

MRP Energy Detailed Design Document: DAY-AHEAD MARKET CALCULATION ENGINE

Stakeholder Feedback Form

Date Submitted:	
Feedback Due:	September 24, 2020
Feedback Provided by:	
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The IESO is posting a series of detailed design documents which together comprise the detailed design of the MRP energy stream.

This design document is posted to the following engagement webpage: <http://ieso.ca/en/Market-Renewal/Energy-Stream- Designs/Detailed-Design>

Stakeholder feedback for this design document is due on **September 24, 2020** to engagement@ieso.ca.

Please let us know if you have any questions. IESO Engagement.



General feedback on the Detailed Design Document (please expand any section as required)

Introduction

Ontario's local distribution companies (LDCs) are the face of the industry to the overwhelming majority of the end users in the province; they serve over 5,000,000 customers and deliver approximately 125 TWh – or about 90% - of all the electricity used in the province.

These are the comments of the Electricity Distributors Association (EDA) on the Independent Electricity System Operator's (IESO) Detailed Design for Energy – Market Renewal Program (MRP). Our focus is on matters directly relevant to LDCs, that the IESO will assign non-dispatchable load (NDL) status when MRP is deployed from the perspective of LDCs and their LDC-connected customers. Our objectives are:

- to provide constructive comments that will support the transition from Detailed Design to Implementation, and
- to identify improvements to the Detailed Design.

Our comments build on those made during the High-Level Design phase. This submission is consistent with the EDA's feedback on other draft

Detailed Design documents published by the IESO, specifically, the EDA's July 31, 2020 submissions on:

- Offers, Bids and Data Inputs,
- Grid and Market Operations Integration, and
- Market Settlement.

Generally, we agree that the objectives of the MRP - being to improve economic efficiency, transparency, and competitiveness of Ontario's wholesale electricity market - are expected to lower electricity costs for consumers.

Recent EDA submissions

Below is the EDA's high level synopsis of its previous submissions that are relevant to this submission.

We repeat that, in addition to identifying the required amendments to IESO Market Rules and Market Manuals, the IESO, the Ontario Energy Board (OEB), and the Ministry of Energy, Northern Development and Mines (MENDM) should proactively engage with LDCs and their customers to identify, scope, evaluate and decide on enabling legislative amendments, amendments to regulatory policy and regulatory instruments. For example, it remains unclear how LDCs will be invoiced under MRP and how their customers' bills will change as a result. We continue to assume that the OEB will amend the applicable formulas used to calculate the

Regulated Price Plan (RPP) price to account for new wholesale market prices. We also assume that the OEB will amend the formulas used in the Retail Settlement Code and replace references to the Hourly Ontario Energy Price (HOEP) with the appropriate new wholesale market price. Doing so will clarify how the electricity commodity charges for non-RPP customers, whose electricity commodity charges currently consist of the HOEP and Global Adjustment charges, are to be quantified in the reformed market. These clarifications are essential for our LDC members that will be responsible for implementing revised or possibly new settlement and billing processes, and who will be the main point of contact for communications with electricity customers with respect to changes on electricity bills. The IESO's published materials to-date have not provided instruction as to which wholesale market price produced in the renewed market will apply to non-RPP customers.

We also repeat that each Detailed Design produced by the IESO should consistently apply terminology and defined terms. For example, within the Day-Ahead Market (DAM) Calculation Detailed Design, the IESO uses the following terms interchangeably:

- "DAM Hourly Ontario Zonal Prices"
- "prices for the Ontario zone"
- "Ontario Zonal price".

As we commented in our feedback on the Market Settlements Detailed Design on July 31, 2020, the IESO should use standardized terms (e.g., DAM Ontario Zonal Price) correctly and consistently so that confusion is avoided, the usability of the documents is improved and gap analysis is facilitated.

Themes and Motivation of this submission

The themes of this submission are:

- Whether the Detailed Design is substantially complete (i.e., exclusion of electricity storage resources),
- The requirement for additional detail and worked examples to enhance users' and readers' comprehension of this Detailed Design,
- The need to link the DAM Calculation Engine's outputs to market settlement, and
- The need to consistently use terminology in each Detailed Design document and among all Detailed Design documents.

The inputs required for the IESO to settle with NDLE entities in the reformed market will be produced by the DAM Calculation Engine and by the Real Time (RT) Calculation Engine. These comments focus on how the DAM Calculation Engine Detailed Design identifies, calculates, produces, and reports the inputs required for settlement with NDLEs. Our review of the DAM Calculation Engine focuses on the following inputs for settlement:

Input for Settlement	Derivation of Input	Reference
DAM_LMPz	Output of DAM Calculation Engine	Section 3.10.1.3 Zonal Energy Prices – see commentary below
RT_LMP (NDL)	Output of RT Calculation Engine	TBD
RT_LMP (non-PRL HDR)	Output of RT Calculation Engine	TBD
DAM_QSW (NDL)	Output of DAM Calculation Engine	Unclear – see commentary below
DAM_QSW (non-PRL HDR)	Output of DAM Calculation Engine	Unclear – see commentary below
AQEW	Quantity measured in real-time	None required.

The “Inputs Used for Settlements” are detailed below and are referenced in our more detailed comments.

Per the Market Settlement Detailed Design, NDLs will be settled at the Hourly Physical Transaction Settlement Amount for NDLs (HPTSA_NDLs) which is calculated as follows:

$$HPTSA_NDL_{k,h} = (DAM_LMP_h^z + LFDC_h) \times \sum^T AQEW_{k,h}^{m,t}$$

Where T is the set of all *metering intervals* ‘t’ in *settlement hour* ‘h’.

The inputs required for settlement are:

DAM_LMPz = DAM Ontario Zonal Price

LFDC = Load Forecast Deviation Charge (LFDC)

AQEW = allocated quantity of electricity withdrawn by the NDL

QSW = quantity scheduled for withdrawal

The LFDC is calculated as the sum of the “Real-Time Purchase Cost/Benefit” and “DAM Volumetric Cost/Benefit”.

$$\begin{aligned}
 & \textit{Real - Time Purchase Cost_Benefit} \\
 &= \sum_{K,h}^{M,T} [RT_LMP_h^{m,t} \times (AQEW_{k,h}^{m,t} - DAM_QSW_{k,h}^m/12)] \\
 & - \sum_{K,h}^{M2,T} [RT_LMP_h^{m,t} \times DAM_QSW_{k,h}^m/12]
 \end{aligned}$$

Where

‘M’ is the set of all *delivery points* ‘m’

‘M2’ is the set of all *delivery points* ‘m’ relating to *hourly demand response* resources that are not registered as price responsive load²

‘T’ is the set of all *metering intervals* ‘t’ in *settlement hour* ‘h’

‘K’ is the set of all *market participants* ‘k’ with *NDL facilities*

$$\begin{aligned}
 & \textit{DAM Volume Factor Cost_Benefit} \\
 &= DAM_LMP_h^z \times \left[\sum_{K,h}^{M,T} (DAM_QSW_{k,h}^m/12 - AQEW_{k,h}^{m,t}) \right] \\
 & + \sum_{K,h}^{M2} [DAM_LMP_h^z \times DAM_QSW_{k,h}^m]
 \end{aligned}$$

Where

‘M’ is the set of all *delivery points* ‘m’

‘M2’ is the set of all *delivery points* ‘m’ relating to *hourly demand response* resources that are not registered as price responsive load²

‘T’ is the set of all *metering intervals* ‘t’ in *settlement hour* ‘h’

‘K’ is the set of all *market participants* ‘k’ with *NDL facilities*

Additional variables required for settlement are:

RT_LMP = both NDLs and non-price responsive load (N-PRL) hourly demand response (HDR) resources RT locational marginal price (LMP) is quantified at the delivery point.

DAM_QSW = for NDLs, the DAM quantity scheduled for withdrawal at NDL delivery point; and for N-PRL HDRs, the DAM quantity scheduled for withdrawal at the delivery point.

We believe that the IESO DAM Calculation Engine would be improved by adding a clear summary of the inputs required for NDL settlement and clear instruction for the calculation and reporting of these inputs.

Design Document: Section	Detailed Comments (Areas of Support or Concern)
1. Introduction	No comment.
2. Summary of Current and Future State	<p>We consider that this section provides a suitable overview of the proposed DAM Calculation Engine. A mapping of the outputs of the DAM Calculation Engine to the IESO’s market settlement processes and ultimately to market participants settlement processes will improve the Summary.</p>
3. Detailed Functional Design	<p>We consider that this section provides a detailed description of the proposed DAM’s functions, calculations, and outputs. We agree with other stakeholders who commented at the IESO’s August 27, 2020 webinar that the inclusion of worked examples will improve all parties’ understanding of the Detailed Design.</p> <p>We are concerned that the Detailed Design does not reference changes proposed by the interim design of the IESO’s Storage Design Project. We characterize the Detailed Design as being incomplete as a result. For example, the IESO does not include references to ‘electricity storage participants’ per MR-00445-R00-R05 (‘Implementation of the Interim Storage Design’). However, MR-00445-R00-R05 is currently being reviewed by the IESO’s Technical Panel in preparation for consideration by the IESO’s Board of Directors, the final step in the Market Rule amendment process.</p> <p>We note that in several instances, the Detailed Design states: “... the DAM calculation engine will record all such values for information purposes”. We seek IESO clarification with respect to whether this information will be recorded and reported publicly. We observe that information such as this will be useful to market participants, including</p>

Design Document: Section	Detailed Comments (Areas of Support or Concern)
	<p>LDCs, for investment decisions (e.g., in generation or non-wires alternative technologies and locations) and other purposes.</p> <p>We offer the following specific feedback:</p> <p><i>Section 3.2 Objectives</i></p> <p>The IESO notes that nodal and zonal prices will provide more accurate pricing signals and improve incentives for market participants to submit offers at marginal costs. We seek confirmation that the IESO considered the unique characteristics of the Ontario electricity sector (e.g., contracted resources, rate-regulated resources, Global Adjustment cost allocation) in this Detailed Design. As demonstrated elsewhere in this submission (refer to Section 3.10 below), reforms to the wholesale market must consider the interplay of out-of-market payments to generators and the implications for consumers who respond to price signals that recover such out-of-market costs.</p> <p><i>Section 3.4.1.2 Load Inputs</i></p> <p>The IESO proposes that bids associated with aggregated HDR resources will be identified using a 'proxy bus' which depends only on the aggregated resources zonal location. We repeat our concern set out in our July 31, 2020 comments on the Market Settlements Detailed Design that the computation of the LFDC requires that the DAM_QSW be quantified for all N-PRL HDR resources at a specific delivery point. We seek this clarity as a proxy bus is generic, and is not specific to a delivery point, which would appear to compromise the accuracy of the LFDC.</p> <p><i>Section 3.6.1.2 Variables and Objective Function</i></p> <p>In this section, the IESO defines "quantity scheduled from hourly demand response (SHDR)" as the amount of HDR reductions scheduled at the bus for each hour. For aggregated HDR resources within an IESO</p>

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	<p>zone, the IESO should clarify whether SHDR would be associated with a 'proxy bus' or the actual bus. This clarification is reasonable as the SHDR is used in the derivation of DAM_QSW for all N-PRL HDR resources.</p> <p><i>Section 3.8.3 Outputs for Energy and OR Settlement</i></p> <p>The IESO defines BHDR_NOT_PRL as the set of buses identifying N-PRL HDR resources. We seek clarification whether BHDR_NOT_PRL includes 'proxy buses' for HDR resources consisting of aggregated contributors. This clarification is reasonable as this value is required for the derivation of the DAM_QSW for all N-PRL HDR resources.</p> <p>We question whether Table 3-32 should be re-labelled, specifically to replace "Forecast Deviation per MW Charge" with "Load Forecast Deviation Charge (LFDC)". Table 3-32 defines "Quantity bid by Hourly Demand Response (QHDR)-SHDR" as the amount of</p> <p>consumption scheduled at a bus associated with a N-PRL HDR resource. In addition, we seek to confirm whether QHDR-SHDR is the same as the DAM_QSW for N-PRL HDR resources per the Market Settlement Detailed Design.</p> <p><i>Section 3.9.1.3 Network Model</i></p> <p>The IESO states that:</p> <ul style="list-style-type: none"> • load distribution factors (LDFs) "define the load pattern that will be used to distribute the IESO demand forecast for each demand forecast area" • LDFs "will be also used to determine a set of weighting factors to distribute the • net virtual transactions scheduled at each virtual transaction trading zone." • the weighting factors are used to "renormalize the LDFs as per the load facilities mapped to

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	<p>each virtual transaction trading zone to determine the weighting factors for each trading zone”.</p> <p>We seek improved clarity (e.g., worked examples) of the derivation of renormalized LDFs and of how renormalized LDFs are used in subsequent calculations. This clarification is reasonable since LDFs will be used in the derivation of the DAM_QSW for NDLS.</p> <p><i>Section 3.10 Pricing Formulas</i></p> <p>The IESO proposes an energy settlement floor price of -\$100/MWh and describes that prices not in the range established by the minimum market clearing price and the settlement price floor, will be modified (i.e., adjusted to the settlement floor price). The IESO also proposes that generators be able to submit bids as low as -\$2000/MWh.</p> <p>We seek additional information from the IESO on the impacts of adjusting prices and the IESO’s policies on adjusted prices, including:</p> <ul style="list-style-type: none"> • how often does IESO anticipate the need to adjust or modify prices? • which locations in the province are anticipated to be impacted by the modification of prices to the settlement floor? • when prices are modified, will IESO publish the un-modified price? • what are the impacts of modifying prices on consumers? <p>We are concerned that Class A and Class B customers will experience different outcomes when prices are adjusted. We wish to understand the IESO’s analysis of the trade-offs between these customer groups when setting its policy on determining settlement price floors. Consider the scenario where a lower settlement price floor results</p>

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	<p>in lower LMPs which would increase the Global Adjustment. Class A customers will benefit from the lower price and Class B customers will see both the lower commodity price and a higher Global Adjustment.</p> <p><i>Section 3.10.1.3 Zonal Energy Prices</i></p> <p>The IESO describes that the “ZonalP” (or the DAM Ontario Zonal Price) will be calculated as the sum of:</p> <ul style="list-style-type: none"> • the hourly reference price • load distribution-weighted loss component within the Ontario zone • the load distribution-weighted congestion component within the Ontario zone. We seek clarification as to which components of the DAM Ontario Zonal Price will be recorded and published and at what level of granularity (e.g., at the bus). <p><i>Section 3.13 Determination of the Non-Dispatchable Load Forecast</i></p> <p>We repeat our concerns on Demand Forecasting that were made in our July 31, 2020 feedback on the Offers, Bids and Data Inputs Detailed Design. We urge the IESO to provide more details on the different aspects of forecasting, including its consideration of forecast accuracy given increased uptake of distributed energy resources (DERs).</p> <p>Upon review of this Detailed Design, it is not apparent to us at what point the IESO determines the DAM_QSW for NDLS, a significant quantity to be used when settling with NDLS. We therefore seek clarification from the IESO and suggest that the Detailed Design be amended to set out how this quantity is derived.</p>
4. Market Rule Requirements	No comment.
5. Procedural Requirements	No comment.

Design Document: Section	Detailed Comments (Areas of Support or Concern)
6. Business Process and Information Flow Overview	No comment.