

Feedback Form

Long-Term 2 (LT2) RFP – February 15, 2024

Feedback Provided by:

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To promote transparency, feedback submitted will be posted on the Long-Term RFP engagement page unless otherwise requested by the sender. If you wish to provide confidential feedback, please mark "Confidential".

Following the LT2 RFP February 1, 2024, engagement webinar, the Independent Electricity System Operator (IESO) is seeking feedback from stakeholders on specific items discussed during the webinar. The webinar presentation and recording can be accessed from the [engagement web page](#).

Please submit feedback to engagement@ieso.ca by February 15, 2024.

Revenue Model

Topic	Feedback
<p>Do you have any additional comments regarding the revenue model, particularly with regards to the following: Deeming energy market revenues based on real-time locational marginal prices (LMP), as opposed to the IESO's recommendation of basing this on the day-ahead LMP. (Slides 19-21)</p> <ul style="list-style-type: none">• The optionality of using either a simple average day-ahead price or weighted average LMP, with the latter including hours where the resource was scheduled day-ahead in a given month. (Slides 22-23)• Including monthly production factors that on average equate to the annual production factor, in order to further account for seasonality. (Slides 24-26)	See the "General Comments" Section

DERs

Topic	Feedback
Do you have any comments regarding eligibility requirements for DERs of other general comments?	none

Capacity Resources

Topic	Feedback
<p>Do you have any comments regarding considerations for acquiring additional capacity resources, and utilizing a multi-stream approach (energy and capacity streams)?</p>	<p>We believe the capacity contract used in LT1 is an efficient mechanism to procure battery storage. We do not believe that attempting to incent hybrid projects within energy procurements (though the value of time-shifting energy) will be successful at this time.</p> <p>If both energy and capacity are to be procured simultaneously in this or a future procurement, we urge the IESO to ensure that the value proposition and compensation is clear and distinct for each product (Energy/Capacity).</p>

LT2 Deliverability

Topic	Feedback
<p>Do you have any comments on early deliverability data and evaluation stage deliverability?</p>	<p>We are supportive of the IESO providing the “system congestion information” listed in the presentation (slides 59-62) by March 2024. We request that any such information is granular enough to give reliable information about capacity available at a transmission line level, and not limited to general information at a regional level.</p> <p>We are not supportive of deliverability tests being conducted only at the proposal evaluation stage. This places far too much uncertainty on project developers who will need to deploy significant development resources long ahead of understanding their projects’ deliverability status.</p> <p>Any project sited in locations indicated to be favorable according to the March 2024 provided data should not be disqualified at the deliverability test stage, provided they do not exceed the capacity of the contracts already moved to the offer list ahead of the Proponent’s project.</p> <p>Additionally, we would suggest that the IESO follows the approach favoured by SaskPower and Hydro-Quebec and evaluate network upgrades and other costs to connect the project (in other words, costs required to make the project ‘deliverable’) in the proposal evaluation. In this scenario, the costs required to connect each project would be added to the Proponent’s submitted price by the IESO in the evaluation stage, and the evaluated price would be adjusted accordingly. These costs are then borne by the utility rather than the proponent, thus ensuring that the utility receives the lowest cost energy possible after accounting for interconnection and network related costs.</p>

Repowering

Topic	Feedback
<p>Do you have any comments around repowering participation?</p>	<p>We continue to push back against the +20% nameplate capacity increase to establish re-powering eligibility for the reasons outlined in our initial response.</p> <p>This push-back seemed nearly unanimous in the publicized feedback, therefore we do not agree with the presentation’s characterization that it requires further discussion.</p>

Long Lead-Time Resources

Topic	Feedback
Do you have any comments on enabling long-lead time resources?	none

General Comments/Feedback

Revenue Model Feedback moved here:

Preference #1 – Revert to a Fixed Price

We continue to push back against the revenue model in whole, and believe that the changes required to make this model financeable will result in unnecessary complication and higher cost outcomes for the IESO and ratepayers vs. simply reverting to a tried-and-true indexed fixed price model or other similar Swap or Contract for Differences model.

Preference #2 – Unit-Contingent (UC) PPA/Swap

Another highly financeable model for renewables in ISO markets in the US (and elsewhere) is the UC PPA which is settled as a fixed-for-floating swap transaction based on the actual MWh's produced by the facility in each interval. This model would likely alleviate all financing concerns.

- Fixed price = Proposal Price
- Floating price = RTLMP at project node
- Buyer pays fixed, seller pays floating, seller receives market revenues
- Settled hourly based on RT dispatched volume
- To incent participation in the DA market and avoid potential perverse incentives to withhold energy DA, a DA must-offer floor could be incorporated in conjunction with the RTLMP for Contract settlements. For example, DA offers could be required at some minimum value (Say 80%) of the resources' or IESO's DA forecast.
- Curtailment would still need to be addressed but this risk could be eliminated if the PPA settled based on forecast generation and a floating price of zero when curtailed

Preference #3 – Further "Enhancements" to the Enhanced PPA model

There are specific concerns that would need to be addressed to make this model financeable:

IESO Examples:

The examples provided by the IESO are misleading and do not represent the reality of how this contract will settle monthly (Slides 17-18 & 37-56)

1. All examples rely on settlements for a single hour when the contract (as described) would be settled based on monthly average price and annual average capacity factor.
2. Settlements on a single hour do not demonstrate potential issues with curtailment or with simple average LMP vs. gen-weighted LMP since there is no averaging over the single hour.
3. Once the IESO provides monthly settlement examples (with hourly supporting data), the following conclusion should be clear to all:

Curtailment:

This statement on slide 16 is false due to the impacts of monthly averaging and intermittent generation:

“In hours where there is no energy scheduled from the resource (i.e. they are curtailed), the day-ahead energy market pricing will reflect that curtailment. The deemed energy revenue will reflect that curtailment and the resource will earn no less than its revenue requirement in that hour via its **GRP**.”

If curtailment happens ($LMP \leq 0$) during an hour where the generation would have otherwise been greater than the average capacity factor (i.e. greater than the contract “production factor”) this curtailment will reduce the market revenue by a greater amount than it reduces deemed revenue (and vice versa). This will result in monthly revenue less than the revenue requirement.

The reality is that curtailment is more likely to occur when generation is greater than average due to oversupply of wind or solar. Therefore, this is an asymmetric risk borne by the proponent.

Simple vs. Dispatch-Weighted Average LMP:

The language used here needs clarification since an average based on the “*hours where a resource was scheduled*” is not the same thing as a true dispatch-weighted average LMP.

Assuming the IESO means a true dispatch-weighted average LMP (Where the LMP is weighted based on the actual generation dispatched in each interval) the following needs to be considered:

- Using dispatch-weighted LMPs in the deemed revenue calculation can actually exacerbate the curtailment risk noted above
- This is due to the fact that if curtailment is significant, the dispatch-weighted average price is likely to be higher than if the price was simply low in those curtailed intervals
- This higher price will be used in the deemed revenue calculation and result in lower GRP

For these reasons, we feel that the Simple vs. Weighted LMP options can only be resolved once the curtailment risk is addressed. Moving to a UC PPA settled on actual generation and LMP in each interval would resolve both of these issues.

Without addressing curtailment, the following issues will remain:

- Simple (ATC) LMP: Will result in proponents bearing the risk of intermittent generation shapes and how those shapes will evolve throughout the life of the contract. (I.E. capturing less of the ATC price as more similar resources are deployed). This risk will be priced into bids and result in inefficiencies and higher proposal prices.
- Weighted LMP: Will address concerns with the ATC LMP, but will exacerbate the impact of curtailment causing deemed revenues to exceed actual market revenues.

DA vs. RT LMP:

In Unit-Contingent (UC) PPAs in other jurisdictions, settlements vary between contracts and occurs based on either the DA or RT LMP. We understand that settlement based on DA LMP will encourage participation in the DA market, but we find settlement based on RT LMP to be risk-reducing.

For a deemed revenue model, settlement based on RT LMP would also be risk-reducing and lead to less risk premiums required by proponents in their bid prices.

Monthly vs. Annual Production Factors:

We are supportive of moving to more granular production factors since this will reduce the disconnect between actual and deemed market revenues, however unless this granularity is increased down to the actual production in a given interval, this disconnect will always exist.

See Preference #2 for the unit-contingent PPA construct that solves this issue entirely.

See examples on the following pages that highlight issues with curtailment and ATC vs. dispatch-weighted LMP under the currently proposed model.

Example day with Curtailment - 100MW Wind Farm							
HE	DALMP	Potential Generation	Dispatched Generation	Revenue	Rev. Requirement	GRP (IESO Example)	Total Revenue
1	\$10	50	50	\$500	\$ 2,854	\$ 2,354	\$ 2,854
2	\$10	50	50	\$500	\$ 2,854	\$ 2,354	\$ 2,854
3	\$10	50	50	\$500	\$ 2,854	\$ 2,354	\$ 2,854
4	\$10	50	50	\$500	\$ 2,854	\$ 2,354	\$ 2,854
5	\$20	50	50	\$1,000	\$ 2,854	\$ 1,854	\$ 2,854
6	\$30	40	40	\$1,200	\$ 2,854	\$ 1,654	\$ 2,854
7	\$40	40	40	\$1,600	\$ 2,854	\$ 1,254	\$ 2,854
8	\$50	35	35	\$1,750	\$ 2,854	\$ 1,104	\$ 2,854
9	\$60	35	35	\$2,100	\$ 2,854	\$ 754	\$ 2,854
10	\$50	30	30	\$1,500	\$ 2,854	\$ 1,354	\$ 2,854
11	\$40	40	40	\$1,600	\$ 2,854	\$ 1,254	\$ 2,854
12	\$40	20	20	\$800	\$ 2,854	\$ 2,054	\$ 2,854
13	\$30	10	10	\$300	\$ 2,854	\$ 2,554	\$ 2,854
14	\$30	10	10	\$300	\$ 2,854	\$ 2,554	\$ 2,854
15	\$50	10	10	\$500	\$ 2,854	\$ 2,354	\$ 2,854
16	\$60	20	20	\$1,200	\$ 2,854	\$ 1,654	\$ 2,854
17	\$70	20	20	\$1,400	\$ 2,854	\$ 1,454	\$ 2,854
18	\$80	20	20	\$1,600	\$ 2,854	\$ 1,254	\$ 2,854
19	\$100	20	20	\$2,000	\$ 2,854	\$ 854	\$ 2,854
20	\$100	20	20	\$2,000	\$ 2,854	\$ 854	\$ 2,854
21	\$50	50	50	\$2,500	\$ 2,854	\$ 354	\$ 2,854
22	\$40	50	50	\$2,000	\$ 2,854	\$ 854	\$ 2,854
23	\$30	60	60	\$1,800	\$ 2,854	\$ 1,054	\$ 2,854
24	\$20	60	60	\$1,200	\$ 2,854	\$ 1,654	\$ 2,854
Total/Avg	\$42.92	840	840	\$ 30,350	\$ 68,493	\$ 38,143	\$ 68,493
		Prod. Fact.	Curtail.	Gen-wtd.	Proposal Price		
		35.00%	0%	\$ 36.13	\$ 81.54		

Monthly examples assuming above *30 days Monthly GRP according to IESO Example **\$ 1,144,295**

Without Curtailment							
Month with 720 Hours - ATC used in Deemed Revenue							
	ATC LMP	Potential Generation	Dispatched Generation	Market Revenue	Rev. Requirement	GRP	Total Revenue
	\$42.92	25200	25200	\$910,500	\$ 2,054,795	\$ 973,295	\$ 1,883,795
		Prices (\$/MWh)		\$ 36.13	\$ 81.54		
		Curtailment		0%			
Deemed Calculation	ATC LMP	* # of hours	* Prod. Fact.	* MW =	Deemed Revenue		
	\$43	720	35%	100	\$1,081,500		

Use of ATC LMP in deemed revenue results in lower GRP

Without Curtailment							
Month with 720 Hours - Gen-Wtd LMP used in Deemed Revenue							
	Gen - Wtd LMP	Potential Generation	Dispatched Generation	Market Revenue	Rev. Requirement	GRP	Total Revenue
	\$ 36.13	25200	25200	\$910,500	\$ 2,054,795	\$ 1,144,295	\$ 2,054,795
		Prices (\$/MWh)		\$ 36.13	\$ 81.54		
		Curtailment		0%			
Deemed Calculation	Gen-Wtd LMP	* # of hours	* Prod. Fact.	* MW =	Deemed Revenue		
	\$36.13	720	35%	100	\$910,500		

Only example where GRP matches IESO's hourly example is with zero Curtailment and Dispatch-Weighted LMP

Example day with Curtailment - 100MW Wind Farm							
HE	DALMP	Potential Generation	Dispatched Generation	Market Revenue	Rev. Requirement	GRP (IESO Example)	Total Revenue
1	\$0	50	0	\$0	\$ 2,854	\$ 2,854	\$ 2,854
2	\$0	50	0	\$0	\$ 2,854	\$ 2,854	\$ 2,854
3	\$10	50	50	\$500	\$ 2,854	\$ 2,354	\$ 2,854
4	\$10	50	50	\$500	\$ 2,854	\$ 2,354	\$ 2,854
5	\$10	50	50	\$500	\$ 2,854	\$ 2,354	\$ 2,854
6	\$30	40	40	\$1,200	\$ 2,854	\$ 1,654	\$ 2,854
7	\$40	40	40	\$1,600	\$ 2,854	\$ 1,254	\$ 2,854
8	\$50	35	35	\$1,750	\$ 2,854	\$ 1,104	\$ 2,854
9	\$60	35	35	\$2,100	\$ 2,854	\$ 754	\$ 2,854
10	\$50	30	30	\$1,500	\$ 2,854	\$ 1,354	\$ 2,854
11	\$40	40	40	\$1,600	\$ 2,854	\$ 1,254	\$ 2,854
12	\$40	20	20	\$800	\$ 2,854	\$ 2,054	\$ 2,854
13	\$30	10	10	\$300	\$ 2,854	\$ 2,554	\$ 2,854
14	\$30	10	10	\$300	\$ 2,854	\$ 2,554	\$ 2,854
15	\$50	10	10	\$500	\$ 2,854	\$ 2,354	\$ 2,854
16	\$60	20	20	\$1,200	\$ 2,854	\$ 1,654	\$ 2,854
17	\$70	20	20	\$1,400	\$ 2,854	\$ 1,454	\$ 2,854
18	\$80	20	20	\$1,600	\$ 2,854	\$ 1,254	\$ 2,854
19	\$100	20	20	\$2,000	\$ 2,854	\$ 854	\$ 2,854
20	\$100	20	20	\$2,000	\$ 2,854	\$ 854	\$ 2,854
21	\$50	50	50	\$2,500	\$ 2,854	\$ 354	\$ 2,854
22	\$40	50	50	\$2,000	\$ 2,854	\$ 854	\$ 2,854
23	\$30	60	60	\$1,800	\$ 2,854	\$ 1,054	\$ 2,854
24	\$20	60	60	\$1,200	\$ 2,854	\$ 1,654	\$ 2,854
Total/Avg	\$41.67	840	740	\$ 28,850	\$ 68,493	\$ 39,643	\$ 68,493
		Prod. Fact.	Curtail.	Gen-wtd.	Proposal Price		
		35.00%	12%	\$ 38.99	\$ 81.54		

Monthly examples assuming above *30 days Monthly GRP according to IESO Example **\$ 1,189,295**

With Curtailment							
Month with 720 Hours - ATC used in Deemed Revenue							
	ATC LMP	Potential Generation	Dispatched Generation	Market Revenue	Rev. Requirement	GRP	Total Revenue
	\$41.67	25200	22200	\$ 865,500	\$ 2,054,795	\$1,004,795	\$ 1,870,295
		Prices (\$/MWh)		\$ 38.99	\$ 81.54		
		Curtailment		12%			
Deemed Calculation	ATC LMP	* # of hours	* Prod. Fact.	* MW =	Deemed Revenue		
	\$41.67	720	35%	100	\$1,050,000		

Use of ATC LMP in deemed revenue results in lower GRP

With Curtailment							
Month with 720 Hours - Gen-Wtd LMP used in Deemed Revenue							
	Gen - Wtd LMP	Potential Generation	Dispatched Generation	Market Revenue	Rev. Requirement	GRP	Total Revenue
	\$ 38.99	25200	22200	\$ 865,500	\$ 2,054,795	\$1,072,335	\$ 1,937,835
		Prices (\$/MWh)		\$ 38.99	\$ 81.54		
		Curtailment		12%			
Deemed Calculation	Gen-Wtd LMP	* # of hours	* Prod. Fact.	* MW =	Deemed Revenue		
	\$ 38.99	720	35%	100	\$982,459		

Use of Gen-Wtd LMP in deemed revenue helps during zero or modest curtailment months, but still below revenue requirement

Example day with Significant Curtailment - 100MW Wind Farm							
HE	DALMP	Potential Generation	Dispatched Generation	Market Revenue	Rev. Requirement	GRP (IESO Example)	Total Revenue
1	\$0	50	0	\$0	\$ 2,854	\$ 2,854	\$ 2,854
2	\$0	50	0	\$0	\$ 2,854	\$ 2,854	\$ 2,854
3	\$0	50	0	\$0	\$ 2,854	\$ 2,854	\$ 2,854
4	\$0	50	0	\$0	\$ 2,854	\$ 2,854	\$ 2,854
5	\$10	50	50	\$500	\$ 2,854	\$ 2,354	\$ 2,854
6	\$30	40	40	\$1,200	\$ 2,854	\$ 1,654	\$ 2,854
7	\$40	40	40	\$1,600	\$ 2,854	\$ 1,254	\$ 2,854
8	\$50	35	35	\$1,750	\$ 2,854	\$ 1,104	\$ 2,854
9	\$60	35	35	\$2,100	\$ 2,854	\$ 754	\$ 2,854
10	\$50	30	30	\$1,500	\$ 2,854	\$ 1,354	\$ 2,854
11	\$40	40	40	\$1,600	\$ 2,854	\$ 1,254	\$ 2,854
12	\$40	20	20	\$800	\$ 2,854	\$ 2,054	\$ 2,854
13	\$30	10	10	\$300	\$ 2,854	\$ 2,554	\$ 2,854
14	\$30	10	10	\$300	\$ 2,854	\$ 2,554	\$ 2,854
15	\$50	10	10	\$500	\$ 2,854	\$ 2,354	\$ 2,854
16	\$60	20	20	\$1,200	\$ 2,854	\$ 1,654	\$ 2,854
17	\$70	20	20	\$1,400	\$ 2,854	\$ 1,454	\$ 2,854
18	\$80	20	20	\$1,600	\$ 2,854	\$ 1,254	\$ 2,854
19	\$100	20	20	\$2,000	\$ 2,854	\$ 854	\$ 2,854
20	\$100	20	20	\$2,000	\$ 2,854	\$ 854	\$ 2,854
21	\$50	50	50	\$2,500	\$ 2,854	\$ 354	\$ 2,854
22	\$40	50	50	\$2,000	\$ 2,854	\$ 854	\$ 2,854
23	\$30	60	60	\$1,800	\$ 2,854	\$ 1,054	\$ 2,854
24	\$20	60	60	\$1,200	\$ 2,854	\$ 1,654	\$ 2,854
Total/Avg	\$40.83	840	640	\$ 27,850	\$ 68,493	\$ 40,643	\$ 68,493
		Prod. Fact.	Curtail.	Gen-wtd.	Proposal Price		
		35.00%	24%	\$ 43.52	\$ 81.54		

Monthly examples assuming above *30 days Monthly GRP according to IESO Example **\$ 1,219,295**

With Significant Curtailment							
Month with 720 Hours - ATC used in Deemed Revenue							
	ATC LMP	Potential Generation	Dispatched Generation	Market Revenue	Rev. Requirement	GRP	Total Revenue
	\$40.83	25200	19200	\$ 835,500	\$ 2,054,795	\$ 1,025,795	\$ 1,861,295
		Prices (\$/MWh)		\$ 43.52	\$ 81.54		
		Curtailment		24%			
Deemed Calculation	ATC LMP	* # of hours	* Prod. Fact.	* MW =	Deemed Revenue		
	\$40.83	720	35%	100	\$1,029,000		

Use of ATC LMP in deemed revenue results in lower GRP

With Significant Curtailment							
Month with 720 Hours - Gen-Wtd LMP used in Deemed Revenue							
	Gen - Wtd LMP	Potential Generation	Dispatched Generation	Market Revenue	Rev. Requirement	GRP	Total Revenue
	\$ 43.52	25200	19200	\$ 835,500	\$ 2,054,795	\$ 958,201	\$ 1,793,701
		Prices (\$/MWh)		\$ 43.52	\$ 81.54		
		Curtailment		24%			
Deemed Calculation	Gen-Wtd LMP	* # of hours	* Prod. Fact.	* MW =	Deemed Revenue		
	\$ 43.52	720	35%	100	\$1,096,594		

Use of Gen-Wtd LMP exacerbates the issues in months with high curtailment