applied.

Energy market settlement = Market Revenue using MP DAM offer - Energy Market Revenue via Step 2 + Protected DAM settlement

= -$200 - (-$200) + $120
= $120

Despite a decrease in the RTM quantity and increase in the RTM price, the supplier is protected for 60% of the IESO Centralized Forecast and receives a Total Energy Market Settlement of $120

Market Settlement using IESO DA Centralized Forecast

| IESO Q,DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| 10 MW | $20 | 0 MW | $40 | $200 | -$400 | -$200 |

Market Settlement using MP DAM Offer

| MP Offer Q,DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| 10 MW | $20 | 0MW | $40 | $200 | -$400 | -$200 |



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# Example 2: Supplier DAM offer > IESO DA Centralized Forecast Quantity with RTM production shortfall

**Step 1: Establish the DAM offer quantity**
DAM offer quantity = min(IESO, MP) = 10 MW

**Step 2: Determine the Energy Market Revenue and Protected DAM Settlement associated with the DAM offer quantity from Step 1**

energy market revenue = -$200
protected DAM settlement = 60% * ($200) = $120

**Step 3: Determine if the modified settlement equation is applied for that hour**

Yes, -$200 < $120

Market Settlement using IESO DA Centralized Forecast

| IESO Q,DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| 10 MW | $20 | 0MW | $40 | $200 | -$400 | -$200 |

Market Settlement using MP DAM Offer

| MP Offer Q, DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| 20 MW | $20 | 0MW | $40 | $400 | -$800 | -$400 |



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# Example 2 continued:

**Step 4: Calculate the energy market settlement**
In this case, the Protected E-PPA settlement equations will be applied.

Energy Market Settlement = Market Revenue using MP DAM offer – Energy Market Revenue via Step 2 + Protected DAM settlement

= -$400 - (-$200) + $120
= -$80

In this example, the supplier has a total energy market revenue of -$80 as opposed to -$400 due to 60% protection associated with the IESO Centralized Forecast.

Market Settlement using IESO DA Centralized Forecast

| IESO Q,DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| **10 MW** | $20 | 0MW | $40 | $200 | -$400 | -$200 |

Market Settlement using MP DAM Offer

| MP Offer Q,DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| 20 MW | $20 | 0MW | $40 | $400 | -$800 | -$400 |



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# Example 3: Supplier DAM offer < IESO DA Centralized Forecast Quantity with RTM production shortfall

**Step 1: Establish the DAM offer quantity**
DAM offer quantity = min(IESO, MP) = 5 MW

**Step 2: Determine the Energy Market Revenue and Protected DAM settlement associated with the DAM offer quantity from Step 1**

energy market revenue = -$100
protected DAM settlement = 60% * ($100) = $60

**Step 3: Determine if the modified settlement equation is applied for that hour**

Yes, -$100 < $60

Market Settlement using IESO DA Centralized Forecast

| IESO Q,DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| 10 MW | $20 | 0MW | $40 | $200 | -$400 | -$200 |

Market Settlement using MP DAM Offer

| MP Offer Q, DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| 5 MW | $20 | 0MW | $40 | $100 | -$200 | -$100 |



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# Example 3 continued:

**Step 4: Calculate the energy market settlement**
In this case, the Protected E-PPA settlement equations will be applied.

Energy Market Settlement = Market Revenue using MP DAM offer – Energy Market Revenue via Step 2 + Protected DAM settlement

= -$100 - (-$100) + $60
= $60

In this example, the supplier has a total energy market revenue of $60 as opposed to -$100.

Market Settlement using IESO DA Centralized Forecast

| IESO Q,DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| 10 MW | $20 | 0MW | $40 | $200 | -$400 | -$200 |

Market Settlement using MP DAM Offer

| MP Offer Q,DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| 5 MW | $20 | 0MW | $40 | $100 | -$200 | -$100 |



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# Example 4: Supplier DAM offer > IESO DA Centralized Forecast Quantity with increase in RTM production

**Step 1: Establish the DAM offer quantity**
DAM offer quantity = min(IESO, MP) = 10 MW

**Step 2: Determine the Energy Market Revenue and Protected DAM settlement associated with the DAM offer quantity from Step 1**

energy market revenue = $850
protected DAM settlement = 60% * ($250) = $150

**Step 3: Determine if the modified settlement equation is applied for that hour**

No, $850 > $150

Market Settlement using IESO DA Centralized Forecast

| IESO Q,DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| 10 MW | $25 | 40MW | $20 | $250 | $600 | $850 |

Market Settlement using MP DAM Offer

| MP Offer Q,DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| 20 MW | $25 | 40MW | $20 | $500 | $400 | $900 |



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# Example 4 continued:

**Step 4: Calculate the energy market settlement**
In this case, the modified settlement equation is not applied and the supplier's energy market settlement is equal to the two settlement it received in the energy market.

Total energy market revenue =
$= (Q_{DA} * \$_{DA}) + \$_{RT}*(Q_{RT}-Q_{DA})$
= (20 MW * $25/MW) + $20/MW *(40 MW – 20MW)
= $500 + $400
= $900

Market Settlement using IESO DA Centralized Forecast

| IESO Q,DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| 10 MW | $25 | 40MW | $20 | $250 | $600 | $850 |

Market Settlement using MP DAM Offer

| MP Offer Q,DA | $,DA | Q,RT | $,RT | DAM Settlement | RTM Balance | Energy Market Revenue |
|---|---|---|---|---|---|---|
| 20 MW | $25 | 40MW | $20 | $500 | $400 | $900 |



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# LT2 Contract: Key Provisions



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# LT2 Contract Provisions

**Performance Obligations:** Stakeholders were generally supportive of the contract performance obligations, however there were differing opinions on the production threshold and periods of time used to determine non-performance.

**Force Majeure and Treatment of Outages:** Stakeholders were supportive on the treatment of outages.

**Payback of Deemed Revenues:** Stakeholders were largely unsupportive on the paying back of deemed revenues.

**The IESO thanks stakeholders for their feedback; these contract provisions will be addressed in the next stakeholder engagement session.**

# Crown Land Discussion with Ministry of Natural Resources and Forestry (MNRF)



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Ministry of Natural Resources and Forestry

# Renewable Energy and Crown Land

May 23rd, 2024
IESO Webinar

**Disclaimer: This presentation and the information provided is general in nature and for information only. It was prepared based on current policies and processes which are under review. If there is a conflict or inconsistency between this document and any legislation, regulation, or requirements for renewable energy projects or Crown land access, the applicable legislation, regulation, or requirements would govern. This presentation would not replace legal advice from a lawyer, or advice from other professional services providers, or experts regarding any renewable energy project you may wish to propose including access to lands owned by Ontario.**

Ontario

# Purpose

To provide more information on topics related to policy and processes for renewable energy projects on Crown land.

# Outline

- MNRF role in LT2
- Administrative updates to guidance documents
- Approving MET Towers
- Indigenous participation in LT2 Projects
- MNRF position on Crown land in organized municipalities
- Long-term Crown land tenure

**Use of terms “Crown land” & “public lands”**

Please note that the use of the term “Crown land” and “public lands” are used interchangeably in this presentation and are meant to refer to Crown land which is under the administration and control of MNRF (which may include acquired lands).

# MNRF Role in LT2

- Working closely with ENERGY and the IESO to align processes and provide procurement-specific guidance.
- Managing disposition of Crown lands for renewable energy projects, including reviewing applications for authorizations under the *Public Lands Act* for certain uses [e.g., pre-development/testing activities or longer-term occupation to operate facility(ies)].
- Assessing and fulfilling the Crown's legal duty to consult for proposed MNRF conduct, and where appropriate, accommodate Indigenous peoples.
- Managing approvals under the *Lakes and Rivers Improvement Act* for new waterpower facilities (location/site and design approvals).
- Commenting on the waterpower Class Environmental Assessment.
- Reviewing and approving natural heritage assessments required for MECP's Renewable Energy Approval and the administration of the bird and bat guidelines for windpower projects.



# Work in progress: Updates to Ontario.ca

- Updates will be made on Ontario.ca to remove references to outdated policy information and past processes to the following webpages:
    - Approvals and Permitting Requirements Document page
    - Renewable Energy on Crown Land policy page
    - Remove outdated webpages. These will be replaced with information that aligns with current Ministry practices for the disposition of Crown lands. *Note: process diagrams were supplied in draft in previous IESO session in Feb.*
- MNRF will work with the IESO to produce new procurement-specific guidance for proponents that will be released on Ontario.ca over the next few months to align with the release of the LT2 -procurement rules by the IESO.

# Process and timeline for approving MET Towers

- MNRF has policies and processes in place under the *Public Lands Act* to authorize pre-development activities.
    - MNRF will take a scalable approach to applying the Approvals Permitting & Requirements Document (APRD) when receiving applications for MET testing.
- Timelines for approval may vary as some components of the process are outside of MNRF's control. Factors potentially affecting approval timelines include:
    - Complexity of approval (i.e., if a new transportation system is required)
    - Approvals required from other authorities
    - Consultation requirements
- Timelines may be affected by a proponent's efforts to build relationships and whether Indigenous communities have concerns with a proposed activity. MNRF usually delegates the procedural aspects of the duty to consult to proponents as they are best suited to discuss their proposal and potential impacts with communities, as well as propose and accept accommodations in a timelier manner.

# Crown Land Site Report

Purpose

Ensure proponents have:

- reviewed relevant resources;
- Understood the legislative requirements
  - (e.g., *Public Lands Act*, *Lakes and Rivers Improvement Act*, *Freedom of Information and Protection of Privacy Act*)
- understood the policy requirements (e.g., consistent with Crown land use direction in CLUPA, Indigenous economic benefits considerations in the Renewable Energy on Crown Land policy);
- received advice from licensed professionals (e.g., solicitor, engineer) as required;
- acknowledged the Crown's duty to consult Indigenous communities and the potential role for the proponent;
- acknowledged the implications of any mining claims, forestry licenses, and holders of other Crown land resource permits
- acknowledged considerations related to the Algonquins of Ontario land claim settlement lands and settlement areas

# RECL Policy: Indigenous Community Economic Benefits

Far North

MNRF will only accept applications for water, wind, and solar power development opportunities from local Ontario First Nation communities and/or their partners.

Northern Rivers

MNRF will only accept applications for waterpower development within the Northern Rivers watersheds south of the *Far North Act* boundary from local Ontario Indigenous communities and/or their partners.

Moose River Basin

Continued government commitment to co-planning with certain First Nation communities about potential future waterpower development within the Moose River Basin, north of Highway 11 .

Waterpower on other Crown lands

South of the boundaries identified above, the ministry supports the creation of **community economic benefits** and the participation of Ontario Indigenous communities in the development of greenfield waterpower sites on Crown land (within or adjacent to the tertiary watershed):

- that have a capacity of between 1 megawatt and 10 megawatts, and where the adjacent bank(s) of the river are Crown owned.

# Indigenous participation: IESO Points and MNRF RECL Policy

- MNRF's RECL policy has geography based and renewable energy source-specific requirements for Indigenous community economic benefits for projects on Crown land.
- MNRF will be implementing the RECL policy, of which requirements do not align in all cases with IESO's tiered system to award rated criteria points for Indigenous partnerships with local communities when projects are proposed within traditional territories.
- Proponents are encouraged to engage with MNRF early, as understanding and addressing the objectives of MNRF's RECL policy for their site location may enable them to develop a proposal that would assist them in meeting both the MNRF policy objectives and **potentially** maximizing the Indigenous participation points under the IESO.

# MNRF position on Crown land in municipal boundaries

- MNRF does not explicitly require municipal support to provide the exclusive opportunity to apply for MNRF approvals for projects on public lands within a municipality.
- Upon application for a work permit, which may be required for a renewable energy project, MNRF will issue a work permit unless certain conditions are met, including if the work is inconsistent with a municipal official plan under the *Planning Act*.
- As well, planning considerations within a municipality's Official Plan or Zoning By-law apply to third parties' activities which may also restrict a renewable energy applicant's use of Crown lands.

# Long-term Crown land occupational authority

- Entry onto Crown land for testing and some pre-development activities may require a Land Use Permit issued under the *Public Lands Act* for a short term.

- MNRF may authorize longer-term tenure through the issuance of a lease or easement for access after a proponent receives a contract from the IESO, all approvals for the project are obtained, and the duty to consult Indigenous communities has been met.

- The term of the lease or easement can be tied to the duration of the energy generation contract at the site and may be renewed with future IESO contract award/renewal.

# QUESTIONS?

Please contact MNRFrenewableenergysupport@ontario.ca



Ontario

# Engagement Planning



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# Engagement Sessions Plan

The IESO is planning a series of engagements over the next few months.

| Week of June 10 | Week of June 24 | Week of July 15 |
| --- | --- | --- |
| •Hybridization<br>•Repowering<br>•DERs | •MT2<br>•LT2 Capacity Stream<br>•Proposal Evaluation | •Community Engagement<br>•Indigenous Participation<br>•Siting Considerations |

# Next Steps



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# Next Steps

- The IESO invites written feedback by **June 7**

- All written feedback should be submitted to engagement@ieso.ca utilizing the provided IESO Feedback Form.

# Thank You

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