Background

IESO E-RFP CONTRACT REVENUE MECHANISM

- The current IESO E-RFP revenue mechanism is a capacity-only monthly payment, with optional top-ups/claw-backs for high/low energy market spreads
- The IESO Board recognizes that industry currently views the revenue mechanism as impractical, which could lead to higher prices
- IESO is currently open to suggestions on an alternative revenue mechanism put forward by CanREA, which is meant to reduce the amount of merchant risk for Developers over the long term, which could lead to lower prices
- Key industry members have identified that the CanREA revenue mechanism does not sufficiently track merchant revenue by omitting important revenue streams, such as Operating Reserves and weekend energy arbitrage
- Key industry members have also identified that the prescriptive formula in the CanREA revenue mechanism can potentially create adverse and impractical storage dispatch operations, especially in a fast-changing energy market
- This presentation describes the Capacity-Only revenue mechanism, CanREA's revenue mechanism, discusses their Pros and Cons, and presents a third option that is based on recent IESO precedent

Overview

CONTRACT MECHANISMS COMPARISON

1. IESO Capacity Only Structure – Pros and Cons
2. CanREA Energy ‘Hedge' Structure – Pros and Cons
3. IESO Lennox-style Structure – Proposal, How it Works, Pros and Cons
4. Next Steps

#1- CAPACITY-ONLY STRUCTURE

PROS

- IESO purchases only the principal produce it is seeking: a capacity product for reliability needs
- The structure in very simple to understand for both IESO and Developers and leads to an easy evaluation process for the IESO in the E-RFP

CONS

- Requires that developers take a view on merchant pricing which are heavily influenced by policy decisions, IESO future procurements and market design/rules
- Developers have very little ability to predict the next few years, due to the important energy and market transition underway, let alone the next two decades
- Merchant market forecasts for energy arbitrage, operating reserve and other ancillary services show a wide variety of potential outcomes
- High merchant risk/uncertainty will mean that Developers will need to apply a higher equity premium to their cost of capital because revenues coming from the merchant market will be worth less on a present value basis, forcing developers to rely more on contracted capacity price, resulting in increased capacity prices
- Developers that utilize project financing will be able to obtain less leverage, necessitating more equity, which increases the weighted average cost of capital, further increasing capacity bid prices
- As a result, the Ontario ratepayer is likely to pay more for capacity up front compared to alternative approaches
- In the event that the Ontario market experiences higher volatility in the future, ancillary services revenue could increase dramatically, leading to even higher future ratepayer costs

#2 - CanREA ENERGY ‘HEDGE’ STRUCTURE

OVERVIEW

- IESO would calculate the Daily Energy Adjustment every business day, then sum it up monthly and deduct it from the Monthly Payment

$$\mathbf{DEA_d} = 4 \text{ hours x } max\left[0, \left(HBAP - \frac{LBAP}{CRE} - VOM\right)\right]$$

Note: we assume for now that VOM = 0 and CRE is a set value

PROS

- The structure would force developers to repay the IESO for a portion of the total merchant revenues they make. In exchange, they would need to increase their capacity price to make up for the lost revenue. However, the lost revenue from merchant is less valuable than contracted revenue from capacity on a PV basis. As a result, the total amount of revenues would be lower by trading merchant for contracted.
  - Ex: If a project makes annual revenues of $10M contracted and $10M merchant, and the merchant revenues are worth 80% of contracted revenues on a PV basis, then the project could trade $10M of merchant for $8M of contracted. This would reduce the total revenue requirement for the project from $20M to $18M, making it cheaper for IESO and Ontario ratepayers overall.
- The structure would incent asset managers to follow market signals

CONS

- The coverage of the hedge excludes significant merchant revenues, which reduces its purpose and effectiveness. Most notably operating reserves and revenues occurring during weekends and holidays are not included in the hedge and represent the majority of merchant revenues at least in the near term
- The formula prescribes a charging/discharging schedule that does not take into account potential market frictions and future market changes that could make it impractical to operate following that schedule
  - Demand charges may cause projects to charge over a longer period of time than the four hour window prescribed by the formula
  - Energy spreads might not justify charging/discharging based on a prescribed schedule on business days based on Qualifying Hours
  - If HOEP is used, and outages cause major price hikes, then projects would need to repay peak market revenues which would be impossible for them to foresee and actually capture
- There is a risk that projects end up underwater, having to pay back to the IESO more than they actually make in the merchant market
  - This is especially true in a tight merchant environment, where the merchant revenue ‘headroom’ from OR and weekend revenues can be eroded very quickly
  - Backcasting shows that the proposed hedge would not track energy arbitrage revenues very well over the past few years, and it may perform even worse in the future

#3 - IESO LENNOX-STYLE STRUCTURE - 1/3

OVERVIEW

- In December 2021, IESO and OPG extended the Lennox Energy Supply Agreement until 2029 (link)
- They included a revenue sharing mechanism, whereby OPG would share with OPG the Actual Net Revenues from the plant in a tiered structure
  - The more merchant revenues Lennox makes, the more it shares with the IESO
- A similar model could be a useful mechanism to reduce merchant revenue uncertainty for energy storage

PROPOSAL

- Have a tiered merchant revenue sharing mechanism similar to the Lennox agreement
  - Tier 1: Projects share 50% for the net merchant revenues that are up to $[5]/kW-mo
  - Tier 2: Projects share 75% for the net merchant revenues that are beyond $[5]/kW-mo
  - We suggest using net merchant revenue (i.e., excluding OPEX, VOM, Augmentation, etc.) to simplify the accounting of the revenue sharing
    - **The Tiers would be set at levels where the they do not deter from efficient market operations taking into account OPEX and VOM**

2.1 The Year-To-Date Buyer's Share of Actual Net Revenue is calculated as follows:

If $YTDANR_{m,y}$ is less than $1,000,000.00, then: **$YTDBSANR_{m,y} = YTDANR_{m,y} \times 0.25$.** If $YTDANR_{m,y}$ is greater than or equal to $1,000,000.00 and less than $2,000,000.00, then: **$YTDBSANR_{m,y} = YTDANR_{m,y} \times 0.50 - \$250,000.00$.** If $YTDANR_{m,y}$ is greater than or equal to $2,000,000, then: **$YTDBSANR_{m,y} = YTDANR_{m,y} \times 0.75 - \$750,000.00$.**	
where:	
$YTDBSANR_{m,y}$	is the Year-To-Date Buyer's Share of Actual Net Revenue for Settlement Month "m-1" in Contract Year "y" (in $).

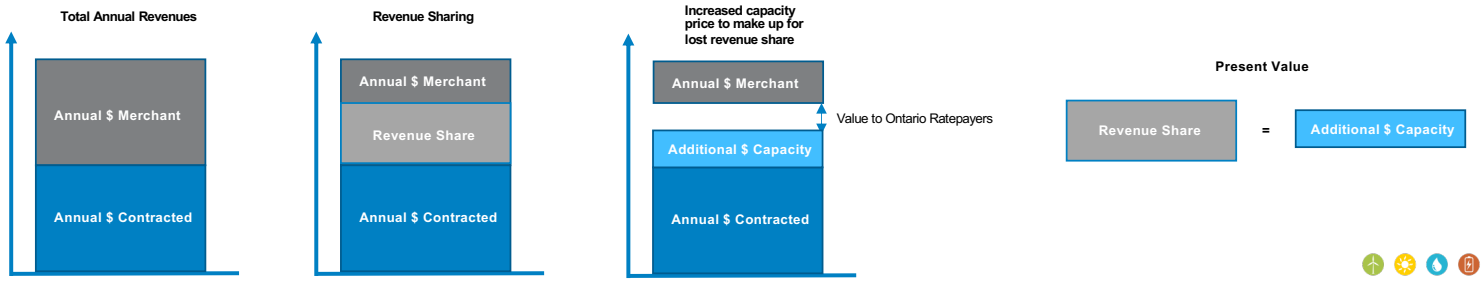
Exhibit J of the Lennox Energy Supply Agreement

Monthly Net Merchant Revenues	50% Revenue Sharing up to $[5/kW mo]	75% Revenue Sharing for amount in excess of $[5/kW mo]	Total Sharing
$4/kW-mo	$2/kW-mo	$0/kW-mo	$2/kW-mo
$5/kW-mo	$2.5/kW-mo	$0/kW-mo	$2.5/kW-mo
$7.5/kW-mo	$2.5/kW-mo	$1.875/kW-mo	$4.375/kW-mo

#3 - IESO LENNOX-STYLE STRUCTURE – 2/3

HOW MERCHANT REVENUE SHARING DECREASES THE RISK TO ONTARIO RATEPAYERS

1. For the reasons that follow, Revenue Sharing will reduce the cost to Ontario ratepayers compared to the capacity only case, and will materially reduce the risk that ratepayers pay both high capacity prices and high merchant revenues
2. Merchant Revenues are discounted at higher Discount Rates than Contracted Revenues to reflect their inherent uncertainty (according to best practices)
   - Having less merchant revenues and more contracted revenues decreases the weighted average discount rate applied to total revenues, increasing the PV
3. Merchant Revenues can sustain lower amounts of debt service than contracted revenues since Lenders are less willing to rely on them, especially in an uncertain market.
   - Ex: If Lenders have a Debt Sizing Coverage Ratio (DSCR) of [2.0x] for Merchant Revenues and [1.5x] for Contracted Revenues, then the annual debt service available (principal and interest) would be 33% lower for Merchant Revenues than Contracted Revenues. This means less overall debt, which increases the Weighted Average Cost of Capital (WACC) of the project
4. In practice merchant revenue sharing means that:
   - Developers will develop their financial model and will calculate merchant revenues based on economic price forecasts and storage dispatch models (just as they would for any other contract structure)
   - Developers would deduct from their Merchant Revenues the Revenue Sharing value (i.e., Tier 1 and Tier 2)
   - To make up for the lower Merchant Revenues, Developers would increase their bid Capacity price, effectively trading merchant for contracted revenues. Despite the IESO paying more for capacity, the revenue sharing decreases the overall amount of total revenues (merchant and contracted) paid over the contract life. **This means lower overall cost, and significantly less risk for Ontario ratepayers in the event that merchant the merchant market experiences high levels of volatility**.



#3 - IESO LENNOX-STYLE STRUCTURE – 3/3

PROS

- Ontario Ratepayers will pay less under the Revenue Sharing structure, while maintaining competitive dynamics in the RFP and strongly encouraging participation in the Ontario merchant markets.
- The Revenue Sharing structure lowers the risk to Ontario Ratepayers compared to a Capacity-Only structure
  - It will reduce cost to rate payers over a capacity only product
  - It reduces significantly reduces the risk to ratepayers if market volatility increases materially, which could result in very large payments to generators
- The Revenue Sharing structure fixes several of the issues from the CanREA Energy 'Hedge' Structure, while preserving its advantages
  - It incents developers to follow market signals, since they still need to materialize their revenue expectations
  - It covers all Merchant Revenues and does not exclude OR and weekends, increasing its effectiveness
  - It does not prescribe any type of operational schedule or technical assumptions, eliminating the risk of being 'underwater' from the hedge
  - It eliminates the difficulty of designing a proxy revenue construct in a market that is still in flux
  - It allows for some of the Merchant Revenues to be 'traded' for Contracted revenues, reducing the WACC of a project
- The Revenue Sharing structure preserves the competitive nature and ranking of the IESO RFP, while reducing the amount of risk-taking for Developers
  - Developers with more bullish views on Merchant Revenues will remain more competitive than Developers with bearish views
  - Revenue sharing reduces the range of speculation on Merchant Revenues, increasing the probability that projects get built
- The Revenue Sharing structure is simple to understand, implement and is based on an IESO precedent

CONS

- Since Developers are 'trading' Merchant Revenues for Contracted Revenues, the headline capacity price of the E-RFP will be higher
  - However, IESO would reclaim a portion of the merchant revenues in the future
  - Compared to Capacity-Only, IESO/Ratepayers would pay more if Developers assume bull Merchant Revenues in the E-RFP, but receive bear Merchant Revenues in practice (i.e., Developers lose their money on Merchant Revenues)
  - Compared to Capacity-Only, IESO/Ratepayers would pay less if Developers assume bear Merchant Revenues in the E-RFP, but receive bull Merchant Revenues in practice (i.e., Developers make a lot of money on both Capacity and Merchant Revenues)
- The Revenue Sharing structure requires additional stakeholder consultations and legal drafting in a short amount of time

NEXT STEPS

WORKING WITH INDUSTRY AND IESO TO CREATE A BETTER OPTION FOR ONTARIO RATEPAYERS

- We recommend reviewing this structure with a few key industry stakeholders on Monday, November 14th, 2022
- If industry representatives see the value of the new structure, CanREA and the Consortium (let by Power Advisory) can propose this model to the IESO as part of their feedback on the November 7th IESO presentation, or request a few more days to more broadly discuss with industry stakeholders