DETAILED DESIGN

Market Renewal Program: Energy

Detailed Design - Version 2.0 Updates

Issue 1.0

This document details changes made to the detailed design documents between Version 1.0 and Version 2.0.

Disclaimer

This document details changes made to the detailed design documents between Version 1.0 and Version 2.0 and must be read in the context of the related MRP detailed design documents. The posting of this design document is made exclusively for the convenience of *market participants* and other interested parties.

The information contained in this design document and related detailed design documents shall not be relied upon as a basis for any commitment, expectation, interpretation and/or design decision made by any *market participant* or other interested party.

The *market rules*, *market manuals*, applicable laws, and other related documents will govern the future market.

Related Documents

Document ID	Document Title
DES-13	MRP High-level Design: Single Schedule Market
DES-14	MRP High-level Design: Day-Ahead Market
DES-15	MRP High-level Design: Enhanced Real-Time Unit Commitment
DES-16	MRP Detailed Design: Overview
DES-17	MRP Detailed Design: Authorization and Participation
DES-18	MRP Detailed Design: Prudential Security
DES-19	MRP Detailed Design: Facility Registration
DES-20	MRP Detailed Design: Revenue Meter Registration
DES-21	MRP Detailed Design: Offers, Bids, and Data Inputs
DES-22	MRP Detailed Design: Grid and Market Operations Integration
DES-23	MRP Detailed Design: Day-Ahead Market Calculation Engine
DES-24	MRP Detailed Design: Pre-Dispatch Calculation Engine
DES-25	MRP Detailed Design: Real-Time Calculation Engine
DES-26	MRP Detailed Design: Market Power Mitigation
DES-27	MRP Detailed Design: Publishing and Reporting Market Information
DES-28	MRP Detailed Design: Market Settlement
DES-29	MRP Detailed Design: Market Billing and Funds Administration

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1. Introduction

1.1. Purpose

This document accompanies Version 2.0 of the Market Renewal Program (MRP) detailed design documents specific to the Energy work stream. Its purpose is to document material changes from Version 1.0.

The IESO received detailed and comprehensive feedback from stakeholders through a robust stakeholder process on Version 1.0 for each of the fourteen detailed design documents. Version 2.0 incorporates comments from stakeholders and the publicly posted IESO responses; this document tracks the changes made arising from that process.

The majority of comments asked for additional information or clarification of language used in the documents. Following the responses to stakeholders, Version 2.0 provides further clarity in those areas where possible. Stakeholders also provided comments on specific aspects of the design where they requested enhancements or modifications. Version 2.0 reflects those design changes the IESO has previously indicated to be accepted or partially accepted in its published responses. The integrated nature of the market can require conforming changes to upstream or downstream elements of these design changes, which are also reflected in Version 2.0.

In addition to changes prompted by stakeholder feedback, the IESO identified other instances where additional clarification could be provided. These limited changes are also reflected in Version 2.0 and listed in this document.

There are also a limited number of minor design changes where the IESO has identified opportunities to improve the implementability of the design, for example, changes to improve the feasibility of the optimization within the calculation engines. These changes do not alter the intent of the design and are captured within this document.

1.2. Scope

This document lists the material changes made to the Market Renewal Energy detailed design documents between Version 1.0 and Version 2.0. Minor spelling, grammatical and formatting changes have not been included.

1.3. Who Should Use This Document

This document is a public document for use by the MRP project team, pertinent *IESO* departments and external stakeholders.

1.4. Assumptions and Limitations

Assumptions: Not applicable.

Limitations: Original and revised text from the design documents reproduced in this document may contain acronyms or variables. Please refer to the applicable design document for the relevant definition(s).

1.5. Conventions

The standard conventions used to describe the reason for each change are as follows:

- Clarification - the language used to describe the design has been refined to provide greater clarity
- Conforming – the design has been modified to align with related design changes
- Correction – an error or omission in the language used to describe the design has been remedied
- Design Change – the design has been modified
- Other – miscellaneous changes to the document that do not impact the design, such as changes to table structures

1.6. How This Document Is Organized

This document is organized into fourteen sections, one for each detailed design document.

– End of Section –

2. Overview

Section	Reason	Original Text	Revised Text	Comments
Calculation Engine Documents	Conforming Change	The three calculation engine documents describe how market participant and IESO inputs and constraints are used in calculations to provide optimized schedules and locational prices in the day-ahead, pre-dispatch and real-time timeframes. Each engine will involve multiple functional 'passes' that apply slightly different calculation logic to meet the goal of the specific pass. Each subsequent pass will build upon the results of the previous one until the engine arrives at a final set of prices and schedules. Details on the passes, equations and constraints used in the optimization are provided in the respective design document.	The three calculation engine documents describe how market participant and IESO inputs will be utilized to determine optimized schedules and locational prices in the day-ahead, pre-dispatch and real-time timeframes. Each engine will involve functional 'passes' that apply slightly different calculation logic to meet the goal of the specific pass and timeframe. For the DAM calculation engine where there are multiple passes, each subsequent pass will build upon the results of the previous one until the engine arrives at a final set of prices and schedules. Details on the pass structure, inputs, outputs and constraints used in each engine are provided in the respective design document.	
Day-Ahead Market Calculation Engine	Conforming Change	The DAM Calculation Engine design document describes the calculation that will jointly optimize energy and operating reserves, to determine reliability-based schedules while maximizing the gains from trade. The DAM calculation engine will run mid-morning, and determine financially-binding hourly schedules and locational prices for all 24 hours of the next day.	The DAM Calculation Engine design document describes the evaluation that will occur in the day-ahead timeframe that will jointly optimize energy and operating reserves for all hours of the next day to determine reliability-based schedules while maximizing the gains from trade. The DAM calculation engine will run mid-morning daily, and determine operational commitments of non-quick start-resources, financially-binding hourly schedules and locational prices for all 24 hours of the next day.	
Pre-Dispatch Calculation Engine	Conforming Change	The PD Calculation Engine design document describes how outputs from the DAM calculation engine, such as operational commitments of non-quick start-resources in addition to revised market participant and IESO data inputs, will be calculated to determine hourly locational prices, schedules and commitments for the pre-dispatch timeframe. It will also set binding schedules for intertie transactions in the near-term. The engine will be structured similarly to the DAM calculation engine in that it will have multiple functional passes, but will optimize over a different timeframe and will run more frequently. The PD calculation engine will run hourly, starting in the evening, optimizing for the remainder of that day and all 24 hours of the following day. In each subsequent hourly run, the PD engine will optimize over the remaining number of hours in each subsequent run until its final run which optimizes a remaining four-hour period.	The PD Calculation Engine design document describes how outputs from the DAM calculation engine, such as operational commitments of non-quick start-resources in addition to revised market participant and IESO data inputs, will be utilized to determine hourly locational prices, schedules and commitments for the pre-dispatch timeframe. It will also set binding schedules for intertie transactions in the near-term. Like the DAM calculation engine, this engine will perform multi-hour optimization while jointly optimizing energy and operating reserves, but will optimize over a different timeframe and will run more frequently. The PD calculation engine will run hourly and optimize over the remaining number of hours of the current day, until the evening when it will begin also including all 24 hours of the following day into its look-ahead period.	

Section	Reason	Original Text	Revised Text	Comments
Real-Time Calculation Engine	Conforming Change	The RT Calculation Engine design document describes the calculations that establish schedules and prices in the real-time dispatch hour. The real-time calculation engine will use some outputs of the day-ahead and pre-dispatch calculation engines, plus revised market participant and IESO data inputs to determine real-time locational prices and schedules. This engine will run every five minutes, providing dispatch instructions for the next five minutes and optimizing advisory schedules for the following 11 five-minute intervals.	The RT Calculation Engine design document describes the optimization that establish dispatch, advisory schedules and RT settlement prices for the current dispatch hour. The RT calculation engine will use some outputs from the DAM and PD calculation engines, plus revised market participant and IESO data inputs to determine real-time locational prices and schedules. This engine will run every five minutes, providing dispatch instructions and locational prices for the next five-minute interval and advisory schedules for the following 10 five-minute intervals.	
Market Scheduling and Optimization	Correction	The real-time (RT) calculation engine will run every five minutes, performing multi-interval optimization over the next 12 five-minute intervals. It will produce optimized dispatch instructions and set the price for the next five-minute interval and advisory schedules for the remaining 11 intervals.	The real-time (RT) calculation engine will run every five minutes, performing multi-interval optimization over the next 11 five-minute intervals. It will produce optimized dispatch instructions and set the price for the next five-minute interval and advisory schedules for the remaining 10 intervals.	
Offers, Bids and Data Inputs	Clarification	In the future market, the majority of changes to market participant inputs arise from the introduction of price-responsive loads and virtual transactions.	In the future market, the majority of changes to market participant inputs arise from the introduction of price-responsive loads and virtual transactions, and physical operating constraints for dispatchable hydroelectric resources.	
Detailed Design of Ontario's Energy Market; Other Ongoing Initiatives	Clarification	These initiatives are not explicitly identified in the detailed design documents and any changes associated with these other initiatives will be incremental and pursued separately from the changes introduced through MRP.	These initiatives are not explicitly identified in the detailed design documents, but MRP will coordinate and maintain alignment with other parallel initiatives as market documentation is developed.	
Facility Registration	Clarification	The Facility Registration design document describes the process for registering a new facility in the market.	The Facility Registration design document describes the process for registering a facility in the market.	
Market Billing and Funds Administration	Clarification	The Market Billing and Funds Administration detailed design document describes the processes for invoicing market participants, receiving and distributing funds, and reconciling the day-ahead market and real-time market settlement amounts in the future market.	The Market Billing and Funds Administration detailed design document describes the process for invoicing market participants and receiving and distributing funds. Invoicing is based on charges represented on the preliminary and final settlement statements.	
Section 2: Summary of the Current and Future State	Clarification	Section 2 describes at a high level how the particular area of the market works today and how it will work in the future energy market. It provides a high-level overview of the process flows, as well as roles and responsibilities of the IESO and market participants in order to broadly describes how key functions of the market are carried out today and how they may change in the future.	Section 2 describes at a high level how the particular area of the market works today and how it will work in the future energy market. It provides a high-level overview of the process flows, as well as roles, responsibilities and how key functions of the IESO and market participants are carried out today and how they may change in the future.	

Section	Reason	Original Text	Revised Text	Comments
Section 6: Business Process and Information Flow Overview	Clarification	It will include IESO-market participant interactions and information exchanges, and a description of how the IESO uses this information.	It will include IESO-market participant interactions and information exchanges, and a description of what data will be used for these information exchanges.	
Appendix D and E: (Various – as required)	Conforming Change	N/A	Appendix D and E: (Various – as required) These appendices may be used to provide public information specific to a particular detailed design document. Examples of such appendices include: • Appendix D of the Market Settlement detailed design document identifies the settlement amounts anticipated for the settlement of the future market. • Appendices D and E in the calculation engine detailed design documents provide the mathematical notation and conventions, and conduct and impact thresholds and parameters.	
Enabling the Future	Clarification	With further change on the horizon from the growth of new emerging, intermittent and distributed resources, the current market design with its well-documented inefficiencies is inadequate to support this evolution.	With further change on the horizon from the growth of new emerging and distributed resources, the current market design with its well-documented inefficiencies is inadequate to support this evolution.	

3. Authorization and Participation

Section	Reason	Original Text	Revised Text	Comments
2.2	Conforming Change	For virtual transactions, prospective market participants must become authorized as a virtual transaction energy trader - a new sub-class of financial market participant with virtual transaction trading privileges in only the day-ahead market	For virtual transactions, prospective market participants must become authorized as a virtual transaction energy trader - a class of market participant with virtual transaction trading privileges in only the day-ahead market	To align with market rule amendment proposal MR-00450: Participant Authorization.
2.2	Conforming Change	To monitor for the potential exercise of market power in the future day-ahead market and real-time market, applicants will also be required to disclose organizations that have the ability to control or influence their offer and bid submissions, or control their ability to follow dispatch instructions. These organizations will be referred to as market control entities.	Applicants will also be required to disclose organizations that have the ability to control or influence their offer and bid submissions, or control their ability to follow their dispatch instructions. These organizations will be referred to as market control entities.	
2.2.1, subsection: New or Modified Outputs from the Authorization and Participation Flows	Conforming Change	- Modified prudential support obligations for physical transactions and new prudential support obligations for virtual transactions. Once the IESO communicates the prudential support obligation to the market participant, the market participant is required to post the indicated level of prudential support; and - Market control entities for virtual transaction energy traders and intertie traders will be used as inputs to the IESO's processes for market power mitigation.	- Modified prudential support obligations for physical transactions and new prudential support obligations for virtual transactions. Once the IESO communicates the prudential support obligation to the market participant, the market participant is required to post the indicated level of prudential support; - Modified minimum prudential support obligations for market participants authorized to participate in the future market solely to import/export energy or operating reserve at boundary entities; and - Market control entities will be disclosed for virtual transaction energy traders and intertie traders during the Authorization and Participation process. Market participants registering dispatchable and non-dispatchable generation resources, dispatchable loads, price responsive loads and physical and virtual hourly demand response resources will disclose their market control entities during the Facility Registration process.	

Section	Reason	Original Text	Revised Text	Comments
3.3.1, subsection: Organization, Name, Address, and HST Number	Conforming Change	[…] unless the applicant intends to solely register as a financial market participant or demand response auction participant. This exemption will also apply to prospective market participants intending to solely register as a virtual transaction energy trader since this type of trader will be considered a type of financial market participant in the future day-ahead market.	[…] unless the applicant intends to solely register as a TR participant or demand response auction participant [1]. This exemption will also apply to prospective market participants intending to solely register as a virtual transaction energy trader in the future day-ahead market. New footnote [1] added: The IESO has replaced the demand response auction with a capacity auction to enable competition between additional resource types. All references to the demand response auction in this document should be read as reference to the capacity auction. Conforming changes required to align with the current or future capacity auction will be made during implementation via market rules and/or market manuals	To align with market rule amendment proposal MR-00450: Participant Authorization.
3.3.1, subsection: Organization Information and Intent of Registration	Conforming Change	The virtual transaction energy trader category will be added to support virtual energy trading in the day-ahead market under an expanded market rules definition for financial market participant.	The virtual transaction energy trader category will be added to support virtual energy trading in the day-ahead market.	To align with market rule amendment proposal MR-00450: Participant Authorization.
3.3.2	Conforming Change	[…] as one or more of the following market participant authorization types applicable to the future day-ahead market and real-time market: - Generator; - Wholesale customers (non-dispatchable load, dispatchable load, price responsive load); - Wholesale sellers and consumers (intertie traders); - Distributor; - Transmitter; - Demand response auction participant; - Demand response market participant; and - Financial market participant. Financial market participant, currently designated for market participants that intend to participate only in the TR market, will be expanded to include virtual transaction energy traders.	[…] as one or more of the following market participant authorization types applicable to the future day-ahead market and real-time market: - Generator; - Wholesale customers (non-dispatchable load, dispatchable load, price responsive load); - Wholesale sellers and consumers (intertie traders); - Distributor; - Transmitter; - Demand response auction participant; and - Demand response market participant. Financial market participant, currently designated for market participants that intend to participate only in the TR market, will be retired as an authorization type. TR participant and virtual transaction energy trader will be created as separate authorization types.	To align with market rule amendment proposal MR-00450: Participant Authorization.
3.3.2	Conforming Change	Financial market participant and Wholesale customer, not included in the current market manual, will be added as market participant authorization types to the Participant Authorization market manual.	Wholesale customer not included in the current market manual, will be added as market participant authorization types to the Participant Authorization market manual.	To align with market rule amendment proposal MR-00450: Participant Authorization.

Section	Reason	Original Text	Revised Text	Comments
3.3.2, Table 3-1	Clarification	OEB License flagged as required for Demand Response Market Participant. Market Control Entity flagged as not required for Generator, Non Dispatchable load, dispatchable load, and price responsive load.	OEB License not flagged as required for Demand Response Market Participant. Market Control Entity[4] flagged as required for Generator, Non Dispatchable load, dispatchable load, and price responsive load. New footnote [4] added: Market control entities for generators and loads are established during the Facility Registration process.	
3.3.2, subsection: OEB Licences	Correction	OEB licensing requirements will continue to be required for all existing market participant authorization types other than demand response auction participants and TR market participants.	OEB licensing requirements will continue to be required for all existing market participant authorization types other than demand response auction participants, demand response market participants and TR market participants	
3.3.2, subsection: Prudential Support	Conforming Change	In the future day-ahead market and real-time market, new prudential support obligations will be determined for: - All existing market participants whose authorized participation for physical transactions in the real-time market will now automatically include participation in the future day-ahead market; - New market participants that intend to be authorized for physical transactions in the future day-ahead market and real-time market; market; and - Consistent with the current Registration of Participation process, these new prudential support obligations must be satisfied by the prospective market participant before they are authorized to participate in future day-ahead market and real-time market.	In the future day-ahead market and real-time market, new prudential support obligations will be determined for: - All existing market participants whose authorized participation for physical transactions in the real-time market will now automatically include participation in the future day-ahead market; - New market participants that intend to be authorized for physical transactions in the future day-ahead market and real-time market; market; - New and existing market participants that intend to be authorized to participate in the future energy market solely to import/export energy or operating reserve at boundary entities; and - Consistent with the current Registration of Participation process, these new prudential support obligations must be satisfied by the prospective market participant before they are authorized to participate in future day-ahead market and real-time market.	
3.3.2, subsection: Transmission Rights (TR) Auction Information	Conforming Change	Applicants that wish to participate in the TR market must continue to complete the authorization process as a financial market participant in the future day-ahead market.	Applicants that wish to participate in the TR market must continue to complete the authorization process in the future market as they do in today's market.	

Section	Reason	Original Text	Revised Text	Comments
3.3.2, subsection: Market Control Entities	Clarification	Market control entities is a new requirement in the future day-ahead market and real-time market to support the IESO's Market Power Mitigation process. Market control entities will be defined as persons that have direct or indirect control over the market participant and/or with whom a market participant has any form of agreement under which such market participant confers rights or the ability to: -set the price or quantity of a market participant's offers made to the IESO administered markets; or -follow dispatch instructions given to a market participant.	Market control entities is a new requirement in the future day-ahead market and real-time market. Market control entity means, with respect to a market participant, any person that meets any of the following criteria: - beneficially owns, directly or indirectly, voting securities carrying more than 10 per cent[5] of the voting rights attached to all voting securities of the market participant; - directly or indirectly, whether through one or more subsidiaries or otherwise, is able to elect or appoint at least 10 per cent of the directors of the market participant, other than ex officio directors; - is a partner in or of the market participant; - has a substantial beneficial interest in the market participant or that serves as a trustee in the market participant, if the market participant is a trust; - is an affiliate of the market participant, excluding affiliates of the market participant that are controlled by the market participant[6]; or - has any form of agreement with an entity whereby: (i) the market participant associated with a resource confers the right or ability to determine the resource’s energy and operating reserve offers and bids to that entity or the ability to follow the dispatch instructions given to the resource; and (ii) that entity is entitled to receive more than 10 per cent of the amounts paid to the market participant in respect of all energy and operating reserve transacted through the energy and operating reserve markets. New footnote [5] added: Similar thresholds are used in the Business Corporations Act (Ontario), Securities Act (Ontario), and the Canada Business Corporations Act. New footnote [6] added: For example, market participants ‘B’ and ‘C’ share parent company ‘A’. Market participant ‘B’ also has child company ‘D’. In this scenario market participant ‘B’ is affiliated with parent ‘A’, market participant ‘C’ and child ‘D’. With respect to market participant ‘B’, only company ‘A’ and market participant ‘C’ qualify as market control entities.	In response to stakeholder feedback, this clarification provides more specificity regarding the determination of the market control entity.
4	Other	This inventory is based on version 1.0 of the detailed design, and any revisions required to this section as a result of design changes to version 1.0 will be incorporated in the market rule amendment process. As a result, the inventory will not be updated after its publication in version 1.0 of this detailed design.	Updates to this inventory since the publication of the Authorization and Participation detailed design version 1.0 have been made to capture material changes to section 3 - Detailed Functional Design. Please refer to market rule amendment proposal MR-00450: Participant Authorization on the Market Renewal Implementation Engagement page to review any further changes between this inventory and the draft market rule amendments.	

Section	Reason	Original Text	Revised Text	Comments
Table 4-1, row 2	Conforming Change	Requirement column: […] Sections 1.2.2 […] 1.2.2.6 that the person, if it applies as a market participant other than solely as a financial market participant, is registered appropriately for tax purposes.	Requirement column: […] Sections 1.2.2 […] 1.2.2.6 that the person, if it applies as a market participant other than solely as one or a combination of (i) a virtual trader or (ii) a TR participant, is registered appropriately for tax purposes.	
Table 4-1, row 4	Conforming Change	Type column: Existing - no change Requirement column: - No new market participant classes will be required to incorporate: - Price Responsive Loads (PRLs) - PRLs will be part of the existing wholesale consumers class; - participation in virtual transactions - the existing market rules definition for financial market participant will be expanded to include persons transacting in the day-ahead market by means of virtual transactions.	Type column: Existing - requires amendment Requirement column: - Add new market participant classes for virtual traders and TR participants.	To align with market rule amendment proposal MR-00450: Participant Authorization.
Table 4-1, row 5	Conforming Change	Requirement column: […] Section 3.1.2: […] unless the application for authorization to participate is submitted in respect of an applicant applying solely as a financial market participant or a demand response auction participant, either the federal harmonized value-added tax system registration number or such documentation exempting them from paying the federal harmonized value-added tax.	Requirement column: […] Section 3.1.2: […] unless the application for authorization to participate is submitted in respect of an applicant applying solely as one or a combination of (i) a virtual traders, or (ii) TR participant, or (iii) a demand response auction participant, either the federal harmonized value-added tax system registration number or such documentation exempting them from paying the federal harmonized value-added tax.	To align with market rule amendment proposal MR-00450: Participant Authorization.
5.1	Conforming Change	Market Manuals: - Market Manual 1: Market Entry, Part 1.1 - Participant Authorization, Maintenance & Exit. Table 5-1 identifies sections within the market manuals that are related but will not require changes, as well as sections that require modification in the future market.	Market Manuals: - Market Manual 1: Connecting to Ontario's Power System, Part 1.5 - Market Registration Procedures. Table 5 1 identifies sections within the market manual that are related to the Authorization and Participation process but will not require changes, as well as sections that will require modification in the future market. Impacts to Market Manual 1: Connecting to Ontario's Power System, Part 1.5 - Market Registration Procedures related to the Facility Registration process are listed in Table 5-1 of the Facility Registration process Detailed Design chapter.	

Section	Reason	Original Text	Revised Text	Comments
Table 5-1, all rows	Conforming Change	See comments	See comments	Table re-ordered and contents rewritten as Market Manual 1.1 was retired and replaced with Market Manual 1.5 since the initial publication of this design document.
Table 6-3	Correction	Table 6-3: Process P5 Input and Output Data Flows	Table 6-3: Process P3 Input and Output Data Flows	Table title name corrected.
Table 6-4	Correction	Table 6-4: Process P6 Input and Output Data Flows	Table 6-4: Process P4 Input and Output Data Flows	Table title name corrected.

4. Prudential Security

Section	Reason	Original Text	Revised Text	Comments
2	Clarification	[...] These processes do not apply to the transmission rights (TR) market or to the demand response auction	[...] These processes do not apply to the transmission rights (TR) market or to the demand response auction [1] New footnote [1] added: The IESO has replaced the demand response auction with a capacity auction to enable competition between additional resource types. All references to the demand response auction in this document should be read as reference to the capacity auction. Conforming changes required to align with the current or future capacity auction will be made during implementation via market rules and/or market manuals.	
3.5.2, subsection: Minimum Prudential Support Requirements for Non-Metered Participants	Clarification	Non-metered participants without any prior history of engaging in physical transactions in the future day-ahead market and real-time market will have an obligation to provide a minimum amount of prudential support even if they expect to transact as a net creditor.	Non-metered participants authorized to participate in the future energy market solely to import energy or operating reserve at boundary entities without any prior history of engaging in physical transactions in the future day-ahead market and real-time market will have an obligation to provide a minimum amount of prudential support even if they expect to transact as a net creditor.	
3.5.2, subsection: Minimum Prudential Support Requirements for Non-Metered Participants	Conforming Change	A non-metered participant may qualify to have this minimum prudential support obligation reduced by 50% if: - The “non-metered participant” achieves net creditor status in each of the three most recent energy market billing periods; - The IESO determines the monthly net creditor position in each of the three upcoming billing periods is at least $25,000; and - The “non-metered participant” demonstrates that it matches a high percentage of its day-ahead schedules with its real-time energy injections in each of the three upcoming billing periods. The 50% reduction will be divided into equal amounts to reduce both the default protection amount and the minimum trading limit. In addition, the “non-metered participant” will be ineligible for reductions associated with credit ratings until they reach three months of market activity.	A non-metered participant may qualify to have this minimum prudential support obligation reduced in accordance with the allowable reductions for physical transactions described in the next subsection, Allowable Reductions.	To align with market rule amendment proposal MR-00453: Prudential Security.
3.6.2, subsection: Allowable Reductions	Conforming Change	Market participants will not be allowed any reductions to their prudential support obligation for virtual transactions.	Market participants that are considered net debtors will not be allowed any reductions to their prudential support obligation for virtual transactions. Market participants that qualify for net creditor status will be allowed reductions to their prudential support obligation for virtual transactions as described in the Net Creditor Status Reduction to Prudential Support for Virtual Transactions section.	To align with market rule amendment proposal MR-00453: Prudential Security. Net creditor status characterized as a reduction rather than a form of prudential support.

Section	Reason	Original Text	Revised Text	Comments
3.6.3, subsection Net Creditor Status as a Form of Prudential Support for Virtual Transactions	Conforming Change	Sub-section Title: Net Creditor Status as a Form of Prudential Support for Virtual Transactions […] provisions will be made to allow them to use a portion of their average credit position as an offset to their virtual transaction prudential support obligation. […] If the virtual transaction prudential support obligation for a net market creditor is higher than what can be covered by the allowable offset, then an irrevocable letter of credit will still be required to cover the shortfall.	Sub-section Title: Net Creditor Status Reduction to Prudential Support for Virtual Transactions […] provisions will be made to allow them to use a portion of their average credit position as a reduction to their virtual transaction prudential support obligation. […] If the virtual transaction prudential support obligation for a net market creditor is higher than what can be covered by the allowable reduction, then an irrevocable letter of credit will still be required to cover the shortfall.	To align with market rule amendment proposal MR-00453: Prudential Security. Net creditor status characterized as a reduction rather than a form of prudential support.
3.7.2	Clarification	[…] In addition, all causes for event of default under the current real-time market will continue in the future.	[…] In addition, all causes for event of default under the current real-time market will continue in the future. Prepayment will allow market participants to maintain sufficient collateral for virtual transactions over a monthly billing period without extending a posted irrevocable letter of credit by permitting voluntary prepayments to reduce actual exposure during the billing period.	
3.7.3	Clarification	[…] A notice of a default levy will continue to be issued to all non-defaulting market participants who were participating in the energy markets at the time of the failure of payment of a defaulting market participant irrespective of whether the default was the result of physical or virtual transactions.	[…] A notice of a default levy will continue to be issued to all non-defaulting market participants who were participating in the energy markets at the time of the failure of payment of a defaulting market participant irrespective of whether the default was the result of physical or virtual transactions. Similar to today's market, default levies will be apportioned to all non-defaulting market participants based on the absolute size of their invoice amounts. In the future market, non-defaulting market participants include both market participants engaging in physical transactions and virtual transactions.	
4	Other	This inventory is based on version 1.0 of the detailed design, and any revisions required to this section as a result of design changes to version 1.0 will be incorporated in the market rule amendment process. As a result, the inventory will not be updated after its publication in version 1.0 of this detailed design.	Updates to this inventory since the publication of the Prudential Security detailed design version 1.0 have been made to capture material changes to section 3 - Detailed Functional Design. Please refer to market rule amendment proposal MR-00453: Prudential Security on the Market Renewal Implementation Engagement page to review any further changes between this inventory and the draft market rule amendments.	
Table 4-1, row 3	Conforming Change	Requirement column: […] Section 5.2.6: - Limit applicability of this section related to prudential reductions to physical transactions only and net creditor status for virtual transactions.	Requirement column: […] Section 5.2.6: - Limit applicability of this section related to prudential reductions to physical transactions only.	To align with market rule amendment proposal MR-00453: Prudential Security.

Section	Reason	Original Text	Revised Text	Comments
Table 4-1: row 14	Conforming Change	Requirement column: [...] Provision on the Obligation to Provide Virtual Transaction Prudential Support - forms of prudential support for virtual transactions: - Obligate market participants to continually provide and maintain prudential support for virtual transactions; - Specify that prudential support for virtual transactions must be met through the provision to the IESO in one or more of the following forms: (1) a letter of credit; (2) subject to IESO approval, a portion of the market participant's market creditor position equal to a maximum of 75% of the average of the most recent six months of energy market billing periods in which the market participant has transacted in physical transactions. Specify that the IESO will have the discretion to adjust the number of consecutive energy market billing periods, or adjust the percentage value of the consecutive energy market billing periods at its sole discretion. - Specify methodology and formula of a market participant's market creditor position.	Requirement column: [...] Provision on the Obligation to Provide Virtual Transaction Prudential Support - forms of prudential support for virtual transactions: - Obligate market participants to continually provide and maintain prudential support for virtual transactions; - Specify that prudential support for virtual transactions must be met through the provision to the IESO via a letter of credit; Provision on Reductions in Prudential Support Obligations for Virtual Transactions: - Specify that a virtual trader that is a market creditor based on its physical transactions as a generator, that has achieved market creditor status in its most recent six energy market billing periods may receive a reduction in its prudential support obligation for virtual transactions by an amount up to 75% of the average amount that the IESO owes to the virtual trader during the relevant six billing periods	To align with market rule amendment proposal MR-00453: Prudential Security.
5.1	Clarification	Market Manuals: - Market Manual 1: Market Entry, Part 1.1 - Participant Authorization, Maintenance & Exit;	Market Manuals: - Market Manual 1: Connecting to Ontario's Power System, Part 1.5 - Market Registration Procedures;	Market Manual 1.1 was retired since the initial publication of this design document.
Table 5-1, all rows	Conforming Change	See Comments	See Comments	Table re-ordered and contents rewritten as Market Manual 1.1 was retired and replaced with Market Manual 1.5 since the initial publication of this design document.
6.1.5	Conforming Change	Market participants will not be allowed any reductions to their prudential support obligation for virtual transactions.	Market participants that are considered net debtors will not be allowed any reductions to their prudential support obligation for virtual transactions. Market participants that qualify for net creditor status will be allowed reductions to their prudential support obligation for virtual transactions.	
Table 6-8	Conforming Change	Flow: Prudential Support Source: Market Participants Target Processes: Process P8 Description: [...] - Net creditor status offset	Flow: Prudential Support Source: Market Participants Target Processes: Process P8 Description: [...] - Net creditor status reduction	

5. Facility Registration

Section	Reason	Original Text	Revised Text	Comments
2.1	Clarification	[…] Demand response market participants register either dispatchable loads or hourly demand response resources to fulfill their demand response capacity obligations	[…] Demand response market participants register either dispatchable loads or hourly demand response resources to fulfill their demand response capacity obligations [1] New Footnote [1] Added: The IESO has replaced the demand response auction with a capacity auction to enable competition between additional resource types. All references to the demand response auction in this document should be read as reference to the capacity auction. Conforming changes required to align with the current or future capacity auction will be made during implementation via market rules and/or market manuals.	
2.2	Conforming Change	Virtual transaction energy traders will be included in a new market participant authorization type of financial market participant that will be authorized to submit virtual transaction offers and bids for energy in the day-ahead market only;	Virtual transaction energy traders will be included as a new market participant authorization type that will be authorized to submit virtual transaction offers and bids for energy in the day-ahead market only;	
2.2.1	Conforming Change	[…] Market Power Mitigation process will require reference levels to be registered that correspond to financial offer parameters that registered market participants submit as dispatch data. […] Reference levels will also be registered for non-financial dispatch data parameters where applicable by season (summer and winter) and for on-peak and off-peak hours.	[…] The Ex-Ante Market Power Mitigation process will require reference levels to be registered that correspond to financial offer parameters that registered market participants submit as dispatch data. […] Reference levels will also be registered for non-financial dispatch data parameters where applicable by season (summer and winter). […] The ex-post Market Power Mitigation process will require reference quantities to be registered for dispatchable generation facilities participating in the energy or the operating reserve markets. Reference quantities will be used to assess physical withholding after-the-fact.	Consistent with the physical withholding framework published in the Market Power Mitigation detailed design document.
2.2.1	Clarification	[…] a new 'start indication value' parameter identifying a minimum MW value for each hydroelectric generating unit that once reached represents a 'start' in the count of the maximum number of starts per day submitted as dispatch data	[…] a new 'start indication value' parameter identifying a minimum MW value for each hydroelectric generating unit(s) associated with a resource that once reached represents a 'start' in the count of the maximum number of starts per day submitted as dispatch data	
2.2.1	Design Change	[…] a new 'hourly must run' parameter that identifies the maximum potential MW quantity that hydroelectric generating units with documented must run conditions that must be scheduled on an hourly basis. This parameter will also be used to validate the submission of hourly must run quantities as dispatch data.	[…] a new 'hourly must run' flag that identifies hydroelectric generating units with documented must run conditions that are eligible to have hourly must run quantities submitted as dispatch data;	Design change in response to stakeholder feedback.

Section	Reason	Original Text	Revised Text	Comments
2.2.1	Conforming Change	[…] the existing 'daily cascading hydroelectric dependency' parameter will be repurposed to identify resources that would be eligible to submit cascade-specific dependencies as dispatch data.	[…] a new 'time lag' parameter that will replace the existing 'daily cascading hydroelectric dependency' parameter. Time lag will be used to identify resources that would be eligible to submit cascade-specific dependencies as dispatch data and register time lag values to validate submission of time lag submitted as dispatch data.	Consistent with the time lag parameter design published in version 1.0 and maintained in version 2.0 of the Offers, Bids and Data Inputs detailed design document.
2.2.1	Conforming Change	[…] The DA-PCG eligibility currently available to dispatchable NQS generation facilities will be retired. Day-ahead market make-whole payments will replace the DA-PCG guarantee payments and day-ahead market make-whole payments will apply to additional facilities and intertie transactions participating in the day-ahead market.	[…] The DA-PCG eligibility currently available to dispatchable NQS generation facilities will also be replaced with the GOG. Day-ahead market make-whole payments will apply to additional facilities and intertie transactions participating in the day-ahead market.	Consistent with the GOG design published in version 1.0 and maintained in version 2.0 of the Market Settlement detailed design document.
2.2.2	Clarification	Demand response market participants will now also be able to satisfy a demand response capacity obligation as a price responsive load by registering their physical hourly demand response resource as a price responsive load. All other facility registration requirements for hourly demand response resources will not change. As with generation facilities, market control entities will also be required to be disclosed for price responsive load, dispatchable load and physical and virtual hourly demand response resources. Load facilities participating in the operating reserve markets will also be required to register their relevant reference levels and reference quantities.	Demand response market participants will now also be able to satisfy a demand response capacity obligation as a price responsive load by registering their physical hourly demand response resource as a price responsive load [2]. All other facility registration requirements for hourly demand response resources will not change. Dispatchable loads participating in the operating reserve markets will be required to register their relevant reference levels and reference quantities. As with generation facilities, market control entities will also be required to be disclosed for price responsive load, dispatchable load and physical and virtual hourly demand response resources. New footnote [2] added: The physical hourly demand response resource and associated price responsive load resource will be registered as separate resources with separate delivery points at the same connection point to the ICG.	
Figure 2-2	Conforming Change		New data flow added: Reference quantities flowing from Facility Registration Process to Ex-post Mitigation.	

Section	Reason	Original Text	Revised Text	Comments
3.1	Conforming Change	This section is sub-divided along the major topic areas that are relevant to the Facility Registration process. Over the course of this section, the design of the Facility Registration process will be described in terms of: - Objectives; - Prerequisites for Facility Registration; - General Requirements for Facility Registration; - Participation of Facilities in The Future Market; - Resource Participation and Registration; - Reference Levels for Market Power Mitigation; - Facility Maintenance; and - Facility De-Registration	This section is sub-divided along the major topic areas that are relevant to the Facility Registration process. Over the course of this section, the design of the Facility Registration process will be described in terms of: - Objectives; - Prerequisites for Facility Registration; - General Requirements for Facility Registration; - Participation of Facilities in The Future Market; - Resource Participation and Registration; - Reference Levels and Reference Quantities for Market Power Mitigation; - Facility Maintenance; and - Facility De-Registration	
3.5.1, subsection: Compliance Aggregation	Conforming Change	NQS generation facilities will continue to be restricted in their use of compliance aggregation in the real-time market. A generation resource that also provides regulation may continue to be subject to additional restrictions. Refer to the Grid and Market Operations detailed design document for more information about these restrictions.	NQS generation facilities will continue to be restricted in their use of compliance aggregation in the real-time market. A generation resource that also provides regulation may continue to be subject to additional restrictions. With the introduction of pseudo-units in the future real-time market, NQS generation facilities registered as pseudo-units will be permitted to use compliance aggregation when following dispatch instructions below MLP. Refer to Section 3.7.2.3 in the Grid and Market Operations Integration detailed design document for more information about compliance to dispatch instructions.	
3.5.1, subsection: Generator Offer Guarantee Eligibility	Conforming Change	[...] The GOG status will replace the current real-time generator cost guarantee (RT-GCG) status in the future real-time market.	[...] The GOG status will replace the current real-time generator cost guarantee (RT-GCG) and day-ahead production cost guarantee (DA-PCG) statuses in the future market.	
3.5.2, subsection: Demand Response Resources	Clarification	Consistent with the current DACP and real-time market, registered market participants will be required to submit dispatch data for the resource type registered to fulfill a demand response capacity obligation into the future day-ahead market and real-time market.	Consistent with the current DACP and real-time market, registered market participants will be required to submit dispatch data for the resource type registered to fulfill a demand response capacity obligation into the future day-ahead market and real-time market[3]. New footnote [3] added: Dispatch data for a physical hourly demand response resource associated with a price responsive load will have a bid for the demand response that is separate from the price responsive load bid for energy	No change to the submission of dispatch data for physical HDR from current market.

Section	Reason	Original Text	Revised Text	Comments
3.5.2, subsection: Physical Hourly Demand Response Resources	Clarification	In the future day-ahead market and real-time market, demand response market participants will also be able to register their physical hourly demand response resource as a price responsive load.	In the future day-ahead market and real-time market, demand response market participants will also be able to register their physical hourly demand response resource as a price responsive load[4]. New footnote [4] added: The physical hourly demand response resource and associated price responsive load resource will be registered as separate resources with separate delivery points at the same connection point to the ICG.	No change to the registration of physical HDR from current market.
3.5.2, Virtual Hourly Demand Response Resources	Clarification	[…] As with dispatchable loads today, a price responsive load will not be able to register as a contributor to a virtual hourly demand response resource.	[…] As with dispatchable loads today, a price responsive load will not be able to register as a contributor to a virtual hourly demand response resource. Conditional on modifications being made to the capacity auction design, design changes would be required in the energy market to enable a price responsive load to register as a virtual hourly demand response resource.	
3.5.8. Capacity Exports	Correction	N/A	New Section: Capacity sellers will continue to be required to register capacity export information with the IESO after issuance of an approval, or a partial approval, to pursue a capacity export request with an entity in an external control area. The following capacity export information must be provided by a market participant no later than the notification date provided by the IESO after a capacity export request has been approved by the IESO. - the external control area to which Ontario-based capacity has been committed; - the generation facility within the IESO-controlled grid providing capacity; - the period for which capacity has been committed; and - the quantity of capacity committed in MW.	Omitted in error in version 1.0. Consistent with capacity export registration requirements in the current market.
Table 3-5	Design Change	N/A	New row added with following details: Registration parameter column: Duct Firing 10-Minute Reserve Capability Existing or New column: New Mandatory or Optional column: M Provided/Determined by (MP or IESO) column: MP Generation Resource Type: flagged with 'x' as applicable to NQS(Other)	Design change in response to stakeholder feedback.
Table 3-5	Conforming Change	Registration Parameter column: Daily Cascading Hydroelectric Dependency Existing or New column: Existing (Modification)	Registration Parameter column: Daily Cascading Hydroelectric Dependency Existing or New column: Retired (See Time Lag)	

Section	Reason	Original Text	Revised Text	Comments
Table 3-5	Conforming Change	N/A	New row added with following details: Registration parameter column: Time Lag Existing or New column: New Mandatory or Optional column: O Provided/Determined by (MP or IESO) column: MP Generation Resource Type: flagged with 'x' as applicable to Quick-start (Hydro)	

Section	Reason	Original Text	Revised Text	Comments
3.6.1, subsection: Market Control Entity	Clarification	Market control entity will be a new registration parameter used to support the Market Power Mitigation process. The IESO must be aware of other persons that have the ability to control or influence the participation of a market participant in the future day-ahead market and real-time market. This is referred to as market control. Existing and new market participants registering resources as dispatchable and non-dispatchable generation facilities will be required to disclose all persons that have direct or indirect control over the market participant and/or with whom a market participant has any form of agreement under which such market participant confers rights or the ability to: - set the price or quantity of a market participant's offers made to the IESO-administered markets; and/or - follow dispatch instructions given to a market participant.	Market control entity will be a new registration parameter used in the future day-ahead market and real-time market. The IESO must be aware of other persons that have the ability to control or influence the participation of a market participant in the future day-ahead market and real-time market. Existing and new market participants registering resources as dispatchable and non-dispatchable generation facilities will be required to disclose their market control entities during the Facility Registration process. Market control entity means, with respect to a market participant, any person that meets any of the following criteria: - beneficially owns, directly or indirectly, voting securities carrying more than 10 per cent[5] of the voting rights attached to all voting securities of the market participant; - directly or indirectly, whether through one or more subsidiaries or otherwise, is able to elect or appoint at least 10 per cent of the directors of the market participant, other than ex officio directors; - is a partner in or of the market participant; - has a substantial beneficial interest in the market participant or that serves as a trustee in the market participant, if the market participant is a trust; - is an affiliate of the market participant, excluding affiliates of the market participant that are controlled by the market participant[6]; or - has any form of agreement with an entity whereby: (i) the market participant associated with a resource confers the right or ability to determine the resource's energy and operating reserve offers and bids to that entity or the ability to follow the dispatch instructions given to the resource; and (ii) that entity is entitled to receive more than 10 per cent of the amounts paid to the market participant in respect of all energy and operating reserve transacted through the energy and operating reserve markets. New footnote [5] added: Similar thresholds are used in the Business Corporations Act (Ontario), Securities Act (Ontario), and the Canada Business Corporations Act. New footnote [6] added: For example, market participants B and C share a parent company A and market participant B wholly owns a subsidiary D. Although B is an affiliate of A, C and D, only A and C would be considered market control entities for market participant B.	Responsive to stakeholder feedback, this clarification provides more specificity regarding the determination of the market control entity.

Section	Reason	Original Text	Revised Text	Comments
3.6.1, subsection: Generator Offer Guarantee Status	Conforming Change	As described earlier, the generator offer guarantee (GOG) status will be a new mandatory registration status that will represent whether a resource registered as a dispatchable NQS generation facility will be eligible for guarantee payments when the pre-dispatch calculation engine commits the facility in the pre-dispatch timeframe. With the introduction of the GOG status, the current real-time generator cost guarantee status (RT-GCG) will become obsolete.	As described earlier, the generator offer guarantee (GOG) status will be a new mandatory registration status that will represent whether a resource registered as a dispatchable NQS generation facility will be eligible for guarantee payments when the day-ahead market or pre-dispatch calculation engine commits the facility in the day-ahead market or pre-dispatch timeframe. With the introduction of the GOG status, the current day-ahead production cost guarantee (DA-PCG) and real-time generator cost guarantee status (RT-GCG) will become obsolete.	
3.6.1, subsection: Pseudo-Unit Modelling Election	Clarification	The market participant will continue to flag which of their registered combustion and steam turbine generation unit resources they want to model as a pseudo-unit resource type	In the future market, the request for pseudo-unit modelling will also be subject to IESO approval based on whether modelling the combined cycle facility as pseudo-unit resource(s) will affect the reliability of the IESO controlled grid. If a market participant elects to model their combined cycle generation facility as a pseudo-unit resource, all generation units at the facility must be modeled as pseudo-units. The market participant will continue to indicate which of their registered combustion and steam turbine generation unit resources will be modeled with each pseudo-unit resource.	Consistent with IESO's responsibility to assess pseudo-unit eligibility in the current market.
3.6.1, subsection: Duct Firing 10-Minute Reserve Capability	Design Change	N/A	This is a new subsection with the following description: Duct firing 10-minute reserve capability is a new mandatory registration parameter submitted for market participants that elect to submit dispatch data for pseudo-units. Steam turbines may not have the capability to initiate duct firing to respond to a 10-minute reserve activation. This parameter can be used to prevent steam turbines associated with pseudo-units from receiving 10-minute reserve schedules within the duct firing operating region. The DAM, PD and RT calculation engines will use this parameter to determine which classes of operating reserve can be scheduled in the duct firing region. When set to 'No', a pseudo-unit will not be scheduled for 10-minute synchronized or 10-minute non-synchronized operating reserve in the duct firing region. A value of 'Yes' allows calculation engines to schedule any class of operating reserve in the duct firing region.	Design change in response to stakeholder feedback.

Section	Reason	Original Text	Revised Text	Comments
3.6.1, subsection: Hourly Must Run Flag	Design Change	Hourly Must Run Hourly must run will be a new optional registration parameter that represents the maximum MW quantity below which the registered resource is incapable of responding to dispatch instructions due to specific must run conditions. Only resources registered as a dispatchable hydroelectric generation facility will be eligible to register this parameter. Market participants will be required to prove they have hourly must run conditions by providing technical data or other applicable supporting documentation to support the values registered for each identified resource. The IESO will review the registered data and may request additional technical data to support the values registered. The IESO may deny registration of the hourly must run resources if the IESO determines that the technical data does not support the request. The value must be greater than zero and less than or equal to the maximum generator resource active power capability value registered for the resource. The registered value for this parameter will be used to validate hourly must run values submitted as dispatch data into the DAM and PD calculation engines. Resources that do not have registered hourly must run values will not be permitted to submit hourly must run values as dispatch data.	Hourly Must Run Flag The hourly must run flag will be a new optional registration parameter that indicates a registered resource is eligible to have dispatch data submitted for hourly must run conditions. Only resources registered as a dispatchable hydroelectric generation facility will be eligible to register this parameter. Market participants will be required to prove they have hourly must run conditions by providing technical data or other applicable supporting documentation to support the flag be registered for each identified resource. The IESO will review the registered data and may request additional technical data to support the flag registration. The IESO may deny registration of the hourly must run flag if the IESO determines that the technical data does not support the request. The registered flag for this parameter will be used to validate hourly must run values can be submitted as dispatch data into the DAM and PD calculation engines. Resources that do not have a registered hourly must run flag set to yes will not be permitted to submit hourly must run values as dispatch data.	Design change in response to stakeholder feedback.

Section	Reason	Original Text	Revised Text	Comments
3.6.1, subsection: Time Lag	Conforming Change	Daily Cascading Hydroelectric Dependency Status A dispatchable hydroelectric generation facility may continue to be registered as having a daily cascading hydroelectric dependency (DCHD). The DCHD will continue to be used to identify a hydroelectric generation facility has a minimum hydraulic time lag of less than 24 hours to or from an adjacent cascading hydroelectric generation facility controlled by the same registered market participant. The DCHD status will no longer be used to designate a resource as an eligible energy limited resource that can re-submit dispatch data into the DACP. Instead, resources with DCHD status will be eligible to submit dispatch data into the day-ahead market and pre-dispatch scheduling process that reflect scheduling dependencies between two or more resources on the same cascade river system and controlled by the same registered market participant. Refer to the Offers, Bids and Data Inputs detailed design document for information on the dispatch data that will be used to reflect scheduling dependencies for resources with DCHD status. The IESO will review the registered data and may request additional technical data to support DCHD status. The IESO may deny registration of the DCHD status if the IESO determines that the technical data does not support DCHD status.	Time Lag Time lag will be a new optional registration parameter that replaces the existing daily cascading hydroelectric dependency (DCHD) flag. Like DCHD today, time lag will be used to identify a dispatchable hydroelectric generation facility has a minimum hydraulic time lag of less than 24 hours to or from an adjacent cascading hydroelectric facility controlled by the same registered market participant. Time lag will also will be used to: - register the maximum amount of amount of time it takes for the water discharge from an upstream generation facility to reach a downstream generation facility that is on the same cascade river system and controlled by the same registered market participant; and - make the registered market participant eligible to submit linked resource, time lag and MWh ratios as dispatch data into the day-ahead market and pre-dispatch scheduling process. The registered value for this parameter will be used to validate the time lag submitted as dispatch data into the DAM and PD calculation engines. Resources that do not have registered time lag values will not be permitted to submit linked resources, time lag and MWh ratio as dispatch data. The time lag value must be a whole number that is greater than or equal to 0 hours and less than 24 hours. The IESO will review the registered data and may request additional technical data to support registration of time lag. The IESO may deny registration of time lag if the IESO determines that the technical data does not support the request.	To align with the time lag parameter design published in version 1.0 and maintained in version 2.0 of the Offers, Bids and Data Inputs detailed design document.

Section	Reason	Original Text	Revised Text	Comments
3.6.2, subsection: Market Control Entity	Conforming Change	As described in Section 3.6.1 for generation resources, the IESO must be aware of other persons that have the ability to control or influence the participation of a market participant in the future day-ahead market and real-time market. This is referred to as market control. Existing and new market participants registering resources as dispatchable load, price responsive load and physical and virtual hourly demand response resources will be required to disclose all persons that have direct or indirect control over the market participant and/or with whom a market participant has any form of agreement under which such market participant confers rights or the ability to: - set the price or quantity of a market participant's offers and bids made to the IESO-administered markets; and/or - follow dispatch instructions given to a market participant	As described in Section 3.6.1 for generation resources, the IESO must be aware of other persons that have the ability to control or influence the participation of a market participant in the future day-ahead market and real-time market. This is referred to as a market control entity. The same criteria described in Section 3.6.1 for generation resources will be used to determine market control entities for existing and new market participants registering resources as dispatchable load, price responsive load and physical and virtual hourly demand response resources.	

Section	Reason	Original Text	Revised Text	Comments
3.7	Conforming Change	Reference Levels for Market Power Mitigation Reference levels will be a new set of mandatory registration requirements that the IESO will determine and use to support the Ex-Ante Market Power Mitigation process in the day-ahead market, pre-dispatch timeframe and the dispatch hour. Ex-ante mitigation will take place either during dispatch data validation or within the DAM, PD and RT calculation engines. When any component of a market participant's dispatch data fails the conduct and impact tests for market power, the IESO will mitigate that dispatch data component to the registered reference level. Reference levels will be determined for all financial offer parameters and some non-financial offer parameters that registered market participants submit as dispatch data. A registered market participant will not be authorized to submit any dispatch data into future day-ahead market or the real-time market until the IESO determines the complete set of reference levels applicable for the market participant's resource. Refer to the Market Power Mitigation detailed design document for more information on how the reference levels for financial and non-financial offer parameters will be determined and used to support the Market Power Mitigation process in the ex-ante timeframe.	Reference Levels and Reference Quantities for Market Power Mitigation Reference levels and reference quantities will be a new set of mandatory registration requirements that the IESO will determine and use to respectively support the Ex-Ante and Ex-post Market Power Mitigation processes in the future market. Ex-ante validation of non-financial dispatch data parameters will take place at the time of dispatch data submission. Ex-ante mitigation of financial dispatch data parameters will take place within the DAM and PD calculation engines. The IESO will reject the non-financial dispatch data upon submission when any dispatch data parameter violates the registered reference level for such parameters. The IESO will mitigate the financial dispatch data parameters to the registered reference level when such submitted parameters fail the market power conduct and impact tests. Ex-post mitigation will take place after market clearing and settlement of a dispatch day to assess potential instances of physical withholding using the registered reference quantities. Reference levels will be determined for all financial offer parameters and some non-financial offer parameters that registered market participants submit as dispatch data. Reference quantities will be determined for resources participating in the energy or the operating reserve markets. Reference quantities are estimates of quantities that a resource is expected to offer in the energy and the operating reserve markets for a dispatch day. A registered market participant will not be authorized to submit any dispatch data into future day-ahead market or the real-time market until the IESO determines the complete set of reference levels and reference quantities applicable for the market participant's resource. Market participants will have the opportunity to request an independent review of their reference levels and reference quantities during the registration process. Refer to the Market Power Mitigation detailed design document for more information on how the reference levels for financial and non-financial dispatch data parameters, and how the reference quantities will be determined, reviewed and used to support the Market Power Mitigation processes in the ex-ante and the ex-post timeframes.	Consistent with ex-ante and ex-post mitigation frameworks published in version 1.0 and maintained in version 2.0 of the Market Power Mitigation detailed design document.

Section	Reason	Original Text	Revised Text	Comments
3.7.2	Conforming Change	Four reference level values will be determined by the IESO for all non-financial offer parameters as follows: - Summer on-peak hours; - Summer off-peak hours; - Winter on-peak hours; and - Winter off-peak hours For the purposes of market power mitigation: - Summer refers to the period from May 1 to October 31; - Winter refers to the period from November 1 to April 30; - On-peak hour means any hour between hour ending (HE) 8 and HE 23 on weekdays (excluding holidays); and - Off-peak hour means any hour between HE 24 and HE 7 on weekdays, all weekends and holidays.	Summer and winter reference level values will be determined by the IESO for all non-financial offer parameters. For the purposes of market power mitigation: - Summer refers to the period from May 1 to October 31; and - Winter refers to the period from November 1 to April 30;	
Table 3-8, row 7	Clarification	Target Non-Financial Offer Parameter Description column: The maximum number of times a generation unit is physically able to be started within a dispatch day.	Target Non-Financial Offer Parameter Description column: The maximum number of times a resource associated with one or more generation units is physically able to be started within a dispatch day.	
Table 3-8, row 8	Conforming Change	N/A	New row with following descriptions: Registered Reference Level Name column: Ramp hours to MLP reference level Target Non-Financial Offer Parameter column: Ramp hours to MLP Target Non-Financial Offer Parameter Description column: The minimum number of hours required for the resource to ramp from synchronization to its MLP. Different values can apply for each thermal state of hot, warm and cold. Reference Level Registered For column: All dispatchable NQS combined cycle generation facilities	
Table 3-8, row 9	Conforming Change	N/A	New row with following descriptions: Registered Reference Level Name column: Energy per ramp hour reference level[7] Target Non-Financial Offer Parameter column: Energy per ramp hour Target Non-Financial Offer Parameter Description column: The average quantity of energy in MWh that the resource is expected to produce in each ramp hour to MLP for each thermal state of hot, warm and cold. Reference Level Registered For column: All dispatchable NQS combined cycle generation facilities New footnote [7] added: A reference level for an upper and lower bound will be registered for each thermal state.	

Section	Reason	Original Text	Revised Text	Comments
4	Other	This inventory is based on version 1.0 of the detailed design, and any revisions required to this section as a result of design changes to version 1.0 will be incorporated in the market rule amendment process. As a result, the inventory will not be updated after its publication in version 1.0 of this detailed design.	Updates to this inventory since the publication of the Facility Registration detailed design version 1.0 have been made to capture material changes to section 3 - Detailed Functional Design. Please refer to market rule amendment proposal MR-00451: Facility Registration on the Market Renewal Implementation Engagement page to review any further changes between this inventory and the draft market rule amendments.	
Table 4-1, row 1	Conforming Change	N/A	New row with following description: Market Rule Section column: Appendix 2.2 S1.1 Type column: Existing - no change Topic column: Voice Communications Requirement column: Section 1.1: - This section specifies the technical requirements for market participants for voice communication, monitoring and control, and workstations. - Provisions unaffected by the design changes specified in the Facility Registration design document.	
Table 4-2, row 1	Conforming Change	N/A	New row with following description: Market Rule Section column: Appendix 4.1 to Appendix 4.23 Type column: Existing - no change Topic column: Grid Connection Requirements Requirement column: Appendix 4.1 to 4.23: - These sections specify technical requirements for various facility types. - Provisions unaffected by the design changes specified in the Facility Registration design document.	
Table 4-3, row 4	Conforming Change	Requirement column: […] - New obligation which specifies that a person must provide all information as specified in the future market power mitigation provisions in the market rules, in order for the IESO to establish reference levels. This new obligation will be one of the conditions which must be met by persons wishing to participate in the real-time markets, or persons submitting offers or bids for physical transactions in the day-ahead market.	Requirement column: […] - New obligation which specifies that a person must provide all information as specified in the future market power mitigation provisions in the market rules, in order for the IESO to establish reference levels and reference quantities. This new obligation will be one of the conditions which must be met by persons wishing to participate in the real-time markets, or persons submitting offers or bids for physical transactions in the day-ahead market. - New section which specifies that market participants may request independent review of their reference levels and reference quantities during the facility registration process.	

Section	Reason	Original Text	Revised Text	Comments
Table 4-3, row 10	Conforming Change	N/A	New row with following description: Market Rule Section column: Section 2.2 Type column: New Topic column: Rejection of values or requests Requirements column: Section 2.2.3C: - New section to allow the IESO to reject a pseudo-unit modelling election request that may have an impact to the reliability of the IESO-control grid or material impact to the operation of the IESO-administered markets.	
Table 4-3, row 12	Conforming Change	Requirement column: […] Amend to obligate/allow a generation facility to provide the following new registration values: - Optional: a start indication value in MW; - Optional: hourly must run value greater than zero and less than or equal to the value representing the maximum MW quantity below which the generation facility is incapable of responding to dispatch instructions due to specific must run conditions; Such value must be greater than zero and less than or equal to the maximum active power capability value registered for the generation facility. Specify that the market participant must provide supporting documentation to support such values; - Optional: shared daily energy limit parameters;	Requirement column: […] Amend to obligate/allow a generation facility to provide the following new registration values: - Optional: a start indication value in MW; - Optional: the intention to submit hourly must run dispatch data; - Optional: shared daily energy limit parameters;	
Table 4-3, row 18	Conforming Change	Topic column: Registered Facilities - Dispatchable Hydroelectric Generation Facilities - Daily Cascading Hydroelectric Dependency Requirements column: […] Amendments are required to specify market participant obligations to provide supporting documentation to support daily cascading hydroelectric dependencies, and to specify IESO authority to deny, at its sole discretion should the technical data not support such status.	Topic column: Registered Facilities - Dispatchable Hydroelectric Generation Facilities - Time Lag Requirements column: […] Amendments are required to specify market participant obligations to provide supporting documentation to support time lag, and to specify IESO authority to deny, at its sole discretion should the technical data not support such status.	
Table 4-3, row 31	Conforming Change	Requirements column: […] Delete - to be replaced by the Day-Ahead Make Whole Payment.	Requirements column: […] Delete - to be replaced by the Generator Offer Guarantee.	
Table 5-1, all rows	Conforming Change	See comments	See comments	Table re-ordered and contents rewritten as Market Manuals 1.2 and 9.1 were retired and replaced with Market Manual 1.5 since the initial publication of this design document.

Section	Reason	Original Text	Revised Text	Comments
Figure 6-1	Conforming Change	N/A	New data flow added to show P5 is now made available to EMI, Ex-Post Mitigation, and an Independent Reviewer.	
6.1.5	Conforming Change	Reference levels are mandatory registration requirements that the IESO will determine and use to support the Market Power Mitigation process in the day-ahead timeframe, pre-dispatch timeframe and the dispatch hour. [...] Reference levels will be determined for all financial dispatch data parameters and some non-financial dispatch data parameters that registered market participants may submit for a resource. A registered market participant will not be authorized to submit any dispatch data into future day-ahead market or real-time market until the IESO determines the complete set of reference levels applicable for the market participant's resource.	Description: Reference levels and reference quantities are mandatory registration requirements that the IESO will determine and respectively use to support the Ex-Ante and Ex-Post Market Power Mitigation processes in the future market. [...] Ex-post mitigation will take place after the dispatch day to assess potential instances of physical withholding using the registered reference quantities. Reference levels will be determined for all financial dispatch data parameters and some non-financial dispatch data parameters that registered market participants may submit for a resource. Reference quantities will be determined for all resources participating in the energy or operating reserve markets. A registered market participant will not be authorized to submit any dispatch data into future day-ahead market or real-time market until the IESO determines the complete set of reference levels and reference quantities applicable for the market participant's resource. Market participants will have the opportunity to request an independent review of their reference levels and reference quantities during the registration process.	
Table 6-5	Conforming Change	Flow: Reference Level Values Target: RTM, PD & DAM Calculation Engine Description: The reference level values are made available to the DAM, PD and RT calculation engines for ex-ante market power mitigation.	Flow: Financial Reference Levels Target: DAM and PD Calculation Engine Description: The financial reference levels are made available to the DAM and PD calculation engines for ex-ante market power mitigation.	

Section	Reason	Original Text	Revised Text	Comments
Table 6-5	Conforming Change	N/A	New rows added with the following details: Flow: Reference Quantities Source: P5 Target: Ex-Post Mitigation Frequency: As necessary Description: The reference quantities are made available to the ex-post market power mitigation process, to assess potential instances of physical withholding. Flow: Review Statement Supporting Documentation Source: Process P5 Target: Independent Reviewer Frequency: Event-based, market participant requested independent review Description: The market participant may request an independent third party review of certain aspects of the materials submitted in support of a market participant's proposed reference levels or reference quantities. The IESO will provide the independent reviewer and the market participant with a statement of the matters to be reviewed, submitted materials relevant to these matters and any relevant communications between the market participant and the IESO. Flow: Review Outcome Report Source: Independent Reviewer Target: Process P5 Frequency: Event-based, after the independent reviewer completes their review Description: The independent reviewer will review the materials provided and then provide a confidential written report to the market participant and the IESO setting out its findings and the reasons supporting the findings. Flow: Non-Financial Reference Levels Source: Process P5 Target: EMI Frequency: As necessary Description: The non-financial reference levels are made available to EMI for validation of non-financial dispatch data.	

6. Revenue Meter Registration

Section	Reason	Original Text	Revised Text	Comments
2.2.3	Conforming Change	The RMP for the HDR resource must be the same as the RMP for the PRL.	The RMP and MMP for the HDR resource must be the same as the RMP and MMP for the PRL.	
2.1	Clarification	Demand response market participants (DRMP) can deliver their demand response capacity obligations to the IESO-administered market via resources registered as a dispatchable load resource or as an hourly demand response (HDR) resource.	Demand response market participants (DRMP) can deliver their demand response capacity obligations to the IESO-administered market via resources registered as a dispatchable load resource or as an hourly demand response (HDR) resource [3]. New footnote [3] added: "The IESO has replaced the demand response auction with a capacity auction to enable competition between additional resource types. All references to the demand response auction in this document should be read as reference to the capacity auction. Conforming changes required to align with the current or future capacity auction will be made during implementation via market rules and/or market manuals."	
2.2.3	Clarification	In the future, an HDR resource may meet a physical demand response capacity obligation through a physical demand response contributor associated with a PRL.	In the future, an HDR resource may meet a physical demand response capacity obligation through a physical demand response contributor associated with a PRL[4]. New footnote[4] added: "The physical hourly demand response resource and associated price responsive load resource will be registered as separate resources with separate delivery points at the same connection point to the IESO-controlled grid."	
3.4.5, Metering Registration	Conforming Change	The RMP for the HDR resource must be the same as the RMP for the PRL.	The RMP and MMP for the HDR resource must be the same as the RMP and MMP for the PRL.	
3.4.5, Metering Registration	Clarification	In the future, an HDR resource may meet a physical demand response capacity obligation through a physical demand response contributor associated with a PRL.	In the future, an HDR resource may meet a physical demand response capacity obligation through a physical demand response contributor associated with a PRL [5]. New footnote[5] added: "The physical hourly demand response resource and associated price responsive load resource will be registered as separate resources with separate delivery points at the same connection point to the IESO-controlled grid."	
3.4.5.2	Other	It is not submitted by the DRMP.	Such metering data is not submitted by the DRMP.	

Section	Reason	Original Text	Revised Text	Comments
4	Other	This inventory is based on version 1.0 of the detailed design, and any revisions required to this section as a result of design changes to version 1.0 will be incorporated in the market rule amendment process. As a result, the inventory will not be updated after its publication in version 1.0 of this detailed design.	Deleted	
4	Other	The inventory is developed in Table 4 1, which describes the impacts to the market rules and classifies them into the following three types:	The inventory is developed in the following tables, which describes the impacts to the market rules and classifies them into the following three types:	
5.1	Other	Table 5 1 identifies sections within the market manuals that are related but will not require changes, as well as sections that require modification in the future market.	The following tables identify sections within the market manuals that are related but will not require changes, as well as sections that require modification in the future market.	

7. Offers, Bids, and Data Inputs

Section	Reason	Original Text	Revised Text	Comments
3.3	Clarification	[…] The maximum offer quantity of energy for a dispatchable generation facility and maximum bid quantity of energy for a dispatchable load or hourly demand response resource in each hour of the day-ahead market will continue to establish the hourly ADE MW quantity for that hour. Hours for which an offer or bid is not submitted will continue to establish an ADE of 0 MW for that hour.	[…] The maximum offer quantity of energy for a dispatchable generation facility and maximum bid quantity of energy for a dispatchable load or hourly demand response resource in each hour of the day-ahead market will continue to establish the hourly ADE MW quantity for that hour. Hours for which an offer or bid is not submitted will continue to establish an ADE of 0 MW for that hour. Self-scheduling generation facilities, intermittent generators, transitional scheduling generators and price responsive loads are exempt from establishing ADE quantities.	
Table 3-1, row 13	Correction	Max Daily Energy Limit flagged with an 'x' as being available to non-dispatchable generation facilities.	'x' removed	Flagged in error in version 1.0.
Table 3-2, row 8	Correction	N/A	New row added for Maximum Daily Energy Limit and flagged with 'x' as being applicable for Pseudo-Unit	
3.4.2.2, subsection: Energy Offer	Correction	[…] For resources associated with a wind generation facility, the price corresponding to the first 10% of the resource's available capacity must be no less than -$15/MWh, and the remaining available capacity must be priced no less than -$3/MWh […]	[…] For resources associated with a wind generation facility, the price corresponding to the first 10% of the resource's available capacity must be no less than -$15/MWh, and the remaining available capacity must be priced no less than -$3/MWh. For solar facilities, the resource's entire available capacity must be priced no less than -$3/MWh […]	
3.4.2.2, subsection: Energy Ramp Rate	Clarification	[…] The DAM, PD and RT calculation engines will use energy ramp rates in determining schedules and dispatch instructions for dispatchable generation facilities.	[…] Similar to today's DACE, the DAM and PD calculation engines will use the energy ramp rate submitted for the first hour of the DAM and PD look-ahead period in determining schedules for dispatchable generation facilities. The RT calculation engine will continue to use the energy ramp rate submitted for a particular dispatch hour in determining dispatch instructions. Refer to Section 3.4.1.3 and 3.6.1.4 in the DAM, Section 3.4.1.4 and 3.6.1.4 in PD and Section 3.4.1.4 and 3.6.1.4 in the RT calculation engine detailed design documents for more information.	

Section	Reason	Original Text	Revised Text	Comments
2.1.1	Correction	[…] Registered market participants authorized to submit dispatch data for resources registered as dispatchable generation facilities, dispatchable loads, and hourly demand response (HDR) resources […]	[…] Registered market participants authorized to submit dispatch data for resources registered as dispatchable generation facilities, dispatchable loads, and hourly demand response (HDR) resources[1] […] New footnote [1] added: The IESO has replaced the demand response auction with a capacity auction to enable competition between additional resource types. All references to the demand response auction in this document should be read as reference to the capacity auction. Conforming changes required to align with the current or future capacity auction will be made during implementation via market rules and/or market manuals.	
2.1.2.4	Clarification	[…] Assignment of virtual HDR resources: The network model assigns a virtual HDR resource to a single bus in each of the IESO's ten electrical zones. This bus allows registered market participants to submit dispatch data for virtual HDR resources.	[…] Assignment of virtual and physical HDR resources: The network model assigns a virtual HDR resource to a single bus in each of the IESO's ten electrical zones. This bus allows registered market participants to submit dispatch data for virtual HDR resources. For physical HDR resources, the network model assigns a resource at the physical location of the non-dispatchable load associated with the physical hourly demand response capacity obligation.	No change to modelling of virtual or physical HDR from current market.
2.2.1.1 Dispatch Data Constructs	Correction	[…] Eligible hydroelectric generation facilities will be able to submit additional, new dispatch data parameters to better reflect their physical operating constraints. Several new features will be introduced for use in the day-ahead market and pre-dispatch scheduling timeframes: - Minimum hourly output, hourly must-run and minimum daily energy limit dispatch data parameters will be made available for registered market participants to specify minimum energy requirements in the day-ahead market and pre-dispatch scheduling timeframes; - Linked resources, time lags and MWh ratios will be made available for registered market participants to specify intertemporal dependencies between adjacent upstream and downstream generation facilities on the same cascade river system and owned by the same market participant; and - The maximum number of starts per day parameter currently available for dispatchable NQS generation facilities will be extended for use to dispatchable hydroelectric generation facilities.	[…] Eligible hydroelectric generation facilities will be able to submit additional, new dispatch data parameters to better reflect their physical operating constraints. Several new features will be introduced for use in the day-ahead market and pre-dispatch scheduling timeframes: - Minimum hourly output, hourly must-run and minimum daily energy limit dispatch data parameters will be made available for registered market participants to specify minimum energy requirements in the day-ahead market and pre-dispatch scheduling timeframes; - Linked resources, time lags and MWh ratios will be made available for registered market participants to specify intertemporal dependencies between adjacent upstream and downstream generation facilities on the same cascade river system owned by the same market participant; and - The maximum number of starts per day parameter currently available for dispatchable NQS generation facilities will be extended for use to dispatchable hydroelectric generation facilities; and - Forbidden regions that are currently available for dispatchable hydroelectric facilities in the real-time market will also be used in the future day-ahead market and pre-dispatch scheduling timeframes.	Forbidden regions omitted in error in version 1.0.

Section	Reason	Original Text	Revised Text	Comments
2.2.2.6	Clarification	- New mappings of existing load facilities to virtual transaction zonal trading entities and the four new demand forecast areas; and - New definitions for pricing locations (previously known as shadow price locations): To enable locational pricing, zonal virtual transaction pricing, and Ontario zone pricing, the current list of pricing locations will be expanded to include all registered facilities.	- New mappings of existing load facilities to virtual transaction zonal trading entities and the four new demand forecast areas; - New assignment of physical HDR resources for price responsive load facilities used to fulfill a demand response capacity obligation; and - New definitions for pricing locations (previously known as shadow price locations): To enable locational pricing, zonal virtual transaction pricing, and Ontario zonal pricing, the current list of pricing locations will be expanded to include all registered facilities.	
Table 3-1, last row	Clarification	Dispatch Data Parameter column: Ramp Up Energy to MLP	Dispatch Data Parameter column: Ramp up energy to MLP (Ramp hours to MLP & Energy per ramp hour)	
Table 3-2, last row	Clarification	Dispatch Data Parameter column: Ramp Up Energy to MLP	Dispatch Data Parameter column: Ramp up energy to MLP (Ramp hours to MLP & Energy per ramp hour)	
3.3	Design Change	N/A	[…] The existing ADE deadband that allows for increases of up to the lesser of 2% of the ADE or 10 MW will be expanded to allow for increases of up to lesser of 15% of the ADE or 10 MW.	Design change in response to stakeholder feedback.
3.4.2.2, subsection: Minimum Hourly Output	Design Change	Minimum hourly output will be a new hourly dispatch data parameter used to represent the minimum amount of energy, in MWh, that a generation unit associated with a dispatchable hydroelectric generation facility must, if economic, produce in any one hour to prevent the registered facility from operating in a manner that would endanger the safety of any person, damage equipment, or violate any applicable law. Registered market participants will only be eligible to submit minimum hourly output quantities for generation units associated with a dispatchable hydroelectric generation facility. A minimum hourly output value can only be submitted if: - spill restrictions are anticipated to prevent the generation unit from responding to dispatch instructions between 0 MW and the minimum hourly output value; and - following a dispatch instruction between 0 MW and the minimum hourly output value would require the registered facility to operate in a manner that endangers the safety of any person, damage equipment, or violate any applicable law.	Minimum hourly output will be a new hourly dispatch data parameter used in the DAM and PD calculation engines to represent the minimum amount of energy, in MWh, that a generation unit associated with a dispatchable hydroelectric generation facility must, if economic, produce in any one hour to prevent the registered facility from operating in a manner that, as a dispatch instruction, reasonably could be expected to endanger the safety of any person, damage equipment, or violate any applicable law. Registered market participants will only be eligible to submit minimum hourly output quantities for generation units associated with a dispatchable hydroelectric generation facility. A minimum hourly output value can only be submitted if: - spill restrictions are anticipated to prevent the generation unit from responding to dispatch instructions between 0 MW and the minimum hourly output value; and - it reasonably could be expected that following a dispatch instruction between 0 MW and the minimum hourly output value would require the registered facility to operate in a manner that endanger the safety of any person, damage equipment, or violate any applicable law.	Design change in response to stakeholder feedback.
3.4.2.2, subsection: Minimum Hourly Output	Correction	[…] Sum of all hourly must-run quantities submitted as dispatch data must be less than or equal to the maximum daily energy limit submitted as dispatch data for the generation unit.	[…] Sum of all minimum hourly output quantities submitted as dispatch data must be less than or equal to the maximum daily energy limit submitted as dispatch data for the generation unit.	Minimum hourly output referred to as 'hourly must run' in error in version 1.0.

Section	Reason	Original Text	Revised Text	Comments
3.4.2.2, subsection: Hourly Must Run	Design Change	[…] that a generation unit associated with a dispatchable hydroelectric generation facility must produce in any one hour to prevent the registered facility from operating in a manner that would endanger the safety of any person, damage equipment, or violate any applicable law. […] Registered market participants will only be eligible to submit hourly must-run quantities for generation units associated with a dispatchable hydroelectric generation facility if the IESO permits a maximum hourly must-run quantity to be registered for the generation facility during the Facility Registration process. […] An hourly must-run value can only be submitted for anticipated must-run conditions that are required to prevent the registered facility from operating in a manner that would endanger the safety of any person, damage equipment, or violate any applicable law. The IESO may review the submission of hourly must-run values to confirm the registered market participant is in compliance with this requirement. Hourly must-run will be used as an input to the DAM and PD calculation engines to schedule a generation unit registered with a dispatchable hydroelectric generation facility to no less than the hourly must-run value for every hour that the value is submitted by the registered market participant. […] The following validations will apply: - Hourly must-run quantities submitted as dispatch data must be less than or equal to the hourly must-run quantity registered for the generation unit during the Facility Registration process; - Hourly must-run quantities submitted as dispatch data must be less than or equal to the maximum quantity of the energy offer for the generation unit; and - Sum of all hourly must-run quantities submitted as dispatch data must be less than or equal to the maximum daily energy limit submitted as dispatch data for the generation unit.	[…] that a generation unit associated with a dispatchable hydroelectric generation facility must produce in any one hour to prevent the registered facility from operating in a manner that, as a dispatch instruction, reasonably could be expected to would endanger the safety of any person, damage equipment, or violate any applicable law. […] Registered market participants will only be eligible to submit hourly must-run quantities for generation units associated with a dispatchable hydroelectric generation facility if the IESO permits the hourly must-run flag to be registered for the generation facility during the Facility Registration process. […] An hourly must-run value can only be submitted for anticipated must-run conditions that are required to prevent the registered facility from operating in a manner that, as a dispatch instruction, reasonably could be expected to endanger the safety of any person, damage equipment, or violate any applicable law. The IESO may review the submission of hourly must-run values to confirm the registered market participant is in compliance with this requirement. Hourly must-run will be used as an input to the DAM and PD calculation engines to schedule a generation unit registered with a dispatchable hydroelectric generation facility to no less than the hourly must-run value for every hour that the value is submitted by the registered market participant. Hourly must run quantities will also be respected in the RT calculation engine through the application of minimum generation constraints received as an output from the PD calculation engine. Refer to section 3.4.1.4 of the RT calculation engine detailed design document for details. […] The following validations will apply: - Hourly must-run quantities submitted as dispatch data must be less than or equal to the maximum quantity of the energy offer for the generation unit; and - Sum of all hourly must-run quantities submitted as dispatch data must be less than or equal to the maximum daily energy limit submitted as dispatch data for the generation unit.	Design change in response to stakeholder feedback.

Section	Reason	Original Text	Revised Text	Comments
3.4.2.3, subsection: Linked Resources, Time Lag, and MWh Ratio	Design Change	[…] The energy produced by upstream resources require a proportional amount of energy to be produced by downstream resources after a period of time to prevent downstream resources from operating in a manner that would to endanger the safety of any person, damage equipment, or violate any applicable law. […] The upstream and downstream generation resources must also be owned by the same market participant. Refer to daily cascading hydroelectric dependency status in the Facility Registration detailed design document for eligibility requirements. […] Linked resource, time lag and MWh ratio values can only be submitted for anticipated intertemporal dependencies that are required to prevent downstream resources from operating in a manner that would endanger the safety of any person, damage equipment, or violate any applicable law. […] The following dispatch data validations and restrictions will apply: - Unless two or more resources are registered to share daily energy limits, only one upstream resource can be linked to one of the downstream resources that it is registered to have a daily cascading hydroelectric dependency with; - Where two or more upstream resources are registered to share daily energy limits, those upstream resources can only be linked to either: - one of the downstream resources they are registered to have a daily cascading hydroelectric dependency with; or - two or more downstream resources they are registered to have a daily cascading hydroelectric dependency with, as long as the downstream resources are also registered to share daily energy limits;	[…] The energy produced by upstream resources require a proportional amount of energy to be produced by downstream resources after a period of time to prevent downstream resources from operating in a manner that, as a dispatch instruction, reasonably could be expected to endanger the safety of any person, damage equipment, or violate any applicable law. […] The upstream and downstream generation resources must also be owned by the same market participant. Refer to time lag parameter in the Facility Registration detailed design document for eligibility requirements. […] Upstream and downstream resources that have been registered with shared daily energy limits can also be linked as an upstream or downstream set. The set of one or more upstream resources that share a daily energy limit may be linked to a set of one or more downstream resources that share a daily energy limit. […] Linked resource, time lag and MWh ratio values can only be submitted for anticipated intertemporal dependencies that are required to prevent downstream resources from operating in a manner that, as a dispatch instruction, reasonably could be expected to endanger the safety of any person, damage equipment, or violate any applicable law. […] The following dispatch data validations and restrictions will apply: - Unless two or more resources are registered to share daily energy limits, only one upstream resource can be linked to one of the downstream resources that it is registered to have a time lag with; - Where two or more upstream resources are registered to share daily energy limits, those upstream resources can only be linked to either: - one of the downstream resources they are registered to have a time lag with; or - two or more downstream resources they are registered to have a time lag with, as long as the downstream resources are also registered to share daily energy limits;	Design change in response to stakeholder feedback.
3.4.2.3, subsection: Forbidden Regions	Clarification	[…] Forbidden regions submitted as dispatch data will consist of upper and lower limit values that the DAM, PD and RT calculation engines will use to schedule a generation unit such that the generation unit will not receive hourly schedules and dispatch instruction within the forbidden regions.	[…] Forbidden regions submitted as dispatch data will consist of upper and lower limit values that the DAM and PD calculation engines will use to schedule a generation unit such that the generation unit will not receive hourly schedules within the forbidden regions. The RT calculation engine will continue to prevent a sustained dispatch instruction within the submitted forbidden regions by ramping the resource through the forbidden region at its maximum ramp rate.	

Section	Reason	Original Text	Revised Text	Comments
3.4.2.3, subsection: Forbidden Regions	Design Change	[…] The following validations and restrictions will apply: - The number of forbidden regions submitted as dispatch data must equal the number of forbidden regions provided as registration data; - A lower limit and an upper limit must be submitted for each forbidden region; and - A null value submitted for the upper or lower limit of given a forbidden region must be accompanied by a null value for the corresponding lower and upper limit in the same forbidden region.	[…] The following validations and restrictions will apply: - A maximum of five forbidden regions may be submitted as dispatch data for each generation resource; - The number of forbidden regions submitted as dispatch data must equal the number of forbidden regions provided as registration data; - A lower limit and an upper limit must be submitted for each forbidden region; and - A null value submitted for the upper or lower limit of given a forbidden region must be accompanied by a null value for the corresponding lower and upper limit in the same forbidden region.	Design change in response to stakeholder feedback.
3.4.2.3, subsection: Maximum Daily Energy Limit (Max DEL)	Clarification	[…] The DAM and PD calculation engines will use the single Max DEL to evaluate the energy offers for those generation units such that the sum of their hourly schedules do not exceed the Max DEL.	[…] The DAM and PD calculation engines will use the single Max DEL to evaluate the energy offers for those generation units such that the sum of their hourly schedules across a dispatch day do not exceed the Max DEL.	
3.4.2.3, subsection: Minimum Daily Energy Limit (Min DEL)	Design Change	[…] This parameter will be used by both the DAM and PD calculation engines. […] A Min DEL value can only be submitted for anticipated daily must-run conditions that are required to prevent the registered facility from operating in a manner that would endanger the safety of any person, damage equipment, or violate any applicable law.	[…] This parameter will be used by both the DAM and PD calculation engines. Min DEL will also be respected in the RT calculation engines as described in the Grid and Market Operations Integration detailed design Section 3.7.2.2. […] A Min DEL value can only be submitted for anticipated daily must-run conditions that are required to prevent the registered facility from operating in a manner that, as a dispatch instruction, reasonably could be expected to endanger the safety of any person, damage equipment, or violate any applicable law.	Design change in response to stakeholder feedback.

Section	Reason	Original Text	Revised Text	Comments
3.4.2.3, subsection: Maximum Number of Starts Per Day	Clarification	The maximum number of starts per day (MNSPD) parameter will continue to be defined as the maximum number of times a generation unit can be started within a dispatch day. […] For dispatchable hydroelectric resources registered as an aggregate of generation units, the DAM and PD calculation engines will evaluate the MNSPD using the new start indication value registration parameter. […] The following validations and restrictions will continue to apply: - MNSPD submitted as dispatch data must be a number between 1 and 24 starts per day. If MNSPD is not submitted, a default value of 24 starts per day will be used by the DAM calculation engine. The PD calculation engine will be enhanced to use the same default value the DAM calculation engine uses. The following new validations will apply for market power mitigation: - MNSPD submitted as dispatch data must be greater than or equal to 50% of the MNSPD reference level registered for the generation unit during the Facility Registration process or greater than or equal to 1.	The maximum number of starts per day (MNSPD) parameter will continue to be defined as the maximum number of times a generation unit(s) associated with a resource can be started within a dispatch day. […] For dispatchable hydroelectric resources registered as single generation unit or an aggregate of generation units, MNSPD will be submitted for the resource. The DAM and PD calculation engines will evaluate the MNSPD using the new start indication value registration parameter. […] The following validations and restrictions will continue to apply for dispatchable NQS generation facilities: - MNSPD submitted as dispatch data must be a number between 1 and 24 starts per day. If MNSPD is not submitted, a default value of 24 starts per day will be used by the DAM calculation engine. The PD calculation engine will be enhanced to use the same default value the DAM calculation engine uses. The following new validations will apply for dispatchable hydroelectric resources registered as an aggregate of generation units: - MNSPD must be less than or equal to 24 times the number of generation units registered within the aggregate. The following new validations will apply for market power mitigation: - MNSPD submitted as dispatch data must be greater than or equal to 50% of the MNSPD reference level registered for the generation resource during the Facility Registration process or greater than or equal to 1.	
3.4.2.3, subsection: Minimum Loading Point	Clarification	[…] The DAM and PD calculation engines will use the MLP for the pseudo-unit that is equal to the sum of the MLPs submitted for the combustion turbine generation unit and the steam turbine generation unit.	[…] The DAM and PD calculation engines will use the MLP for the pseudo-unit that is equal to the sum of the MLPs submitted for the combustion turbine generation unit and the 1-on-1 MLP submitted for the steam turbine generation unit.	
3.4.2.3, subsection: Minimum Generation Block Down Time	Conforming Change	[…] The DAM calculation engine will evaluate only one MGBDT value of hot, warm or cold. The registered market participant will designate which one of the three submitted MGBDT values will be used as an input into the DAM calculation engine.	[…] The DAM calculation engine will evaluate only one MGBDT value and will use hot as the minimum amount of hours a resource must remain offline before it may be scheduled again within the same dispatch day. […new paragraph after Figure 3-1] The PD calculation engine will evaluate a MGBDT value of hot as the minimum amount of hours a resource must remain offline before it may be scheduled again within the same PD look-ahead period.	

Section	Reason	Original Text	Revised Text	Comments
3.4.2.3, subsection: Minimum Generation Block Down Time	Conforming Change	[…] The following new validations will apply for market power mitigation: - The MGBDT (hot) value submitted as dispatch data must be less than MGBDT (warm) value submitted as dispatch data, and less than or equal to the lesser of two times the registered MGBDT reference level (hot) or the registered MGBDT reference level (hot) plus 3 hours; - The MGBDT (warm) value submitted as dispatch data must greater than the MGBDT (hot) value submitted as dispatch data, less than the MGBDT (cold) value submitted as dispatch data, and less than or equal to the lesser of two time the registered MGBDT reference level for (warm) or the registered MGBDT reference level (warm) plus 3 hours; - The MGBDT (cold) value submitted as dispatch data must be greater than the submitted MGBDT (warm) value submitted as dispatch data, and less than or equal to lesser of two times the registered MGBDT reference level (cold) or the registered MGBDT reference level (cold) plus 3 hours; and - The sum of the MGBDT values for hot, warm and cold submitted as dispatch data must be less than or equal to the sum of the registered reference level values for MGBDT hot, warm and cold, plus 6 hours.	[…] The MGBDT (hot, warm and cold) submitted as dispatch data must be a positive integer between 0 and 24. The following new validations will apply for market power mitigation: - The MGBDT (hot) value submitted as dispatch data must be less than or equal to MGBDT (warm) value submitted as dispatch data, and less than or equal to the lesser of two times the registered MGBDT reference level (hot) or the registered MGBDT reference level (hot) plus 3 hours; - The MGBDT (warm) value submitted as dispatch data must greater than or equal to the MGBDT (hot) value submitted as dispatch data, less than or equal to the MGBDT (cold) value submitted as dispatch data, and less than or equal to the lesser of two time the registered MGBDT reference level for (warm) or the registered MGBDT reference level (warm) plus 3 hours; - The MGBDT (cold) value submitted as dispatch data must be greater than or equal to the submitted MGBDT (warm) value submitted as dispatch data, and less than or equal to lesser of two times the registered MGBDT reference level (cold) or the registered MGBDT reference level (cold) plus 3 hours; and - The sum of the MGBDT values for hot, warm and cold submitted as dispatch data must be less than or equal to the sum of the registered reference level values for MGBDT hot, warm and cold, plus 6 hours.	Consistent with MGBDT validations from current market and MGBDT reference level design in the Market Power Mitigation detailed design document.
3.4.2.3, subsection: Lead Time	Conforming Change	[…] For dispatchable NQS generation facilities with a registered pseudo-unit, lead time will be the sum of the submitted lead times for the combustion turbine generation unit and the steam turbine generation unit and not on the pseudo-unit.	[…] For dispatchable NQS generation facilities with a registered pseudo-unit, lead time will be equal to the submitted lead time for the combustion turbine generation unit and not on the pseudo-unit.	Updated to align with the application of Lead Time within the PD calculation engine detailed design.
3.4.2.3, subsection: Ramp Up Energy to MLP	Conforming Change	[…] For dispatchable NQS generation facilities with registered pseudo-units, ramp up energy to MLP will only be submitted for the combustion turbine generation unit and not for the pseudo-unit. The DAM and PD calculation engines will use the ramp up energy to MLP values submitted for the combustion turbine generation unit as the ramp up energy to MLP values for the pseudo-unit.	[…] For dispatchable NQS generation facilities with registered pseudo-units, ramp up energy to MLP will be submitted for each combustion turbine generation unit and the steam turbine generation unit to represent the expected ramp energy for each resource in a 1-on-1 configuration. The DAM and PD calculation engines will sum the ramp up energy to MLP submitted for the combustion and steam turbine generation units as the ramp up energy to MLP values for the pseudo-unit.	Updated to align with the application of Ramp Up Energy to MLP within the PD calculation engine detailed design.

Section	Reason	Original Text	Revised Text	Comments
3.4.2.3, subsection: Ramp Up Energy to MLP	Clarification	[…] The following new validations will apply for market power mitigation: - The number of hours for the resource to ramp from synchronization to its MLP submitted as dispatch data must be a positive integer between the values of 1 and 24 and be less than or equal to the number of hours submitted as dispatch data for lead time; - The ramp hours to MLP (hot, warm and cold) submitted as dispatch data must be less than or equal to the lesser of two times the registered reference level for ramp hours to MLP (hot, warm and cold) or the registered reference level for ramp hours to MLP (hot, warm and cold) plus 3 hours; - The average quantity of energy per ramp hour (hot, warm and cold) submitted as dispatch data must be greater than or equal to half of the minimum registered reference level for energy per ramp hour (hot, warm and cold) and less than or equal to one and a half times the maximum registered reference level for energy per ramp hour (hot, warm and cold); and - The average quantity of energy per ramp hour for each subsequent ramp hour to MLP must be greater than or equal to the quantity of energy per ramp hour submitted for the previous ramp hour to MLP.	[…] The following new validations will apply for market power mitigation: Ramp hours to MLP: - The number of hours for the resource to ramp from synchronization to its MLP submitted as dispatch data must be a positive integer between the values of 0 and 24 and be less than or equal to the number of hours submitted as dispatch data for lead time; and - The ramp hours to MLP (hot, warm and cold) submitted as dispatch data must be less than or equal to the lesser of two times the registered reference level for ramp hours to MLP (hot, warm and cold) or the registered reference level for ramp hours to MLP (hot, warm and cold) plus 3 hours. Energy per ramp hour: - Energy per ramp hour submitted as dispatch data must be more than 50% above the upper bound reference level or 50% below the lower bound reference level for any thermal state; and - The average quantity of energy per ramp hour for each subsequent ramp hour to MLP must be greater than or equal to the quantity of energy per ramp hour submitted for the previous ramp hour to MLP.	
3.4.4	Clarification	[…] Demand response market participants will also be able to submit dispatch data for hourly demand response resources registered as a PRL.	[…] Demand response market participants will also be able to submit dispatch data for hourly demand response resources registered with a PRL to meet their demand response capacity obligation.	
3.4.4.1	Clarification	[…] Demand response market participants delivering demand response capacity with transmission connected load facilities or with embedded load facilities will continue to identify a registered market participant authorized to submit dispatch data for each dispatchable load or hourly demand response resource.	[…] Demand response market participants delivering demand response capacity with transmission connected load facilities or with embedded load facilities will continue to identify a registered market participant authorized to submit dispatch data for each dispatchable load resource, physical hourly demand response resource, or virtual hourly demand response resource.	
3.4.4.3	Clarification	[…] PRLs will be assigned a resource name during the re-registration of an NDL as a PRL to be used for submission of dispatch data into the day-ahead market only.	[…] PRLs will be assigned a resource name during the re-registration of an NDL as a PRL to be used for submission of dispatch data into the day-ahead market only. PRLs registered to fulfill a demand response capacity obligation will have a separate physical hourly demand response resource name assigned to be used for the submission of dispatch data to satisfy such obligation.	No change to the assignment of resource name for physical HDR from current market.

Section	Reason	Original Text	Revised Text	Comments
3.4.4.3	Design Change	[…] Registered market participants will continue to have the ability to designate all or a portion of a bid to consume energy for a dispatchable load as non-dispatchable by submitting the maximum market clearing price (MMCP) with the quantity intended to be non-dispatchable.	[…] Registered market participants will continue to have the ability to designate all or a portion of a bid to consume energy for a dispatchable load as non-dispatchable by submitting the maximum market clearing price (MMCP) with the quantity intended to be non-dispatchable. Registered market participants may also continue to indicate the non-dispatchable status of the entire dispatchable load capacity for any hour of the dispatch day by not submitting a bid (i.e. the 'no-bid' option).	Design change in response to stakeholder feedback.
3.4.5.2	Correction	Currently, both the export bid and the import offer are assessed as separate transactions by the DACE and PD calculation engine processes. In the future the export bid and the import offer will continue to be assessed as separate transactions by the DAM and PD calculation engines. The linked bid and offer will continue to only be scheduled if both are independently economic	Currently, the DACE assesses the export bid and import offer together as linked transactions, whereas the current PD calculation engine assesses both the export bid and the import offer as separate transactions. In the future, both DAM and PD calculation engines will assess the export bid and the import offers linked transactions. The linked bid and offer will be scheduled to equal quantities if both are economic.	
3.4.6	Design Change	[…] Table 3-5 lists the existing and new parameters that will be required when submitting offers for operating reserve from dispatchable generation facilities and dispatchable loads within Ontario and boundary entities outside of Ontario. Dispatchable Generation Facility and Dispatchable Load column in Table 3-5: - Registered market participant - Resource name - Offer to supply operating reserve - Reserve Class - Operating reserve ramp rate - Steam turbine 10 min operating reserve contribution (new) - Reserve loading point	Table 3-5 lists the existing parameters that will be required when submitting offers for operating reserve from dispatchable generation facilities and dispatchable loads within Ontario and boundary entities outside of Ontario. 'Steam turbine 10 min operating reserve contribution (new)' removed from Dispatchable Generation Facility and Dispatchable Load column in Table 3-5.	Design change in response to stakeholder feedback.
3.4.6.1	Clarification	[…] The price in each price-quantity pair will be expressed in dollars and whole cents ($0.00) per MW and each price must be greater than or equal to zero and less than or equal to the maximum operating reserve price;	[…] The price in each price-quantity pair will be expressed in dollars and whole cents ($0.00) per MW and each price must be greater than or equal to zero (the minimum operating reserve price, -MORP) and less than or equal to $2000 (the maximum operating reserve price, +MORP);	

Section	Reason	Original Text	Revised Text	Comments
3.4.6.3	Conforming Change	[…] A single operating reserve ramp rate is required for every dispatch hour an offer to provide operating reserve is submitted by the registered market participant.	[…] Currently the DACE, PD and RT calculation engines use the same single operating reserve ramp rate for every dispatch hour an offer to provide operating reserve is submitted by the registered market participant. In the future market, the DAM and PD calculation engines will continue to use a single operating reserve ramp rate for all hours of the DAM and PD look-ahead periods. For DAM, the operating reserve ramp rate used will always be the rate submitted in the first hour of the dispatch day. For PD, the operating reserve ramp rate used will always be the rate submitted in the first hour of the PD look-ahead period. a different operating reserve ramp rate can be submitted for each dispatch hour. The future RT calculation engine will be capable of using different operating reserve ramp rates submitted for different dispatch hours.	Consistent with the application of Operating Reserve Ramp Rate within the DAM, PD and RT calculation engine detailed designs.
3.4.6.5	Design Change	Steam turbine 10-min operating reserve contribution is a new daily dispatch data parameter used to represent the percentage of 10-minute operating reserve that can be allocated to the steam turbine generation resource registered as a combined cycle generation facility and registered to have dispatch data submitted for a pseudo-unit. In the future day-ahead market and real-time market, the DAM, PD and RT calculation engines will use this parameter to allocate operating reserve schedules to the combustion turbine and steam turbine generation resources that are offered as pseudo-units. If no value is submitted for the pseudo-unit by the registered market participant, 10-minute operating reserve schedules will be allocated to the combustion turbine and steam turbine generation resources using the existing pseudo-unit model allocation for energy schedules.	[Deleted]	Design change in response to stakeholder feedback.
3.5.2.1	Clarification	The maximum market clearing price (MMCP) will continue to define the maximum allowable price for energy, and the negative of which will continue to be the minimum allowable price for energy (negative MMCP). MMCP and negative MMCP will be used in the day-ahead market and the real-time market and will continue to be specified from time-to-time by the IESO Board.	The maximum market clearing price (MMCP) will continue to define the maximum allowable price for energy. Negative maximum market clearing price will continue to be the minimum allowable price for energy (negative MMCP). MMCP and negative MMCP will be used in the day-ahead market and the real-time market and will continue to be specified from time-to-time by the IESO Board.	

Section	Reason	Original Text	Revised Text	Comments
3.5.2.3, subsection: Penalty Price Curves in the Scheduling Passes	Conforming Change	[…] With respect to the pricing of the penalty curves for the scheduling pass, most will be unchanged in the future day-ahead market and real-time market while one will be modified.	[…] With respect to the pricing of the penalty curves for the scheduling pass, most will be unchanged in the future day-ahead market and real-time market while one will be modified. A new single price-quantity price curve will be introduced in the DAM and PD calculation engines scheduling passes that apply to dispatchable hydroelectric resources that have Linked Resources, Time Lag and MWh Ratios submitted as dispatch data so that the calculation engines are able to produce a solution when constraints are in conflict.	Consistent with the application of penalty price curves published in version 1.0 and maintained in version 2.0 of the DAM and PD calculation engine detailed design documents.
Table 3-6, row 9	Design Change	N/A	New row added with following descriptions: Penalty Curve Name: Downstream under or over generation[4] Penalty Price: Current: None; Future: $37,000 Calculation Engine(s): Current: None; Future: DAM, PD Description: There will be one penalty price for all magnitudes of downstream over or under generation. This new price curve has been introduced to the design so that the DAM and PD calculation engines are able to solve when hydroelectric constraints are in conflict. The single price will be $37,000. New footnote [4] added: During implementation the IESO will consider separate penalty prices for downstream under generation and downstream over generation, with input from participants	The applicable penalty price allows the engines to solve conflicts for global reliability constraints ahead of hydroelectric cascade resources, and for local transmission constraints where cascade resources may be the only resource available.
Table 3-6, last row	Correction	N/A	New row added with following descriptions: Penalty Curve Name: Daily Energy Limits Penalty Price: Current: $100,000/MW; Future: $100,000/MW Calculation Engine(s): Current: DACP, PD; Future: DAM, PD Description: There will continue to be one penalty price for all magnitudes of DEL violations. The penalty price shall continue to be set at $100,000.	
Table 3-7, last row	Correction	N/A	New row added with following descriptions: Penalty Curve Name: Daily Energy Limits Description: The DAM, PD and RT calculation engines will use a single penalty price for all magnitudes of daily energy limit violations. The penalty price used will be set above all other penalty prices in order to minimize the daily energy limit violations, while still providing a feasible region for the calculation engine to be solved.	

Section	Reason	Original Text	Revised Text	Comments
3.5.3	Clarification	[…] Reference levels for financial dispatch data parameters will be used by the ex-ante mitigation functions of the DAM, PD and RT calculation engines to test for economic withholding. Ex-ante mitigation of financial dispatch data will result in modifying schedules and dispatch instructions for registered facilities and their corresponding LMPs in the day-ahead market and the real-time market. […] Some of the market power mitigation inputs will also be used in ex-post mitigation processes that test for physical withholding and impacts to make-whole payments that can result in settlement adjustments after the DAM and real-time markets have been cleared and settled.	[…] Reference levels for financial dispatch data parameters will be used by the ex-ante mitigation functions of the DAM and PD calculation engines to test for economic withholding. Ex-ante mitigation of financial dispatch data will result in modifying schedules and dispatch instructions for registered facilities and their corresponding LMPs in the day-ahead market and in pre-dispatch, and based on any persisting mitigated dispatch data from the pre-dispatch scheduling process in the real-time market. […] Some of the market power mitigation inputs will also be used in settlement mitigation processes that test for impacts to make-whole payments that can result in settlement adjustments after the DAM and real-time markets have been cleared.	
3.5.4.4	Clarification	[…] In the future day-ahead and real-time market, locational marginal prices (LMPs) will replace the uniform price and be used for settlement purposes. In the future day-ahead and real-time market, LMPs will be used for both informational and settlement purposes. The following pricing location definitions will need to be maintained or expanded as part of the Network Model Build process: - All delivery points associated with dispatchable generation facilities, dispatchable loads, non-dispatchable generation facilities, non-dispatchable loads and price responsive loads; - All boundary entities; - All pseudo-unit and hourly demand response resources; - A new single Ontario zone; and - All new virtual transaction zonal trading entities.	[…] In the future day-ahead and real-time market, locational marginal prices (LMPs) will be used for settlement and informational purposes. LMPs will replace the current uniform price for settlement of all dispatchable generation facilities, non-dispatchable generation facilities, dispatchable loads and price responsive loads. A new Ontario zonal price will be applied for settlement of non-dispatchable loads. The following pricing location definitions will continue to be maintained as part of the Network Model Build process: - All delivery points associated with dispatchable generation facilities, dispatchable loads, and non-dispatchable generation facilities; - All boundary entities; and - All hourly demand response resources; The following pricing locations will need to be added as part of the Network Model Build process: - All delivery points associated with non-dispatchable loads and price responsive loads; - Pseudo-unit resources; - A new single Ontario zone; and - All new virtual transaction zonal trading entities.	
3.5.6	Correction	[…] In the future day-ahead and real-time market, the IESO will continue to produce a demand forecast at the province-wide level but as the sum of four separate area demand forecasts.	[…] In the future day-ahead and real-time market, the IESO will produce four separate area demand forecasts. A demand forecast at the province-wide level will continue to be published but now as the sum of the four separate area demand forecasts.	
3.5.6.1	Correction	As described above, the IESO will produce a demand forecast for the entire province as the sum of four separate demand forecast areas in the province.	As described above, the IESO will produce four separate area demand forecasts that sum to the total demand forecast for the entire province.	

Section	Reason	Original Text	Revised Text	Comments
3.5.6.1	Conforming Change	[…] Before the demand forecasts for each demand forecast area can be used as inputs to the DAM, PD and RT calculation engines, they will be automatically adjusted by the IESO by removing transmission losses and the forecast consumption of all load facilities for which registered market participants are submitting dispatch data. […] The purpose of removing transmissions losses and forecast consumption of participating load facilities is to arrive at a demand forecast quantity that is solely reflective of non-dispatchable loads (NDLs). For ease of reference, the demand forecast for all load facilities within a demand forecast area is referred to as the total demand forecast and the demand forecast that is solely reflective of NDLs is referred to as the NDL demand forecast. The high level methodology that will be used to arrive at the NDL demand forecast for each demand forecast area is further described in the NDL demand forecasts section below.	Before the demand forecasts for each demand forecast area can be used by the optimization functions of the DAM, PD and RT calculation engines, they will be automatically adjusted by removing the forecast consumption of all load facilities for which registered market participants are submitting dispatch data. Transmission losses are removed before the non-dispatchable demand forecast is used by the security assessment function. […] The purpose of removing forecast consumption of participating load facilities is to arrive at a demand forecast quantity that is solely reflective of loads considered to be non-dispatchable. For ease of reference, the demand forecast for all load facilities within a demand forecast area is referred to as the total demand forecast and the demand forecast that is solely reflective of loads considered to be non-dispatchable is referred to as the non-dispatchable demand forecast. The high level methodology that will be used to arrive at the non-dispatchable demand forecast for each demand forecast area is further described in the non-dispatchable demand forecasts section below.	
3.5.6.3	Conforming Change	The forecast consumption of all load facilities for which registered market participants submit dispatch data will be removed from the total demand forecasts of each demand forecast area to arrive at the NDL demand forecast for each area. Transmission losses will also be removed from the total demand forecasts of each demand forecast area to avoid double counting the losses since the DAM, PD and RT calculation engines determine losses during optimization. Refer to the DAM, PD and RT Calculation Engine detailed design documents for how transmission losses will be determined by each of the engines. The NDL demand forecast for each demand forecast area will then be evaluated by all calculation engines. Each calculation engine will use slightly different NDL demand forecasts as described below.	The forecast consumption of all load facilities for which registered market participants submit dispatch data will be removed from the total demand forecasts of each demand forecast area to arrive at the non-dispatchable demand forecast for each area. The non-dispatchable demand forecast for each demand forecast area will then be evaluated by the optimization function of the calculation engines. Transmission losses will also be removed from the non-dispatchable demand forecasts for each demand forecast area to avoid double counting the losses since the security assessment function of the DAM, PD and RT calculation engines determine losses during its execution. Refer to the DAM, PD and RT Calculation Engine detailed design documents for how transmission losses will be determined by each of the engines. Each calculation engine will use slightly different non-dispatchable NDL demand forecasts as described below.	Instances of 'non-dispatchable load (NDL) forecast' replaced with 'non-dispatchable demand forecast' to reflect that the IESO's non-dispatchable demand forecast also includes price responsive loads in Pass 2 of the DAM engine, and in the PD and RT engines.

Section	Reason	Original Text	Revised Text	Comments
3.5.6.3, subsection: Day-Ahead Market Calculation Engine	Conforming Change	The DAM calculation engine will use the hourly average NDL demand forecast as well as the hourly peak NDL demand forecast for each demand forecast area. The hourly average NDL demand forecast will be determined by removing the forecast consumption for the following load facilities from the average hourly total demand forecast: - Forecast consumption of all dispatchable loads; - Forecast consumption of all PRLs; and - Forecast response of all hourly demand response obligations associated with NDLs and PRLs. The hourly peak NDL demand forecast of each area will be determined by removing the forecast consumption for the following load facilities from the peak hourly total demand forecast: - Forecast consumption of all dispatchable loads; and - Forecast response of all hourly demand response obligations associated with NDLs and PRLs. Refer to the DAM Calculation Engine detailed design document for more information about the NDL demand forecasts used as inputs into the various passes of the DAM calculation engine.	The DAM calculation engine will use the hourly average non-dispatchable demand forecast as well as the hourly peak non-dispatchable demand forecast for each demand forecast area. The hourly average non-dispatchable demand forecast used by Pass 1 and Pass 3 of the DAM calculation engine will be determined by removing the forecast consumption for the following load facilities from the average hourly total demand forecast: - Forecast consumption of all dispatchable loads; - Forecast consumption of all PRLs; - Bid demand response capability of virtual hourly demand response resources; and - Bid demand response capability of physical hourly demand response resources associated with NDLs and PRLs. The hourly peak non-dispatchable demand forecast of each area used by Pass 2 of the DAM calculation engine will be determined by removing the forecast consumption for the following load facilities from the peak hourly total demand forecast: - Forecast consumption of all dispatchable loads except dispatchable loads for which there is no bid; - Bid demand response capability of virtual hourly demand response resources; and - Bid demand response capability of physical hourly demand response resources associated with NDLs and PRLs. Refer to the DAM Calculation Engine detailed design document for more information about the determination of the non-dispatchable demand forecasts used as inputs into the various passes of the DAM calculation engine.	Instances of 'non-dispatchable load (NDL) forecast' replaced with 'non-dispatchable demand forecast' to reflect that the IESO's non-dispatchable demand forecast also includes price responsive loads in Pass 2 of the DAM engine, and in the PD and RT engines.

Section	Reason	Original Text	Revised Text	Comments
3.5.6.3, subsection: Pre-Dispatch Calculation Engine	Conforming Change	The PD calculation engine will use the hourly average NDL demand forecast for each demand forecast area unless there is a significant difference between the average and peak total demand forecasts. Refer to the Grid and Market Operations Integration detailed design document for the criteria the IESO will use to determine the total demand forecast that will be used to arrive at the NDL demand forecast for each demand forecast area. The hourly average and hourly peak NDL demand forecast for each demand forecast area will be determined by removing the forecast consumption for the following load facilities from the average and peak hourly total demand forecast: • Forecast consumption of all dispatchable loads; and • Forecast consumption of all hourly demand response obligations associated with NDLs and PRLs. Additional details on demand forecast inputs into the pre-dispatch timeframe can be found in the PD Calculation Engine detailed design document.	The PD calculation engine will use the hourly average non-dispatchable demand forecast for each demand forecast area unless there is a significant difference between the average and peak total demand forecasts. Refer to the Grid and Market Operations Integration detailed design document for the criteria the IESO will use to determine the total demand forecast that will be used to arrive at the non-dispatchable demand forecast for each demand forecast area. The hourly average and hourly peak non-dispatchable demand forecast for each demand forecast area will be determined by removing the forecast consumption for the following load facilities from the average and peak hourly total demand forecast: • Forecast consumption of all dispatchable loads except dispatchable loads for which there is no bid; • Bid demand response capability of virtual hourly demand response resources; and • Bid demand response capability of physical hourly demand response resources associated with NDLs and PRLs. Refer to the PD Calculation Engine detailed design document for more information about the determination of the non-dispatchable demand forecast inputs into the PD calculation engine.	Instances of 'non-dispatchable load (NDL) forecast' replaced with 'non-dispatchable demand forecast' to reflect that the IESO's non-dispatchable demand forecast also includes price responsive loads in Pass 2 of the DAM engine, and in the PD and RT engines.
4	Other	[…] This section is intended to provide an inventory of the changes to market rule provisions required to support the Offers, Bids and Data Inputs detailed design, and is intended to guide the development of market rule amendments. This inventory is based on version 1.0 of the detailed design, and any revisions required to this section as a result of design changes to version 1.0 will be incorporated in the market rule amendment process. As a result, the inventory will not be updated after its publication in version 1.0 of this detailed design.	[…] This section is intended to provide an inventory of the changes to market rule provisions required to support the Offers, Bids and Data Inputs detailed design, and is intended to guide the development of market rule amendments	
Table 4-3, row 18	Conforming Change	Requirement column: Section 3.6 - Existing provisions are adequate to support the operating reserve dispatch data submissions requirements that are unchanged under the Offers, Bids and Data Inputs design document. - Amendments are required to add MPM validations for operating reserve ramp rate. - Amendments are required to establish a new optional daily dispatch data parameter called 'steam turbine ten-minute operating reserve contribution' to represent the percentage of ten-minute operating reserve that can be allocated to the steam turbine associated with a not quick-start generation facility registered to have dispatch data submitted as a pseudo-unit.	Requirement column: Section 3.6 - Existing provisions are adequate to support the operating reserve dispatch data submissions requirements that are unchanged under the Offers, Bids and Data Inputs design document. - Amendments are required to add MPM validations for operating reserve ramp rate.	

Section	Reason	Original Text	Revised Text	Comments
Table 4-3, row 49	Conforming Change	Requirement column: Appendix 7.3 - This section specifies the required operating reserve offer information for generation facilities and boundary entities. - Amendments are required to introduce a new dispatch data parameter for a steam turbine and specify that the information is relevant to the day-ahead market and the real-time market, since the dispatch data construct will be common to all timeframes - Amendments are required to introduce market power mitigation validations for the operating reserve ramp rate.	Requirement column: Appendix 7.3 - This section specifies the required operating reserve offer information for generation facilities and boundary entities. - Amendments are required to introduce market power mitigation validations for the operating reserve ramp rate.	
Table 5-2, row 7	Conforming Change	Description column: - Updates required to reflect that registered market participants registered to submit dispatch data for a pseudo-unit resource type will only submit offers for operating reserve for a pseudo-unit resource type. - Updates required to reflect that registered market participants submitting dispatch data for a pseudo-unit can indicate the percentage of 10-min operating reserve to be allocated to steam turbine generation unit using the new steam turbine 10-min operating reserve contribution dispatch data parameter.	Description column: - Updates required to reflect that registered market participants registered to submit dispatch data for a pseudo-unit resource type will only submit offers for operating reserve for a pseudo-unit resource type.	

8. Grid and Market Operations Integration

Section	Reason	Original Text	Revised Text	Comments
2.1. Grid and Market Operations Integration in Today's Market	Correction	The pre-dispatch scheduling run that begins at around 15:00 is the first run that looks out for the balance of hours of the current pre-dispatch day, and all of the hours of the next dispatch day for a total of 33 hours.	The pre-dispatch scheduling run that begins at around 15:00 is the first run that looks out for the balance of hours of the current pre-dispatch day, and all of the hours of the next dispatch day for a total of 32 hours	
1.1 Purpose	Correction	Figure 1-1 Detailed Design Document Relationships	Figure 1-1 Detailed Design Document Relationships	Update “Prudential Security” to “Grid and Market Operations Integration” in the diagram.
2.1.1	Clarification	The DACP process requires that dispatch data be submitted for dispatchable loads, dispatchable generation facilities, hourly demand response resources and boundary entities between 06:00 EST and 10:00 EST on the pre-dispatch day that reflects the expected capabilities of these resources.	The DACP requires that dispatch data be submitted for dispatchable loads, dispatchable generation facilities, hourly demand response resources [2] and boundary entities between 06:00 EST and 10:00 EST on the pre-dispatch day that reflects the expected capabilities of these resources. New footnote added [2]: The IESO has replaced the demand response auction with a capacity auction to enable competition between additional resource types. All references to the demand response auction in this document should be read as reference to the capacity auction. Conforming changes required to align with the current or future capacity auction will be made during implementation via market rules and/or market manuals.	
2.1.3	Clarification	The RT scheduling process occurs within and across each dispatch hour. During the dispatch hour, the IESO continually monitors and ensures reliable operation of the IESO-controlled grid. In doing so, the IESO may be taking actions to prepare for and recover from contingencies as governed by the IESO market rules, NERC and NPCC standards and guidelines.	The RT scheduling process occurs within and across each dispatch hour. During the dispatch hour, the IESO continually monitors and ensures reliable operation of the IESO-controlled grid. In doing so, the IESO may be taking actions to prepare for and recover from contingencies as governed by the IESO market rules [3], NERC and NPCC standards and guidelines. New footnote added [3]: See Market Rules, Chapter 5, Section 1.2.1 and section 1.1.1.2	

Section	Reason	Original Text	Revised Text	Comments
2.2.3	Conforming Change	Ex-ante mitigation for economic withholding will be applied to dispatch data before the 5 minute schedules and prices are calculated.	The real-time scheduling process will use any mitigated dispatch data persisting from ex-ante market power mitigation performed during the pre-dispatch scheduling process. Such mitigated dispatch data and other accepted dispatch data submitted by market participants will be applied to dispatch data before the 5 minute schedules and prices are calculated.	
3. Detailed Functional Design	Clarification	A dispatch hour is a one-hour period within a dispatch day, and consists of twelve 5- minute intervals.	A dispatch hour is a one-hour period within a dispatch day, and consists of twelve 5- minute dispatch intervals.	
3.3.5.	Clarification	Linked resources, time lag and MW ratio;	Linked resources, time lag and MWh ratio;	
3.3.5.	Conforming Change	Steam turbine 10-min OR contribution.	[Deleted]	To align with deleted section 3.4.6.5 in Offers, Bids and Data Inputs.
3.3.7.2. Restrictions on Energy Offer/Bid Quantity – Availability Declaration Envelope	Design Change	After a request is approved, a registered market participant will be able to increase its energy offer quantity or energy bid quantity within each dispatch hour of the dispatch day specified in the notification provided by the IESO.	After a request is approved, a registered market participant will be able to increase its energy offer quantity or energy bid quantity within each dispatch hour of the dispatch day specified in the notification provided by the IESO. In the future market, the ADE deadband will be expanded to allow for increases of up to 15% of the ADE or 10 MW, whichever is less.	Design change in response to stakeholder feedback.
3.3.7.3 Revision Rules for NQS Generation Units Dispatch Data After DAM Publishing	Conforming Change	Following 20:00 EST on the pre-dispatch day, revisions to these three parameters will be restricted such that only decreases to the value of submitted parameters will be permitted.	Following 20:00 EST on the pre-dispatch day, revisions to these three parameters will be restricted such that only decreases to the value of the initially submitted or subsequently reduced parameters will be permitted.	
3.3.7.3 Revision Rules for NQS Generation Units Dispatch Data After DAM Publishing	Conforming Change	o For all other dispatch hours, submissions and revisions to the incremental energy offer prices for MW quantities up to and including MLP may be made without restriction until 20:00 EST of the pre-dispatch day.	o For all other dispatch hours, submissions and revisions to the incremental energy offer prices for MW quantities up to and including MLP may be made without restriction until 20:00 EST of the pre-dispatch day. In cases where a resource provides updated offers that are priced lower than the respective reference levels, the updated offers will be used for the current PD calculation engine run.	

Section	Reason	Original Text	Revised Text	Comments
3.3.7.5 Real-Time Market Mandatory Window for Hourly Dispatch Data	Clarification	Hourly dispatch data submissions that are made within the mandatory window will continue to require IESO approval, subject to meeting criteria defined in the market rules. The criteria will be generally consistent with existing criteria, with the potential for changes to be identified further during MRP implementation.	Hourly dispatch data submissions that are made within the mandatory window will continue to require IESO approval, subject to meeting criteria defined in the market rules. The criteria will be generally consistent with existing criteria, with the potential for changes to be identified further during MRP implementation. Consistent with today, dispatchable load resources will continue to be permitted to revise energy bids and operating reserve offers within the mandatory window subject to the guidelines currently specified in Market Manual 4.2 Submission of Dispatch Data in the Real-Time Energy and Operating Reserve Markets, Appendix B Short Notice Change Criteria.	
3.3.7.6 Real-Time Market Restricted Window for Daily Dispatch Data; Revision Rules – Daily Dispatch Data	Clarification	Daily dispatch data submissions within the daily dispatch data restricted window will not require IESO approval, but will be subject to meeting criteria to be defined in the market rules. Market participants will be required to include with their daily dispatch data submission the reason for the submission that must adhere to defined criteria. The criteria will be consistent with criteria for the existing (two-hour) mandatory window for dispatch data, with exceptions applied to three of the eleven parameters identified below. Additional changes will be identified further during MRP implementation.	Daily dispatch data submissions and revisions within the daily dispatch data restricted window will be permitted without requiring IESO approval. These submissions and revisions will be subject to meeting criteria to be defined in the market rules. Market participants will be required to include with their daily dispatch data submission the reason for the submission that must adhere to defined criteria. The criteria will be consistent with criteria for the existing (two-hour) mandatory window for dispatch data, with additional provisions to allow combined cycle facilities to reflect changing capabilities between single and combined cycle modes. Additional changes may be identified further during MRP implementation. Revision rule exceptions apply to three of the eleven daily dispatch parameters identified below.	
3.4.2.1 IESO Inputs Revised Based on Resource Schedules and Energy Flow	Clarification	The IESO will continue to derive and forecast these five inputs for use in the day-ahead market based on an assessment of conditions on similar days as they best reflect anticipated conditions. The IESO will continue updating these inputs for use in PD and RT using resource schedules and energy flows calculated by each engine and actual energy flows in real-time.	The IESO will continue to derive and forecast these five inputs for use in the day-ahead market based on an assessment of conditions on similar days in the recent past as they best reflect anticipated conditions. Other factors like day of the week and outages that may impact flows are also taken into account when forecasting these inputs. The IESO will continue updating these inputs for use in PD and RT using resource schedules and energy flows calculated by each engine and actual energy flows in real-time.	
3.4.2.3 Regulation Capacity Requirements	Correction	In the pre-dispatch and dispatch day, [...]	In the pre-dispatch day and dispatch day, [...]	

Section	Reason	Original Text	Revised Text	Comments
3.4.2.5 Reliability Constraints	Clarification	In some cases, the IESO may require certain generation facilities to be in-service and generating at or above a certain output for specific system conditions or outages to maintain reliability. Today, this is reflected through a minimum scheduling constraint on the facility(s) that may span multiple intervals, hours or days. These constraints are incorporated as inputs into the applicable DACP, PD and RT calculation engines and may result in a higher market schedule for the affected generation facility. In the future, the IESO will continue to enter constraints for reliability. Constraints will only be entered as an input into DAM if the calculation engine is not able to recognize the reliability need for the generation facility. Reliability constraints are described further in Section 3.5.2.3	In some cases, the IESO may require certain generation facilities or dispatchable load facilities to be generating or consuming at, above or below specific levels to maintain reliability during certain system conditions or outages. Today, this is reflected through a minimum, maximum or fixed scheduling constraint on the facility(s) that may span multiple intervals, hours or days. These constraints are incorporated as inputs into the applicable DACP, PD and RT calculation engines and may result in a higher or lower market schedule for the affected facility. In the future, the IESO will continue to enter constraints for reliability. Constraints will only be entered as an input into DAM if the calculation engine is not able to recognize the reliability need for the facility to generate or consume at a specific level. Reliability constraints are described further in Section 3.5.2.3.	
3.4.4.1 Variable Generation Forecast in the Day-Ahead Scheduling Process	Conforming Change	In the day-ahead scheduling process, the registered market participant for variable generation will have the option to submit their own variable generation forecast using a new hourly dispatch data parameter called variable generation resource forecast quantity. This alternative forecast will be used in DAM Stage 1, Initial Scheduling and Market Power Mitigation, and DAM Stage 3, Day-ahead Market Scheduling and Pricing. The IESO's centralized variable generation forecast will be used in DAM Stage 2, Reliability Scheduling. If no alternative forecast is provided, the IESO's centralized forecast will be used for all DAM stages.	In the day-ahead scheduling process, the registered market participant for variable generation will have the option to submit their own variable generation forecast using a new hourly dispatch data parameter called variable generation resource forecast quantity. This alternative forecast will be used in DAM Pass 1, Market Commitment and Market Power Mitigation, and DAM Pass 3, Day-ahead Market Scheduling and Pricing. The IESO's centralized variable generation forecast will be used in DAM Pass 2, Reliability Scheduling and Commitment. If no alternative forecast is provided, the IESO's centralized forecast will be used for all DAM Passes.	
3.4.5.1 Demand Forecast in the Day-Ahead Scheduling Process	Conforming Change	The IESO currently forecasts the average and peak hourly global demand which is used as an input into DACP. In the future, the IESO will forecast average and peak hourly demand for each demand forecast area instead of globally. The forecasts for each demand forecast area will be used as inputs into the DAM calculation engine. The average hourly demand forecast is used in DAM Stage 1, Initial Scheduling and Pricing, and DAM Stage 3, Day-ahead Market Scheduling and Pricing. The peak hourly demand forecast is used in DAM Stage 2, Reliability Scheduling. For more information on the DAM calculation engine pass structure see Section 3.5.3, DAM Calculation Engine Execution and Supporting Processes.	The IESO currently forecasts the average and peak hourly global demand which is used as an input into DACP. In the future, the IESO will forecast average and peak hourly demand for each demand forecast area instead of globally. The forecasts for each demand forecast area will be used as inputs into the DAM calculation engine. The average hourly demand forecast is used in DAM Pass 1, Market Commitment and Market Power Mitigation, and DAM Stage 3, Day-ahead Market Scheduling and Pricing. The peak hourly demand forecast is used in DAM Pass 2, Reliability Scheduling and Commitment. For more information on the DAM calculation engine pass structure see Section 2.2, Day-Ahead Market Calculation Engine detailed design document.	

Section	Reason	Original Text	Revised Text	Comments
3.5.2.3 Reliability Constraints	Clarification	Under specific system conditions, the IESO may require certain generation facilities to be in-service and generating above a certain output to maintain reliability. If these system conditions are not recognized by the calculation engine, the generation facilities may not be scheduled. An example is an outage condition where voltage support is required from a generation facility to maintain reliability. To ensure the resources required are scheduled even if uneconomic, the IESO creates a minimum scheduling constraint on the facility(s) as an input to the calculation engine.	Under specific system conditions, the IESO may require certain generation facilities to be in-service and generating above a certain output or dispatchable load facilities to be consuming below a certain level to maintain reliability. If these system conditions are not recognized by the calculation engine, the generation facilities or dispatchable load facilities may not be scheduled at the amount required for reliability. An example is an outage condition where voltage support is required from a generation facility to maintain reliability. To ensure the resources required are scheduled even if uneconomic, the IESO creates a minimum, maximum, or fixed scheduling constraint on the facility(s) as an input to the calculation engine.	
3.5.3.	Conforming Change	The future day-ahead market will be executed in three stages with multiple passes per stage.	The future day-ahead market will be executed in three Passes with multiple steps per Pass.	
3.5.3.	Conforming Change	Figure 3-6: DAM Calculation Engine Execution	Conforming changes applied to Figure 3-6: DAM Calculation Engine Execution. DAM stages are now DAM passes, description of passes updated.	
3.5.4.	Clarification	The DAM calculation engine will evaluate all market participant data inputs and IESO data inputs, optimizing over a 24-hour period to produce hourly resource schedules. All resources, boundary entity resources and virtual transactions will receive a financially binding schedule, some resources may also receive a commitment. Specific changes to DA scheduling of resources in relation to the DACP process are noted below.	The DAM calculation engine will evaluate all market participant data inputs and IESO data inputs, optimizing over a 24-hour period to produce hourly resource schedules. All resources, boundary entity resources and virtual transactions will receive a financially binding schedule, some resources may also receive a commitment. Specific changes to DA scheduling of resources in relation to the DACP process are noted below. There are no changes to how self-scheduling generation facilities and non-dispatchable load resources are scheduled.	
3.5.4.1 Determination of NQS and Pseudo-Unit Resource Schedules and Commitments	Conforming Change	• Start-up offer; • Speed no-load offer; • Minimum loading point (MLP); • Minimum generation block run-time (MGBRT); • Minimum generation block down time (MGBDT); • Maximum number of starts per day; and • Single cycle mode. New daily dispatch data parameters for the day-ahead market are: • Ramp up energy to MLP; and • Steam turbine 10-min OR contribution.	• Start-up offer; • Speed no-load offer; • Minimum loading point (MLP); • Minimum generation block run-time (MGBRT); • Minimum generation block down time (MGBDT); • Maximum number of starts per day; and • Single cycle mode. New daily dispatch data parameters for the day-ahead market are: • Ramp up energy to MLP	To align with deleted section 3.4.6.5 in Offers, Bids and Data Inputs.

Section	Reason	Original Text	Revised Text	Comments
3.5.4.1 Determination of NQS and Pseudo-Unit Resource Schedules and Commitments	Conforming Change	The steam turbine 10-min OR contribution parameter will be utilized by the DAM calculation engine to allocate operating reserve schedules to the combustion turbine and stream turbine generation resources that are offered as pseudo-units.	Deleted	To align with deleted section 3.4.6.5 in Offers, Bids and Data Inputs.
3.5.4.2 Determination of Hydroelectric Generation Facility Schedules; Linked Resources, Time Lag and MWh ratio (Linked Resource Parameters)	Correction	Linked Resources, Time Lag and MW ratio (Linked Resource Parameters)	Linked Resources, Time Lag and MWh ratio (Linked Resource Parameters)	
3.5.4.2 Determination of Hydroelectric Generation Facility Schedules; Linked Resources, Time Lag and MWh ratio (Linked Resource Parameters)	Clarification	Figure 3 18: Future - Treatment of Linked Resource Parameters in DAM	Figure 3 18: Future - Treatment of Linked Resource Parameters in DAM. Updated diagram to show MWh not MW	
3.5.5.3 Use of DAM Results in Pre-Dispatch	Clarification	NQS operational commitments that are made in the DACP are passed to the pre-dispatch calculation engine through minimum constraints for the generation facility's MLP for a period equal to the day-ahead schedule, per the DACP schedule of record. allows the pre-dispatch calculation engine to respect NQS commitments made in the DACP in each pre-dispatch run after 15:00 EST. NQS generation facilities and pseudo-unit operational commitments made in DAM will continue to be passed to PD through minimum constraints for the generation facility's MLP.	NQS operational commitments that are made in the DACP are passed to the pre-dispatch calculation engine through minimum constraints for the generation facility's MLP for a period equal to the day-ahead schedule, per the DACP schedule of record. For steam turbine (ST) generation units, the minimum constraint is applied at the corresponding n-on-1 MLP based on the number of combustion turbine (CT) generation units committed (n). This allows the pre-dispatch calculation engine to respect NQS commitments made in the DACP in each pre-dispatch run after 15:00 EST. NQS generation facilities and pseudo-unit operational commitments made in DAM will continue to be passed to PD through minimum constraints at the CT MLP and ST n-on-1 MLP.	
3.6.2.2 Determination of NQS Generation Facility Schedules and Commitments	Conforming Change	and • Steam turbine 10-min OR contribution	Deleted	

Section	Reason	Original Text	Revised Text	Comments
3.6.2.2 Determination of NQS Generation Facility Schedules and Commitments; Types of Pre-Dispatch Commitments for NQS Generation Facilities	Clarification	All operational commitments issued will be respected by the real-time dispatch process as minimum constraints to the scheduling and dispatch of a NQS generation facility. These operational commitments are described below.	All operational commitments issued by the PD calculation engine will be respected by the real-time dispatch process as minimum constraints at the CT and n-on-1 ST MLP. These operational commitments are described below.	
Section 3.6.2.2; Types of Pre-Dispatch Commitments for NQS Generation Facilities	Clarification	Multiple figures were updated to reflect a discreet hourly ramp MWh values during the Ramp Energy to MLP instead of a linear interpolation.	Multiple figures were updated to reflect a discreet hourly ramp MWh values during the Ramp Energy to MLP instead of a linear interpolation. Figure 3-22: Revised diagram in HE 15 and 16 Figure 3-23: Revised diagram in HE 15 and 16 Figure 3-24: Revised diagram in HE 14 and 15 Figure 3-25: Revised diagram in HE 5 and 6 Figure 3-26: Revised diagram in HE 8 and 9 Figure 3-27: Revised diagram in HE 5, 6, 15 and 16 Figure 3-28: Revised diagram in HE 5 and 6 Figure 3-29: Revised diagram in HE 5 and 6 Figure 3-30: Revised diagram in HE 5 and 6	

Section	Reason	Original Text	Revised Text	Comments
3.6.2.3 Determination of Hydroelectric Generation Facility Schedules in Pre-Dispatch; Tracking Actual Energy Produced	Clarification	In the current market, the PD calculation engine tracks the hourly energy schedules for a hydroelectric generation unit by summing the pre-dispatch schedules from past hours. The tracked energy schedules are subtracted from the most recent value of Max DEL submitted by the registered market participant to determine how much remaining energy can be scheduled by the PD calculation engine for future hours. In the future market, the PD calculation engine will track the actual energy produced by a hydroelectric generation unit instead of tracking past pre-dispatch schedules. Actual energy production gathered from operational telemetry will be recorded at the start of each dispatch interval in the real-time scheduling process and added to the running total of actual energy produced for the dispatch day. Registered market participants will have visibility of this running total through confidential reports. Each run of the PD calculation engine will take the difference between the running total of actual energy production and the most recent Max DEL submitted by the registered market participant value to determine the amount of remaining energy available to be scheduled for a given hydroelectric generation unit for the remaining dispatch hours of the dispatch day. Similarly, each run of the PD calculation engine run will take the difference between the running total of actual energy production and the most recent Min DEL submitted by the registered market participant to determine if the Min DEL has been satisfied for the dispatch day. If the Min DEL has not been satisfied, this calculation will determine how much remaining energy must be scheduled to satisfy the Min DEL for the remaining dispatch hours of the dispatch day.	In the current market, the PD calculation engine tracks the hourly energy schedules for a hydroelectric resource by summing the pre-dispatch schedules from past hours. The tracked energy schedules are subtracted from the most recent value of Max DEL submitted by the registered market participant to determine how much remaining energy can be scheduled by the PD calculation engine for future hours. In the future market, the PD calculation engine will track the actual energy produced by a hydroelectric resource instead of tracking past pre-dispatch schedules. Actual energy production gathered from operational telemetry will be recorded at the start of each dispatch interval in the real-time scheduling process and added to the running total of actual energy produced for the dispatch day. Registered market participants will have visibility of this running total through confidential reports. Each run of the PD calculation engine will take the difference between the running total of actual energy production and the most recent Max DEL submitted by the registered market participant value to determine the amount of remaining energy available to be scheduled for a given hydroelectric resource for the remaining dispatch hours of the dispatch day. Similarly, each run of the PD calculation engine run will take the difference between the running total of actual energy production and the most recent Min DEL submitted by the registered market participant to determine if the Min DEL has been satisfied for the dispatch day. If the Min DEL has not been satisfied, this calculation will determine how much remaining energy must be scheduled to satisfy the Min DEL for the remaining dispatch hours of the dispatch day.	
3.6.2.3 Determination of Hydroelectric Generation Facility Schedules in Pre-Dispatch; Tracking Actual Energy Produced	Clarification	New paragraph	For hydroelectric resources registered with a shared forebay and therefore a shared daily energy limit, the PD calculation engine will use the summed energy production from each resource to ensure that pre-dispatch schedules for these resources satisfy Min DEL and Max DEL. Refer to the PD Calculation Engine document, section 3.6.1.5 for details on pre-dispatch scheduling to respect shared daily energy limits.	

Section	Reason	Original Text	Revised Text	Comments
3.6.2.3 Determination of Hydroelectric Generation Facility Schedules in Pre-Dispatch; Tracking Actual Number of Starts	Clarification	Currently the PD calculation engine does not track or limit the number of times a hydroelectric generation unit can be started during a dispatch day. In the future, the PD calculation engine will use the maximum number of starts per day value submitted by the registered market participant to limit the number of times a hydroelectric generation unit can be started during a dispatch day. The same operational telemetry gathered and used at the start of each dispatch interval to track actual energy production against Max DEL and Min DEL will also be used to track the actual number of starts per day. Each time the output of a hydroelectric generation unit reaches a registered start indication value during a dispatch day, the running total for actual number of starts per day will be incremented. Each run of the PD calculation engine will take the difference between the number of starts running total and the maximum number of starts per day value to determine the number of starts that a given hydroelectric generation unit has remaining for the dispatch day. The PD calculation engine will schedule the hydroelectric generation unit for the remaining hours of the dispatch day such that the most recent value for maximum number of starts per day submitted by the registered market participant is not exceeded.	Currently the PD calculation engine does not track or limit the number of times a hydroelectric resource can be started during a dispatch day. In the future, the PD calculation engine will use the maximum number of starts per day value submitted by the registered market participant to limit the number of times a hydroelectric resource can be started during a dispatch day. The same operational telemetry gathered and used at the start of each dispatch interval to track actual energy production against Max DEL and Min DEL will also be used to track the actual number of starts per day. Each time the output of a hydroelectric resource reaches a registered start indication value during a dispatch day, the running total for actual number of starts per day will be incremented. Each run of the PD calculation engine will take the difference between the number of starts running total and the maximum number of starts per day value to determine the number of starts that a given hydroelectric resource has remaining for the dispatch day. The PD calculation engine will schedule the hydroelectric resource for the remaining hours of the dispatch day such that the most recent value for maximum number of starts per day submitted by the registered market participant is not exceeded.	

Section	Reason	Original Text	Revised Text	Comments
3.6.2.3 Determination of Hydroelectric Generation Facility Schedules in Pre-Dispatch; Scheduling Linked Resources at the Boundaries of the PD Look-Ahead Period	Conforming Change	For registered market participants to manage their intertemporal cascade dependencies from one pre-dispatch run to the next, the PD calculation engine will evaluate a linked downstream resource independent of the time lag and MWh ratio value for the first h-1 hours of the pre-dispatch look-ahead period10, where h is the value of the time lag parameter submitted. A linked upstream resource will be independently evaluated in the last h hours of the pre-dispatch look-ahead period. The number of h hours that linked resources will be evaluated independently at the start and end of the pre-dispatch look-ahead period will be determined by the time lag value submitted. Registered market participants should submit an hourly must run quantity for the downstream resource to respect the MWh ratio if they expect a must run condition to develop to pass the water received from the upstream resource that actually produced energy in previous h-1 dispatch hours. A minimum hourly output value should be submitted for the downstream resource if it has the ability to spill the water but spill restrictions are expected prevent it from being partially scheduled. An outage should be submitted for the downstream resource if it is expected to be unavailable or have limited availability in any of the first h-1 hours of the downstream resource, because either no water or a limited amount was used by the upstream resource in the previous hours. Figure 3-31 below demonstrates the above using an example in which a downstream resource that is linked to an upstream resource has a time lag of 3 hours. The downstream resource is independently evaluated in the first two hours (h-1) of the pre-dispatch look-ahead period. This allows the registered market participant to inform the PD calculation engine whether a minimum amount of energy must be evaluated for the downstream resource in any of the first two hours of the look-ahead period to pass the water received from the upstream resource that actually produced energy in the two hours prior to the pre-dispatch run.	A key difference will be in the initial hours of the pre-dispatch look ahead period, where pre-dispatch will respect intertemporal cascade dependencies. The PD calculation engine will use the actual energy output of an upstream resource in prior dispatch hours to determine the schedule of a linked downstream resource in accordance with the submitted time lag and MWh ratio values. This will apply for the first h-1 hours of the pre-dispatch look-ahead period, where h is the value of the time lag parameter submitted. A linked upstream resource will be independently evaluated in the last h hours of the pre-dispatch look-ahead period. The number of h hours that linked resources will be independently evaluated at the end of the pre-dispatch look-ahead period will be determined by the time lag value submitted. During real-time dispatch, registered market participants may submit an hourly must run quantity for the downstream resource to respect the MWh ratio if a must run condition has developed to pass the water received from the upstream resource that actually produced energy in prior dispatch hours. A minimum hourly output value may be submitted for the downstream resource if it has the ability to spill the water but spill restrictions are expected to prevent it from being partially scheduled. An outage should be submitted for the downstream resource if it becomes unavailable or has limited availability, because either no water or a limited amount was used by the upstream resource in the previous hours. Figure 3 31 below demonstrates the above using an example in which a downstream resource that is linked to an upstream resource has a time lag of 3 hours. The downstream resource schedule in the first two (h-1) hours of the pre-dispatch look-ahead period will be based on the actual output of the upstream resource in prior dispatch hours. The PD calculation engine will schedule the downstream resource in the first two hours of the look-ahead period to align with the water received from the upstream resource that actually produced energy in the two hours prior to the pre-dispatch run.	To align with linked hydroelectric resource scheduling content published in version 1.0 and maintained in version 2.0 of the Pre-Dispatch Calculation Engine detailed design document.

Section	Reason	Original Text	Revised Text	Comments
3.6.2.3 Determination of Hydroelectric Generation Facility Schedules in Pre-Dispatch; Scheduling Linked Resources at the Boundaries of the PD Look-Ahead Period	Conforming Change	Footnote [12]: This differs from the DAM calculation engine where the first h hours of the DAM forecast period will evaluate downstream resources independent of the time lag and MWh ratio. The first h-1 hours is used in PD because the PD look-ahead period begins one hour after current dispatch hour (t) in forecast hour t+1.	Footnote [12]: This differs from the DAM calculation engine where the first h hours of the DAM forecast period will evaluate downstream resources independent of the time lag and MWh ratio.	
3.6.2.3 Determination of Hydroelectric Generation Facility Schedules in Pre-Dispatch; Scheduling Linked Resources at the Boundaries of the PD Look-Ahead Period	Conforming Change	This will apply for the first h-1 hours of the pre-dispatch look-ahead period[12], where h is the value of the time lag parameter submitted.	This will apply for the first h-1 hours of the pre-dispatch look-ahead period[12], where h is the value of the time lag parameter submitted [13]. New footnote [13] added: For additional information on the pre-dispatch scheduling of resources that have submitted linked resource, time lag and MWh ratio parameters, see section 3.4.1.6 of the Pre-Dispatch Calculation Engine detailed design document.	
3.6.2.3 Determination of Hydroelectric Generation Facility Schedules in Pre-Dispatch; Scheduling Linked Resources at the Boundaries of the PD Look-Ahead Period	Conforming Change	Figure 3 31: Managing Linked Resources for the Start of the PD Look-Ahead Period	Figure 3 31: Linked Resources for the Start of the PD Look-Ahead Period.	Figure has been updated to better reflect PD calculation engine design.
3.6.2.3 Determination of Hydroelectric Generation Facility Schedules in Pre-Dispatch; Scheduling Linked Resources at the Boundaries of the PD Look-Ahead Period	Conforming Change	The following logic will be used when scheduling upstream resources in the last hours of the dispatch day:	Consistent with the DAM, the following logic will be used when scheduling upstream resources in the last hours of the dispatch day:	
3.6.2.4 Determination of PD Intertie Schedules	Clarification	For forecast hours beyond the first two, only the offers and bids associated with DAM-scheduled intertie transactions will be evaluated and economically scheduled.	For forecast hours beyond the first two, only the offers and bids associated with DAM-scheduled intertie transactions will be re-evaluated and economically scheduled by PD. As a result, changes to bid/offer prices or changes to market conditions may result in a schedule that deviates from the DAM MW schedule.	

Section	Reason	Original Text	Revised Text	Comments
3.7.1.	Correction	The real-time dispatch engine runs every five minutes and optimizes 5-minute dispatch of dispatchable generation and load facilities over the next twelve 5-minute intervals.	The real-time dispatch engine runs every five minutes and optimizes 5-minute dispatch of dispatchable generation and load facilities over the next eleven 5-minute intervals.	
3.7.1.	Correction	Figure 3 34: RT Calculation Engine Process	Figure 3 34: RT Calculation Engine Process.	Corrected diagram. MIO calculates for the next 11 dispatch intervals, not 12.
3.7.1.	Correction	Intervals 2-12 are optimized 5-minute schedules for the hour and provide advisories on how dispatchable generation and load facilities are expected to be dispatched through the hour.	Intervals 2-11 are optimized 5-minute schedules for the hour and provide advisories on how dispatchable generation and load facilities are expected to be dispatched through the hour.	
3.7.2.	Correction	Registered market participants remove offers for HDR resources that have not been placed on standby, so these resources are not available for scheduling by the RT calculation engine.	Registered market participants remove bids for HDR resources that have not been placed on standby, so these resources are not available for scheduling by the RT calculation engine.	
3.7.2.1 Determination of NQS Facility Real-Time Dispatch Instructions; De-Commitment when NQS Generation Facility has Two Commitments in a Dispatch Day	Clarification	If after the first commitment the RT calculation engine determines that the NQS generation unit is economic to remain in-service in real-time, the RT calculation engine will continue to keep it online and not dispatch it below MLP.	If after the first commitment the RT calculation engine determines that the NQS generation unit is economic to remain in-service in real-time, the RT calculation engine will continue to keep it online and not dispatch it below MLP. In this situation, the market participant will not be put in a position in which they are unable to respect both MGBDT and their future commitment.	
3.7.2.1 Determination of NQS Facility Real-Time Dispatch Instructions; De-Commitment when NQS Generation Facility has Two Commitments in a Dispatch Day	Clarification	If after the first commitment the RT calculation engine determines that the NQS generation unit is economic to remain in-service in real-time, the RT calculation engine will continue to keep it online and not dispatch it below MLP. If the 5-minute dispatches overlap with the MGBDT such that the generation unit will not be able to comply with a future commitment, the IESO will perform a reliability assessment. If there is an immediate reliability need, the IESO will keep the generation unit in-service until the future commitment starts, otherwise it will enforce the PD de-commitment decision and the RT calculation engine will ramp the generation unit down.	If dispatch advisories indicate that the 5-minute dispatches will overlap with the MGBDT such that the generation unit will not be able to comply with a future commitment, the IESO will perform a reliability assessment. If there is an immediate reliability need, the IESO will keep the generation unit in-service until the future commitment starts by applying a reliability constraint. Otherwise it will enforce the PD de-commitment decision and the RT calculation engine will ramp the generation unit down, allowing the NQS generation unit to respect both MGBDT and the future commitment. When a reliability constraint is applied to bridge the commitments, it is considered a new reliability commitment. Refer to Market Settlements sections 3.7.5 and 3.7.9 and Market Power Mitigation section 3.8.3 for more details on the settlement of reliability commitments.	

Section	Reason	Original Text	Revised Text	Comments
3.7.2.2 Determination of Hydroelectric Generation Facility Real-Time Dispatch Instructions	Correction	Linked Resources, Time Lag and MW Ratio	Linked Resources, Time Lag and MWh Ratio	
3.8.	Clarification	During the course of an operating day, changing system conditions will affect the requirements associated with the reliability and security of the IESO-controlled grid as mandated by NERC and NPCC, and governed by the market rules. This section identifies the operational processes and control actions that the IESO will use to ensure reliable operation of the IESO-controlled grid during the pre-dispatch day, dispatch day and dispatch hour.	During the course of an operating day, changing system conditions will affect the requirements associated with the reliability and security of the IESO-controlled grid as mandated by NERC and NPCC, and governed by the market rules. This section identifies the operational processes and control actions that the IESO will use to ensure reliable operation of the IESO-controlled grid during the pre-dispatch day, dispatch day and dispatch hour [19] New footnote added [19]: Principles for manual intervention are found in Market Rules Chapter 5 Section 1.2.1, Market Manual 7.1 sections 2.1 and 2.4, and Market Manual 7.4 Sections 1.4, 2.7.1, 3.1, and 4.1	
3.8.1.	Clarification	In the future market, the notification of a commitment or de-commitment will be initiated by the IESO and not the market participant. The IESO will issue binding start-up instructions for DAM and PD commitments and notifications of de-commitment to NQS generation units during the dispatch day.	In the future market, the notification of a commitment or de-commitment will be initiated by the IESO and not the market participant. The IESO will issue binding start-up instructions for DAM and PD commitments and notifications of de-commitment to NQS generation units during the dispatch day. Market participants will respond to binding start-up instructions and notifications of de-commitment and will no longer be required to provide the two-hour start-up or one-hour shutdown calls.	
3.8.9.	Clarification	These are not scheduled by the day-ahead or pre-dispatch calculation engines.	These are not economically evaluated by the day-ahead or pre-dispatch calculation engines, but are accounted for by calculation engines when producing schedules.	

Section	Reason	Original Text	Revised Text	Comments
3.8.9.1 Emergency Energy	Conforming Change	In the current market, demand is automatically adjusted up in the unconstrained run by the amount of emergency energy purchased to prevent counterintuitive price signals. The demand adjustment ensures that the price continues to reflect the scarcity condition in Ontario that triggered the emergency energy purchase. For emergency energy sales, demand is not adjusted. An emergency purchase to support a sale is considered two independent transactions, a purchase and a sale. In the future market, demand adjustments will continue to be applied to emergency energy purchases to address reliability concerns in Ontario. The demand adjustment will be reflected at the interconnection over which emergency energy is scheduled to flow. For an emergency purchase to support a sale, no demand adjustments will be made for either transaction. Please refer to the Real-Time Calculation Engine detailed design document for more information on automated demand adjustments for emergency energy transactions.	In the current market, emergency energy purchases are not included in the unconstrained run in order to prevent counterintuitive price signals. This adjustment ensures that the price continues to reflect the scarcity condition in Ontario that triggered the emergency energy purchase. Emergency energy sales are included in the unconstrained run and price reflects the quantity of emergency energy provided. An emergency energy purchase to support a sale is considered two independent transactions, a purchase and a sale. In the future market, emergency energy purchases to address reliability concerns in Ontario will continue to be excluded from the pricing algorithm. Emergency energy sales and emergency energy purchases to support a sale will be reflected in the pricing algorithm at the interconnection over which emergency energy is scheduled to flow. Please refer to the Pre-Dispatch Calculation Engine detailed design, sections 3.4.1.5, 3.6.1.4 and 3.6.2.4, and the Real-Time Calculation Engine detailed design, sections 3.4.1.3 and 3.4.1.4 for more information on how emergency energy transactions are accounted for in schedules and prices.	
3.8.9.3 Segregated Mode of Operation (SMO)	Clarification	Certain hydroelectric generation facilities in Ontario have the ability to segregate their generating units from the IESO-controlled grid and connect them to the Quebec transmission grid. In some cases, transferring the units to Quebec requires a change to the IESO-controlled grid. This topology change is effectively an outage to a critical transmission element and results in reduced transmission limits.	Certain hydroelectric generation facilities in Ontario have the ability to segregate their generating units from the IESO-controlled grid and connect them to the Quebec transmission grid. In some cases, transferring the units to Quebec requires a change to the IESO-controlled grid. This topology change is effectively an outage to a critical transmission element [21] and results in reduced transmission limits. New footnote [21] added: Critical transmission elements are defined in Market Manual 7.3 as those that have a material impact on the reliability and/or operability of the IESO-controlled grid or the interconnection when removed from service.	
3.9.2. Pre-Dispatch Remediation; Intertie Treatment under PD Failure	Design Change	However, if PD fails for two hours or more, the IESO will only be able to implement the DAM intertie transaction schedules that align with transactions present in neighbouring jurisdictions for the RT intertie checkout.	However, if PD fails for two hours or more, the IESO will use the last successful Pre-dispatch results for hours T+3 and beyond to implement intertie transactions schedules that align with transactions present in neighbouring jurisdictions for the RT intertie checkout. These results will only include DAM scheduled intertie transactions in its evaluation.	Design change in response to stakeholder feedback.

Section	Reason	Original Text	Revised Text	Comments
3.9.3.2 Real-Time Failures; Electrical Islands	Clarification	When an electrical island is formed, the IESO will be required to use administrative prices for resources in the island using the future methods outlined in the section below.	When an electrical island is formed, the IESO will be required to use administrative prices for resources in the island. The IESO will determine a price using any of the methodologies listed in table 3-2 of section 3.9.3.4. The determination of which methodology to apply will be based on the best available dispatch data and the resulting island conditions to best reflect the LMP in the electrical island.	
4. Market Rule Requirements	Correction	This inventory is based on version 1.0 of the detailed design, and any revisions required to this section as a result of design changes to version 1.0 will be incorporated in the market rule amendment process. As a result, the inventory will not be updated after its publication in version 1.0 of this detailed design.	[Deleted]	
4. Market Rule Requirements; Chapter 7, Section 6.4	Clarification	Chapter 7, Section 6.4 For the day-ahead market, new sections are required to establish a high operating limit that also takes into account the IESO forecast vs a submitted forecast for variable generation, to ensure that if the market participant submits its own forecast that it will be used in setting the high operating limit.	Chapter 7, Section 6.4 For the day-ahead market, new sections are required to establish a high operating limit that also takes into account the IESO forecast vs a submitted forecast for variable generation, to ensure that if the market participant submits its own forecast that it will be used in setting the high operating limit for DAM Pass 1 and DAM Pass 3. The IESO forecast will be used for DAM Pass 2.	
4. Market Rule Requirements; Chapter 7, Section 4D.5	Correction	Section 4A.5 NEW:	Section 4D.5 NEW:	
4. Market Rule Requirements; Chapter 7A, Section 2	Clarification	• Variable generator new option to submit own forecast – Sections 6.4.2.9A/B of Chapter 7 establish a high operating limit. These sections will be moved and re-used for the real-time market. For the day-ahead market, new sections are required under Section 2 of Chapter 7A to establish a high operating limit that also takes into account the IESO forecast vs a submitted forecast for variable generation, to ensure that if the market participant submits its own forecast that it will be used in setting the high operating limit	• Variable generator new option to submit own forecast – Sections 6.4.2.9A/B of Chapter 7 establish a high operating limit. These sections will be moved and re-used for the real-time market. For the day-ahead market, new sections are required under Section 2 of Chapter 7A to establish a high operating limit that also takes into account the IESO forecast vs a submitted forecast for variable generation, to ensure that if the market participant submits its own forecast that it will be used in setting the high operating limit for DAM Pass 1 and DAM Pass 3. The IESO forecast will be used for DAM Pass 2.	
5.1. Market-Facing Procedure Impacts; Part 4.2 – Submission of Dispatch data in the RT Energy and Operating reserve markets	Clarification	2.3.1 - Generation Units with Start-Up Delays Section to indicate that additional dispatch data parameters, Lead Time and Ramp to MLP, will be used to model the time required for a generation unit to prepare, synchronize to the IESO-controlled grid, and reach its minimum loading point.	2.3.1 - Generation Units with Start-Up Delays Procedure for generation units with start-up delays in PD to be removed. New dispatch data parameters, Lead Time and Ramp to MLP, will be used to model the time required for a generation unit to prepare, synchronize to the IESO-controlled grid, and reach its minimum loading point.	

Section	Reason	Original Text	Revised Text	Comments
5.1. Market-Facing Procedure Impacts; Market Manual 9 Day-Ahead Commitment, Part 9.4:RT Integration of the DACP	Clarification	4.3 - Day-Ahead Intertie Transactions (bullet 3) This section will be updated to reflect that only intertie transactions scheduled in the DAM will be evaluated in the PD look-ahead period in hours T+2 and beyond	4.3 - Day-Ahead Intertie Transactions (bullet 3) This section will be updated to reflect that only intertie transactions scheduled in the DAM will be evaluated in the PD look-ahead period in hours T+2 and beyond, with some exceptions (emergency energy, capacity exports and capacity imports)	

9. Day-Ahead Market Calculation Engine

Section	Reason	Original Text	Revised Text	Comments
Various	Clarification	Ontario zonal price	DAM Ontario Zonal Price	Usage of the term “DAM Ontario Zonal Price” consistently throughout the document.
Various	Clarification	...demand forecast... OR ...demand forecast of non-dispatchable load...	...non-dispatchable demand forecast...	Consistent usage of "non-dispatchable demand forecast", reflecting a forecast input consisting of loads considered non-dispatchable and losses.
Various	Design Change	N/A	[Summary of change below. Refer to detailed design document for relevant mathematical representations.] Accounting for hydroelectric constraint violations in the mathematical formulation. The following violation variables are added: • Adding constraint penalty variables for violating the minimum daily energy limit of hydroelectric resources. • Adding constraint penalty variables for exceeding the maximum daily energy limit of hydroelectric resources. • Adding constraint penalty variables for violating the shared minimum daily energy limit of hydroelectric resources on a shared forebay. • Adding constraint penalty variables for exceeding the shared maximum daily energy limit of hydroelectric resources on a shared forebay. • Adding constraint penalty variables for violating the linked hydroelectric resources constraint by over-generating the downstream resources. • Adding constraint penalty variables for violating the linked hydroelectric resources constraint by under-generating the downstream resources.	Design change in response to stakeholder feedback. Addition of these constraint penalty variables allows the DAM calculation engine to find a feasible solution when there are multiple simultaneous binding constraints.
3.3	Clarification	If the resource is not committed, it will receive a zero schedule and will not be eligible for economic scheduling	If the resource is not committed, it will not be eligible for economic scheduling. It will receive a zero schedule, unless it is an hour where ramp energy to MLP is scheduled.	

Section	Reason	Original Text	Revised Text	Comments
3.4.1.3	Clarification	[MGODG] shall designate the offered minimum generation cost to operate at minimum loading point in hour h∈ {1,..,24}.	[MGODG] shall designate the offered minimum generation cost to operate at minimum loading point in hour h∈ {1,..,24}. This parameter is calculated based on the speed no-load offer and energy laminations up to the resource's minimum loading point submitted by the market participant.	
3.4.1.3	Design Change	[MGBDTDG] shall designate the minimum generation block down-time – the shortest period (in hours) between the end of one hour the resource is scheduled to operate at or above its minimum loading point and the beginning of the next hour the resource is scheduled to operate at or above its minimum loading point.	[MGBDTDG] shall designate the minimum generation block down-time – the shortest period (in hours) between the end of one hour the resource is scheduled to operate at or above its minimum loading point and the beginning of the next hour the resource is scheduled to operate at or above its minimum loading point. The value of this parameter will be equal to the value for MGBDT in the hot thermal state	This recognizes that a second start of an NQS resource in the DAM should always reflect a hot thermal state for the MGBDT.
3.4.1.3	Design Change	As described in the Offers, Bids and Data Inputs detailed design document, the minimum generation block down time, start-up offer, and ramp up energy to MLP inputs will correspond to those for the thermal state selected by the registered market participant for the purposes of DAM scheduling.	As described in the Offers, Bids and Data Inputs detailed design document, start-up offer, and ramp up energy to MLP inputs will correspond to those for the thermal state selected by the registered market participant for the purposes of DAM scheduling.	This recognizes that a second start of a NQS resource in the DAM should always reflect a hot thermal state for the MGBDT.
3.4.1.3	Clarification	Within the optimization function of the DAM calculation engine, the minimum generation cost is evaluated as a whole in determining a commitment decision. For the purposes of Market Power Mitigation, the component speed no-load and energy laminations up to the resource's minimum loading point will be compared against their respective reference levels separately.	For the purposes of market power mitigation, the component speed no-load and energy laminations up to the resource's minimum loading point will be compared against their respective reference levels separately. Within the optimization function of the DAM calculation engine, the minimum generation cost as derived from these offered parameters will be evaluated as a whole in determining a commitment decision.	
3.4.1.3	Conforming Change	...to prevent the resource from operating in a manner that would endanger the safety of any person, damage equipment, or violate any applicable law.	...to prevent the resource from operating in a manner that reasonably could be expected to endanger the safety of any person, damage equipment, or violate any applicable law.	Conforming change to Offers Bids and Data Inputs.
3.4.1.3	Clarification	This parameter has been introduced so that registered market participants will also be able to submit a single Min DEL value for two or more dispatchable hydroelectric generation unit resource types that are registered as sharing the same forebay.	[Deleted]	This variable is described in the Offer Bids and Data Inputs design document.

Section	Reason	Original Text	Revised Text	Comments
3.4.1.3, 3.6.1.5, 3.6.2.3	Design Change	…energy produced by an upstream resource requires a proportional amount of energy to be produced by a downstream resource after a period of time…	…energy produced by one or more upstream resources requires a proportional amount of energy to be produced by one or more downstream resources after a period of time…	Design change in response to stakeholder feedback. Mapping cascade hydroelectric resource constraints as groups of resources to groups of resources.
3.4.1.4	Clarification	The DAM calculation engine will require additional inputs to support the scheduling of inadvertent payback. In particular, the intertie transactions that correspond to inadvertent payback transactions will be identified and such transactions must be scheduled.	The intertie transactions that correspond to inadvertent payback transactions will be identified and such transactions must receive a schedule equal to the specified quantity.	
3.4.1.4	Clarification	• Reliability Must-Run (RMR) and Reactive Support Service Contracts: The IESO will identify resources that must operate for reliability purposes. These resources will be considered committed for all the hours in which they are flagged as must-commit. Similarly, the IESO may place minimum or maximum limits on the net injections by generation resources to permit them to provide reactive power support as may be necessary to enable the reliable operation of the system. • Reliability Constraints: A constraint imposed as a result of a control action may limit the minimum or maximum output of a generation resource.	• Reliability constraints: The IESO will identify resources that must operate for reliability purposes. The IESO may, as required, place minimum or maximum constraints on these resources to support reliability must-run contracts, reactive support service contracts or other reliability needs, to enable the reliable operation of the system. • [Deleted]	
3.4.1.4	Clarification	The net interchange scheduling limit constraint prevents hour-to-hour changes in the net interchange from being too large.	The net interchange scheduling limit constraint limits time-step to time-step changes in net interchange.	
3.4.1.4, 3.6.1.4	Conforming Change	N/A	[Summary of change below. Refer to detailed design document for relevant mathematical representations.] • Rewriting Section 3.4.1.4 PSU resource minimum and maximum constraints to conforming to the PD engine. • Rewriting Section 3.6.1.4 PSU resource constraints to conform with the PD engine.	Changes in these sections conform to the PSU design described in the RT and PD calculation engines. The augmented language reflects a more detailed description of the PSU model that will be implemented in all timeframes.

Section	Reason	Original Text	Revised Text	Comments
3.4.1.4	Clarification	Pre-contingency and post-contingency internal transmission limits may be violated. For hour h∈{1,..,24}:	Pre-contingency and post-contingency internal transmission limits may be violated. As described in Section 3.4.3, transmission constraints may be identified for any facility (or group of facilities) within Ontario. The set of facilities (or groups of facilities) for which transmission constraints may be identified shall be designated by F. For hour h∈{1,..,24}:	
3.5.2	Clarification	• The load forecasts used by the optimization function will be modified to reflect only nodes in the largest island; and	• The load forecasts used by the optimization function will only include demand forecast areas in the largest island; and	
3.6.1.5	Clarification	Energy-limited resources cannot be scheduled to provide more energy than they have indicated they are capable of providing. In addition to limiting energy schedules over the course of the day to the energy limit specified for a resource, the corresponding constraints ensure that energy-limited resources cannot be scheduled to provide energy in amounts that would preclude them from providing operating reserve when activated.	Energy-limited resources cannot be scheduled to provide more energy than they have indicated they are capable of providing. The submitted energy limit both limits the total amount of energy scheduled over the course of a dispatch day and prevents operating reserve schedules which, if activated, would result in an exceedance of the submitted daily energy limit.	
3.6.2.2	Design Change	N/A	Violation variables for the linked hydroelectric resource constraints are not needed in As-Offered Pricing. This is because the schedules of linked hydroelectric resources will largely be fixed from their schedules from As-Offered Scheduling. $SOGenLnkViol_{h,(b_1,b_2),i}$ for $(b_1,b_2) \in LNK$ such that $b_1 \in B_{up}^{HE}$ and $b_2 \in B_{dn}^{HE}$, hour h∈{1,..,24} and $i \in \{1,..,N_{OGenLnkViol_h}\}$ will no longer appear in the formulation. $SUGenLnkViol_{h,(b_1,b_2),i}$ for $(b_1,b_2) \in LNK$ such that $b_1 \in B_{up}^{HE}$ and $b_2 \in B_{dn}^{HE}$, hour h∈{1,..,24} and $i \in \{1,..,N_{UGenLnkViol_h}\}$ will no longer appear in the formulation.	Design change in response to stakeholder feedback.

Section	**Reason**	**Original Text**	**Revised Text**	**Comments**
3.6.2.3	Clarification	Minimum Hourly Output When a hydroelectric resource is scheduled for energy at or above its minimum hourly output in As-Offered Scheduling, the hydroelectric resource will also be scheduled at or above its minimum hourly output in As-Offered Pricing. The energy offer laminations corresponding to the minimum hourly output amount will be ineligible to set prices. When a hydroelectric resource with a minimum hourly output amount receives a zero schedule in As-Offered Scheduling, the hydroelectric resource will also receive a zero schedule in As-Offered Pricing and will be ineligible to set prices in the energy market. Thus, for all hours h∈{1,..,24} and hydroelectric buses $b\in B^{HE}$: $ODG_{h,b}\cdot MinQDG_b+\sum_{k\in K^E_{h,b}} SDG_{h,b,k}\geq MinHO_{h,b}\cdot OHO^{AOS}_{h,b}$and for all $k\in K^E_{b,h}$: $0\leq SDG_{h,b,k}\leq OHO^{AOS}_{h,b}\cdot QDG_{h,b,k}$.	Minimum Hourly Output When a hydroelectric resource is scheduled for energy at or above its minimum hourly output in As-Offered Scheduling, the hydroelectric resource will also be scheduled at or above its minimum hourly output in As-Offered Pricing. The energy offer laminations corresponding to the minimum hourly output amount will be ineligible to set prices. When a hydroelectric resource with a minimum hourly output amount receives a zero schedule in As-Offered Scheduling, the hydroelectric resource will also receive a zero schedule in As-Offered Pricing and will be ineligible to set prices in the energy market. Thus, for all hours h∈{1,..,24} and hydroelectric buses $b\in B^{HE}$: $ODG_{h,b}\cdot MinQDG_b+\sum_{k\in K^E_{h,b}} SDG_{h,b,k}\geq MinHO_{h,b}\cdot OHO^{AOS}_{h,b}$ and for all $k\in K^E_{b,h}$: $0\leq SDG_{h,b,k}\leq OHO^{AOS}_{h,b}\cdot QDG_{h,b,k}$. That is , the variable $OHO_{h,b}$ used in As-offered Scheduling will be set equal to the constant $OHO^{AOS}_{h,b}$.	
3.6.2.3	Design Change	For all resources in the set, the energy schedules calculated in As-Offered Scheduling will be treated like fixed blocks and will be ineligible to set prices. Thus, for all sets s∈SHE such that $\sum_{h=1..24}\left(\sum_{b\in B^{HE}_s}\left(ODG^{AOS}_{h,b}\cdot MinQDG_b+\sum_{k\in K^E_{h,b}} SDG^{AOS}_{h,b,k}\right)\right)\leq MinSDEL_s$, the following constraints must hold for all hours h∈{1,..,24}, hydroelectric resource buses $b\in B^{HE}_s$ and offer laminations $k\in K^E_{h,b}$: $SDG_{h,b,k}\geq SDG^{AOS}_{h,b,k}$.	In each hour, the sum of energy schedules calculated in As-Offered Scheduling for all resources in each set will be ineligible to set prices. Energy schedules for individual resources in each set may be changed compared to schedules in As-Offered Scheduling, but the sum of energy scheduled in each set must be at least equal to the sum of energy scheduled in As-Offered Scheduling. Thus, for all sets s∈SHE such that $\sum_{h=1..24}\left(\sum_{b\in B^{HE}_s}\left(ODG^{AOS}_{h,b}\cdot MinQDG_b+\sum_{k\in K^E_{h,b}} SDG^{AOS}_{h,b,k}\right)\right)\leq MinSDEL_s$, the following constraints must hold for all hours h∈{1,..,24}: $\sum_{b\in B^{HE}_s}\left(ODG_{h,b}\cdot MinQDG_b+\sum_{k\in K^E_{h,b}} SDG_{h,b,k}\right)$ $\geq \sum_{b\in B^{HE}_s}\left(ODG^{AOS}_{h,b}\cdot MinQDG_b+\sum_{k\in K^E_{h,b}} SDG^{AOS}_{h,b,k}\right)$.	Version 1.0 equation distributed shared minimum DEL to individual resources. Version 2.0 more appropriately limits sum of schedules within the group, allowing for individual resource flexibility.

Section	Reason	Original Text	Revised Text	Comments
3.6.2.3	Design Change	Hydroelectric resources with a binding maximum daily energy limit are constrained as per the energy-limited resource constraint described above. A similar constraint holds for all sets of hydroelectric resources with a shared maximum daily energy limit that was binding in As-Offered Scheduling. For all resources in the set, the schedules calculated in As-Offered Scheduling will determine the price-setting eligibility of the resource's energy and operating reserve offer laminations. In each hour, energy or operating reserve laminations up to the total amount of energy and operating reserve scheduled in As-Offered Scheduling will be eligible to set prices. For set s∈SHE, if there exists H∈{1,..,24} such that $\sum_{h=1..H}\left(\sum_{b\in B_s^{HE}}\left(ODG_{h,b}^{AOS}\cdot MinQDG_b+\sum_{k\in K_{h,b}^{E}} SDG_{h,b,k}^{AOS}\right)\right)+$ $\sum_{b\in B_s^{HE}}\left(10ORConv\left(\sum_{k\in K_{H,b}^{10S}} S10SDG_{H,b,k}^{AOS}+\sum_{k\in K_{H,b}^{10N}} S10NDG_{H,b,k}^{AOS}\right)+\right.$ $\left.30ORConv\left(\sum_{k\in K_{H,b}^{30R}} S30RDG_{H,b,k}^{AOS}\right)\right)=MaxSDEL_s,$ then the maximum daily energy limit constraint is considered to be binding in As-Offered Scheduling. In such circumstances, the following constraint must hold for all hydroelectric resource buses b ∈B_s^HE and hours h∈{1,..,24}: $\sum_{k\in K_{h,b}^{E}} SDG_{h,b,k}+\sum_{k\in K_{h,b}^{10S}} S10SDG_{h,b,k}+\sum_{k\in K_{h,b}^{10N}} S10NDG_{h,b,k}+$ $\sum_{k\in K_{h,b}^{30R}} S30RDG_{h,b,k}\le\sum_{k\in K_{h,b}^{E}} SDG_{h,b,k}^{AOS}+\sum_{k\in K_{h,b}^{10S}} S10SDG_{h,b,k}^{AOS}+$ $\sum_{k\in K_{h,b}^{10N}} S10NDG_{h,b,k}^{AOS}+\sum_{k\in K_{h,b}^{30R}} S30RDG_{h,b,k}^{AOS}.$	Hydroelectric resources with a binding maximum daily energy limit are constrained as per the energy-limited resource constraint described above. A similar constraint holds for all sets of hydroelectric resources with a shared maximum daily energy limit that was binding in As-Offered Scheduling. In each hour, the sum of energy schedules calculated in As-Offered Scheduling for all resources in each set will be eligible to set prices. Energy schedules for individual resources in each set may be changed compared to schedules in As-Offered Scheduling, but the sum of energy scheduled in each set must be less than or equal to the sum of energy scheduled in As-Offered Scheduling. For set s∈SHE, if there exists H∈{1,..,24} such that $\sum_{k\in K_{h,b}^{E}} SDG_{h,b,k}+\sum_{k\in K_{h,b}^{10S}} S10SDG_{h,b,k}+\sum_{k\in K_{h,b}^{10N}} S10NDG_{h,b,k}+$ $\sum_{k\in K_{h,b}^{30R}} S30RDG_{h,b,k}\le\sum_{k\in K_{h,b}^{E}} SDG_{h,b,k}^{AOS}+\sum_{k\in K_{h,b}^{10S}} S10SDG_{h,b,k}^{AOS}+$ $\sum_{k\in K_{h,b}^{10N}} S10NDG_{h,b,k}^{AOS}+\sum_{k\in K_{h,b}^{30R}} S30RDG_{h,b,k}^{AOS},$ then the maximum daily energy limit constraint is considered to be binding in As-Offered Scheduling. In such circumstances, the following constraint must hold for all hours h∈{1,..,24}: $\sum_{b\in B_s^{HE}}\left(\sum_{k\in K_{h,b}^{E}} SDG_{h,b,k}+\sum_{k\in K_{h,b}^{10S}} S10SDG_{h,b,k}+\sum_{k\in K_{h,b}^{10N}} S10NDG_{h,b,k}+\right.$ $\left.\sum_{k\in K_{h,b}^{30R}} S30RDG_{h,b,k}\right)\le\sum_{b\in B_s^{HE}}\left(\sum_{k\in K_{h,b}^{E}} SDG_{h,b,k}^{AOS}+\right.$ $\left.\sum_{k\in K_{h,b}^{10S}} S10SDG_{h,b,k}^{AOS}+\sum_{k\in K_{h,b}^{10N}} S10NDG_{h,b,k}^{AOS}+\sum_{k\in K_{h,b}^{30R}} S30RDG_{h,b,k}^{AOS}\right)..$	Version 1.0 equation distributed shared maximum DEL to individual resources. Version 2.0 more appropriately limits sum of schedules within the group, allowing for individual resource flexibility.
3.6.3.1	Clarification	N/A	In Table 3-18, add row: $\mathrm{SPEmT}_{h,c,f}^{AOP}$ shall designate the shadow price for the post-contingency transmission constraint for facility f∈F in contingency c∈C in hour h.	

Section	Reason	Original Text	Revised Text	Comments
3.6.3.3	Clarification	Resources Tested If both conditions 1 and 2 are met, the DAM calculation engine will test market participants with resources that can meet incremental load within Ontario for global market power, unless they are excluded as a result of the conditions below: If the transmission constraints that allow flow from the Northeast electrical zone to Southern Ontario are binding in the southward direction, then no resources in the Northeast and Northwest electrical zones will be tested for global market power. If the transmission constraints that allow flow from the Northwest electrical zone to the Northeast electrical zone are binding in the eastward direction, then no resources in the Northwest electrical zone will be tested for global market power. If resources in any zone have congestion components at least $1/MWh below the internal congestion component at all of the Global Market Power Reference Interties, they will not be tested for global market power. The process for identifying resources that qualify for the conduct test for global market power in the energy market is as follows: For each hour h∈{1,..,24}, if conditions 1 and 2 to trigger global market power for energy testing are met: Place all $\mathrm{b}\in\mathrm{B}^{\mathrm{DG}}$in the set $\mathrm{b}\in\mathrm{BCond}_{\mathrm{h}}^{\mathrm{GMP}^{\mathrm{DG}}}$. Next, for each transmission facility that transmits flow from the Northeast electrical zone to Southern Ontario f∈{NE→SOntario interface}, check if $\mathrm{SPNormT}_{\mathrm{h,f}}^{\mathrm{AOP}}\neq 0$ for the southern flow limit. If true, then remove all resources in the NE and NW zone from the set $\mathrm{BCond}_{\mathrm{h}}^{\mathrm{GMP}}$. Next, for each transmission facility that transmits flow from the Northwest electrical zone to the Northeast electrical zone f∈{NW→NE interface}, check if $\mathrm{SPNormT}_{\mathrm{h,f}}^{\mathrm{AOP}}\neq 0$ for the eastward flow limit. If true, then remove all resources in the NW zone from the set $BCond_h^{GMP}$. And, for all resources $\mathrm{b}\in\mathrm{B}^{\mathrm{DG}}$ in all zones, if $\mathrm{PCong}_{\mathrm{h,b}}^{\mathrm{AOP}}<\mathrm{PIntCong}_{\mathrm{h,d}}^{\mathrm{AOP}}-\frac{\$1}{\mathrm{MWh}}$ where $\mathrm{d}\in\mathrm{D}^{\mathrm{GMPRef}}$ (must be true for all Global Market Power Reference Interties), then remove resource b from the set $\mathrm{BCond}_{\mathrm{h}}^{\mathrm{GMP}}$.	Resources Tested If both conditions 1 and 2 are met, the DAM calculation engine will test market participants with resources that can meet incremental load within Ontario for global market power, unless they are excluded as a result of the condition below: If resources in any zone have congestion components at least $1/MWh below the internal congestion component at all of the Global Market Power Reference Interties, they will not be tested for global market power. The process for identifying resources that qualify for the conduct test for global market power in the energy market is as follows: For each hour h∈{1,..,24}, if conditions 1 and 2 to trigger global market power for energy testing are met: Place all $\mathrm{b}\in\mathrm{B}^{\mathrm{DG}}$in the set $\mathrm{BCond}_{\mathrm{h}}^{\mathrm{GMP}}$. Next, for each transmission facility, check if $\mathrm{SPNormT}_{\mathrm{h,f}}^{\mathrm{AOP}}\neq 0$ or $\mathrm{SPEmT}_{\mathrm{h,c,f}}^{\mathrm{AOP}}\neq 0$. If true, then remove all resources that have positive sensitivity factor on that transmission facility from the set $\mathrm{BCond}_{\mathrm{h}}^{\mathrm{GMP}}$. And, for all resources b∈B^DG in all zones, if $\mathrm{PCong}_{\mathrm{h,b}}^{\mathrm{AOP}}<\mathrm{PIntCong}_{\mathrm{h,d}}^{\mathrm{AOP}}-\frac{\$1}{\mathrm{MWh}}$ where $\mathrm{d}\in\mathrm{D}^{\mathrm{GMPRef}}$ (must be true for all Global Market Power Reference Interties), then remove resource b from the set $\mathrm{BCond}_{\mathrm{h}}^{\mathrm{GMP}}$.	

Section	Reason	Original Text	Revised Text	Comments
3.7.1	Conforming Change	Peak demand forecasts will be used in place of average demand forecasts. Schedules for price responsive loads and dispatchable loads with an entire bid submitted at MMCP are not calculated by the optimization function. Instead, the optimization function accounts for expected consumption of price responsive loads and for dispatchable loads that have no bid submitted or an entire bid submitted at MMCP through the demand forecast. Virtual bids and offers will be excluded from evaluation. The IESO's centralized variable generation forecast for variable generation resources will be used.	Peak non-dispatchable demand forecasts will be used in place of average non-dispatchable demand forecasts. Schedules for price responsive loads and for no bid dispatchable loads are not calculated by the optimization function. Instead, the optimization function accounts for expected consumption of price responsive loads and for no bid dispatchable loads through the demand forecast. Virtual bids and offers will be excluded from evaluation. The IESO's centralized variable generation forecast for variable generation resources will be used.	Conforming change to the description in the Pre-Dispatch Calculation Engine. Entire bids at the maximum market clearing price from dispatchable loads do not need to be included in the non-dispatchable demand forecast.
3.7.1.4	Clarification	Operating Reserve Scheduling These constraints are the same as in As-Offered Scheduling, except $\mathrm{AdjMaxDG}_{h,b}$, which is adjusted as indicated above.	Operating Reserve Scheduling These constraints are the same as in As-Offered Scheduling.	
3.8.2	Design Change	N/A	Refer to the Publishing and Reporting detailed design document for descriptions on pricing outputs from the DAM calculation engine that will be published to market participants.	Design change in response to stakeholder feedback.
3.9.1.3	Conforming Change	In Pass 2, the security assessment function will use load distribution factors to determine MW quantities at non-dispatchable loads, price responsive loads, and dispatchable loads that have no bid submitted or an entire bid submitted at MMCP based on the IESO peak demand forecast.	In Pass 2, the security assessment function will use load distribution factors to determine MW quantities at non-dispatchable loads, price responsive loads, and no bid dispatchable loads based on the IESO peak demand forecast.	Conforming change to the description in the Pre-Dispatch Calculation Engine. Entire bids at the maximum market clearing price from dispatchable loads do not need to be included in the non-dispatchable demand forecast and therefore do not need to be distributed in Pass 2.

Section	Reason	Original Text	Revised Text	Comments
3.9.2.2	Clarification	The pre-contingency security assessment will continue to check all monitored equipment for violation of their pre-contingency thermal limits. It will also check for violation of any applicable OSL equations. For every violated limit, a linearized constraint will be generated. These linearized constraints will be expressed in terms of scheduling variables and sensitivity factors so they can be provided to the optimization function to be used in the next optimization function iteration.	When the AC or non-linear DC power flow solution is used, the pre-contingency security assessment will continue to check all monitored equipment for violation of their pre-contingency thermal limits. It will also check for violation of any applicable OSL equations. For every violated limit, a linearized constraint will be generated. When the linear DC power flow solution is used, the pre-contingency security assessment may develop linear constraints to help the AC or non-linear DC power flow solution converge in the subsequent iterations. These linearized constraints will be expressed in terms of scheduling variables and sensitivity factors so they can be provided to the optimization function to be used in the next optimization function iteration.	
3.11	Clarification	See Table 3-34	See Table 3-34	Table 3-34 describes the resources for which data will be provided to settlements for the purposes of settlement mitigation. The changes in this table conform with the descriptions from the PD calculation engine detailed design. The conforming changes are editorial and do not alter the design.
3.12.2, 3.12.3	Conforming Change	N/A	[Summary of change below. Refer to detailed design document for relevant mathematical representations.] • Adding section 3.12.2: the application of PU de-rates to the PSU Model. The PU de-rate model explains the pre-processing of de-rates and identify the available energy laminations. • Adding section 3.12.3: Applying Minimum and Maximum Constraints to PSUs. This section discusses the treatments of the minimum and maximum constraints on a given CT or ST, or a constraint on a given PSU resource.	Changes in these sections conform to the PSU design described in the RT and PD calculation engines. The augmented language reflects a more detailed description of the PSU model that will be implemented in all timeframes.

Section	Reason	Original Text	Revised Text	Comments
3.12.4	Conforming Change	N/A	[Summary of change below. Refer to detailed design document for relevant mathematical representations.] • Completing section 3.12.4: translation of PSU Schedules to PU Schedules. This section describes the logic for translating energy and operating reserve schedules for the PSUs representing a combined cycle facility to energy and operating reserve schedules for the corresponding physical units.	PSU to PU translation in V1 only described treatment of energy. V2 describes translation for both energy and operating reserve. This change conforms to the description in the RT calculation engine.
3.13	Clarification	1. The IESO average demand forecasts for each demand forecast area will be distributed to all load facilities in those areas using the load distribution factors described in Section 3.9.1.3.	1. The IESO average demand forecast for each demand forecast area subtracting the total of the bid quantities submitted for virtual hourly demand response resources will be distributed to all load facilities in the area using the load distribution factors described in Section 3.9.1.3. The distributed forecast MW quantities will then be adjusted to account for the bid quantities for physical hourly demand response resources by subtracting the bid quantities for physical hourly demand response resources from their associated load facilities.	
3.13	Clarification	1 The IESO peak demand forecast for each demand forecast area will be distributed to all load facilities with delivery points in those areas using the load distribution factors described in Section 3.9.1.3.	1. The IESO peak demand forecast for each demand forecast area subtracting the total of the bid quantities submitted for virtual hourly demand response resources will be distributed to all load facilities with delivery points in the area using the load distribution factors described in Section 3.9.1.3. The distributed forecast MW quantities will be adjusted to account for bid quantities for physical hourly demand response resources by subtracting the bid quantities for physical hourly demand response resources from their associated load facilities.	

10. Pre-Dispatch Calculation Engine

Section	Reason	Original Text	Revised Text	Comments
Various	Clarification	…demand forecast… OR …demand forecast of non-dispatchable load…	…non-dispatchable demand forecast…	Usage of "non-dispatchable demand forecast" consistently, reflecting a forecast input consisting of loads considered non-dispatchable and losses.
Various	Design Change	N/A	[Summary of change below. Refer to detailed design document for relevant mathematical representations.] Accounting for hydroelectric constraint violations in the mathematical formulation. The following violation variables are added: • Adding constraint penalty variables for violating the minimum daily energy limit of hydroelectric resources. • Adding constraint penalty variables for exceeding the maximum daily energy limit of hydroelectric resources. • Adding constraint penalty variables for violating the shared minimum daily energy limit of hydroelectric resources on a shared forebay. • Adding constraint penalty variables for exceeding the shared maximum daily energy limit of hydroelectric resources on a shared forebay. • Adding constraint penalty variables for violating the linked hydroelectric resources constraint by over-generating the downstream resources. • Adding constraint penalty variables for violating the linked hydroelectric resources constraint by under-generating the downstream resources.	Design change in response to stakeholder feedback. Addition of these constraint penalty variables allows the PD calculation engine facilitates to find a feasible solution when there are multiple simultaneous binding constraints.
2.2.4	Clarification	The DAM scheduled quantities for import and export transactions will limit import and export schedules beyond the first two forecast hours of the pre-dispatch look-ahead period. Capacity imports/exports and imports to meet reliability needs are not limited by their DAM scheduled quantities in all forecast hours of the look-ahead period.	The DAM scheduled quantities for import and export transactions will limit import and export schedules beyond the first two forecast hours of the pre-dispatch look-ahead period. The limitation will be applied on a per transaction basis. Capacity imports/exports and imports to meet reliability needs are not limited by their DAM scheduled quantities in all forecast hours of the look-ahead period.	
3.3	Clarification	If the resource is not committed, it will receive a zero schedule and will not be eligible for economic scheduling	If the resource is not committed, it will not be eligible for economic scheduling. It will receive a zero schedule, unless it is an hour where ramp energy to MLP is scheduled.	

Section	Reason	Original Text	Revised Text	Comments
3.4.1.1	Design Change	Time-step 1 schedules are set based on the advisory schedules calculated in the last RT calculation engine run that successfully completed before the PD calculation engine run commenced.	Time-step 1 schedules are set based on the value determined by the IESO's energy management system.	This change reflects an implementation detail that is necessary to improve the feasibility of the optimization. It is does not alter the intent of the design.
3.4.1.3	Correction	$J_{t,b}^{10S}$shall designate the set of bid for energy laminations for b∈B for time-step t∈TS;	$J_{t,b}^{10S}$shall designate the set of synchronized ten-minute operating reserve offer laminations at bus b∈B for time-step t∈TS;	
3.4.1.3	Clarification	Before the optimization function uses these forecasts, they will be adjusted as described in Section 3.11 to arrive at a quantity that is representative of load that is considered non-dispatchable, where: FL_t shall designate the hourly province-wide non-dispatchable demand forecast for time-step t∈TS.	Before the optimization function uses these forecasts, they will be adjusted as described in Section 3.11 to arrive at a quantity that is representative of load that is considered non-dispatchable and is inclusive of losses, where: FL_t shall designate the hourly province-wide non-dispatchable demand forecast for time-step t∈TS.	
3.4.1.4	Correction	For the variable generation resource identified by bus b∈B^VG and time-step t∈TS: $FG_{t,b}$shall designate the IESO forecast for time-step t∈T.	For the variable generation resource identified by bus b∈B^VG and time-step t∈TS: $FG_{t,b}$shall designate the IESO forecast for time-step t.	
3.4.1.4	Conforming Change	…to prevent the resource from operating in a manner that would endanger the safety of any person, damage equipment, or violate any applicable law.	…to prevent the resource from operating in a manner that reasonably could be expected to endanger the safety of any person, damage equipment, or violate any applicable law.	Conforming change to Offers Bids and Data Inputs.
3.4.1.4	Correction	Minimum daily energy limit is a new hourly dispatch data parameter. For more details on this parameter, refer to the Offers, Bids and Data Inputs detailed design document.	Minimum daily energy limit is a new daily dispatch data parameter. For more details on this parameter, refer to the Offers, Bids and Data Inputs detailed design document.	
3.4.1.4, 3.6.1.5, 3.6.2.3	Design Change	…energy produced by an upstream resource requires a proportional amount of energy to be produced by a downstream resource after a period of time…	…energy produced by one or more upstream resources requires a proportional amount of energy to be produced by one or more downstream resources after a period of time…	Design change in response to stakeholder feedback. Mapping cascade hydroelectric resource constraints as groups of resources to groups of resources.

Section	Reason	Original Text	Revised Text	Comments
3.4.1.6	Design Change	By default, initial schedules (i.e. schedules for time-step 1 of the look-ahead period) will be based on the last RT calculation engine run that successfully completed before the PD calculation engine run commenced. The initial schedules will be based on the advisory schedules for interval 6 of time-step 1 calculated by the RT calculation engine run, adjusted by a thirty-minute ramp period to represent an expected end-of-hour schedule.	By default, initial schedules (i.e. schedules for time-step 1 of the look-ahead period) will be based on the value determined by the IESO's energy management system.	This change reflects an implementation detail that is necessary to improve the feasibility of the optimization. It is does not alter the intent of the design.
3.5.2	Clarification	The load forecasts used by the optimization function will be modified to reflect only nodes in the largest island; and	The load forecasts used by the optimization function will only include demand forecast areas in the largest island; and	
3.6.1.4	Design Change	Maximum constraints are also respected in hours where an NQS resource is ramping to its minimum loading point. In the case where an operational commitment has not yet been issued, a resource will not be scheduled to reach minimum loading point in a given hour if the resource's ramp up energy to minimum loading point profile cannot be accommodated in a preceding hour due to a maximum constraint being imposed (e.g. reduced output due to a transmission outage).	Maximum constraints are also respected in hours where an NQS resource is ramping to its minimum loading point. In the case where an operational commitment has not yet been issued, a resource will not be scheduled to reach minimum loading point for a number of hours immediately following outages that make the resource grid-incapable. The number of hours will correspond to the number of ramp-to-MLP hours associated with the resource's warm state.	This change reflects an implementation detail that is necessary to improve the feasibility of the optimization. It is does not alter the intent of the design.
3.6.1.4	Correction	$\sum_{k\in K_{t,b}^{E}} SDG_{t,b,k} + \sum_{k\in K_{t,b}^{10S}} S10SDG_{t,b,k} + \sum_{k\in K_{t,b}^{10N}} S10NDG_{t,b,k} + \sum_{k\in K_{t,b}^{30R}} S30RDG_{t,b,k} \leq MaxDR_{t,b} + \left(1 - O10R_{t,b}\right) \cdot MaxDF_{t,b}$	$\sum_{k\in K_{t,b}^{E}} SDG_{t,b,k} + \sum_{k\in K_{t,b}^{10S}} S10SDG_{t,b,k} + \sum_{k\in K_{t,b}^{10N}} S10NDG_{t,b,k} \leq MaxDR_{t,b} + \left(1 - O10R_{t,b}\right) \cdot MaxDF_{t,b}$	Removed S30RDG from the constraint. When there is 10R scheduled on the PSU with no 10R in DF, only energy + 10R should be less than or equal the DR range.
3.6.1.6	Correction	$\sum_{b\in B^{NDG}\cup B^{DG}} SF_{t,c,f,b} \cdot Inj_{t,b} - \sum_{b\in B^{DL}\cup B^{HDR}} SF_{t,c,f,b} \cdot With_{t,b} - \sum_{d\in DI} SF_{t,c,f,d} \cdot Inj_{t,d} - \sum_{d\in DX} SF_{t,c,f,d} \cdot With_{t,d} - \sum_{i=1..N_{ITLViol_{c,f,t}}} SITLViol_{t,c,f,i} \leq AdjEmMaxFlow_{t,c,f}.$	$\sum_{b\in B^{NDG}\cup B^{DG}} SF_{t,c,f,b} \cdot Inj_{t,b} - \sum_{b\in B^{DL}\cup B^{HDR}} SF_{t,c,f,b} \cdot With_{t,b} + \sum_{d\in DI} SF_{t,c,f,d} \cdot Inj_{t,d} - \sum_{d\in DX} SF_{t,c,f,d} \cdot With_{t,d} - \sum_{i=1..N_{ITLViol_{c,f,t}}} SITLViol_{t,c,f,i} \leq AdjEmMaxFlow_{t,c,f}.$	Fixing sign in post-contingency constraint equation.

Section	Reason	Original Text	Revised Text	Comments
3.6.2.2	Clarification	N/A	Violation variables for the linked hydroelectric resource constraints are not needed in Pre-Dispatch Pricing. This is because the schedules of linked hydroelectric resources will largely be fixed from Pre-Dispatch Scheduling. $SOGenLnkViol_{[\![t,(b]\!]_1,b_2),i}$ for $(b_1,b_2) \in LNK$ such that $b_1 \in B_{up}^{HE}$ and $b_2 \in B_{dn}^{HE}$, time-step t∈TS and $i \in \{1,..,N_{OGenLnkViol_t}\}$ will no longer appear in the formulation. $SUGenLnkViol_{h,(b_1,b_2),i}$ for $(b_1,b_2) \in LNK$ such that $b_1 \in B_{up}^{HE}$ and $b_2 \in B_{dn}^{HE}$, time-step t∈TS and $i \in \{1,..,N_{UGenLnkViol_t}\}$ will no longer appear in the formulation.	
3.6.2.3	Design Change	Shared Minimum Daily Energy Limit A similar constraint holds for all sets of hydroelectric resources with a shared minimum daily energy limit that was binding in Pre-Dispatch Scheduling. For all resources in the set, the energy schedules calculated in Pre-Dispatch Scheduling will be treated like fixed blocks and will be ineligible to set prices. Thus, for all sets s∈SHE such that: $\sum_{t \in TS_{tod}} \left(\sum_{b \in B_s^{HE}} \left(ODG_{t,b}^{PDS} \cdot MinQDGC_b + \sum_{k \in K_{t,b}^E} SDG_{t,b,k}^{PDS} \right) \right) \leq MinSDEL_{tod,s} - EngyUsedSHE_s$, the following constraints must hold for all time-steps $t \in TS_{tod}$, hydroelectric resource buses $b \in B_s^{HE}$ and offer laminations $k \in K_{t,b}^E$: $SDG_{t,b,k} \geq SDG_{t,b,k}^{PDS}$. If the look-ahead period spans two dispatch days, then for all sets s∈SHE such that: $$\sum_{t \in TS_{tom}} \left(\sum_{b \in B_s^{HE}} \left(ODG_{t,b}^{PDS} \cdot MinQDGC_b + \sum_{k \in K_{t,b}^E} SDG_{t,b,k}^{PDS} \right) \right) \leq MinSDEL_{tom,s}$$ the following constraints must hold for all time-steps $t \in TS_{tom}$, hydroelectric resource buses $b \in B_s^{HE}$ and offer laminations $k \in K_{t,b}^E$: $SDG_{t,b,k} \geq SDG_{t,b,k}^{PDS}$.	Shared Minimum Daily Energy Limit A similar constraint holds for all sets of hydroelectric resources with a shared minimum daily energy limit that was binding in Pre-Dispatch Scheduling. In each hour, the sum of energy schedules calculated in Pre-Dispatch Scheduling for all resources in each set will be ineligible to set prices. Energy schedules for individual resources in each set may be changed compared to schedules in Pre-Dispatch Scheduling, but the sum of energy scheduled in each set will be at least equal to the sum of energy scheduled in Pre-Dispatch Scheduling. Thus, for all sets s∈SHE such that: $\sum_{t \in TS_{tod}} \left(\sum_{b \in B_s^{HE}} \left(ODG_{t,b}^{PDS} \cdot MinQDGC_b + \sum_{k \in K_{t,b}^E} SDG_{t,b,k}^{PDS} \right) \right) \leq MinSDEL_{tod,s} - EngyUsedSHE_s$, the following constraints must hold for all time-steps $t \in TS_{tod}$: $\sum_{b \in B_s^{HE}} \left(ODG_{t,b} \cdot MinQDGC_b + \sum_{k \in K_{t,b}^E} SDG_{t,b,k} \right) \geq \sum_{b \in B_s^{HE}} \left(ODG_{t,b}^{PDS} \cdot MinQDGC_b + \sum_{k \in K_{t,b}^E} SDG_{t,b,k}^{PDS} \right)$. If the look-ahead period spans two dispatch days, then for all sets s∈SHE such that: $$\sum_{t \in TS_{tom}} \left(\sum_{b \in B_s^{HE}} \left(ODG_{t,b}^{PDS} \cdot MinQDGC_b + \sum_{k \in K_{t,b}^E} SDG_{t,b,k}^{PDS} \right) \right) \leq MinSDEL_{tom,s}$$ the following constraints must hold for all time-steps $t \in TS_{tom}$: $$\sum_{b \in B_s^{HE}} \left(ODG_{t,b} \cdot MinQDGC_b + \sum_{k \in K_{t,b}^E} SDG_{t,b,k} \right) \geq [\![\sum_{b \in B_s^{HE}} \left(ODG_{t,b}^{PDS} \cdot MinQDGC_b + \sum_{k \in K_{t,b}^E} SDG_{t,b,k}^{PDS} \right) \right)$$	Version 1.0 equation distributed shared minimum DEL to individual resources. Version 2.0 more appropriately limits sum of schedules within the group, allowing for individual resource flexibility.

Section	Reason	Original Text	Revised Text	Comments
3.6.2.3	Design Change	Shared Maximum Daily Energy Limit Hydroelectric resources with a binding maximum daily energy limit are constrained as per the energy-limited resource constraints described above. Similar constraints hold for all sets of hydroelectric resources with a shared maximum daily energy limit that was binding in Pre-Dispatch Scheduling. For all resources in the set, the schedules calculated in Pre-Dispatch Scheduling will determine the price-setting eligibility of the resource's energy and operating reserve offer laminations. In each hour, energy or operating reserve laminations up to the total amount of energy and operating reserve scheduled in Pre-Dispatch Scheduling will be eligible to set prices. For all sets s∈SHE, if there exists $T \in TS_{tod}$ such that $\sum_{t=2..T}\left(\sum_{b\in B_s^{HE}}\left(ODG_{t,b}^{PDS}\cdot MinQDGC_b + \sum_{k\in K_{t,b}^{E}} SDG_{t,b,k}^{PDS}\right)\right) + \sum_{b\in B_s^{HE}}\left(10ORConv\left(\sum_{k\in K_{T,b}^{10S}} S10SDG_{T,b,k}^{PDS} + \sum_{k\in K_{T,b}^{10N}} S10NDG_{T,b,k}^{PDS}\right) + 30ORConv\left(\sum_{k\in K_{T,b}^{30R}} S30RDG_{T,b,k}^{PDS}\right)\right) = MaxSDEL_{tod,s} - EngyUsedSHE_s,$ then the maximum daily energy limit constraint is considered to be binding for the current dispatch day in Pre-Dispatch Scheduling.	Shared Maximum Daily Energy Limit Hydroelectric resources with a binding maximum daily energy limit are constrained as per the energy-limited resource constraints described above. Similar constraints hold for all sets of hydroelectric resources with a shared maximum daily energy limit that was binding in Pre-Dispatch Scheduling. In each hour, the sum of energy schedules calculated in Pre-Dispatch Scheduling for all resources in each set will be eligible to set prices. Energy schedules for individual resources in each set may be changed compared to schedules in Pre-Dispatch Scheduling, but the sum of energy scheduled in each set will be less than or equal to the sum of energy scheduled in Pre-Dispatch Scheduling. For all sets s∈SHE, if there exists $T \in TS_{tod}$such that $\sum_{t=2..T}\left(\sum_{b\in B_s^{HE}}\left(ODG_{t,b}^{PDS}\cdot MinQDGC_b + \sum_{k\in K_{t,b}^{E}} SDG_{t,b,k}^{PDS}\right)\right) + \sum_{b\in B_s^{HE}}\left(10ORConv\left(\sum_{k\in K_{T,b}^{10S}} S10SDG_{T,b,k}^{PDS} + \sum_{k\in K_{T,b}^{10N}} S10NDG_{T,b,k}^{PDS}\right) + 30ORConv\left(\sum_{k\in K_{T,b}^{30R}} S30RDG_{T,b,k}^{PDS}\right)\right) = MaxSDEL_{tod,s} - EngyUsedSHE_s.$ then the maximum daily energy limit constraint is considered to be binding for the current dispatch day in Pre-Dispatch Scheduling.	Version 1.0 equation distributed shared maximum DEL to individual resources. Version 2.0 more appropriately limits sum of schedules within the group, allowing for individual resource flexibility.

Section	Reason	Original Text	Revised Text	Comments
3.6.2.3	Design Change	Shared Maximum Daily Energy Limit [Cont'd] In such circumstances, the following constraint must hold for all hydroelectric resource buses $b \in B_s^{HE}$ and time-steps $t \in TS_{tod}$: $\sum_{k\in K_{t,b}^{E}} SDG_{t,b,k} + \sum_{k\in K_{t,b}^{10S}} S10SDG_{t,b,k} + \sum_{k\in K_{t,b}^{10N}} S10NDG_{t,b,k} + \sum_{k\in K_{t,b}^{30R}} S30RDG_{t,b,k} \le \sum_{k\in K_{t,b}^{E}} SDG_{t,b,k}^{PDS} + \sum_{k\in K_{t,b}^{10S}} S10SDG_{t,b,k}^{PDS} + \sum_{k\in K_{t,b}^{10N}} S10NDG_{t,b,k}^{PDS} + \sum_{k\in K_{t,b}^{30R}} S30RDG_{t,b,k}^{PDS}$. If the look-ahead period spans two dispatch days, if there exists a time-step $T \in TS_{tom}$ such that $\sum_{t=t_{tom}..T}\left(\sum_{b\in B_s^{HE}}\left(ODG_{t,b}^{PDS}\cdot MinQDGC_b + \sum_{k\in K_{t,b}^{E}} SDG_{t,b,k}^{PDS}\right)\right) + \sum_{b\in B_s^{HE}}\left(10ORConv\left(\sum_{k\in K_{T,b}^{10S}} S10SDG_{T,b,k}^{PDS} + \sum_{k\in K_{T,b}^{10N}} S10NDG_{T,b,k}^{PDS}\right) + 30ORConv\left(\sum_{k\in K_{T,b}^{30R}} S30RDG_{T,b,k}^{PDS}\right)\right) = MaxSDEL_{tom,s}$, then the maximum daily energy limit constraint is considered to be binding for the next dispatch day in Pre-Dispatch Scheduling. In such circumstances, the following constraint must hold for all hydroelectric resource buses b ∈B_s^HE and time-steps $t \in TS_{tom}$: $\sum_{k\in K_{t,b}^{E}} SDG_{t,b,k} + \sum_{k\in K_{t,b}^{10S}} S10SDG_{t,b,k} + \sum_{k\in K_{t,b}^{10N}} S10NDG_{t,b,k} + \sum_{k\in K_{t,b}^{30R}} S30RDG_{t,b,k} \le \sum_{k\in K_{t,b}^{E}} SDG_{t,b,k}^{PDS} + \sum_{k\in K_{t,b}^{10S}} S10SDG_{t,b,k}^{PDS} + \sum_{k\in K_{t,b}^{10N}} S10NDG_{t,b,k}^{PDS} + \sum_{k\in K_{t,b}^{30R}} S30RDG_{t,b,k}^{PDS}$.	Shared Maximum Daily Energy Limit [Cont'd] In such circumstances, the following constraint must hold for all time-steps $t \in TS_{tod}$: $\sum_{b\in B_s^{HE}}\left(\sum_{k\in K_{t,b}^{E}} SDG_{t,b,k} + \sum_{k\in K_{t,b}^{10S}} S10SDG_{t,b,k} + \sum_{k\in K_{t,b}^{10N}} S10NDG_{t,b,k} + \sum_{k\in K_{t,b}^{30R}} S30RDG_{t,b,k}\right) \le \sum_{b\in B_s^{HE}}\left(\sum_{k\in K_{t,b}^{E}} SDG_{t,b,k}^{PDS} + \sum_{k\in K_{t,b}^{10S}} S10SDG_{t,b,k}^{PDS} + \sum_{k\in K_{t,b}^{10N}} S10NDG_{t,b,k}^{PDS} + \sum_{k\in K_{t,b}^{30R}} S30RDG_{t,b,k}^{PDS}\right)$. If the look-ahead period spans two dispatch days, if there exists a time-step $T \in TS_{tom}$ such that $\sum_{t=t_{tom}..T}\left(\sum_{b\in B_s^{HE}}\left(ODG_{t,b}^{PDS}\cdot MinQDGC_b + \sum_{k\in K_{t,b}^{E}} SDG_{t,b,k}^{PDS}\right)\right) + \sum_{b\in B_s^{HE}}\left(10ORConv\left(\sum_{k\in K_{T,b}^{10S}} S10SDG_{T,b,k}^{PDS} + \sum_{k\in K_{T,b}^{10N}} S10NDG_{T,b,k}^{PDS}\right) + 30ORConv\left(\sum_{k\in K_{T,b}^{30R}} S30RDG_{T,b,k}^{PDS}\right)\right) = MaxSDEL_{tom,s}$, then the maximum daily energy limit constraint is considered to be binding for the next dispatch day in Pre-Dispatch Scheduling. In such circumstances, the following constraint must hold for all and time-steps $t \in TS_{tom}$: $\sum_{b\in B_s^{HE}}\left(\sum_{k\in K_{t,b}^{E}} SDG_{t,b,k} + \sum_{k\in K_{t,b}^{10S}} S10SDG_{t,b,k} + \sum_{k\in K_{t,b}^{10N}} S10NDG_{t,b,k} + \sum_{k\in K_{t,b}^{30R}} S30RDG_{t,b,k}\right) \le \sum_{b\in B_s^{HE}}\left(\sum_{k\in K_{t,b}^{E}} SDG_{t,b,k}^{PDS} + \sum_{k\in K_{t,b}^{10S}} S10SDG_{t,b,k}^{PDS} + \sum_{k\in K_{t,b}^{10N}} S10NDG_{t,b,k}^{PDS} + \sum_{k\in K_{t,b}^{30R}} S30RDG_{t,b,k}^{PDS}\right)$.	Version 1.0 equation distributed shared maximum DEL to individual resources. Version 2.0 more appropriately limits sum of schedules within the group, allowing for individual resource flexibility.
3.6.3.1	Clarification	N/A	In Table 3-15, add row: $\mathrm{SPEmT}_{h,c,f}^{AOP}$ shall designate the shadow price for the post-contingency transmission constraint for facility "f ∈ F" in contingency "c ∈ C" in hour "h" .	

Section	Reason	Original Text	Revised Text	Comments
3.6.3.1	Clarification	Resources Tested If both conditions 1 and 2 are met, the PD calculation engine will test financial dispatch data from resources that can meet incremental load within Ontario for global market power, unless such resources are exempt as a result of the conditions below: If the transmission constraints that allow flow from the Northeast electrical zone to Southern Ontario are binding in the southward direction, then no resources in the Northeast and Northwest electrical zones will be tested for global market power. If the transmission constraints that allow flow from the Northwest electrical zone to the Northeast electrical zone are binding in the eastward direction, then no resources in the Northwest electrical zone will be tested for global market power. If resources in any zone have congestion components at least $1/MWh below the internal congestion component at all of the Global Market Power Reference Interties. The process for identifying resources that qualify for the conduct test for global market power in the energy market is as follows: For each time-step t∈TS, if condition 1 and 2 to trigger global market power for energy testing are met: Place all $b \in B^{DG}$ in the set $BCond_t^{GMP}$. Next, for each transmission facility that transmits flow from the Northeast electrical zone to Southern Ontario f∈{NE→SOntario interface}, check if $SPNormT_{h,f}^{AOP} \neq 0$ for the southern flow limit. If true, then remove all resources in the NE and NW zone from the set $BCond_h^{GMP}$. Next, for each transmission facility that transmits flow from the Northwest electrical zone to the Northeast electrical zone f∈{NW→NE interface}, check if $SPNormT_{h,f}^{AOP} \neq 0$ for the eastward flow limit. If true, then remove all resources in the NW zone from the set $BCond_h^{GMP}$. And, for all resources $b \in B^{DG}$ in all zones, if $PCong_{t,b}^{PDP} < PIntCong_{t,d}^{PDP} - \frac{\$1}{MWh}$ where $d \in D^{GMPRef}$ (must be true for all Global Market Power Reference interties), then remove resource from the set $BCond_t^{GMP}$.	Resources Tested If both conditions 1 and 2 are met, the PD calculation engine will test financial dispatch data from resources that can meet incremental load within Ontario for global market power, unless such resources are exempt as a result of the condition below: If resources in any zone have congestion components at least $1/MWh below the internal congestion component at all of the Global Market Power Reference Interties. The process for identifying resources that qualify for the conduct test for global market power in the energy market is as follows: For each time-step t∈TS, if condition 1 and 2 to trigger global market power for energy testing are met: Place all $b \in B^{DG}$ in the set $BCond_t^{GMP}$. Next, for each transmission facility, check if $SPNormT_{h,f}^{AOP} \neq 0$ or $SPEmT_{h,c,f}^{AOP} \neq 0$. If true, then remove all resources that have positive sensitivity factor on that transmission facility from the set $BCond_h^{GMP}$. And, for all resources $b \in B^{DG}$ in all zones, if $PCong_{t,b}^{PDP} < PIntCong_{t,d}^{PDP} - \frac{\$1}{MWh}$ where $d \in D^{GMPRef}$ (must be true for all Global Market Power Reference interties), then remove resource from the set $BCond_t^{GMP}$.	

Section	Reason	Original Text	Revised Text	Comments
3.7.1.3	Clarification	Load Distribution Factors Load distribution factors define the load pattern that will be used to distribute the IESO demand forecast for each demand forecast area. The security assessment function will use load distribution factors to determine forecasted MW quantities at non-dispatchable load locations and price responsive load locations based on the IESO demand forecast.	Load Distribution Factors Load distribution factors define the load pattern that will be used to distribute the IESO demand forecast for each demand forecast area. The security assessment function will use load distribution factors to determine forecasted MW quantities at non-dispatchable load locations, price responsive load locations, and dispatchable loads that have no bid submitted based on the IESO demand forecast.	
3.7.2.2	Clarification	The pre-contingency security assessment will continue to check all monitored equipment for violation of their pre-contingency thermal limits. It will also check for violation of any applicable OSL equations. For every violated limit, a linearized constraint will be generated. These linearized constraints will be expressed in terms of scheduling variables and sensitivity factors so they can be provided to the optimization function to be used in the next optimization function iteration.	When the AC or non-linear DC power flow solution is used, the pre-contingency security assessment will continue to check all monitored equipment for violation of their pre-contingency thermal limits. It will also check for violation of any applicable OSL equations. For every violated limit, a linearized constraint will be generated. When the linear DC power flow solution is used, the pre-contingency security assessment may develop linear constraints to help the AC or non-linear DC power flow solution converge in the subsequent iterations. These linearized constraints will be expressed in terms of scheduling variables and sensitivity factors so they can be provided to the optimization function to be used in the next optimization function iteration.	
Added section 3.10.6	Conforming Change	N/A	[Summary of change below. Refer to the detailed design document for relevant mathematical representations.] Translation of PSU Schedules to PU Schedules. This section describes the logic for translating energy and operating reserve schedules for the PSUs representing a combined cycle facility to energy and operating reserve schedules for the corresponding physical units.	The information in this section reflects the design described in the RT calculation engine. This section was not included in V1.0 of the PD calculation engine detailed design. It is being added to version 2.0 for consistency.
Added section 3.10.7	Conforming Change	N/A	Pricing for PSUs The PD calculation engine will produce prices for PSUs by calculating weighted average marginal loss factors and weighted average sensitivities based on the PSU model parameters and scheduling results.	The addition of this section conforms to the Pricing for PSUs section in DAM. The same PSU pricing design described in the DAM will apply to the PD timeframe.

Section	Reason	Original Text	Revised Text	Comments
3.11	Clarification	The IESO demand forecasts for each demand forecast area will be distributed to all load facilities with delivery points in th areas using the load distribution factors described in Section 3.7.1.3. The forecast quantity for time-step t, FL_t, will be obtained by adding: The forecast MW quantities reflecting losses; The forecast MW quantities distributed to delivery points for non-dispatchable loads; The forecast MW quantities distributed to delivery points for price responsive loads; and the forecast MW quantities distributed to delivery points for dispatchable loads when no bid is submitted for a dispatchable load; and then subtracting: the total of the bid quantities submitted for virtual hourly demand response resources; and the bid quantities for physical hourly demand response resources.	The IESO demand forecasts for each demand forecast area, after subtracting the total of the bid quantities submitted for virtual hourly demand response resources, will be distributed to all load facilities with delivery points in the areas using the load distribution factors described in Section 3.7.1.3. The distributed forecast MW quantities will then be adjusted to account for the bid quantities for physical hourly demand response resources by subtracting the bid quantities for physical hourly demand response resources from their associated load facilities. The forecast quantity for time-step t, FL_t, will be obtained by adding: The forecast MW quantities reflecting losses; The forecast MW quantities distributed to delivery points for non-dispatchable loads; The forecast MW quantities distributed to delivery points for price responsive loads; and the forecast MW quantities distributed to delivery points for dispatchable loads when no bid is submitted for a dispatchable load.	

11. Real-Time Calculation Engine

Section	Reason	Original Text	Revised Text	Comments
Various	Clarification	Ontario zonal price	RT Ontario Zonal Price	Usage of the term "RT Ontario Zonal Price" consistently throughout the document.
Various	Clarification	…demand forecast… OR …demand forecast of non-dispatchable load…	…non-dispatchable demand forecast…	Usage of "non-dispatchable demand forecast" consistently, reflecting a forecast input consisting of loads considered non-dispatchable and losses.
3.4.1.5	Clarification	Regulation: The IESO will continue to enter into contracts with market participants for certain dispatchable generation resources to provide regulation. RT offers must be submitted for such generation resources. A resource providing AGC will be scheduled to at least the more restrictive of its minimum AGC limit and its minimum loading point plus the designated AGC range. It will be scheduled to at most the more restrictive of its maximum AGC limit and its maximum offered energy quantity minus the designated AGC range. Generation resources nominated to provide AGC are not allowed to supply operating reserve into the real-time market and therefore, the RT calculation engine will not schedule operating reserve from a resource nominated to provide AGC. Although the RT calculation engine will schedule energy from an AGC provider within the range described above, this schedule will not be issued as a dispatch instruction for energy. It will be used by the AGC function as the economic basepoint around which to raise and lower signals in response to Area Control Error (ACE).	Regulation: The IESO will continue to enter into contracts with market participants for certain dispatchable generation resources to provide regulation. RT offers must be submitted for such generation resources. A resource providing AGC will be scheduled to at least the more restrictive of its minimum AGC limit and its minimum loading point plus the designated AGC range. It will be scheduled to at most the more restrictive of its maximum AGC limit and its maximum offered energy quantity minus the designated AGC range. Generation resources are not allowed to supply operating reserve into the real-time market in hours where AGC is being provided. Therefore, the RT calculation engine will not schedule operating reserve from a resource in these hours. Although the RT calculation engine will schedule energy from an AGC provider within the range described above, this schedule will not be issued as a dispatch instruction for energy. It will be used by the AGC function as the economic basepoint around which to raise and lower signals in response to area control error (ACE).	
3.5.2	Clarification	The load forecasts used by the optimization function will be modified to reflect only nodes in the largest island; and	The load forecasts used by the optimization function will only include demand forecast areas in the largest island; and	

Section	Reason	Original Text	Revised Text	Comments
3.7.2.2	Clarification	The pre-contingency security assessment will continue to check all monitored equipment for violation of their pre-contingency thermal limits. It will also check for violation of any applicable OSL equations. For every violated limit, a linearized constraint will be generated.	When the AC or non-linear DC power flow solution is used, the pre-contingency security assessment will continue to check all monitored equipment for violation of their pre-contingency thermal limits. It will also check for violation of any applicable OSL equations. For every violated limit, a linearized constraint will be generated. When the linear DC power flow solution is used, the pre-contingency security assessment may develop linear constraints to help the AC or non-linear DC power flow solution converge in the subsequent iterations. These linearized constraints will be expressed in terms of scheduling variables and sensitivity factors so they can be provided to the optimization function to be used in the next optimization function iteration.	
3.10.2.1	Clarification	The last step is to apply the de-rate to the amount of energy offered attributed to each CT and ST portion, respecting the proportional loading.	The last step is to recalculate the operating regions based on the application of the PU de-rates and the available parts of the CT and ST.	
3.10.2.2	Clarification	The offer quantity that may be scheduled for energy and operating reserve in each operating region for interval i∈I will be calculated for each PSU k∈{1,..,K}, where: $QMLP_{i,k}$ indicates the quantity that may be scheduled in the MLP region; $QDR_{i,k}$ indicates the quantity that may be scheduled in the dispatchable region; and $QDF_{i,k}$ indicates the quantity that may be scheduled in the duct firing .	Once the de-rated operating regions have been established, scheduling limitations will be applied so that the corresponding unavailable offer laminations will not be scheduled for energy and operating reserve. The offer quantity laminations that may be scheduled for energy and operating reserve in each operating region for interval "i ∈ I" will be calculated for each PSU "k ∈ {1,..,K}" , where: $\mathrm{QMLP}_{\mathrm{i,k}}$ indicates the total quantity that may be scheduled in the MLP region; $\mathrm{QDR}_{\mathrm{i,k}}$ indicates the total quantity that may be scheduled in the dispatchable region; and $\mathrm{QDF}_{\mathrm{i,k}}$ indicates the total quantity that may be scheduled in the duct firing region.	

Section	Reason	Original Text	Revised Text	Comments
3.10.2.2	Clarification	These quantities will be determined as follows: the first $MLP_{i,k}$ quantity offered will comprise the MLP region offer laminations; the next MDR_k quantity offered will comprise the dispatchable region offer laminations, but only the first $DR_{i,k}$ will be eligible for scheduling; and the next MDF_k quantity offered will comprise the duct firing region offer laminations, but only the first $DF_{i,k}$ will be eligible for scheduling.	The available offered quantity laminations will be determined as follows: The first offered quantity laminations up to $MLP_{i,k}$ will comprise the MLP region offer laminations; The available laminations will have an offered quantity less than $QMLP_{t,k}$. The offered quantity laminations between $MLP_{i,k}$ and $MDR_{i,k}$ will comprise the dispatchable region offer laminations. The available laminations will have an offered quantity between than $MLP_{i,k}$ and $QDR_{i,k}$; and The offered quantity laminations between $MDR_{i,k}$ and $DF_{i,k}$ will comprise the duct firing region offer laminations. The available laminations will have an offered quantity between than $MDR_{i,k}$ and $QDF_{i,k}$.	
Added 3.10.7	Clarification	N/A	3.10.7. Pricing for PSUs The RT calculation engine will produce prices for PSUs by calculating weighted average marginal loss factors and weighted average sensitivities based on the PSU model parameters and scheduling results.	

12. Market Power Mitigation

Section	Reason	Original Text	Revised Text	Comments
2.2.1	Clarification	[...] If the impact test is failed, each dispatch data value that failed the conduct test is substituted with the applicable reference level values. Prices are then determined using the substituted reference levels in place of the as-offered dispatch data values.	[...] If the impact test is failed, each dispatch data value that failed the conduct test is substituted with the applicable reference level values. Prices are then determined using the substituted reference levels in place of the as-offered dispatch data values. Passing the ex-ante price impact test does not exempt a resource from testing for settlement mitigation or for physical withholding.	
2.2.1	Clarification	As competition is more restricted, impact thresholds become narrower.	As competition is more restricted, impact thresholds decrease.	
2.2.4	Clarification	This ex-ante mitigation process will be a part of the determination of outcomes in the IESO's day-ahead, pre-dispatch and real-time calculation engines.	This ex-ante mitigation process will be a part of the determination of outcomes in the IESO's day-ahead, and pre-dispatch calculation engines. The real-time calculation engine will use mitigated dispatch data from the pre-dispatch scheduling process that persists into the real-time scheduling process.	
2.2.4.	Clarification	[...] In general, resources that act as suppliers of a product will be tested for market power in the supply of that product. For example, generation resources are suppliers of energy and thus will be tested for market power in the energy market.	[...] In general, resources that act as suppliers of a product will be tested for market power in the supply of that product. For example, generation resources are suppliers of energy and thus will be tested for market power in the energy market. Dispatchable loads and hourly demand response resources will not be tested for market power in the energy market.	
2.2.4	Clarification	Typically, dispatchable loads and hourly demand response resources pay the energy price to consume energy and thus have little incentive to exercise market power in the energy market.	Typically, dispatchable loads and the load facilities associated with hourly demand response resources pay the energy price to consume energy and thus have little incentive to exercise market power in the energy market.	
2.2.4.1	Design Change	N/A	Market participants may request a third-party review of certain aspects of the materials submitted in support of a market participant's proposed reference levels or reference quantities as part of the registration process. This will be known as the independent review process. Market participants may request review of reference level cost eligibility and amount, supporting material eligibility, and of the IESO's proposed opportunity cost and reference quantity methodologies.	Design change in response to stakeholder feedback.
2.2.5	Clarification	N/A	Such tests will not be applicable to energy bids from dispatchable loads or hourly demand response resources.	

Section	Reason	Original Text	Revised Text	Comments
3.4.1	Clarification	Where competition is more frequently restricted, or absent, conduct thresholds will be narrow and will allow a dispatch data value to deviate less from its reference level without failing the conduct test.	Where competition is more frequently restricted, or absent, conduct thresholds will decrease and will allow a dispatch data value to deviate less from its reference level without failing the conduct test.	
3.4.1	Clarification	When competition is infrequently restricted, price impact thresholds will be broad. When competition is more frequently restricted, or absent, impact thresholds will be narrow.	When competition is infrequently restricted, price impact thresholds will be broad. When competition is more frequently restricted, or absent, impact thresholds will decrease .	
3.6.1.1	Conforming Change	The condition for testing for local market power in an NCA or a DCA will be met when at least one of the transmission constraints that define an NCA or a DCA is binding in the as-offered scheduling pass of the relevant calculation engine.	The condition for testing for local market power in an NCA or a DCA will be met when at least one of the transmission constraints that define an NCA or a DCA is binding in the as-offered scheduling step of the relevant calculation engine.	Conforming editorial change reflecting the language used in the calculation engine detailed design documents.
3.6.1.1	Clarification	Offer price is greater than either 50% or $25/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	Offer price is greater than the lesser of 50% or $25/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	
3.6.1.1	Clarification	Energy LMP in the as-offered pricing pass of the relevant calculation engine is either 50% higher than or $25/MWh above the energy LMP from the reference level pricing pass.	Energy LMP in the as-offered pricing step of the relevant calculation engine is greater than the energy LMP from the reference level pricing step by the lesser of 50% or $25/MWh.	
3.6.1.2	Design Change	Offer price is greater than either 200% or $100/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	Offer price is greater than the lesser of 300% or $100/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	Design change in response to stakeholder feedback.
3.6.1.2	Clarification	Energy LMP in the as-offered pricing pass of the relevant calculation engine is either 100% higher than or $50/MWh above the energy LMP from the reference level pricing pass.	Energy LMP in as-offered pricing step of the relevant calculation engine is greater than the energy LMP from reference level pricing step by the lesser of 100% or $50/MWh.	
3.6.1.3	Design Change	Offer price is greater than either 200% or $100/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	Offer price is greater than the lesser of 300% or $100/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	Design change in response to stakeholder feedback.
3.6.1.3	Clarification	Energy LMP at each of the Global Market Power Reference Interties in the as-offered pricing pass of the relevant calculation energy is either 100% higher than or $50/MWh above the energy LMP at the same Global Market Power Reference Intertie in the reference level pricing pass	Energy LMP at each of the Global Market Power Reference Interties in as-offered pricing step of the relevant calculation engine is greater than the energy LMP at the same Global Market Power Reference Intertie in reference level pricing by the lesser of 100% or $50/MWh.	

Section	Reason	Original Text	Revised Text	Comments
3.6.1.3	Clarification	If the conditions for global market power are met for the one-hour ahead in the pre-dispatch scheduling process, then resources tested for that dispatch hour will continue to be tested during the real-time dispatch for that hour. This will be subject to the ability to run conduct and impact tests in the real-time dispatch. These resources will be tested regardless of whether real-time conditions meet the conditions to test for mitigation.	[Deleted]	Ex-ante conduct and impact tests will not be run in the real-time dispatch due to run-time limitations.
3.6.1.3	Clarification	• Other reasons: Operational actions such as pre-emptive curtailment and transmission loading relief actions can prevent flow from other jurisdictions without necessarily resulting in import congestion or in the NISL binding. Where possible, the IESO will design automated checks to identify instances in the day-ahead scheduling process or the pre-dispatch scheduling process when these other reasons result in an inability to schedule incremental imports. The incremental import conditions for these other reasons will be met if: o Operational actions are preventing incremental imports on one of the Global Market Power Reference Interties and there are negative congestion components at all of the other Global Market Power Reference Interties, or o Operational actions are preventing incremental imports on all of the Global Market Power Reference Interties.	[Deleted]	It is not practical for the IESO to implement the automated checks referred to in the original text.
3.6.1.3	Design Change	N/A	The pre-dispatch scheduling process will not assess day-at-hand imports or exports further than two-hours ahead of the dispatch hour. As a result, the IESO will only assess global market power in only the two-hour ahead run of the pre-dispatch scheduling process.	Incremental imports on the global market power reference interties will not be available until two-hours prior to the dispatch hour. The revision avoids testing for global market power unnecessarily in pre-dispatch for every previous hour.

Section	Reason	Original Text	Revised Text	Comments
3.6.1.3	Design Change	Pre-dispatch Look-Ahead: The pre-dispatch scheduling process will not assess day-at-hand imports or exports further than two-hours ahead of the dispatch hour. As a result, the incremental import condition for hours further than two-hours from the dispatch hour is always met;	[Deleted]	Incremental imports on the global market power reference interties will not be available until two-hours prior to the dispatch hour. The revision avoids testing for global market power unnecessarily in pre-dispatch for every previous hour.
3.6.1.3	Clarification	Mitigation Timing: The IESO will test for global market power in the day-ahead market and in each run of the pre-dispatch scheduling process.	Mitigation Timing: The IESO will test for global market power in the day-ahead market and in the two-hour ahead run of the pre-dispatch scheduling process. Global market power tests will not be conducted in the real-time dispatch .	
3.6.2.1	Conforming Change	2. Fail if the price in the as-offered pricing pass exceeds the price in the reference level pricing pass by more than the impact threshold.	2. Fail if the price in the as-offered pricing step exceeds the price in the reference level pricing step by more than the impact threshold.	Conforming editorial change reflecting the language used in the calculation engine detailed design documents.
3.6.2.1	Conforming Change	Operating reserve LMP in the as-offered pricing pass of the relevant calculation engine is higher than operating reserve LMP from the reference level pricing pass	Operating reserve LMP in the as-offered pricing step of the relevant calculation engine is higher than operating reserve LMP from the reference level pricing step.	Conforming editorial change reflecting the language used in the calculation engine detailed design documents.
Table 3-11	Clarification	Operating reserve offer Offer price is greater than either 10% or $ 25/MW above reference level value; offers below $5/MW excluded from economic withholding tests.	Operating reserve offer Offer price is greater than the lesser of 10% or $ 25/MW above reference level value; offers below $5/MW excluded from economic withholding tests.	
Table 3-11	Clarification	Energy offers for the range of production up to MLP Offer price is greater than 10% or $25/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	Energy offers for the range of production up to MLP Offer price is greater than the lesser of 10% or $25/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	

Section	Reason	Original Text	Revised Text	Comments
3.6.2.2	Clarification	Operating reserve LMP in the as-offered pricing pass of the relevant calculation engine is 50% higher than or $25/MW above the operating reserve LMP from the reference level pricing pass.	Operating reserve LMP in as-offered pricing step of the relevant calculation engine is greater than the operating reserve LMP from the reference level pricing step by the lesser of 50% or $25/MW.	
Table 3-13	Clarification	Operating reserve offer Offer price is greater than either 50% or $25/MW above reference level value; offers below $5/MW are excluded from economic withholding tests.	Operating reserve offer Offer price is greater than the lesser of 50% or $25/MW above reference level value; offers below $5/MW are excluded from economic withholding tests.	
Table 3-13	Clarification	Energy offers for the range of production up to MLP Offer price is greater than either 50% or $25/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	Energy offers for the range of production up to MLP Offer price is greater than the lesser of 50% or $25/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	
3.7	Clarification	Mitigation tests for price impact will be applied in the day-ahead market (DAM) and the pre-dispatch (PD) scheduling processes. If processing time permits, the IESO will also implement mitigation tests for price impact in the real-time dispatch (RTD) scheduling process. Whether this is possible will be determined in the implementation phase. The following sub-sections discuss how the scheduling processes will incorporate the mitigation tests for price impact in the three different timeframes. The following sub-sections focus on how the price impact mitigation tests will be applied in the DAM and PD scheduling processes.	Mitigation tests for price impact will be applied in the day-ahead market (DAM) and the pre-dispatch (PD) scheduling processes. Due to run-time considerations, the real-time calculation engine will not perform testing for ex-ante mitigation. Mitigation decisions that are made by the PD calculation engine will be carried forward into the real-time calculation engine. The following sub-sections discuss how the price impact mitigation tests will be applied in the DAM and PD scheduling processes.	
3.7.1	Clarification	N/A	For the PD calculation engine, when the conduct and impact tests are failed, the decision to mitigate a particular resource for the relevant dispatch hour will be an input into all subsequent runs of the PD calculation engine leading up to the relevant dispatch hour. Subsequent runs of the PD calculation engine will not re-assess the mitigation test results for that resource for the relevant dispatch hour unless updated offers that are priced lower than the respective reference levels are submitted for the resource. Such updated offers will be used by the conduct and impact tests in subsequent runs of the PD calculation engine.	
3.7.1.1	Clarification	If the price impact test fails for any hour up to and including the hour that met the relevant conditions for price impact testing, then the IESO will replace the commitment cost offers for all hours leading up to and including that hour with the appropriate reference level values.	If the price impact test fails for any hour, then for all hours up to and including the hour when the price impact test was failed, all resources that also failed the conduct test for commitment costs will have their commitment cost offers replaced with the relevant reference levels.	

Section	Reason	Original Text	Revised Text	Comments
3.7.2	Clarification	Mitigation may be applied based on conduct and impact testing within the RT calculation engine. If mitigation is instead applied in RTD based on an assessment by the PD calculation engine, then the decision to mitigate RTD will be made with hourly granularity for an entire dispatch hour based on the last PD results for the dispatch hour.	Mitigated dispatch data will be applied in real time based on the results of the PD calculation engine. The mitigation results from pre-dispatch will apply to an entire dispatch hour.	
Table 3-17	Design Change	Energy offer Offer price is greater than either 200% or $100/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	Energy offer Offer price is greater than the lesser of 300% or $100/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	Design change in response to stakeholder feedback.
Table 3-18	Design Change	Make-whole payment based on the dispatch data used to set schedules and prices is more than 10% higher than the make-whole payment based on reference level values for offers parameters which failed the conduct test.	Make-whole payment based on the dispatch data used to set schedules and prices is more than 20% higher than the make-whole payment based on reference level values for offers parameters which failed the conduct test.	Design change in response to stakeholder feedback.
Table 3-19	Clarification	Offer price is greater than 10% or $25/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	Offer price is greater than the lesser of 10% or $25/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	
Table 3-15	Clarification	Energy offer Offer price is greater than either 50% or $25/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	Energy offer Offer price is greater than the lesser of 50% or $25/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	
3.8.4	Clarification	Conditions: When any of the following conditions are met, the IESO will carry out the conduct and impact tests for make-whole payment impact for global market power: • Any resource that was tested for global market power for price impact but was not mitigated and would otherwise receive a make-whole payment; or • Any NQS resource that was committed in the pre-dispatch scheduling process and is otherwise receiving an unmitigated make-whole payment for that commitment that exceeds $15,000; or	Conditions: When any of the following conditions are met, the IESO will carry out the conduct and impact tests for make-whole payment impact for global market power: • Any resource that was tested for global market power for price impact but was not mitigated and would otherwise receive a make-whole payment; or • Any NQS resource that was committed in the pre-dispatch scheduling process and is otherwise receiving an unmitigated make-whole payment for that commitment that exceeds $15,000; or • Any NQS resource that was committed in the Reliability Scheduling Pass of the DAM Calculation Engine; or • Any resource that submitted a new or revised energy offer within the real-time market mandatory window that was approved by the IESO.	
3.8.4	Clarification	The set of resources that meet either of the two conditions above will be tested for make-whole payment impact.	The set of resources that meet either of the four conditions above will be tested for make-whole payment impact.	

Section	Reason	Original Text	Revised Text	Comments
3.8.4	Design Change	Any NQS resource that was committed in the pre-dispatch scheduling process and is otherwise receiving an unmitigated make-whole payment for that commitment that exceeds $10,000;	Any NQS resource that was committed in the pre-dispatch scheduling process and is otherwise receiving an unmitigated make-whole payment for that commitment that exceeds $15,000;	Design change in response to stakeholder feedback.
Table 3-21	Design Change	Energy offer Offer price is greater than either 200% or $100/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	Energy offer Offer price is greater than the lesser of 300% or $100/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	Design change in response to stakeholder feedback.
Table 3-22	Design Change	Make-whole payment based on the dispatch data used to set schedules and prices is more than 10% higher than the make-whole payment based on reference level values for offers parameters which failed the conduct test.	Make-whole payment based on the dispatch data used to set schedules and prices is more than 20% higher than the make-whole payment based on reference level values for offers parameters which failed the conduct test.	Design change in response to stakeholder feedback.
3.8.5	Clarification	The resource was tested for local market power for operating reserve price impact;	The resource was tested for local market power for operating reserve price impact[9]; New footnote [9] added: Unlike price impact testing, resources that are within an operating reserve area with a MIN constraints greater than 0 MW and also within an operating reserve area with a binding MAX area reserve constraint are not excluded from testing for make-whole payment impact.	
Table 3-23	Clarification	Operating reserve offer Offer price is greater than either 10% or $25/MW above reference level value; offers below $5/MW are excluded from economic withholding tests.	Operating reserve offer Offer price is greater than the lesser of 10% or $25/MW above reference level value; offers below $5/MW are excluded from economic withholding tests.	
Table 3-23	Clarification	Energy offers for the range of production up to MLP Offer price is greater than 10% or $25/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	Energy offers for the range of production up to MLP Offer price is greater than the lesser of 10% or $25/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	
3.8.6	Design Change	An NQS resource is committed and scheduled to provide operating reserve, and would otherwise receive an unmitigated make-whole payment for that commitment that exceeds $10,000	An NQS resource is committed and scheduled to provide operating reserve, and would otherwise receive an unmitigated make-whole payment for that commitment that exceeds $15,000	Design change in response to stakeholder feedback.
3.8.6	Clarification	Any resource that submitted a new offer within the mandatory window.	Any resource that submitted a new or revised operating reserve offer within the real-time market mandatory window that was approved by the IESO.	

Section	Reason	Original Text	Revised Text	Comments
Table 3-25	Clarification	Operating reserve offer Offer price is greater than 50% or $25/MW above reference level value; offers below $5/MW are excluded from economic withholding tests.	Operating reserve offer Offer price is greater than the lesser of 50% or $25/MW above reference level value; offers below $5/MW are excluded from economic withholding tests.	
Table 3-25	Clarification	Energy offers for the range of production up to MLP Offer price is greater than either 50% or $25/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	Energy offers for the range of production up to MLP Offer price is greater than the lesser of 50% or $25/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests.	
3.9.1	Design Change	If any resource fails the initial conduct and impact tests, the IESO will notify the market participant of the indicative finding and allow them 15 business days to provide relevant supplementary information regarding the reference quantity.	If any resource fails the initial conduct and impact tests, the IESO will notify the market participant of the indicative finding and allow them 30 business days to provide relevant supplementary information regarding the reference quantity.	Design change in response to stakeholder feedback.

Section	Reason	Original Text	Revised Text	Comments
3.9.2	Clarification	A market participant will be deemed the market control entity of its own resource where no other person or persons qualify. For the purposes of performing the physical withholding assessments, affiliates with a voting interest of greater than fifty percent will be deemed to be the market control entity for that resource.	Only one market control entity per resource will be used when assessing physical withholding. The relevant market control entity must be selected by the market participant from among the resource's registered market control entities. The following paragraphs describe how market participants will select the market control entity for a given resource. If the market participant associated with the resource has any form of agreement with an entity whereby: (i) the market participant associated with the resource confers the right or ability to determine the resource's energy and operating reserve offers and bids to that entity; and (ii) that entity is entitled to receive more than 50 per cent of the amounts paid to the market participant in respect of all energy and operating reserve transacted through the energy and operating reserve markets, then the resource's market control entity is that entity. If the criteria for assigning the resource's market control entity above are not met and the market participant associated with the resource is a corporation with share capital, then its market control entity is the entity or individual that (i) holds, directly or indirectly, whether through one or more subsidiaries or otherwise, otherwise than by way of security only, by or for the benefit of that entity or individual securities of the market participant that are attached to more than 50 per cent of the votes that may be cast to elect directors of the market participant; and (ii) the votes attached to those securities are sufficient, if exercised, to elect a majority of the directors of the market participant. If the criteria for assigning the resource's market control entity above are not met and the market participant associated with the resource is a corporation without share capital, then its market control entity is the entity or individual that, directly or indirectly, whether through one or more subsidiaries or otherwise, is able to elect or appoint a majority of the directors of the market participant, other than ex officio directors. If the criteria for assigning the resource's market control entity above are not met and the market participant associated with the resource is an entity other than a corporation, then its market control entity is the entity or individual that holds, directly or indirectly, whether through one or more subsidiaries or otherwise, an interest in the market participant that entitles the entity or individual to receive more than 50 per cent of the profits of the market participant. If the criteria for assigning the resource's market control entity above are not met and the market participant associated with the resource is a limited partnership, then the resource's market control entity is the general partner of that limited partnership. If none of the criteria above for assigning the resource's market control entity are met, then the resource's market control entity is the market participant associated with the resource.	Clarification in response to stakeholder feedback. This language provides more specificity regarding the determination of the market control entity.

Section	Reason	Original Text	Revised Text	Comments
3.9.3	Clarification	Conditions: The IESO will consider the following resources to be eligible for testing for physical withholding: • Resources that have an LMP greater than $25/MWh and an installed capacity of at least 10 MW; and • Resources that have an LMP greater than $25/MWh and the market control entity for each resource has at least 10 MW in aggregate installed capacity.	Conditions: The IESO will consider the following resources to be eligible for testing for physical withholding: • Resources that have a real time or day ahead LMP greater than $25/MWh and an installed capacity of at least 10 MW; and • Resources that have a real time or day ahead LMP greater than $25/MWh and the market control entity for each resource has at least 10 MW in aggregate installed capacity.	
3.9.3	Clarification	In order to be tested for physical withholding, the above-mentioned resources must meet at least one of the following conditions:	•In order to be tested for physical withholding, the above-mentioned resources must meet at least one of the following conditions in the market power mitigation conduct test from the day-ahead market or pre-dispatch calculation engines. [10]: New footnote [10] added: The conduct test step is outline in Section 3.8 of the DAM Calculation Engine detailed design document and section 3.6.3 of the Pre-Dispatch Calculation Engine detailed design document.	

Section	Reason	Original Text	Revised Text	Comments
Table 3-27	Clarification	Global (Energy) • Submitting energy offers of quantities that are lower than either 10% or 100 MW below a resource's reference quantity. • For at least two resources from one market control entity, submitting energy offers of quantities that are in the aggregate, lower than either 5% or 200 MW below the resources' aggregate reference quantities. BCA (Energy) • Submitting energy offers of quantities that are lower than either 10% or 100 MW below a resource's reference quantity. • For at least two resources from one market control entity, submitting energy offers of quantities that are in the aggregate, lower than either 5% or 200 MW below the resources' aggregate reference quantities. NCA (Energy) • Submitting energy offers of quantities that are lower than either 2% or 5 MW below a resources' reference quantity. • For at least two resources from one market control entity, submitting energy offers of quantities that are in the aggregate, lower than 5 MW below the resources' aggregate reference quantities. DCA (Energy) • Submitting energy offers of quantities that are lower than either 2% or 5 MW below a resources' reference quantity. • For at least two resources from one market control entity, submitting energy offers of quantities that are in the aggregate, lower than 5 MW below the resources' aggregate reference quantities.	Global (Energy) • Submitting energy offers of quantities that are lower than a resource's reference quantity by the lesser of 10% or 100 MW. • For at least two resources from one market control entity, submitting energy offers of quantities that are in the aggregate, below the resources' aggregate reference quantities by the lesser of 5% or 200 MW. BCA (Energy) • Submitting energy offers of quantities that are lower than a resource's reference quantity by the lesser of 10% or 100 MW. • For at least two resources from one market control entity, submitting energy offers of quantities that are in the aggregate, below the resources' aggregate reference quantities, by the lesser of 5% or 200 MW NCA (Energy) • Submitting energy offers of quantities that are lower than a resource's reference quantity by the lesser of 2% or 5 MW . • For at least two resources from one market control entity, submitting energy offers of quantities that are in the aggregate, lower than 5 MW below the resources' aggregate reference quantities. DCA (Energy) • Submitting energy offers of quantities that are lower than a resource's reference quantity by the lesser of 2% or 5 MW. • For at least two resources from one market control entity, submitting energy offers of quantities that are in the aggregate, lower than 5 MW below the resources' aggregate reference quantities.	
Table 3-28	Clarification	Global (Energy) As-offered energy LMP 100% or $50/MWh above the reference quantity energy LMP. […] NCA (Energy) As-offered energy LMP is 50% or $25/MWh above the reference energy quantity LMP.	Global (Energy) As-offered energy LMP higher than the reference quantity energy LMP by the lesser of 100% or $50/MWh. […] NCA (Energy) As-offered energy LMP is higher than the reference energy quantity LMP by the lesser of 50% or $25/MWh.	

Section	Reason	Original Text	Revised Text	Comments
Table 3-30	Clarification	Global (operating reserve) • Submitting operating reserve offers of quantities that are either 10% or 100 MW below a resource's reference quantity. • For at least two resources from one market control entity, submitting operating reserve offers of quantities that are in the aggregate, lower than either 5% or 200 MW below the resources' aggregate reference quantities. Local (operating reserve) • Submitting operating reserve offers of quantities that are lower than either 2% or 5 MW below a resource's reference quantity. • For at least two resources from one market control entity, submitting operating reserve offers of quantities that are in the aggregate, lower than 5 MW below the resources' aggregate reference quantities.	Global (operating reserve) • Submitting operating reserve offers of quantities that are below the lesser of 10% of the reference quantity (the minimum value is 5 MWs) or 100 MW below a resource's reference quantity. • For at least two resources from one market control entity, submitting operating reserve offers of quantities that are in the aggregate, lower than the lesser of 5% or 200 MW below the resources' aggregate reference quantities. Local (operating reserve) • Submitting operating reserve offers of quantities that are lower than the lesser of 2% or 5 MW below a resource's reference quantity. • For at least two resources from one market control entity, submitting operating reserve offers of quantities that are in the aggregate, lower than 5 MW below the resources' aggregate reference quantities.	
Table 3-31	Clarification	Global (operating reserve) As-offered operating reserve LMP is 50% or $25/MW above the reference quantity operating reserve LMP.	Global (operating reserve) As-offered operating reserve LMP is greater than the reference quantity operating reserve LMP by the lesser of 50% or $25/MW.	
3.10	Clarification	Figure 3-7 illustrates the ex-post mitigation process that will be implemented by the IESO to test for economic withholding on uncompetitive interties.	Figure 3-7 illustrates the ex-post mitigation process that will be implemented by the IESO to test for price impact of economic withholding on uncompetitive interties.	
3.10	Clarification	Figure 3-7: Conduct and Impact Testing Methodology for Economic Withholding on Uncompetitive Interties	Figure 3-7: Conduct and Impact Testing Methodology for Price Impact of Economic Withholding on Uncompetitive Interties	
3.10	Clarification	Figure 3-7 illustrates the ex-post mitigation process that will be implemented by the IESO to test for economic withholding on uncompetitive interties.	Figure 3-7 illustrates the ex-post mitigation process that will be implemented by the IESO to test for the price impact of economic withholding on uncompetitive interties.	
3.10.2	Design Change	If any market participant on an uncompetitive intertie resource fails the conduct and impact tests, the IESO will notify the market participant of the indicative finding and allow them 15 business days to make representations regarding the intertie reference level.	If any market participant on an uncompetitive intertie resource fails the conduct and impact tests, the IESO will notify the market participant of the indicative finding and allow them 30 business days to make representations regarding the intertie reference level.	Design change in response to stakeholder feedback.
3.10.4	Clarification	If there is an operating reserve price for a class of operating reserves on an uncompetitive intertie greater than a threshold value of $15/MW, offers to import operating reserve of this class on the intertie will be eligible for ex-post testing for operating reserve price impact on an uncompetitive intertie.	If there is an operating reserve LMP for a class of operating reserves on an uncompetitive intertie greater than a threshold value of $15/MW, offers to import operating reserve of this class on the intertie will be eligible for ex-post testing for operating reserve price impact on an uncompetitive intertie.	

Section	Reason	Original Text	Revised Text	Comments
3.10.6	Clarification	Conditions: The resource will be eligible for ex-post testing for energy price impact on an uncompetitive intertie if: • There is a positive congestion component for energy on an uncompetitive intertie greater than a threshold value of $25/MWh; and • The energy offer or bid price is above $25/MWh. Note: The congestion referred to in this section does not relate to intertie congestion.	Conditions: The resource will be eligible for ex-post testing for energy price impact on an uncompetitive intertie if there is a positive congestion component of the IBP [11] for energy on an uncompetitive intertie greater than a threshold value of $25/MWh. New footnote added [11]: The congestion referred to in this section does not relate to intertie congestion price. Refer to Section 3.10.1.2 of the Day-Ahead Market Calculation Engine detailed design document for more information on intertie price components.	
3.11	Design Change	Within 15 business days of receiving the notification, the registered market participant may make written representations regarding the reference quantity or intertie reference level used to determine the settlement charge.	Within 30 business days of receiving the notification, the registered market participant may make written representations regarding the reference quantity or intertie reference level used to determine the settlement charge.	Design change in response to stakeholder feedback.
3.12.1	Design Change	Narrow constrained areas (NCAs) are areas where congestion is expected to be relatively frequent over a relatively long duration. Given the expected frequency when competition would be limited, price or make-whole payment increases above competitive levels could have a material impact on the cost of meeting load.	Narrow constrained areas (NCAs) are areas where congestion occurred relatively frequently in the past and over a relatively long duration. Given the frequency when competition is limited, price or make-whole payment increases above competitive levels could have a material impact on the cost of meeting load.	Designation based on observed congestion, and not on expected congestion, provides better transparency for market participants.
3.12.1.1	Clarification	The IESO's expectations of congestion will be informed by historical data from the previous year and prospective analysis predicting where congestion is expected to continue.	The IESO's expectations of congestion will be informed by historical data from the previous year where congestion occurred.	
3.12.1.2	Clarification	The IESO will use the least expensive fuel type among the registered primary and secondary fuel types for a resource's reference level for the timeframe when it tests a submitted offer for market power. Market participants can request the IESO to change this default fuel type selection if the least expensive fuel (in $/MWh), as flagged by the market participant and approved by the IESO, is unavailable or not preferred because of an acceptable reason for the specific subset of hours during the trading day.	The IESO will use the least expensive fuel type among the registered primary and secondary fuel types for a resource's reference level for the timeframe when it tests a submitted offer for market power. The approach to determine the least expensive fuel type will be based on the total hourly reference level cost of operating the resource at maximum capacity using a selected fuel type. Total Hourly Cost $= (P1 * Q1 + P2 * Q2 + \cdots + P_{max} * Q_{\max}\ ) + \left(\frac{SUC_{ref}}{MGBRT_{ref}}\right) + SNL_{ref}$ Market participants can request the IESO to change this default fuel type selection if the least expensive fuel (in $/MWh), as flagged by the market participant and approved by the IESO, is unavailable or not preferred because of an acceptable reason for the specific subset of hours during the trading day.	

Section	Reason	Original Text	Revised Text	Comments
3.12.2	Clarification	There may be occasions when a transmission constraint binds or is expected to bind relatively frequently but not for a long enough duration to warrant the designation of an NCA. An example of this might be a transmission outage that results, or is expected to result, in increased congestion leading into a load pocket for a period of days. In such cases, these load pockets will be designated as a dynamic constrained area (DCA) for the duration the change in congestion conditions is expected to continue.	There may be occasions when a transmission constraint binds relatively frequently but not for a long enough duration to warrant the designation of an NCA. An example of this might be a transmission outage that results in increased congestion leading into a load pocket for a period of days. In such cases, these load pockets will be designated as a dynamic constrained area (DCA) for the duration of change in congestion conditions.	
3.12.2.1	Design Change	The IESO will determine the set of constrained areas of the transmission grid that meet any of the following conditions and may designate these as DCAs [12] if: • The load pocket is import constrained in more than 15% of hours in a continuous five-day period prior to the current period in either the day-ahead market or the real-time market.; or • The IESO identifies the prospective initiation of an outage or recurring conditions that previously caused a binding import constraint to a load pocket for at least 15% of hours in a continuous 5-day period in either the day-ahead market or the real-time market. Footnote [12]: When analyzing congestion in the real-time market, the IESO will examine pre-dispatch and multi-interval optimization (MIO) scheduling results. If congestion patterns are significantly different in the pre-dispatch and MIO scheduling timeframes, then the IESO will look at both of these timeframes when determining if the designation criteria are met for a given constrained area.	The IESO will determine the set of constrained areas of the transmission grid that are import constrained in more than 15% of hours in a continuous five-day period prior to the current period in either the day-ahead market or the real-time market. Areas that meet this condition may be designated as DCAs.[12] The IESO will revoke the designation of a DCA when the specific outages or other conditions that occurred causing the DCA designation have been resolved. DCA designations will apply in the day-ahead and real-time markets. Footnote [12]: When analyzing congestion in the real-time market, the IESO will examine pre-dispatch and real-time scheduling results. If congestion patterns are significantly different in the pre-dispatch and real-time scheduling timeframes, then the IESO will look at both of these timeframes when determining if the designation criteria are met for a given constrained area.	Designation based on observed congestion, and not on expected congestion, provides better transparency for market participants.
3.12.2.3	Design Change	The IESO will publicly post this information about upcoming DCAs as quickly as reasonably possible because the conditions that lead to the designation of a DCA may not materialize until during or shortly before an outage. The IESO will indicate in the public posting when the DCA designation will come into effect.	The IESO will publicly post the list of the constraints and resources that make up the DCA at least 4 hours in advance of designation taking effect. This is because the conditions that lead to the designation of a DCA may not materialize until during or shortly before an outage. The IESO will indicate in the public posting when the DCA designation will come into effect.	Design change in response to stakeholder feedback.
Table 3-32	Clarification	Operating reserve offer Offer price is greater than either 50% or $25/MW above reference level value; offers below $5/MW are excluded from economic withholding tests.	Operating reserve offer Offer price is greater than the lesser of 50% or $25/MW above reference level value; offers below $5/MW are excluded from economic withholding tests.	
Table 3-33	Clarification	Uncompetitive Interties (operating reserve) As-offered operating reserve LMP is 50% or $25/MW above the intertie reference level operating reserve LMP.	Uncompetitive Interties (operating reserve) As-offered operating reserve LMP is the lesser of 50% or $25/MW above the intertie reference level operating reserve LMP.	

Section	Reason	Original Text	Revised Text	Comments
Table 3-34	Design Change	Operating reserve offer Offer price is greater either 50% or $25/MW above reference level value. Energy offer Offer price is greater than either 200% or $100/MWh above reference level value.	Operating reserve offer Offer price is greater than the lesser of 50% or $25/MW above reference level value. Energy offer Offer price is greater than the lesser of 300% or $100/MWh above reference level value.	Design change in response to stakeholder feedback.
Table 3-36	Design Change	Energy offer Offer or bid price is greater than either 200% or $100/MWh above reference level value; offers and bids below $25/MWh are excluded from economic withholding tests.	Energy offer Offer or bid price is greater than the lesser of 300% or $100/MWh above reference level value; offers and bids below $25/MWh are excluded from economic withholding tests.	Design change in response to stakeholder feedback.
Table 3-37	Clarification	Uncompetitive Interties (Energy offer) As-offered energy LMP is either 100% or $50/MWh above the intertie reference level energy LMP.	Uncompetitive Interties (Energy offer) As-offered energy LMP is the lesser of 100% or $50/MWh above the intertie reference level energy LMP.	
3.12.4	Clarification	N/A	Make-whole payments for reliability constraints will be assessed through the settlement mitigation process.	
3.12.4.2	Design Change	The following manual constraints are excluded from reliability constraints for the purpose of mitigation: • If the IESO sets a participant's schedule to address a gap in the IESO's tools or processes, and the manual processes followed by the IESO includes a proxy for economic selection in the scheduling process. For example, resources scheduled for operating reserve that have their respective energy schedules selected in the event of a contingency are excluded. Although these resources are selected by a manual action by the IESO, the process to select the relevant resources includes consideration of the economics of the available energy offers that could potentially be selected. • When the IESO manually sets schedules due to the IESO tool failures. These occasions are likely not predictable, which reduces the risk that behaviour during these occasions represents attempts to exercise market power.	The following manual constraints are excluded from reliability constraints for the purpose of mitigation: •If the IESO sets a participant's schedule to address a gap in the IESO's tools or processes, and the manual processes followed by the IESO includes a proxy for economic selection in the scheduling process. For example: o Resources scheduled for operating reserve that have their respective energy schedules selected in the event of a contingency. o Manual constraints to bring online NQS resources that are not eligible for the day-ahead or real-time generator offer guarantee. •When the IESO manually sets schedules due to the IESO tool failures. These occasions are likely not predictable, which reduces the risk that behaviour during these occasions represents attempts to exercise market power.	Manual constraints of economically scheduled NQS resources that are not eligible for the day-ahead or real-time generator offer guarantee will not be considered as reliability constraints for the purposes of make-whole payment mitigation.

Section	Reason	Original Text	Revised Text	Comments
3.12.4.2	Design Change	Manual constraints include constraints to bring online NQS resources that are not eligible for the day-ahead or real-time generator offer guarantee.	[Deleted]	Manual constraints of economically scheduled NQS resources that are not eligible for the day-ahead or real-time generator offer guarantee should not be considered as reliability constraints for the purposes of make-whole payment mitigation.
3.12.5	Clarification	N/A	The IESO will publish designations of uncompetitive interties publicly in advance of the effective date of designation. Any changes in the designations will take effect two calendar days after the publication of the outcomes of a review (the "effective date").	
3.13.1	Clarification	N/A	Operating reserve reference levels will be established for both generators and dispatchable loads.	
3.13.1	Clarification	The IESO will calculate reference levels using this methodology for the following costs: •Energy reference level. The short-run marginal costs associated with the supply of incremental injections of energy into the IESO-controlled grid; •Speed no-load reference level. The short-run marginal costs associated with operating a generation unit in a synchronized status while injecting no energy to the IESO-controlled grid; •Start-up reference level. The short-run marginal costs associated with bringing an offline resource through all the generation unit-specific start-up procedures to minimum loading point; and •Operating reserve reference level. The short-run marginal costs associated with preparing a resource to be able to supply incremental injections of energy into the IESO-controlled grid per the requirements for a class of reserves.	The IESO will set reference levels for domestic suppliers of energy and operating reserve for the following costs: •Energy reference level. The short-run marginal costs associated with the supply of incremental injections of energy by dispatchable generation resources into the IESO-controlled grid; •Speed no-load reference level. The short-run marginal costs associated with operating a generation unit in a synchronized status while injecting no energy to the IESO-controlled grid; •Start-up reference level. The short-run marginal costs associated with bringing an offline resource through all the generation unit-specific start-up procedures to minimum loading point; and •Operating reserve reference level. The short-run marginal costs incurred by dispatchable generation resources in making operating reserve capability available, or the incremental costs incurred by a dispatchable load resource to enable reduction of energy withdrawals for the supply of operating reserve to the IESO-controlled grid per the requirements for a class of reserves.	

Section	Reason	Original Text	Revised Text	Comments
3.13.1.1	Design Change	After initial consultations, the IESO-determined reference levels will remain in effect unless: • [...] • the market participant notifies the IESO of an increase or a decrease in its initially submitted costs. Market participants shall inform the IESO if their initially submitted short-run marginal costs – excluding fuel and opportunity costs – decrease no later than five business days following the decrease in costs coming into effect.	After initial consultations, the IESO-determined reference levels will remain in effect unless: • [...] • the market participant notifies the IESO of an increase in its initially submitted costs. • The IESO revises previously approved cost data as a result of a periodic review of cost data.	Design change in response to stakeholder feedback.
3.13.1.1	Clarification	Default Value for Operating Reserve Reference Levels If a resource has not established an operating reserve reference level, the IESO will use a default reference level of $0.10/MW.	Supporting Material Requirements for Energy and Operating Reserve Reference Levels If market participant submits a request for an energy or operating reserve reference level equal to or lower than $0.10/MW, no supporting materials are required to be submitted.	
3.13.1.1	Design Change	The market participant must notify the IESO if the expected price to procure fuel for the resource for a given hour or hours in a given trading day will be lower than that used by the IESO to calculate the relevant reference levels.	[Deleted]	This obligation may not be practical to implement and thus has been removed.
3.13.1.2	Clarification	Operating Reserve Reference Level=Opportunity Costs The IESO will develop further details and methodologies for each of the cost components in these equations for reference levels.	Operating Reserve Reference Level (for dispatchable generation resources) = Incremental Costs to make Operating Reserve Capability available Operating Reserve Reference Level (for dispatchable load resources)= Incremental costs incurred by a dispatchable load to enable reduction of energy withdrawal for the supply of operating reserve	
3.13.2	Design Change	In the event that a market participant makes changes to a resource that impacts the operational characteristics described by a non-financial reference level, the market participant must update the registered value of the relevant non-financial reference level no later than five business days following such a change.	In the event that a market participant makes changes to a resource that impacts the operational characteristics described by a non-financial reference level, the market participant must update the registered value of the relevant non-financial reference level no later than five business days following completion of testing and commissioning.	Design change in response to stakeholder feedback.
3.13.2	Clarification	The reference level values for non-financial dispatch data parameters will be determined, where applicable : • by season (summer and winter); and • for on-peak and off-peak hours.	The reference level values for non-financial dispatch data parameters will be determined, where applicable by season (summer and winter).	

Section	Reason	Original Text	Revised Text	Comments
3.13.2	Design Change	The IESO will provide market participants the ability to register different values for given non-financial parameter reference levels (e.g. for different seasons, on-peak and off-peak hours). However, values of a particular non-financial parameter that do not vary across these dimensions should be identical.	The IESO will provide market participants the ability to register different values for given non-financial parameter reference levels (e.g. for different seasons). However, values of a particular non-financial parameter that do not vary across these dimensions should be identical.	Design change in response to stakeholder feedback.
3.14.1	Correction	The IESO will determine the reference quantities for energy and operating process	The IESO will determine the reference quantities for energy and operating reserve.	
3.14.3	Design Change	The IESO will allow market participants 15 business days to provide relevant supplementary information regarding the reference quantity for the resource.	The IESO will allow market participants 30 business days to provide relevant supplementary information regarding the reference quantity for the resource.	Design change in response to stakeholder feedback.
3.16	Conforming Change	N/A	External reports will include: […] • Confidential reports to market participants of failure of make whole payment impact tests; […] • Public report of list of constraints and resources comprising Narrowly Constrained Areas (NCAs); • Public report of list of constraints and resources comprising Dynamic Constrained Areas (DCAs); • Public report of list of designated uncompetitive interties; • Public report of summary Global Market Power conditions in the day-ahead market or real-time market.	Conforming revision to the V2.0 Publishing and Reporting detailed design Table 3-20 and Table 3-22.
3.17	Design Change	N/A	3.17. Independent Review Process for Reference Levels and Quantities [Please refer to detailed design document for full section 3.17]	Design change in response to stakeholder feedback.
Table 4-1	Design Change	o Any NQS resource that was committed in the pre-dispatch scheduling process and is otherwise receiving an unmitigated make-whole payment for that commitment which exceeds $10,000.	o Any NQS resource that was committed in the pre-dispatch scheduling process and is otherwise receiving an unmitigated make-whole payment for that commitment which exceeds $15,000; or o Any NQS resource that was committed in the reliability scheduling pass of the DAM Calculation Engine; or o Any resource that submitted a new or revised energy offer within the real-time market mandatory window that was approved by the IESO.	Design change in response to stakeholder feedback.
Table 4-1	Design Change	o An NQS resource is committed and scheduled to provide operating reserve, and would otherwise receive an unmitigated make-whole payment for that commitment that exceeds $10,000.	o An NQS resource is committed and scheduled to provide operating reserve, and would otherwise receive an unmitigated make-whole payment for that commitment that exceeds $15,000. o Any resource that submitted a new or revised operating reserve offer within the real-time mandatory window that was approved by the IESO.	Design change in response to stakeholder feedback.

Section	Reason	Original Text	Revised Text	Comments
Table 4-1	Design Change	• If any market participant fails the conduct and impact tests, obligate the IESO to notify the market participant and allow them 15 business days to make representations regarding the intertie reference level.	• If any market participant fails the conduct and impact tests, obligate the IESO to notify the market participant and allow them 30 business days to make representations regarding the intertie reference level.	Design change in response to stakeholder feedback.
Table 4-1	Design Change	• Within 15 business days of receiving the notification from the IESO, the registered market participant may make written representations regarding the reference quantity or intertie reference level used to determine the settlement charge.	• Within 30 business days of receiving the notification from the IESO, the registered market participant may make written representations regarding the reference quantity or intertie reference level used to determine the settlement charge.	Design change in response to stakeholder feedback.
6.11	Design Change	Diagram update	Updated Figure 6-10, to show the Independent Reviewer for process P2 "Conduct IESO/Market Participant CBRL Consultation".	Design change in response to stakeholder feedback.
6.11.2	Design Change	N/A	The IESO will allow market participants to request an independent third party review of certain aspects of the materials submitted in support of a market participant's proposed reference levels as part of the registration process.	Design change in response to stakeholder feedback.
6.11.2	Design Change	N/A	In Table 6-42, added input and output data flows between Process P2 and the Independent Reviewer.	Design change in response to stakeholder feedback.
4	Clarification	This inventory is based on version 1.0 of the detailed design, and any revisions required to this section as a result of design changes to version 1.0 will be incorporated in the market rule amendment process. As a result, the inventory will not be updated after its publication in version 1.0 of this detailed design.	[Deleted]	
Table 4-1	Conforming Change	N/A	Section 2.1 New Independent Review Process for Reference Levels and Quantities Section 2.1.1.4 (new): • Specify that market participants may request a third-party review of certain aspects of the materials submitted in support of a market participant's reference levels or reference quantities, as part of the Facility Registration process, and as further detailed in new Appendix 7.8: Market Power Mitigation.	
Table 4-1	Clarification	Delete existing provisions in Appendix 7.6 - Local Market Power and replace with new market power mitigation construct in Appendix 7.8 NEW.	Existing provisions in Appendix 7.6 - Local Market Power will eventually be replaced with the new market power mitigation construct in Appendix 7.8 NEW.	

Section	Reason	Original Text	Revised Text	Comments
Table 4-1	Conforming Change	Specify that the IESO shall determine the following non-financial reference levels by season (summer and winter); and for on-peak and off-peak dispatch hours where appropriate:	Specify that the IESO shall determine the reference levels for following non-financial dispatch data parameters, where applicable by season (summer and winter);	
Table 4-1	Conforming Change	Keep the reference levels established by the IESO in effect until: (i) the IESO makes changes to the cost-based reference level methodology warranting a revision of the initially determined reference levels; (ii) the IESO identifies a need for a cost data review for completeness and accuracy; (iii) the market participant notifies the IESO of a decrease in its initially submitted costs; (iv) the market participant notifies the IESO of an increase in its initially submitted costs.	Keep the reference levels established by the IESO in effect until: (i) the IESO subsequently makes changes to the cost-based reference level methodology warranting a revision of the initially determined reference levels; (ii) the IESO or the market participant identifies a need for a cost data audit or review for completeness and accuracy and a consultation is initiated between the market participant and the IESO to revise reference level values; or (iii) the market participant notifies the IESO of an increase in its initially submitted costs.	
Table 4-1	Conforming Change	• Obligate market participants to inform the IESO, and update as applicable if: […] o non-financial reference levels: their registered values have changed no later than five business days following such a change coming into effect.	• Obligate market participants to inform the IESO, and update as applicable if: […] o non-financial reference levels: their registered values have changed no later than five business days following completion of testing and commissioning.	
Table 4-1	Conforming Change	N/A	Independent Review Process for Reference Levels and Quantities: • Specify that market participants may request a third-party review of reference levels or reference quantities during the initial registration or when a change to an existing reference level or reference quantity has been requested. • Specify the reviewable topics. • Specify the review steps. • Specify the outcome of the review process	
Table 4-1	Conforming Change	The IESO identifies the prospective initiation of an outage or recurring conditions that previously caused a binding import constraint for at least 15% of hours in a continuous 5-day period in either day-ahead market or the real-time market.	[Deleted]	Designation based on observed congestion, and not on expected congestion, provides better transparency for market participants.

Section	Reason	Original Text	Revised Text	Comments
Table 4-1	Clarification	Mitigation Timing and Application: o Specify that the IESO shall test for global market power in the day-ahead market and in each run of the pre-dispatch scheduling process. o Specify that if the conditions for global market power are met for the hour ahead in the pre-dispatch scheduling process, then the resources that also failed the conduct and impact thresholds for this hour will continue to be tested for mitigation during the real-time scheduling process for that dispatch hour.	Mitigation Timing and Application: o Specify that the IESO shall test for global market power in the day-ahead market and in the two-hour ahead run of the pre-dispatch scheduling process. Global market power tests will not be conducted in the real-time dispatch.	
Table 4-1	Clarification	Timing of Ex-Ante Mitigation Test for Price Impact: o Specify that the conduct and impact test is carried out ex-ante in the day-ahead market, the pre-dispatch scheduling processes, and if processing time permits, the real-time dispatch scheduling.	Timing of Ex-Ante Mitigation Test for Price Impact: o Specify that the conduct and impact test is carried out ex-ante in the day-ahead market and the pre-dispatch scheduling processes. Mitigation decisions that are made by the PD calculation engine will be carried forward into the real-time calculation engine unless new dispatch data is submitted priced lower than the respective reference levels for the resource.	
Table 4-1	Conforming Change	N/A	For the PD calculation engine, when the conduct and impact tests are failed, the decision to mitigate a resource for the relevant dispatch hour will be an input into all subsequent runs of the PD calculation engine leading up to the relevant dispatch hour unless new dispatch data is submitted priced lower than the respective reference levels for the resource.	Clarification of mitigation in pre-dispatch and real-time. Conforms to the description of market power mitigation within the Pre-Dispatch Calculation Engine detailed design.
Table 4-1	Clarification	Specify that if the price impact test fails for any of the hours that met the relevant conditions for price impact testing, then the IESO will replace the commitment cost offers for all hours leading up to and including that hour with the appropriate reference level values.	Specify that if the price impact test fails for any hour, then for all hours up to and including the hour where the price impact test was failed, all resource that also failed the conduct test for commitment costs will have their commitment cost offers replaced with the reference levels	
Table 4-1	Clarification	Ex-Ante Mitigation in the Real-Time Timeframe: o Specify that mitigation in real time may be applied based on conduct and impact testing within the RT calculation engine. If mitigation is instead applied in RTD based on an assessment by the PD calculation engine, then the decision to mitigate RTD will be made with hourly granularity for an entire dispatch hour based on the PD results.	Ex-Ante Mitigation in the Real-Time Timeframe: o Specify that mitigation will be applied in real-time based on the results of the PD calculation engine. The mitigation decisions from pre-dispatch will apply to an entire dispatch hour.	

Section	Reason	Original Text	Revised Text	Comments
Table 4-1	Clarification	The resource was tested for local market power for operating reserve price impact;	The resource was tested for local market power for operating reserve price impact; Note: Unlike price impact testing, resources that are within an operating reserve area with a MIN constraints greater than 0 MW and also within an operating reserve area with a binding MAX area reserve constraint are not excluded from testing for make-whole payment impact.	
Table 4-1	Clarification	Specify that the IESO shall consider the following resources to be eligible for testing for physical withholding: o Resources that have an LMP greater than $25/MWh and installed capacity of at least 10 MW. o Resources that have an LMP greater than $25/MWh and the market control entity for each resource has at least 10 MW in aggregate installed capacity. In order to be tested for physical withholding, the above mentioned resources must meet at least one of the following conditions	Conditions - Energy: Specify that the IESO shall consider the following resources to be eligible for testing for physical withholding: o Resources that have a real-time or day-ahead LMP greater than $25/MWh and installed capacity of at least 10 MW. o Resources that have a real-time or day-ahead LMP greater than $25/MWh and the market control entity for each resource has at least 10 MW in aggregate installed capacity. In order to be tested for physical withholding, the above mentioned resources must meet at least one of the following conditions in the market power mitigation conduct test from the day-ahead market or the pre-dispatch calculation engines	
Table 4-1	Clarification	The settlement charge will be calculated using the MWh quantity that failed the conduct and impact test for economic withholding for a dispatch day, and will be calculated for the day-ahead market and the real-time market. Codify settlement charge formula.	The settlement charge will be calculated using the hourly MW quantity scheduled for the boundary entity in the simulation that is used to determine the intertie reference level energy LMP and failed the conduct and impact test for economic withholding for a dispatch day, and will be calculated for the day-ahead market and the real-time market. Codify settlement charge formula.	
Table 4-1	Clarification	The settlement charge will be calculated using the MWh quantity that failed the conduct and impact test for economic withholding for a dispatch day, and will be calculated for the day-ahead market and the real-time market. Codify settlement charge formula.	The settlement charge will be calculated using the MWh quantity scheduled for the boundary entity in the simulation that is used to determine the intertie reference level operating reserve LMP and failed the conduct and impact test for economic withholding for a dispatch day, and will be calculated for the day-ahead market and the real-time market. Codify settlement charge formula.	
5	Correction	• Market Manual 1: Market Entry	• Market Manual 1: Connecting to Ontario's Power System	
Table 5-1	Other	Table 5-1: Required Updates to Existing Market-Facing Procedures	Single Table 5-1 split to seven different tables: Table 5-1 to Table 5-7 (structural change only).	

Section	Reason	Original Text	Revised Text	Comments
Table 5-1	Conforming Change	N/A	Please refer to detailed design for following redline changes: - Part 1.5: Market Registration Procedures (row added) - Market Manual 1 Market Entry, Part 1.2 - Facility Registration, Maintenance, and De-registration (Row removed)	This change was made to reflect the fact that the IESO has updated the registration market manuals and aggregated content related to registration into the new market manual 1.5.
Table 5-6	Clarification	N/A	Market Manual 9 will be replaced. DACP will be replaced with a financially-binding DAM.	
6.4	Clarification	Processes for real-time market power mitigation tests in Figure 6-3 and section 6.4.	Updates made to Figure 6-3 and section 6.4 to remove the processes for real-time market power mitigation tests, as global market power tests will not be conducted in the real-time dispatch.	

13. Publishing and Reporting Market Information

Section	Reason	Original Text	Revised Text	Comments
1.2	Other	[...] An example of such a report is a Meter Trouble Report where an interface is provided in the Online IESO platform. This document focuses on the first category, automated reports, with the exception of some non-automated reports related to market power mitigation. These exceptions are noted in the Market Power Mitigation detailed design document.	[...] An example of such a report is a Meter Trouble Report where an interface is provided in the Online IESO platform.	
2.1 Figure 2-1	Clarification		Figure 2-1 Updated	
2.2 Figure 2-2	Clarification		Figure 2-2 Updated	
3.2 Figure 3-1	Clarification		Figure 3-1 Updated	
3.3.1 Table 3-1	Other	**Report Name:** Adequacy Report **Reference:** Published on the pre-dispatch day for the dispatch day, with the following schedule: [...] • hourly at approximately 15 minutes past the hour.	**Report Name:** Adequacy Report **Reference:** Published on the pre-dispatch day for the dispatch day, with the following schedule: [...] • after the successful completion of the pre-dispatch (PD) calculation engine run at 20:00 EST, this report will be issued hourly at approximately 15 minutes past the hour	
3.3.2 Table 3-2	Conforming Change	**Report Name:** Physical Transaction Dispatchable Resource Energy Price Report **Report Audience:** Public **Reference:** Annual report with an average day-ahead to average real-time price delta for an LMP specific to the dispatchable resource.	**Report Name:** Physical Transaction Dispatchable Resource Energy Price Report **Report Audience:** Market Participant Confidential **Reference:** Annual report with an average day-ahead to average real-time price delta for an LMP specific to the dispatchable resource.	To align with Prudential Security detailed design document.

Section	Reason	Original Text	Revised Text	Comments
3.3.2 Table 3-2	Conforming Change	**Report Name:** Physical Transaction Non-Dispatchable Load Energy Price Report **Report Audience:** Public **Reference:** Annual report with an average day-ahead to average real-time price delta for the Ontario zonal price.	**Report Name:** Physical Transaction Non-Dispatchable Load Energy Price Report **Report Audience:** Market Participant Confidential **Reference:** Annual report with an average day-ahead to average real-time price delta for the Ontario zonal price.	To align with Prudential Security detailed design document.
3.3.2 Table 3-2	Conforming Change	**Report Name:** Virtual Transaction Prudential Support Obligation (PSO) Price Delta Report **Reference:** Annual Report with one price delta calculated based on all nine virtual zonal trading entities.	**Report Name:** Annual Virtual Transaction Price Delta Report **Reference:** Annual report with one price delta calculated based on all nine virtual zonal trading entities.	To align with Prudential Security detailed design document.
3.3.2 Table 3-2	Conforming Change	**Report Name:** Virtual Transaction Actual Exposure (AE-V) & Daily Screening Price Delta Report **Reference:** Daily report with nine price deltas calculated for each of the nine virtual zonal trading entities.	**Report Name:** Daily Virtual Transaction Price Delta Report **Reference:** Daily report with nine price deltas calculated for each of the nine virtual zonal trading entities.	To align with Prudential Security detailed design document.
3.3.5 Table 3-5	Clarification	**Report Name:** Hourly Demand Response (HDR) Standby Report **Impact:** No Change **Reference:** n/a	**Report Name:** Hourly Demand Response (HDR) Standby Report **Impact:** Revise for Timing **Reference:** • The first opportunity for the IESO to publish a Standby Report will be aligned with day-ahead market timelines. The report may be provided starting at 13:30 EPT after successful completion of the DAM calculation engine run. • Standby reports will continue to be issued throughout the pre-dispatch scheduling horizon from the completion of the DAM on the pre-dispatch day through to 07:00 of the dispatch day.	

Section	Reason	Original Text	Revised Text	Comments
3.3.5	Design Change	[...] These reports will provide new and/or updated advisory and binding schedules as necessary.	[...] These reports will provide new and/or updated advisory and binding schedules as necessary. The PD calculation engine will determine which one of the three minimum generation block down time (MGBDT) values to use based on the number of hours the generation unit has been offline. The IESO will provide a new confidential report to notify market participants of the MGBDT value that was selected by the PD calculation engine for use as the inferred state.	Design change in response to stakeholder feedback.
3.3.5 Table 3-6	Design Change	N/A	**Report Name:** Pre-Dispatch NQS Unit Inferred State Report **Report Audience:** Market Participant Confidential **Impact:** New **Reference:** • Report will identify the MGBDT value that was selected by the PD calculation engine to use as the inferred state of the unit. • Report will be issued 30 minutes past every hour following each successful completion of the PD calculation engine run.	New report added in response to stakeholder feedback
3.3.6	Design Change	[...] Participation of virtual transaction energy traders will require the creation of new virtual zonal pricing reports.	[...] Participation of virtual transaction energy traders will require the creation of new virtual zonal pricing reports. The IESO will publish two new reports to provide the shadow prices for binding constraints that the day-ahead and the real-time scheduling processes used to generate the LMPs.	Design change in response to stakeholder feedback.

Section	Reason	Original Text	Revised Text	Comments
3.3.6 Table 3-8	Design Change	N/A	**Report Name:** DAM Binding Constraints Shadow Prices **Report Audience:** Public **Impact:** New **Reference:** • Report will provide shadow prices for the binding constraints that are used to generate LMPs by the day-ahead scheduling process. • Report will be published no sooner than five business days after the trade date.	New report added in response to stakeholder feedback.
3.3.6 Table 3-8	Clarification	**Report Name:** DAM Hourly Energy Virtual Zonal Price Report **Reference:** • DAM hourly zonal price for all nine virtual zonal trading entities.	**Report Name:** DAM Hourly Energy Virtual Zonal Price Report **Reference:** • DAM hourly zonal price for all nine virtual zonal trading entities. • Report will include LMP (Energy Reference Price, Zonal Energy Congestion Price and Zonal Energy Loss Price) for all virtual zones.	
3.3.6 Table 3-8	Clarification	**Report Name:** DAM Hourly Ontario Zone Energy Price Report **Reference:** • DAM hourly price for the Ontario zone for settlement of non-dispatchable loads.	**Report Name:** DAM Hourly Ontario Zonal Energy Price Report **Reference:** • DAM hourly price for the Ontario zone for settlement of non-dispatchable loads. • Report will include LMP (Energy Reference Price, Zonal Energy Congestion Price and Zonal Energy Loss Price) for the Ontario zone.	
3.3.6 Table 3-9	Clarification	Pre-Dispatch Hourly Ontario Zone Energy Price Report	Pre-Dispatch Hourly Ontario Zonal Energy Price Report	

Section	Reason	Original Text	Revised Text	Comments
3.3.6 Table 3-10	Conforming Change	**Report Name:** Real-Time 5-min Energy LMP Report **Reference:** • Report will include real-time LMP for every delivery point; • Real-time LMP at every delivery point for settlement of non-dispatchable loads, and Required for settlement of dispatchable loads, price responsive loads, storage resources, exports and generation units.	**Report Name:** Real-Time 5-min Energy LMP Report **Reference:** • Report will include real-time LMP for every delivery point; • Real-time LMP at every delivery point for settlement calculation of the real-time purchase cost/benefit component of the forecast deviation adjustment of the DAM Ontario hourly zonal price for non-dispatchable loads, and Required for settlement of dispatchable loads, price responsive loads, storage resources, imports, exports and generation units.	
3.3.6 Table 3-10	Conforming Change	**Report Name:** Real-Time 5-min Ontario Zone Energy Price Report **Reference:** Real Time LMP for settlement of non-dispatchable loads.	**Report Name:** Real-Time 5-min Ontario Zonal Energy Price Report **Reference:** Real Time LMP for Ontario zone as information for market participants.	
3.3.6 Table 3-10	Design Change	N/A	**Report Name:** Real-time Binding Constraints Shadow Prices **Impact:** New **Reference:** • Report will provide shadow prices for the binding constraints that are used to generate LMPs by the real-time scheduling process. • Report will be published no sooner than five business days after the trade date.	New report added in response to stakeholder feedback.
3.3.7 Table 3-12	Design Change	N/A	**Report Name:** 5-Minute Zonal Demand Report (Ten Electrical Zones) **Impact:** New **Reference:** • Report for 5-minute zonal demand for the ten electrical zones for each 5 minute interval of the hour.	New report added in response to stakeholder feedback.

Section	Reason	Original Text	Revised Text	Comments
3.3.9 Table 3-14	Clarification	**Report Name:** Day-Ahead Area Reserve Constraints Report **Reference:** • Reporting timelines to be aligned with day-ahead market timelines; and • This report will be provided daily at 13:30 Eastern Prevailing Time.	**Report Name:** Day-Ahead Area Reserve Constraints Report **Reference:** • This report will be issued prior to the start of day-ahead scheduling process.	
3.3.10 Table 3-16	Clarification	**Report Name:** Day-Ahead Intertie Scheduling Limits Report **Reference:** • Reporting timelines to be aligned with day-ahead market timelines; and • This report will be provided daily at 13:30 Eastern Prevailing Time.	**Report Name:** Day-Ahead Intertie Scheduling Limits Report **Reference:** • This report will be issued prior to the start of day-ahead scheduling process.	
3.3.10 Table 3-17	Design Change	**Report Name:** Transmission Facility Outage Limits Report (Days 0 to 2) **Impact:** No Change	**Report Name:** Transmission Facility Outage Limits Report (Days 0 to 2) **Impact:** Revise for Content **Reference:** • Report will show the normal operating limit as well as the revised operating limit.	Design change in response to stakeholder feedback.
3.3.11 Table 3-20	Clarification	**Report Name:** Dynamic Constrained Areas (“DCAs”) Report **Reference:** List of the constraints and resources that make up the DCA to be published at least 24 hours prior to designation taking effect when reasonably possible. Otherwise, posted as soon as reasonably possible.	**Report Name:** Dynamic Constrained Areas (“DCAs”) Report **Reference:** List of the constraints and resources that make up the DCA to be published at least 4 hours prior to designation taking effect.	

Section	Reason	Original Text	Revised Text	Comments
4	Conforming Change	**Table:** 4-1 Market Rule Impacts **Market Rule Section:** Chapter 2, Section 5C.1 NEW **Topic:** Physical Transaction Dispatchable Resource Energy Price Report **Requirement:** New Section 5C.1: • Provision to obligate the IESO to publish an annual report with an average day-ahead to average real-time price delta for an LMP specific to the dispatchable resource. OVERLAP: Prudential Security detailed design.	**Table:** 4-2 Market Rule Impacts Related to Prudential Security Reports **Market Rule Section:** Chapter 2, Section 5.3.10D NEW **Topic:** Physical Transaction Dispatchable Resource Energy Price Report **Requirement:** New Section 5.3.10D: • Provision to obligate the IESO to release an annual report with an average day-ahead to average real-time price delta for an LMP specific to the dispatchable resource. OVERLAP: Prudential Security detailed design.	
4	Conforming Change	**Table:** 4-1 Market Rule Impacts **Market Rule Section:** Chapter 2, Section 5C.1 NEW **Topic:** Physical Transaction Non-Dispatchable Load Energy Price Report **Requirement:** New Section 5C.1: • Provision to obligate the IESO to publish an annual report with an average day-ahead to average real-time price delta for the Ontario zonal price. OVERLAP: Prudential Security detailed design.	**Table:** 4-2 Market Rule Impacts Related to Prudential Security Reports **Market Rule Section:** Chapter 2, Section 5.3.10D NEW **Topic:** Physical Transaction Non-Dispatchable Load Energy Price Report **Requirement:** New Section 5.3.10D: • Provision to obligate the IESO to release an annual report with an average day-ahead to average real-time price delta for the Ontario zonal price. OVERLAP: Prudential Security detailed design.	

Section	Reason	Original Text	Revised Text	Comments
4	Other	[...] This section is intended to provide an inventory of the changes to market rule provisions required to support the Publishing and Reporting detailed design, and is intended to guide the development of market rule amendments. This inventory is based on version 1.0 of the detailed design, and any revisions required to this section as a result of design changes to version 1.0 will be incorporated in the market rule amendment process. As a result, the inventory will not be updated after its publication in version 1.0 of this detailed design.	[...] This section is intended to provide an inventory of the changes to market rule provisions required to support the Publishing and Reporting detailed design, and is intended to guide the development of market rule amendments.	
4	Conforming Change	**Table:** 4-1 Market Rule Impacts **Market Rule Section:** Chapter 2, Section 5C.1 NEW **Topic:** Virtual Transaction Prudential Support Obligation (PSO) Price Delta Report **Requirement:** New Section 5C.1: • Provision to obligate the IESO to publish an annual report with one price delta calculated based on all nine virtual trading zones to establish market participant prudential support obligations for virtual transactions. OVERLAP: Prudential Security detailed design.	**Table:** 4-2 Market Rule Impacts Related to Prudential Security Reports **Market Rule Section:** Chapter 2, Section 5C.1 NEW **Topic:** Annual Virtual Transaction Price Delta Report **Requirement:** New Section 5C.1.11: • Provision to obligate the IESO to publish an annual report with one price delta calculated based on all nine virtual trading zones to establish market participant prudential support obligations for virtual transactions. OVERLAP: Prudential Security detailed design.	

Section	Reason	Original Text	Revised Text	Comments
4	Conforming Change	**Table:** 4-1 Market Rule Impacts **Market Rule Section:** Chapter 2, Section 5C.1 NEW **Topic:** Virtual Transaction Actual Exposure (AE-V) & Daily Screening Price Delta Report **Requirement:** New Section 5C.1: • Provision to obligate the IESO to publish, via a daily report the nine price deltas calculated for each of the nine virtual zones to allow market participants to estimate their actual exposure when submitting bids and offers into the day-ahead market. OVERLAP: Prudential Security detailed design.	**Table:** 4-2 Market Rule Impacts Related to Prudential Security Reports **Market Rule Section:** Chapter 2, Section 5C.1 NEW **Topic:** Daily Virtual Transaction Actual Exposure Price Delta Report **Requirement:** New Section 5C.3.2: • Provision to obligate the IESO to publish, via a daily report the nine price deltas calculated for each of the nine virtual zones to allow market participants to estimate their actual exposure when submitting bids and offers into the day-ahead market. OVERLAP: Prudential Security detailed design.	
4	Conforming Change	N/A	**Table:** 4-6 Market Rule Impacts Related to Pre-Dispatch Scheduling and Commitment Reports **Market Rule Section:** Chapter 7, 4C.2 NEW **Type:** New **Topic:** Pre-Dispatch NQS Unit Inferred State Report **Requirement:** New Section 4C.2: • New section 4C.2: Releasing Market Participant- Specific Pre-Dispatch Information will specify the release and publication requirements related to pre-dispatch. • Obligate the IESO to provide a new confidential report to notify market participants of the MGBDT value that was selected by the PD calculation engine to use as the inferred state of the unit. OVERLAP: This section may be further assessed under the Grid and Market Operations Integration.	

Section	Reason	Original Text	Revised Text	Comments
4	Clarification	N/A	**Table:** 4-8 Market Rule Impacts Related to Price Reports - Day-Ahead Market Pricing Reports **Market Rule Section:** Chapter 7A, Section 5.1 NEW **Type:** New **Topic:** DAM Binding Constraints Shadow Prices Report **Requirement:** See Above	
4	Clarification	N/A	**Table:** 4-10 Market Rule Impacts Related to Price Reports - Real-Time Price Reports **Market Rule Section:** Chapter 7, Section 4F.1 NEW **Type:** New **Topic:** Real-time Binding Constraints Shadow Prices Report **Requirement:** See Above	
4	Clarification	**Table:** 4-1 Market Rule Impacts **Market Rule Section:** Chapter 7A, Section 5.1 NEW **Topic:** DAM Hourly Ontario Zone Energy Price Report	**Table:** 4-8 Market Rule Impacts Related to Price Reports - Day-Ahead Market Pricing Reports **Market Rule Section:** Chapter 7A, Section 5.1 NEW **Topic:** DAM Hourly Ontario Zonal Energy Price Report	
4	Clarification	**Table:** 4-1 Market Rule Impacts **Market Rule Section:** Chapter 7, Section 4C.1 NEW **Topic:** Pre-Dispatch Hourly Ontario Zone Energy Price Report	**Table:** 4-9 Market Rule Impacts Related to Price Reports - Pre-Dispatch Price Reports **Market Rule Section:** Chapter 7, Section 4C.1 NEW **Topic:** Pre-Dispatch Hourly Ontario Zonal Energy Price Report	

Section	Reason	Original Text	Revised Text	Comments
4	Clarification	**Table:** 4-1 Market Rule Impacts **Market Rule Section:** Chapter 7, Section 4F.1 NEW **Topic:** Real-Time 5-Minute Ontario Zone Energy Price Report	**Table:** 4-10 Market Rule Impacts Related to Price Reports - Real-Time Price Reports **Market Rule Section:** Chapter 7, Section 4F.1 NEW **Topic:** Real-Time 5-Minute Ontario Zonal Energy Price Report	
5.1	Other	Table 5-1: Impacts to Market-Facing Procedures	Table 5-1: Impacts to Market Manual 1 Connecting Table 5-2: Impacts to Market Manual 2 Market Administration Table 5-3: Impacts to Market Manual 4 Market Operations Table 5-4: Impacts to Market Manual 5 Settlements Table 5-5: Impacts to Market Manual 7 System Operations Table 5-6: Impacts to Market Manual 9 Day-Ahead Commitment Table 5-7: Impacts to Market Manual 11 Reliability Compliance Table 5-8: Impacts to Market Manual 12 Demand Response Auction Table 5-9: Impacts to Market Manual 13 Capacity Exports	Restructured Table 5-1 into multiple tables.
5.1	Other	N/A	**Table:** 5-1 Impacts to Market Manual 1 Connecting **Procedure:** Part 1.5 – Market Registration Procedures **Type of change:** No change **Section:** All **Description:** This market manual will not be impacted by the decisions made in this detailed design document.	
5.1	Conforming Change	**Table:** 5-1 Impacts to Market-Facing Procedures **Procedure:** Part 4.2 - Submission of Dispatch Data in the Real-Time Energy and Operating Reserve Markets **Description:**	**Table:** 5-3 Impacts to Market Manual 4 Market Operations **Procedure:** Part 4.2 - Submission of Dispatch Data in the Real-Time Energy and Operating Reserve Markets **Description:**	

Section	Reason	Original Text	Revised Text	Comments
		• [...] the IESO will publish NQS extensions and interchange schedules in the Pre-Dispatch Intertie Transactions and NQS Resource Extensions Reports);	• [...] the IESO will publish NQS extensions and interchange schedules in the Pre-Dispatch Intertie Transactions and NQS Resource Extensions Reports); • Update required for the IESO to provide a new confidential report to notify market participants of the MGBDT value that was selected by the PD calculation engine for use as the inferred state; and	
5.1	Conforming Change	N/A	**Table:** 5-3 Impacts to Market Manual 4 Market Operations **Procedure:** Part 4.3 – Real-Time Scheduling of the Physical Markets **Type of change:** New **Section:** 5.0 - Releasing Real-Time and Market Information **Description:** • Include new report to provide the shadow prices for the binding constraints that are used to generate LMPs by the real-time scheduling processes. Report will be published no sooner than five business days after the trade date.	
5.1	Conforming Change	**Table:** 5-1 Impacts to Market-Facing Procedures **Procedure:** Part 5.4 - Prudential Support **Section:** 1.3.1 - Assessment of Prudential Support Obligation for Physical Markets **Description:** Publication updates required to reflect Virtual Transaction Prudential Support Obligation (PSO) Price Delta Report).	**Table:** 5-4 Impacts to Market Manual 5 Settlements **Procedure:** Part 5.4 - Prudential Support **Section:** 1.3.1 - Assessment of Prudential Support Obligation for Physical Markets **Description:** Publication updates required to reflect Annual Virtual Transaction Price Delta Report.	
5.1	Conforming Change	**Table:** 5-1 Impacts to Market-Facing Procedures **Procedure:** Part 5.4 - Prudential Support **Section:** 1.3.2 - Daily Monitoring of Prudential Support	**Table:** 5-4 Impacts to Market Manual 5 Settlements **Procedure:** Part 5.4 - Prudential Support **Section:** 1.3.2 - Daily Monitoring of Prudential Support	

Section	Reason	Original Text	Revised Text	Comments
		Description: Publication updates required to reflect Virtual Transaction Actual Exposure (AE-V) and Daily Screening Price Delta Report)	**Description:** Publication updates required to reflect Daily Virtual Transaction Price Delta Report	
5.1	Conforming Change	**Table:** 5-1 Impacts to Market-Facing Procedures **Procedure:** Guide to Prudentials at the IESO **Description:** New section may be required for the IESO Virtual Transaction Prudential Support Obligation (PSO) Parameter Report and Virtual Transaction Actual Exposure (AE-V) and Daily Screening Price Delta Report	**Table:** 5-4 Impacts to Market Manual 5 Settlements **Procedure:** Guide to Prudentials at the IESO **Description:** New section may be required for the IESO Annual Virtual Transaction Price Delta Report and Daily Virtual Transaction Price Delta Report	
5.1	Clarification	**Table:** 5-1 Impacts to Market-Facing Procedures **Procedure:** Part 9.1 - Submitting Registration Data for the DACP **Type of change:** No change **Section:** All sections **Description**: • This manual will be replaced by a DAM manual to reflect the elimination of the DACP. Neither this manual nor its replacement will be impacted by decisions made in this detailed design document	**Table:** 5-6 Impacts to Market Manual 9 Day-Ahead Commitment [Deleted]	
5.1	Clarification	**Table:** 5-1 Impacts to Market-Facing Procedures **Procedure:** Part 9.3 - Operation of the DACP **Section:** 4.8 - DACP Reports **Description:** • To be replaced to reflect reports outlined in section 3.4.3.2 of this detailed design document. Updates required to reflect market participants participating in virtual transactions for energy (e.g. Day-Ahead Virtual Transactions Report).	**Table:** 5-6 Impacts to Market Manual 9 Day-Ahead Commitment **Procedure:** Part 9.3 - Operation of the DACP **Section:** 4.8 - DACP Reports **Description:** • To be replaced to reflect reports outlined in section 3.3 of this detailed design document. • Updates required to reflect market participants participating in virtual transactions for energy (e.g. Day-Ahead Virtual Transactions Report).	

Section	Reason	Original Text	Revised Text	Comments
			• Include a new report to provide shadow prices for the binding constraints that are used to generate LMPs by the DAM scheduling processes. Report will be published no sooner than five business days after the trade date.	

14. Market Settlement

Section	Reason	Original Text	Revised Text	Comments
Table 3-9	Correction	Forbidden Regions (Daily) One or more operating regions (upper limit and lower limit), in MW, within which a hydroelectric generation unit cannot maintain steady state operation without causing equipment damage. DAM schedules which are at or within the boundary of a forbidden region will be adjusted prior to calculating the DAM make-whole payments.	Forbidden Regions (Daily) One or more operating regions (upper limit and lower limit), in MW, within which a hydroelectric generation unit cannot maintain steady state operation without causing equipment damage.	
Table 3-14	Clarification	Table 3-14: DAM Unit Commitment Events	Table 3-14: DAM Schedules from Pass 1 and Pass 2 of the DAM Calculation Engine	
3.7.5.2 RT_MWP Formulation	Correction	The energy offers associated with a generation facility and operating reserve offers will be adjusted to the greater of the offer price and the associated real-time market price. Also, bids associated with loads will be adjusted to the lesser of bid price and the real-time price.	Energy offers associated with a generation facility and operating reserve offers that are greater than the real-time market price will be adjusted to the lesser of the offer price and the associated real-time market price. Also, bids associated with loads that are lesser than the real-time market price will be adjusted to the greater of bid price and the real-time price.	
3.7.5.2 RT_MWP Formulation	Correction	$\mathrm{RT}_{\mathrm{MWP}}{}^{\mathrm{m}}_{\mathrm{k,h}}=\mathrm{Max}\left(0,\mathrm{ELC}^{\mathrm{m}}_{\mathrm{k,h}}+\mathrm{ELOC}^{\mathrm{m}}_{\mathrm{k,h}}\right)+\mathrm{Max}\left(0,\mathrm{OLC}^{\mathrm{m}}_{\mathrm{k,h}}+\mathrm{OLOC}^{\mathrm{m}}_{\mathrm{k,h}}\right)$	$\mathrm{RT}_{\mathrm{MWP}}{}^{\mathrm{m}}_{\mathrm{k,h}}=\mathrm{Max}\left(0,\mathrm{ELC}^{\mathrm{m}}_{\mathrm{k,h}}+\mathrm{OLC}^{\mathrm{m}}_{\mathrm{k,h}}\right)+\mathrm{Max}\left(0,\mathrm{ELOC}^{\mathrm{m}}_{\mathrm{k,h}}+\mathrm{OLOC}^{\mathrm{m}}_{\mathrm{k,h}}\right)$	
Table 3-52	Design Change	N/A	DAM Fuel Cost Compensation Credit DAM_FCC 3.7.16 PD Fuel Cost Compensation Credit PD_FCC 3.7.16 Fuel Cost Compensation Uplift FCCU 3.7.16	Design change in response to stakeholder feedback.
3.7.2.2 Interactions and Special Considerations	Design Change	• prior to the start of its DAM commitment, DAM_GOG will not be assessed. However, in addition to DAM_MWP, the generation unit will be able to recover any negative buyback, which is described in Section 3.7.7: DAM Balancing Credit (DAM_BC).	• prior to the start of its DAM commitment, DAM_GOG will not be assessed. However, in addition to DAM_MWP, the generation unit will be able to recover any negative buyback, which is described in Section 3.7.7: DAM Balancing Credit (DAM_BC). Market participants will also be able to submit claims for the reimbursement of any financial loss that are associated with the de-committed unit, which is described in Section 3.7.16: Fuel Cost Compensation Settlement Charges.	Design change in response to stakeholder feedback.

Section	Reason	Original Text	Revised Text	Comments
3.7.2.4; Eligibility for Recovery of Implied Cost of Start-up Offers	Correction	• the CT's single cycle flag is never activated during its MGBRT.	[Deleted]	
3.7.2.4; Eligibility for Recovery of Implied Cost of Start-up Offers	Correction	The steam turbine (ST) associated with one or more pseudo-units will be eligible to recover its share of the implied costs of any of its associated PSU's start-up offers, if: • at least one of the CT associated with the PSU has met all eligibility requirements.	The steam turbine (ST) associated with one or more pseudo-units will be eligible to recover its share of the implied costs of any of its associated PSU's start-up offers, if: • the CT associated with the PSU has met all eligibility requirements, and • the CT associated with the PSU is not operating in single-cycle mode	
3.7.2.4; Eligibility for Recovery of Implied Cost of Speed No-Loads Offers	Clarification	A combustion turbine associated with a pseudo-unit will be eligible to recover its share of the PSU's speed no-load offers for each hour of the DAM schedule that the CT actually produces energy for the entire hour. It will recover its share of a pro-rated speed no-load offer for each hour of that PSU's DAM schedule when the associated CT produces energy during some, but not all intervals within the hour.	A combustion turbine associated with a PSU will be eligible to recover its share of the PSU's speed no-load offers for each hour of the DAM schedule that the CT actually produces energy for the entire hour. The IESO will reduce the implied cost of any speed no-load offer for a given hour by 1/12th for each 5-minute interval in that hour where the CT did not produce energy. An ST associated with one or more PSUs will recover its share of each associated PSU's speed no-load offer in every hour of that PSU's commitment period when the associated CT is not operating in a single-cycle mode and actually produces energy for the entire hour. The IESO will reduce the implied cost of any speed no-load offer for a given hour by 1/12th for each 5-minute interval in that hour where the CT either (1) operated in a single-cycle mode or (2) did not produce energy. The eligibility criteria will apply to any and all PSUs associated with the given ST, such that the ST can potentially recover speed no-load offers from multiple overlapping PSU commitments throughout its calculation period. This is aligned with the calculation for the RT-GOG.	
3.7.9.2 Interactions and Special Considerations	Clarification	N/A	Bridging of Two Commitments In the event there is a reliability need to keep a non-quick start generation unit in-service between two independent commitments, a minimum generation constraint will be applied to bridge the commitments. During this bridging period, the reliability constraint will be considered as a separate reliability commitment and both the RT_GOG and RT_MWP will apply.	

Section	Reason	Original Text	Revised Text	Comments
3.7.9.2 Interactions and Special Considerations; De-commitment of an NQS Generation Unit	Design Change	A generation unit may be de-committed by the IESO for reliability, security or adequacy reasons after the unit receives a binding start-up instruction for a PD commitment. In the event that a generation unit is de-committed subsequent to receiving a binding start-up instruction, the generation unit will be compensated for any lost opportunity during the de-committed period through RT_MWP. Any offered cost incurred before the de-commitment including any start-up offer and speed no-load offer for the hours that the unit was online will be compensated through RT_GOG as per eligibility rules defined in the section above.	A generation unit may be de-committed by the IESO for reliability, security or adequacy reasons after the unit receives a binding start-up instruction for a PD commitment. In the event that a generation unit is de-committed: • Subsequent to the start of its PD commitment, any offered cost incurred before the de-commitment including any start-up offer and speed no-load offer for the hours that the unit was online will be compensated through RT_GOG as per the eligibility rules defined in the section above. • Subsequent to receiving a binding start-up instruction, but prior to the start of the PD commitment or dispatched down such that the generation unit has to de-synchronize before the end of its PD commitment period, market participants will be able to submit claims for the reimbursement of any financial loss that are associated with the de-committed unit, which is described in Section 3.7.16: Fuel Cost Compensation Settlement Charges.	Design change in response to stakeholder feedback.
3.7.11.3 Special Considerations and Interactions	Clarification	N/A	Treatment of Failure over Midnight A failure event that crosses over midnight will be assessed as a single event that is associated with the dispatch day when the binding start-up instruction is issued.	

Section	Reason	Original Text	Revised Text	Comments
3.7.16.11 Fuel Cost Compensation Credit Settlement Charges	Design Change	N/A	Fuel Cost Compensation Credit Settlement Charges Similar to the current market, the IESO will compensate market participants for fuel cost incurred for de-commitment events. For reliability reasons, the IESO may de-commit a NQS generation unit prior to the start of a DAM or PD commitment. Fuel cost compensation credit is intended to allow the NQS generation unit to recover cost incurred to meet the DAM or PD commitment that it may not otherwise be able to recover from the market. In order to receive a fuel cost compensation credit, a market participant must submit a claim to the IESO for cost incurred in securing unused fuel to meet its DAM commitment or PD commitment. Compensation claims are allowable up to the minimum loading point of the anticipated real-time operation, which had been scheduled and committed in DAM or PD timeframe. DAM Fuel Cost Compensation Credit (DAM_FCC) In the event that a generation unit is de-committed by the IESO for reliability or security reasons prior to the start of its DAM commitment in real time, the market participant will be able to submit a claim for unused fuel in the DAM timeframe. If the IESO determines that the claim is valid, it will be settled under the new settlement amounts, DAM Fuel cost compensation credit (DAM_FCC). RT Fuel Cost Compensation Credit (RT_FCC) In the event that a generation unit is de-committed by the IESO for reliability or security reasons subsequent to receiving a binding start-up instruction and prior to the start of the PD commitment in real-time or dispatched down such that the generation unit has to de-synchronized before the end of its PD commitment period, the market participant will be able to submit a claim for unused fuel in the PD timeframe. If the IESO determines that the claim is valid, it will be settled under the new settlement amounts, RT Fuel cost compensation credit (RT_FCC).	Design change in response to stakeholder feedback.

Section	Reason	Original Text	Revised Text	Comments
3.7.16.12 Fuel Cost Compensation Credit Uplift (FCCU)	Design Change	N/A	Fuel Cost Compensation Credit Uplift (FCCU) Fuel Cost Compensation Credit Uplift is intended to recover DAM_FCC and RT_FCC accrued due to the de-commitment events for both DAM and PD commitments. The FCCU will be allocated monthly on a pro-rata basis to all real-time market loads and exports when these costs are incurred. $\mathrm{FCCU}_k = \sum_K^M (DAM\_\mathrm{FCC}_k^m + RT\_FCC_k^m) \text{ x } \sum_H^{M,T} (AQEW_{k,h}^{m,t} + SQEW_{k,h}^{i,t}) \, / \, \sum_{K,H}^{M,T} (AQEW_{k,h}^{m,t} + SQEW_{k,h}^{i,t})$ Where: 'K' is the set of all market participants 'k'. 'M' is the set of all delivery points 'm' and intertie metering points 'i'. 'H' is the set of all settlement hours 'h' in the month. 'T' is the set of all metering intervals 't' in settlement hour 'h'.	Design change in response to stakeholder feedback.
Table D-2	Design Change	N/A	DAM Fuel Cost Compensation Credit DAM_FCC 3.7.16 PD Fuel Cost Compensation Credit PD_FCC 3.7.16 Fuel Cost Compensation Uplift FCCU 3.7.16	Design change in response to stakeholder feedback.
2.1	Clarification	The existing settlement process also supports the settlement of demand response capacity obligations awarded to demand response market participants.	The existing settlement process also supports the settlement of demand response capacity obligations awarded to demand response market participants [1]. New footnote [1] added: "The IESO has replaced the demand response auction with a capacity auction to enable competition between additional resource types. All references to the demand response auction in this document should be read as a reference to the capacity auction. Conforming changes required to align with the current or future capacity auction will be made during implementation via market rules and/or market manuals."	

Section	Reason	Original Text	Revised Text	Comments
2.1	Clarification	From a market-facing standpoint, the primary service that the settlement process delivers is a detailed breakdown of all the financial calculations performed by the IESO concerning a market participant's activity in the IESO-administered markets including the real-time market, demand response auction, TR market, and procurement markets.	From a market-facing standpoint, the primary service that the settlement process [2] delivers is a detailed breakdown of all the financial calculations performed by the IESO concerning a market participant's activity in the IESO-administered markets including the real-time market, demand response auction, TR market, and procurement markets. New footnote [2] added: "The settlement process described in this document is applicable to registered IESO market participants only."	
2.2	Correction	• New Data from the Pre-Dispatch Process. This new information flow will include: o Pre-dispatch advisory nodal LMPs; o Hourly and daily dispatch data used by the PD calculation engine including offers and bids; o Dispatch data mitigated by the PD calculation engine on failure of ex-ante conduct tests; o Market power mitigation ex-ante conduct and impact test data including prevailing constrained area mitigation conditions; o Market power mitigation reference level data used by or available to the PD calculation engine; and o Pre-dispatch unit commitment events.	• New Data from the Pre-Dispatch Process. This new information flow will include: o Pre-dispatch advisory nodal LMPs; o Hourly and daily dispatch data used by the PD calculation engine including offers and bids; o Dispatch data mitigated by the PD calculation engine on failure of ex-ante conduct and impact tests; and o Pre-dispatch unit commitment events.	
2.2	Conforming Change	• New Data from the Real-Time Market Process: This new information flow will include: [...] o Dispatch data mitigated by the RT calculation engine on failure of ex-ante conduct tests;	• New Data from the Real-Time Market Process: This new information flow will include: [...] o Mitigated Dispatch data for price impact used by RT calculation engine;	
Figure 2-2	Conforming Change	Data Flow from DAM Calculation Engine - Ex-Ante Conduct/Impact Test Data "Typical DA,PD,RT"	Data Flow from DAM Calculation Engine - Ex-Ante Conduct/Impact Test Data "Typical DA,PD"	
Table 3-1	Clarification	Hourly Physical Transaction Settlement Amount – Non-Dispatchable Load (HPTSA_NDL)	Hourly Physical Transaction Settlement Amount – Non-Dispatchable Load (HPTSA_NDL) [3] New footnote [3] added: The first settlement stage does not apply to non-dispatchable loads. The settlement for energy withdrawals at delivery points for a non-dispatchable load is a single settlement calculation performed as part of the second settlement stage.	
3.3.1	Other	Congestion rents collected from intertie congestion will continue to fund the TR market.	Under a separate initiative from MRP, the IESO is undertaking a review of Ontario's TR market. The TR Market Review will address where and how the real-time intertie congestion will be collected and settled.	

Section	Reason	Original Text	Revised Text	Comments
3.3.1	Conforming Change	This uplift will recover the cost of committing additional registered facilities in the Reliability Scheduling pass of the DAM calculation engine from virtual supply transactions, loads and exports. As stated in the DAM high-level design, virtual supply transactions may cause additional physical resources to be committed or imports to be scheduled in the Reliability Scheduling pass of the DAM calculation engine.	This uplift will recover the cost of committing additional registered facilities in the Reliability Scheduling and Commitment pass of the DAM calculation engine from virtual supply transactions, loads and exports. As stated in the DAM high-level design, virtual supply transactions may cause additional physical resources to be committed or imports to be scheduled in the Reliability Scheduling and Commitment pass of the DAM calculation engine.	Language updated to conform with terms used for reliability scheduling in DAM calculation engine detailed design
3.3.1	Conforming Change	In addition, any residual make-whole payment costs not allocated to virtual supply transactions would be the result of the IESO over-forecasting load in the Reliability Scheduling pass of DAM.	In addition, any residual make-whole payment costs not allocated to virtual supply transactions would be the result of the IESO over-forecasting load in the Reliability Scheduling and Commitment pass of DAM.	Language updated to conform with terms used for reliability scheduling in DAM calculation engine detailed design
Table 3-3	Design Change	N/A	Day-Ahead Fuel Cost Compensation Credit (DA_FCC) Market rules reference: Chapter 9, Section 4.7E Replaced by DAM Fuel Cost Compensation Credit (DAM_FCC) and PD Fuel Cost Compensation Credit (PD_FCC)	Design change in response to stakeholder feedback.
Table 3-3	Design Change	N/A	Day-Ahead Fuel Cost Compensation Debit (DA_FCCU) Market rules reference: Chapter 9, Section 4.8.1.12 Replaced by Fuel Cost Compensation Uplift (FCCU)	Design change in response to stakeholder feedback.
Table 3-5	Design Change	Day-Ahead Fuel Cost Compensation Credit (DA_FCC) Market rules reference: Chapter 9, Section 4.7E Day-Ahead Fuel Cost Compensation Debit (DA_FCCU) Market rules reference: Chapter 9, Section 4.8.1.12	[Deleted]	Design change in response to stakeholder feedback.
3.5.2.4 Market Price Associations	Clarification	Non-dispatchable loads will be subject to the Ontario zonal price, adjusted for the province-wide allocation of the cost of forecast deviation.	Non-dispatchable loads will be subject to the DAM Ontario zonal price, adjusted for the cost or benefit of any load forecast deviation.	
Table 3-10	Clarification	$DAM_{LMP}{}_{h}^{z}$ $DAM\ Zonal\ \ Locational\ Marginal\ Price\ of\ Energy$	$DAM_{LMP}{}_{h}^{z}$ $DAM\ Ontario\ Zonal\ Price\ of\ Energy$	

Section	Reason	Original Text	Revised Text	Comments
Table 3-11	Clarification	N/A	$\mathrm{DAM\_QVSW}^{d}_{k,h}$ $DAM\ Quantity\ of\ Energy\ Scheduled\ for\ Withdrawal\ at\ a\ Hourly\ Demar$ $DAM\ quantity\ of\ energy\ scheduled\ for\ withdrawal\ by\ market\ particip$ $Unit\ of\ measurement: MWh$ $Time\ resolution: hourly$	Added new variable to account for hourly demand response resources in the calculation of load forecast deviation charge.
3.5.4.1 DAM Calculation Engine	Conforming Change	The DAM calculation engine will perform ex-ante mitigation for economic withholding and produce conduct and price impact test results and mitigated dispatch data when such tests result in failure. See the Market Power Mitigation detailed design document for a description of these processes. The DAM calculation engine will be the source of mitigated dispatch data and test results provided to the settlement process for potential settlement mitigation of make-whole payments and other guarantee payments.	The DAM calculation engine will perform ex-ante mitigation for economic withholding and produce conduct and price impact test results and mitigated dispatch data when such tests result in failure. The Pre-Settlement Mitigation process, which is executed after the DAM calculation engine completes Pass 3, will provide enhanced mitigated for conduct test dispatch data. See the DAM Calculation engine detailed design document for a description of these processes. The DAM calculation engine will be the source of mitigated dispatch data and test results provided to the settlement process for potential settlement mitigation of make-whole payments and other guarantee payments.	Conforming changes to the DAM Calculation engine detail design.
Table 3-12	Conforming Change	Mitigated Dispatch Data	Enhanced Mitigated Dispatch Data	
3.5.4.1 DAM Calculation Engine	Conforming Change	Table 3 14 provides a listing of the data from the DAM calculation engine, prior to, and during, the reliability scheduling pass that will be used by the settlement process in the calculation of the DAM Reliability Scheduling Uplift (DRSU), discussed in Section 3.7.4.	Table 3 14 provides a listing of the data from the DAM calculation engine Pass 1: Market Commitment and Market Power Mitigation and Pass 2: Reliability Scheduling and Commitment that will be used by the settlement process in the calculation of the DAM Reliability Scheduling Uplift (DRSU), discussed in Section 3.7.4.	
Table 3-14	Conforming Change	${PRE_{RSP_{DAM_{QSI}}}}^{m}_{k,h}$ $Latest\ DAM\ pass\ prior\ to\ the\ Reliability\ Scheduling\ Pass\ of\ DAM\ Quant$ $Represents\ the\ latest\ schedule\ from\ the\ DAM\ calculation\ engine\ passes$ $DAM\ quantity\ of\ energy\ scheduled\ for\ injection\ by\ market\ participant$	${PASS1_{DAM_{QSI}}}^{m}_{k,h}$ $Pass\ 1\ DAM\ Quantity\ of\ Energy\ Scheduled\ for\ Injection\ at\ a\ Delivery\ P$ $Represents\ the\ DAM\ schedule\ produced\ by\ the\ Market\ Commitment\ and$ $DAM\ quantity\ of\ energy\ scheduled\ for\ injection\ by\ market\ participant$	

Section	Reason	Original Text	Revised Text	Comments
Table 3-14	Conforming Change	$RSP_{DAM_{QSI}}{}^{m}_{k,h}$ $Reliability\ Scheduling\ Pass\ of\ DAM\ Quantity\ of\ Energy\ Scheduled\ for$ $Represents\ the\ reliability\ scheduling\ pass\ that\ determines\ if\ the\ resou$ $DAM\ quantity\ of\ energy\ scheduled\ for\ injection\ by\ market\ participant$	$PASS2_{DAM_{QSI}}{}^{m}_{k,h}$ $Pass\ 2\ DAM\ Quantity\ of\ Energy\ Scheduled\ for\ Injection\ at\ a\ Delivery\ P$ $Represents\ the\ DAM\ schedule\ produced\ by\ the\ Reliability\ Scheduling\ ar$ $DAM\ quantity\ of\ energy\ scheduled\ for\ injection\ by\ market\ participant$	
Table 3-14	Conforming Change	$PRE_{RSP_{DAM_{QSI}}}{}^{i}_{k,h}$ $Latest\ DAM\ pass\ prior\ to\ the\ Reliability\ Scheduling\ Pass\ of\ DAM\ Quant$ $Represents\ the\ latest\ schedule\ from\ the\ DAM\ calculation\ engine\ passes$ $DAM\ quantity\ of\ energy\ scheduled\ for\ injection\ by\ market\ participant$	$PASS1_{DAM_{QSI}}{}^{i}_{k,h}$ $Pass\ 1\ DAM\ Quantity\ of\ Energy\ Scheduled\ for\ Injection\ at\ a\ Intertie\ M$ $Represents\ the\ DAM\ schedule\ produced\ by\ Pass\ 1\text{:}\ Market\ Commitment$ $DAM\ quantity\ of\ energy\ scheduled\ for\ injection\ by\ market\ participant$	
Table 3-14	Conforming Change	$RSP_{DAM_{QSI}}{}^{i}_{k,h}$ $Reliability\ Scheduling\ Pass\ of\ DAM\ Quantity\ of\ Energy\ Scheduled\ for$ $Represents\ the\ reliability\ scheduling\ pass\ that\ determines\ if\ the\ resou$ $DAM\ quantity\ of\ energy\ scheduled\ for\ injection\ by\ market\ participant$	$PASS2_{DAM_{QSI}}{}^{i}_{k,h}$ $Pass\ 2\ DAM\ Quantity\ of\ Energy\ Scheduled\ for\ Injection\ at\ an\ Intertie$ $Represents\ the\ DAM\ schedule\ produced\ by\ Pass\ 2\text{:}\ Reliability\ Schedulin$ $DAM\ quantity\ of\ energy\ scheduled\ for\ injection\ by\ market\ participant$	
Table 3-14	Conforming Change	$PRE_{RSP_{DAM_{QSOR}}}{}^{m}_{r,k,h}$ $Latest\ DAM\ pass\ prior\ to\ the\ Reliability\ Scheduling\ Pass\ of\ DAM\ Sched$ $Represents\ the\ latest\ DAM\ pass\ prior\ to\ the\ reliability\ scheduling\ pass.$ $DAM\ scheduled\ quantity\ of\ class\ r\ reserve\ for\ market\ participant\ 'k'\ a$	$PASS1_{DAM_{QSOR}}{}^{m}_{r,k,h}$ $Pass\ 1\ DAM\ Scheduled\ Quantity\ of\ Operating\ Reserve\ at\ a\ Delivery\ Po$ $Represents\ DAM\ schedule\ produced\ by\ Pass\ 1\text{:}\ Market\ Commitment\ and$ $DAM\ scheduled\ quantity\ of\ class\ r\ reserve\ for\ market\ participant\ 'k'\ a$	
Table 3-14	Conforming Change	$RSP_{DAM_{QSOR}}{}^{m}_{r,k,h}$ $Reliability\ Scheduling\ Pass\ DAM\ Scheduled\ Quantity\ of\ Operating\ Rese$ $Represents\ the\ reliability\ scheduling\ pass\ that\ determines\ if\ the\ resou$ $DAM\ scheduled\ quantity\ of\ class\ r\ reserve\ for\ market\ participant\ 'k'\ a$	$PASS2_{DAM_{QSOR}}{}^{m}_{r,k,h}$ $Pass\ 2\ DAM\ Scheduled\ Quantity\ of\ Operating\ Reserve\ at\ a\ Delivery\ Po$ $Represents\ the\ DAM\ schedule\ produced\ by\ Pass\ 2\text{:}\ Reliability\ Schedulin$ DAM scheduled quantity of class r reserve for market participant ‘k’ at delivery point ‘m’ in settlement hour ‘h’ during the Reliability Scheduling.	

Section	Reason	Original Text	Revised Text	Comments
Table 3-14	Conforming Change	$PRE_{RSP_{DAM_{QSOR}}}{}^{i}_{r,k,h}$ $Latest\ DAM\ pass\ prior\ to\ the\ Reliability\ Scheduling\ Pass\ of\ DAM\ Sched$ $Represents\ the\ latest\ DAM\ pass\ prior\ to\ the\ reliability\ scheduling\ pass.$ $DAM\ scheduled\ quantity\ of\ class\ r\ reserve\ for\ market\ participant\ 'k'\ a$	$PASS1_{DAM_{QSOR}}{}^{i}_{r,k,h}$ $Pass\ 1\ DAM\ Scheduled\ Quantity\ of\ Operating\ Reserve\ at\ an\ Intertie\ Me$ $Represents\ the\ DAM\ schedule\ produced\ by\ Pass\ 1{:}\ Market\ Commitment$ $DAM\ scheduled\ quantity\ of\ class\ r\ reserve\ for\ market\ participant\ 'k'\ a$	
Table 3-14	Conforming Change	$RSP_{DAM_{QSOR}}{}^{i}_{r,k,h}$ Reliability Scheduling Pass DAM Scheduled Quantity of Operating Reserve at an Intertie Metering Point Determines if the resources committed by prior passes are sufficient to meet the peak zonal forecast demand and commits additional imports, if required. DAM scheduled quantity of class r reserve for market participant 'k' at intertie metering point 'i' in settlement hour 'h' during the reliability scheduling pass.	$PASS2_{DAM_{QSOR}}{}^{i}_{r,k,h}$ $Pass\ 2\ DAM\ Scheduled\ Quantity\ of\ Operating\ Reserve\ at\ an\ Intertie\ Me$ $Determines\ if\ the\ resources\ committed\ by\ Pass\ 1{:}\ Market\ Commitment$ $DAM\ scheduled\ quantity\ of\ class\ r\ reserve\ for\ market\ participant\ 'k'\ a$	
Table 3-14	Conforming Change	$PRE_{RSP_{Import_{DAM_{MWP}}}}{}^{i}_{k,h}$ $Import\ DAM\ Make$ $-\ Whole\ Payment\ Prior\ to\ the\ Reliability\ Scheduling\ Pass$ $Represents\ the\ DAM\_MWP\ made\ to\ imports\ that\ are\ scheduled\ in\ the\ p$ $For\ the\ market\ participant/resource/trading\ day$ $/trading\ hour, if\ there\ is\ a\ schedule\ in\ the\ mitigated\ scheduling\ pass, t$ $-\ offered\ scheduling\ pass\ will\ be\ used.$	$PASS1_{Import_{DAM_{MWP}}}{}^{i}_{k,h}$ $Pass\ 1\ Import\ DAM\ Make-Whole\ Payment$ $Represents\ the\ DAM\_MWP\ made\ to\ imports\ that\ are\ scheduled\ in\ the\ P$ $For\ the\ market\ participant/\ resource/trading\ day$ $/trading\ hour, if\ there\ is\ a\ schedule\ in\ Mitigated\ Scheduling,$ $then\ the\ schedule\ from\ the\ Mitigated\ Scheduling\ step\ will\ be\ used, othe$ $-\ Offered\ Scheduling\ will\ be\ used.$	
Table 3-14	Conforming Change	$RSP_{Import_{DAM_{MWP}}}{}^{i}_{k,h}$ $Import\ DAM\ Make$ $-\ Whole\ Payment\ from\ the\ Reliability\ Scheduling\ Pass$ $Represents\ the\ DAM\_MWP\ made\ to\ imports\ that\ are\ incrementally\ or\ n$	$PASS2_{Import_{DAM_{MWP}}}{}^{i}_{k,h}$ $Pass\ 2\ Import\ DAM\ Make-Whole\ Payment$ $Represents\ the\ DAM\_MWP\ made\ to\ imports\ that\ are\ incrementally\ or\ n$	

Section	Reason	Original Text	Revised Text	Comments
Table 3-14	Conforming Change	${RSP_{New_{NQS_{DAM_{GOG}}}}}^{m}_{k,h}$ DAM Generator Offer Guarantee from the Reliability Scheduling Pass Represents the DAM_GOG payments generated by the final pass of the DAM calculation engine that are made to NQS generation facilities that are first committed in the reliability scheduling pass for a contiguous set of hours. In order to be first committed in the reliability scheduling pass, the schedules in preceding passes must be zero.	${PASS2_{New_{NQS_{DAM_{GOG}}}}}^{m}_{k,h}$ $Pass\ 2\ DAM\ Generator\ Offer\ Guarantee$ Represents the DAM_GOG payments that are made to NQS generation facilities that are first committed in Pass 2: Reliability Scheduling and Commitment for a contiguous set of hours. In order to be first committed in the Pass 2, the schedules in preceding passes must be zero.	
3.5.5.1 PD Calculation Engine	Conforming Change	The PD calculation engine will perform ex-ante mitigation for economic withholding and produce conduct and price impact test results and mitigated dispatch data when such tests result in failure. See the Market Power Mitigation detailed design document for a description of these processes. The PD calculation engine will be the source of mitigated dispatch data and test results provided to the settlement process for potential settlement mitigation of make-whole payments and other guarantee payments.	The PD calculation engine will perform ex-ante mitigation for economic withholding and produce conduct and price impact test results when such tests result in failure. See the PD calculation engine detailed design document for a description of these processes. The PD calculation engine will be the source of the conduct and price impact test results provided to the settlement process for the settlement of the generation failure charge.	
Table 3-21	Other	Mitigated Dispatch Data Mitigated dispatch data enhanced to reflect the most restrictive failed dispatch data parameter during the hour or commitment period for the unit that failed the conduct test for market participant ‘k’ at delivery point ‘m’ for each dispatch hour ‘h’ of the pre-dispatch look-ahead period. Potential mitigated financial dispatch data parameters include: • Energy offers • Start-up offers • Speed no-load offers • Operating reserve offers • Energy offers for the range of production up to MLP	[Deleted]	Make-whole payments are not settled in PD timeframe hence enhanced mitigated dispatch data is not required.

Section	Reason	Original Text	Revised Text	Comments
Table 3-21	Other	Resource Constrained Area Mitigation Test Conditions Constrained area mitigation condition for each resource at delivery point 'm' prevailing during each settlement hour 'h' of the pre-dispatch look-ahead period. The relevant impact threshold used in MWP impact testing for market participant 'k' will be applied depending on the constrained area condition under which the resource failed the conduct test. See Table 3 22: PD Thresholds from the Market Power Mitigation Information System.	[Deleted]	Make-whole payments are not settled in PD timeframe hence enhanced mitigated dispatch data is not required.
3.5.5.1 PD Calculation Engine	Other	Table 3 22 identifies the PD mitigation data provided by the Market Power Mitigation Information System to the settlement process.	[Deleted]	Make-whole payments are not settled in PD timeframe hence enhanced mitigated dispatch data is not required.
Table 3-22	Other	Make-Whole Payment Impact Test Thresholds The relevant impact threshold used in make-whole payment impact testing for market participant 'k' will be applied depending on the constrained area condition under which the resource failed the conduct test: • Broad constrained area (BCA) for energy • Narrow constrained area (NCA) for energy • Dynamic constrained area (DCA) for energy • Reliability constraint for energy • Global market power for energy • Global market power for operating reserve • Local market power for operating reserve Refer to the Market Power Mitigation detailed design, Table 3-3 for mitigation conditions for make-whole payment impact testing.	[Deleted]	Make-whole payments are not settled in PD timeframe hence enhanced mitigated dispatch data is not required.
Table 3-23	Clarification	$PD_{SU_{MLP}}{}^{m}_{k,f}$ $Unit\ of\ measurement\colon \$\ (dollar\ rounded\ to\ the\ nearest\ cent\ per - start)$	$PD_{SU_{MLP}}{}^{m}_{k,f}$ $Unit\ of\ measurement\colon \%\ (expressed\ as\ a\ decimal)$	
Table 3-23	Clarification	$PD_{SU_{MLP}}{}^{c}_{k,f}$ $Unit\ of\ measurement\colon \$\ (dollar\ rounded\ to\ the\ nearest\ cent\ per - start)$	$PD_{SU_{MLP}}{}^{c}_{k,f}$ $Unit\ of\ measurement\colon \%\ (expressed\ as\ a\ decimal)$	

Section	Reason	Original Text	Revised Text	Comments
Table 3-23	Clarification	$MLP_{INJ}{}^{m}_{k,f}$ $Unit\ of\ measurement: MW$	$MLP_{INJ}{}^{m}_{k,f}$ $Unit\ of\ measurement: number\ of\ intervals$	
Table 3-23	Clarification	$MLP_{INJ}{}^{c}_{k,f}$ $Unit\ of\ measurement: MW$	$MLP_{INJ}{}^{c}_{k,f}$ $Unit\ of\ measurement: number\ of\ intervals$	
Table 3-26	Clarification	Time resolution: interval	Time resolution: 5-minute interval	
Table 3-26	Clarification	N/A	$RT_{LMP}{}^{d,t}_{h}$ $Real$ $- Time\ Locational\ Marginal\ Price\ of\ Energy\ at\ a\ Hourly\ Demand\ Resp$ $Real$ $- time\ energy\ market\ price\ at\ hourly\ demand\ response\ resource\ 'd'\ in$ $Unit\ of\ measurement: \$/MWh\ to\ the\ nearest\ cent$ $Time\ resolution: 5\ minute\ interval$	Added new variable to account for hourly demand response resources in the calculation of Load Forecast Deviation Charge.
Table 3-27	Clarification	Time resolution: interval	Time resolution: 5-minute interval	
3.5.6.1 RT Calculation Engine	Conforming Change	The RT calculation engine will perform ex-ante mitigation for economic withholding and produce conduct and price impact test results and mitigated dispatch data when such tests result in failure. See the Market Power Mitigation detailed design document for a description of these processes. The RT calculation engine will be the source of mitigated dispatch data and test results provided to the settlement process for potential settlement mitigation of make-whole payments and other guarantee payments.	The RT calculation engine will not perform ex-ante mitigation of dispatch data. Instead, mitigation decisions made by the PD calculation engine will be carried forward into real-time. The Pre-Settlement Mitigation process, which is executed after the PD and RT calculation engine processes are completed, will provide enhanced mitigated dispatch data. See the RT Calculation detailed design document for a description of these processes. The RT calculation engine will be the source of enhanced mitigated dispatch data and PD mitigation test results provided to the settlement process for potential settlement mitigation of make-whole payments and other guarantee payments	
Table 3-28	Conforming Change	Conduct Test Result Pass or fail results of units at delivery point ‘m’ undergoing the conduct test for each dispatch interval ‘t’ of dispatch hour ‘h’.	Conduct Test Result Pass or fail results of units at delivery point ‘m’ undergoing the conduct test for each dispatch interval ‘t’ of dispatch hour ‘h’. These are the results from the PD calculation engine runs that will be used by the RT calculation engine to determine prices and schedules.	

Section	Reason	Original Text	Revised Text	Comments
Table 3-28	Conforming Change	Price Impact Test Result Pass or fail results of units at delivery point 'm' undergoing the price impact test for each dispatch interval 't' of dispatch hour 'h'.	Price Impact Test Result Pass or fail results of units at delivery point 'm' undergoing the price impact test for each dispatch interval 't' of dispatch hour 'h'. These are the results from the PD calculation engine runs that will be used by the RT calculation engine to determine prices and schedules.	
Table 3-28	Conforming Change	Mitigated Dispatch Data	Enhanced Mitigated Dispatch Data	
Table 3-33	Clarification	Time resolution: interval	Time resolution: 5-minute interval	
Table 3-34	Clarification	Time resolution: interval	Time resolution: 5-minute interval	
3.5.6.5 RT PBC Data	Clarification	N/A	Table 3-35 identifies the RT PBC data quantities used by the settlement process prior to the first settlement run for a given trading day.	
Table 3-35	Clarification	Time resolution: interval	Time resolution: 5-minute interval	
3.5.7	Clarification	When a facility with a DAM financially binding schedule is dispatched down, the IESO will adjust the first settlement and second settlement accordingly.	In instances where a facility with a DAM financially binding schedule is dispatched down to meet a reliability need, the market participant will receive a DAM Balancing Credit charge to offset any negative impact of real-time balancing for the facility.	
Table 3-39	Clarification	Non-dispatchable generation facility	Non-dispatchable generation facility [5] New footnote [5] added: "Excludes embedded generation that are distribution-connected and hence are not registered IESO market participants"	
3.6.1.1, First Settlement HPTSA – PBC	Clarification	During first settlement, the HPTSA_PBC will consist of all the quantities bought and sold by the market participant valued at the applicable DAM zonal or nodal market price.	During first settlement, the HPTSA_PBC will consist of all the quantities bought and sold by the market participant valued at the applicable DAM Ontario zonal price or DAM LMP.	
3.6.1.1; First Settlement HPTSA - Formula Variant 2	Correction	$HPTSA\{1\}\_V2_{k,h} = \sum^{M1}[(DAM\_QSW^m_{k,h} \times DAM\_LMP^m_h] + \sum^{M2}[(DAM\_QSW^m_{k,h} \times DAM\_LMP^m_h]$	$HPTSA\{1\}\_V2_{k,h} = -1\ x \left[\sum^{M1}[(DAM\_QSW^m_{k,h} \times DAM\_LMP^m_h] + \sum^{M2}[(DAM\_QSW^m_{k,h} \times DAM\_LMP^m_h]\right]$	Added (-1) multiplier to the formula

Section	Reason	Original Text	Revised Text	Comments
Table 3-46	Clarification	Non-dispatchable generation facility	Non-dispatchable generation facility [6] New footnote [6] added: "Excludes embedded generation that are distribution-connected and hence are not registered IESO market participants"	
3.6.2.1; Second Settlement HPTSA - Formula variant 2	Correction	$HPTSA\{2\}_{V2_{k,h}} =$ $\sum^{M1,T}\left[\left[RT_{LMP_h}^{m,t}\ x\ \left(AQEW_{k,h}^{m,t} - \frac{DAM_{QSW_{k,h}}^{m}}{12}\right)\right]\right] - \sum^{M2,T}\left[RT_{LMP_h}^{m,t}\ x\ \frac{DAM_{QSW_{k,h}}^{m}}{12}\right]$	$HPTSA\{2\}_{V2_{k,h}} =$ $-1\ x\ \left[\sum^{M1,T}\left[\left[RT_{LMP_h}^{m,t}\ x\ \left(AQEW_{k,h}^{m,t} - \frac{DAM_{QSW_{k,h}}^{m}}{12}\right)\right]\right] - \sum^{M2,T}\left[RT_{LMP_h}^{m,t}\ x\ \frac{DAM_{QSW_{k,h}}^{m}}{12}\right]\right]$	Added (-1) multiplier to the formula.
3.6.3	Clarification	The cost/benefit of these two elements will be recovered through an adjustment to the DAM hourly Ontario zonal price.	The cost/benefit of these two elements will be recovered through an adjustment to the DAM Ontario zonal price.	
3.6.3.1 Real-Time Purchase Cost/Benefit	Clarification	Real-Time Purchase Cost_Benefit= $\sum_{K,h}^{M,T}\left[RT_{LMP_h}^{m,t}\ x\ \left(AQEW_{k,h}^{m,t} - \frac{DAM_{QSW_{k,h}}^{m}}{12}\right)\right] - \sum_{K,h}^{M2,T}\left[RT_{LMP_h}^{m,t}\ x\ \frac{DAM_{QSW_{k,h}}^{m}}{12}\right]$ 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 load.	Real-Time Purchase Cost_Benefit= $\sum_{K,h}^{M,T}\left[RT_{LMP_h}^{m,t}\ x\ \left(AQEW_{k,h}^{m,t} - \frac{DAM_{QSW_{k,h}}^{m}}{12}\right)\right] - \sum_{K,h}^{M2,T}\left[RT_{LMP_h}^{d,t}\ x\ \frac{DAM_{QSW_{k,h}}^{d}}{12}\right]$ Where: 'M' is the set of all NDL delivery points 'm'. 'M2' is the set of all hourly demand response resources 'd' that are not registered as price responsive load.	
3.6.3.2 DAM Volume Factor Cost/Benefit	Clarification	DAM Volume Factor Cost_Benefit= $DAM_{LMP_h}^{z}\ x\ \left[\sum_{K,h}^{M,T}\left(\frac{DAM_{QSW_{k,h}}^{m}}{12} - AQEW_{k,h}^{m,t}\right)\right] +$ $\sum_{K,h}^{M2}\left[DAM_{LMP_h}^{z}\ x\ DAM_{QSW_{k,h}}^{m}\right]$ 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 load.	DAM Volume Factor Cost_Benefit= $DAM_{LMP_h}^{z}\ x\ \left[\sum_{K,h}^{M,T}\left(\frac{DAM_{QSW_{k,h}}^{m}}{12} - AQEW_{k,h}^{m,t}\right)\right] +$ $\sum_{K,h}^{M2}\left[DAM_{LMP_h}^{z}\ x\ DAM_{QSW_{k,h}}^{d}\right]$ Where: 'M' is the set of all NDL delivery points 'm'. 'M2' is the set of all hourly demand response resources 'd' that are not registered as price responsive load.	

Section	Reason	Original Text	Revised Text	Comments
3.6.3.3. Load Forecast deviation Charge	Clarification	3.6.3.3 Province-Wide Per Megawatt Charge […] The province-wide per megawatt charge for the total cost of forecast deviation is: Forecast Deviation per MW Charge= (RT Purchase Cost_Benefit+DAM Volume Factor Cost_Benefit)/(RT Energy Withdrawn by all NDL facilities) The province-wide per megawatt charge is thus the sum of two price adjustments, specifically: an adjustment to the real-time LMP at the delivery point for each non-dispatchable load expressed in $/MWh; and an adjustment to the DAM Ontario zonal price expressed in $/MWh. The price paid by non-dispatchable loads for the real-time allocated quantity of energy withdrawn will be the sum of the DAM hourly zonal price and the hourly province-wide per megawatt charge.	3.6.3.3 Load Forecast Deviation Charge […] The load forecast deviation charge for the total cost of forecast deviation is: Load Forecast Deviation Charge= (RT Purchase Cost_Benefit+DAM Volume Factor Cost_Benefit)/(RT Energy Withdrawn by all NDL facilities) The load forecast deviation charge is thus the sum of two price adjustments, specifically: an adjustment to the real-time LMP at the delivery point for each non-dispatchable load expressed in $/MWh; and an adjustment to the DAM Ontario zonal price expressed in $/MWh. The price paid by non-dispatchable loads for the real-time allocated quantity of energy withdrawn will be the sum of the DAM Ontario zonal price and the hourly load forecast deviation charge.	
3.6.3.4 NDL Settlement - Formula	Clarification	Let $LFDC_h$ be the hourly province-wide forecast deviation dollars per megawatt-hour ($/MWh) charge for non-dispatchable loads for each settlement hour ‘h’: $LFDC_h = \frac{\sum_{K,h}^{M,T}\left[RT_{LMP}{}_h^{m,t}\ x\ \left(AQEW_{k,h}^{m,t} - \frac{DAM_{QSW}{}_{k,h}^{m}}{12}\right)\right] - \sum_{K,h}^{M2,T}\left[RT_{LMP}{}_h^{m,t}\ x\ \frac{DAM_{QSW}{}_{k,h}^{m}}{12}\right]}{\sum_{K,h}^{M,T} AQEW_{k,h}^{m,t}} + \frac{DAM_{LMP}{}_h^{z}\ x\ \left[\sum_{K,h}^{M,T}\left(\frac{DAM_{QSW}{}_{k,h}^{m}}{12} - AQEW_{k,h}^{m,t}\right)\right] + \sum_{K,h}^{M2}\left[DAM_{LMP}{}_h^{z}\ x\ \frac{DAM_{QSW}{}_{k,h}^{m}}{12}\right]}{\sum_{K,h}^{M,T} AQEW_{k,h}^{m,t}}$ *‘M2’ is the set of all delivery points ‘m’ relating to hourly demand resp* *The price adjustment to the DAM hourly zonal price for non − dispatchable loads for the province − wide allocation of the cost of forecast deviation is:* $Price_{adj}$=DAM Ontario Zonal Price+ Forecast Deviation per MW Charge	Let $LFDC_h$ be the hourly load forecast deviation dollars per megawatt-hour ($/MWh) charge for non-dispatchable loads for each settlement hour ‘h’: $LFDC_h = \frac{\sum_{K,h}^{M,T}\left[RT_{LMP}{}_h^{m,t}\ x\ \left(AQEW_{k,h}^{m,t} - \frac{DAM_{QSW}{}_{k,h}^{m}}{12}\right)\right] - \sum_{K,h}^{M2,T}\left[RT_{LMP}{}_h^{d,t}\ x\ \frac{DAM_{QSW}{}_{k,h}^{d}}{12}\right]}{\sum_{K,h}^{M,T} AQEW_{k,h}^{m,t}} + \frac{DAM_{LMP}{}_h^{z}\ x\ \left[\sum_{K,h}^{M,T}\left(\frac{DAM_{QSW}{}_{k,h}^{m}}{12} - AQEW_{k,h}^{m,t}\right)\right] + \sum_{K,h}^{M2}\left[DAM_{LMP}{}_h^{z}\ x\ \frac{DAM_{QSW}{}_{k,h}^{d}}{12}\right]}{\sum_{K,h}^{M,T} AQEW_{k,h}^{m,t}}$ *‘M2’ is the set of all hourly demand response resources ‘d’ that are not* *The price adjustment to the DAM Ontario zonal price for non − dispatchable loads for the province − wide allocation of the cost of forecast deviation is:* $Price_{adj}$=DAM Ontario Zonal Price+ Load Forecast Deviation Charge	

Section	Reason	Original Text	Revised Text	Comments
3.7.1.1 Eligibility for DAM_MWP	Clarification	Furthermore, such a generation facility will not be compensated for the hours where it received a schedule to supply energy at its minimum hourly must run; at its minimum hourly output; or within or at the boundary of a forbidden region such parameters provided by the market participant as part of submitted dispatch data.	Furthermore, such a generation facility will not be compensated for the hours where it received a schedule to supply energy at its minimum hourly must run or at its minimum hourly output. These parameters are provided by the market participant as part of submitted dispatch data.	
3.7.4 DAM Reliability Scheduling Uplift (DRSU)	Conforming Change	The purpose of the DAM Reliability Scheduling Uplift (DRSU) is to uplift the cost of DAM_MWP and DAM_GOG allocated to the following resources in the reliability scheduling pass of the DAM calculation engine: • Additional NQS generation units committed; or • Newly scheduled or incrementally scheduled imports. The detailed description of reliability scheduling pass of the DAM calculation engine is provided in the DAM Calculation Engine detailed design document. Schedules in this pass will be compared to either the as-offered scheduling pass or, if applicable, the mitigated scheduling pass to identify the new or incremental schedules that are caused by the reliability scheduling pass. The DAM_MWP and DAM_GOG being generated by these schedules will be uplifted on a cost causation basis because resources that are committed in the reliability scheduling pass and might be uneconomic in subsequent passes because of the change in inputs from the reliability scheduling pass. The cost causation will allocate the uplift costs to those market participants specifically responsible for causing resources that are eligible for a make-whole payment to be scheduled. The new commitments made in the reliability scheduling pass cannot be de-committed in subsequent passes of the DAM calculation engine even if they are uneconomic and necessitate a DAM_MWP or DAM_GOG. This is the desired outcome of the DAM calculation engine passes because this ensures there are sufficient physical resources scheduled to meet demand. Virtual supply transactions will be allocated a portion of the cost of DAM_MWP and DAM_GOG generated in the reliability pass of the DAM calculation engine for every MW cleared in the DAM. The remaining portion of the DRSU will be allocated proportionally to all real-time loads and exports. The DRSU will be distributed daily.	The purpose of the DAM Reliability Scheduling Uplift (DRSU) is to uplift the cost of DAM_MWP and DAM_GOG allocated to the following resources in Pass 2: Reliability Scheduling and Commitment of the DAM calculation engine: • Additional NQS generation units committed; or • Newly scheduled or incrementally scheduled imports. The detailed description of Pass 2: Reliability Scheduling and Commitment of the DAM calculation engine is provided in the DAM Calculation Engine detailed design document. Schedules in this pass will be compared to either As-Offered Scheduling or, if applicable, Mitigated Scheduling to identify the new or incremental schedules that are caused by Pass 2: Reliability Scheduling and Commitment. The DAM_MWP and DAM_GOG being generated by these schedules will be uplifted on a cost causation basis because resources that are committed in Pass 2: Reliability Scheduling and Commitment and might be uneconomic in subsequent passes because of the change in inputs from the Pass 2: Reliability Scheduling and Commitment. The cost causation will allocate the uplift costs to those market participants specifically responsible for causing resources that are eligible for a make-whole payment to be scheduled. The new commitments made in Pass 2: Reliability Scheduling and Commitment cannot be de-committed in subsequent passes of the DAM calculation engine even if they are uneconomic and necessitate a DAM_MWP or DAM_GOG. This is the desired outcome of the DAM calculation engine passes because this ensures there are sufficient physical resources scheduled to meet demand. Virtual supply transactions will be allocated a portion of the cost of DAM_MWP and DAM_GOG generated in Pass 2: Reliability Scheduling and Commitment of the DAM calculation engine for every MW cleared in the DAM. The remaining portion of the DRSU will be allocated proportionally to all real-time loads and exports. The DRSU will be distributed daily.	Language updated to conform with terms used for reliability scheduling in DAM calculation engine detailed design.

Section	Reason	Original Text	Revised Text	Comments
3.7.4.1 Formulation	Conforming Change	The DAM_MWP_R represents the DAM_GOG made to NQS generation facilities and DAM_MWP made to imports scheduled in the reliability scheduling pass of the DAM calculation engine. In order to measure the impact of the reliability scheduling pass, the price from the final pass of the DAM calculation engine is used to calculate the make-whole payment.	The DAM_MWP_R represents the DAM_GOG made to NQS generation facilities and DAM_MWP made to imports scheduled in Pass 2: Reliability Scheduling and Commitment of the DAM calculation engine. In order to measure the impact of Pass 2: Reliability Scheduling and Commitment, the price from the final pass of the DAM calculation engine is used to calculate the make-whole payment.	
3.7.4.1 Formulation	Conforming Change	Pre-reliability scheduling pass: $PRE_{RSP_{Import_{DAM_{MWP}}}}{}^{i}_{k,h} = Max\left[0, DAM_{COMP1}{}^{i}_{k,h} + DAM_{COMP2}{}^{i}_{k,h}\right]$ Where: $DAM_{COMP1}{}^{i}_{k,h} = -1\ x\ \left[OP\left(DAM_{LMP}{}^{i}_{h}, PRE_{RSP_{DAM_{QSI}}}{}^{i}_{k,h}, DAM_{BE}{}^{i}_{k,h}\right) - OP\left(DAM_{LMP}{}^{i}_{h}, DAM_{EOP}{}^{i}_{k,h}, DAM_{BE}{}^{i}_{k,h}\right)\right]$ $DAM_{COMP2}{}^{i}_{k,h} = -1\ x \sum_{R}\left\{OP\left(DAM_{PROR}{}^{i}_{r,h}, PRE_{RSP_{DAM_{QSOR}}}{}^{i}_{r,k,h}, DAM_{BOR}{}^{i}_{r,k,h}\right) - OP\left(DAM_{PROR}{}^{i}_{r,h}, DAM_{EOP}{}^{i}_{r,k,h}, DAM_{BOR}{}^{i}_{r,k,h}\right)\right\}$ Where: 'R' is the set of each class r of operating reserve. 'RSP' DAM variables with 'RSP' are defined in Section 3.5.4 Table 3 14. 'EOP' DAM variables with 'EOP' are defined in Section 3.5.4 Table 3 17.	During Pass 1: Market Commitment and Market Power Mitigation: $Pass1_{Import_{DAM_{MWP}}}{}^{i}_{k,h} = Max\left[0, DAM_{COMP1}{}^{i}_{k,h} + DAM_{COMP2}{}^{i}_{k,h}\right]$ Where: $DAM_{COMP1}{}^{i}_{k,h} = -1\ x\ \left[OP\left(DAM_{LMP}{}^{i}_{h}, PASS1_{DAM_{QSI}}{}^{i}_{k,h}, DAM_{BE}{}^{i}_{k,h}\right) - OP\left(DAM_{LMP}{}^{i}_{h}, DAM_{EOP}{}^{i}_{k,h}, DAM_{BE}{}^{i}_{k,h}\right)\right]$ $DAM_{COMP2}{}^{i}_{k,h} = -1\ x \sum_{R}\left\{OP\left(DAM_{PROR}{}^{i}_{r,h}, PASS1_{DAM_{QSOR}}{}^{i}_{r,k,h}, DAM_{BOR}{}^{i}_{r,k,h}\right) - OP\left(DAM_{PROR}{}^{i}_{r,h}, DAM_{EOP}{}^{i}_{r,k,h}, DAM_{BOR}{}^{i}_{r,k,h}\right)\right\}$ Where: 'R' is the set of each class r of operating reserve. 'PASS' DAM variables with 'PASS' are defined in Section 3.5.4 Table 3 14. 'EOP' DAM variables with 'EOP' are defined in Section 3.5.4 Table 3 17.	

Section	Reason	Original Text	Revised Text	Comments
3.7.4.1 Formulation	Conforming Change	During the reliability scheduling pass: $RSP_{Import_{DAM_{MWP}}}{}^{i}_{k,h} = Max\left[0, DAM_{COMP1}{}^{i}_{k,h} + DAM_{COMP2}{}^{i}_{k,h}\right]$ $DAM_{COMP1}{}^{i}_{k,h} = -1\ x\ \left[OP\left(DAM_{LMP}{}^{i}_{h}, RSP_{DAM_{QSI}}{}^{i}_{k,h}, DAM_{BE}{}^{i}_{k,h}\right) - OP\left(DAM_{LMP}{}^{i}_{h}, DAM_{EOP}{}^{i}_{k,h}, DAM_{BE}{}^{i}_{k,h}\right)\right]$ $DAM_{COMP2}{}^{i}_{k,h} = -1\ x \sum_{R}\left\{OP\left(DAM_{PROR}{}^{i}_{r,h}, RSP_{DAM_{QSOR}}{}^{i}_{r,k,h}, DAM_{BOR}{}^{i}_{r,k,h}\right) - OP\left(DAM_{PROR}{}^{i}_{r,h}, DAM_{EOP}{}^{i}_{r,k,h}, DAM_{BOR}{}^{i}_{r,k,h}\right)\right\}$ 'RSP' DAM variables with 'RSP' are defined in Section 3.5.3 Table 3 12. $DAM_{MWP_R} = \sum_{H,K}^{M} Max\left(RSP_{Import_{DAM_{MWP}}}{}^{i}_{k,h} - PRE_{RSP_{Import_{DAM_{MWP}}}}{}^{i}_{k,h}, 0\right) + RSP_{New_{NQS_{DAM_{GOG}}}}{}^{m}_{k,h}$	During the Reliability Scheduling and Commitment pass: $PASS2_{Import_{DAM_{MWP}}}{}^{i}_{k,h} = Max\left[0, DAM_{COMP1}{}^{i}_{k,h} + DAM_{COMP2}{}^{i}_{k,h}\right]$ $DAM_{COMP1}{}^{i}_{k,h} = -1\ x\ \left[OP\left(DAM_{LMP}{}^{i}_{h}, PASS2_{DAM_{QSI}}{}^{i}_{k,h}, DAM_{BE}{}^{i}_{k,h}\right) - OP\left(DAM_{LMP}{}^{i}_{h}, DAM_{EOP}{}^{i}_{k,h}, \mathrm{DAM}_{\mathrm{BE}}{}^{\mathrm{i}}_{\mathrm{k,h}}\right)\right]$ $\mathrm{DAM}_{\mathrm{COMP2}}{}^{\mathrm{i}}_{\mathrm{k,h}} = -1\ \mathrm{x} \sum_{R}\left\{\mathrm{OP}\left(\mathrm{DAM}_{\mathrm{PROR}}{}^{\mathrm{i}}_{\mathrm{r,h}}, \mathrm{PASS2}_{\mathrm{DAM}_{\mathrm{QSOR}}}{}^{\mathrm{i}}_{\mathrm{r,k,h}}, \mathrm{DAM}_{\mathrm{BOR}}{}^{\mathrm{i}}_{\mathrm{r,k,h}}\right) - \mathrm{OP}\left(\mathrm{DAM}_{\mathrm{PROR}}{}^{\mathrm{i}}_{\mathrm{r,h}}, \mathrm{DAM}_{\mathrm{EOP}}{}^{\mathrm{i}}_{\mathrm{r,k,h}}, \mathrm{DAM}_{\mathrm{BOR}}{}^{\mathrm{i}}_{\mathrm{r,k,h}}\right)\right\}$ 'PASS' DAM variables with 'PASS' are defined in Section 3.5.4 Table 3-14. $\mathrm{DAM}_{\mathrm{MWP_R}} = \sum_{\mathrm{H,K}}^{\mathrm{M}} \mathrm{Max}\left(\mathrm{PASS2}_{\mathrm{Import}_{\mathrm{DAM}_{\mathrm{MWP}}}}{}^{\mathrm{i}}_{\mathrm{k,h}} - \mathrm{PASS1}_{\mathrm{Import}_{\mathrm{DAM}_{\mathrm{MWP}}}}{}^{\mathrm{i}}_{\mathrm{k,h}}, 0\right) + \mathrm{PASS2}_{\mathrm{New}_{\mathrm{NQS}_{\mathrm{DAM}_{\mathrm{GOG}}}}}{}^{\mathrm{m}}_{\mathrm{k,h}}$	
3.7.7	Correction	However, it does not provide a guarantee of the operating profit.	[Deleted]	This statement is applicable to boundary entities only. Clarification is provided under boundary entities further in this section.
3.7.7	Clarification	A market participant who does not submit offers in real time and is ineligible for RT_MWP may incur a financial loss when the IESO curtails a resource due to a system reliability need after the resource has received a DAM financially binding schedule.	A market participant who does not submit offers for a generation unit in real time and is ineligible for RT_MWP may incur a financial loss when the IESO curtails a resource due to a system reliability need after the resource has received a DAM financially binding schedule.	
3.7.7	Clarification	A boundary entity may incur a financial loss as a result of a negative buyback of its day-ahead position when the IESO activates operating reserves or when a transaction is curtailed as a result of system reliability. DAM_BC will incorporate any required adjustment and mitigation test results into the calculation set out by the market power mitigation process, which is described in Section Market Power Mitigation: Market Power Mitigation.	A boundary entity may incur a financial loss as a result of a negative buyback of its day-ahead position when the IESO activates operating reserves or when a transaction is curtailed as a result of system reliability. When this occurs, the IESO will provide DAM Balancing Credit (DAM_BC) to cover any operating loss incurred as a result of following dispatch instructions. However, it does not provide a guarantee of the operating profit and will not overlap with intervals that have already received a RT MWP. DAM_BC for boundary entities will incorporate any required adjustment and mitigation test results into the calculation set out by the market power mitigation process, which is described in Section 3.13: Market Power Mitigation.	

Section	Reason	Original Text	Revised Text	Comments
3.7.9.2 Interaction and Special Considerations; Extension Due to Late Reach of MLP	Clarification	When a generation unit reaches MLP late, the IESO may extend the unit's operational constraint beyond its initial commitment to ensure the generation unit completes its MGBRT.	When a generation unit reaches MLP late, the IESO will extend the unit's operational constraint beyond its initial commitment to ensure the generation unit completes its MGBRT.	
Table 3-63	Clarification	Geographic resolution Applicable generation unit within Ontario: • By delivery point	Geographic resolution Applicable NQS generation unit within Ontario receiving PD commitment: • By delivery point	
3.7.14 Congestion Rent and Loss Residuals (CRLR)	Clarification	Congestion rent and loss residuals (CRLR) collected at internal system nodes will be disbursed to all loads on a pro-rata basis across all allocated quantities of energy withdrawn at all RWMs. Congestion rents collected due to intertie congestion will continue to be available to the TR clearing account to fund TRs.	Congestion rent and loss residuals (CRLR) collected at internal system nodes will be disbursed monthly to all loads on a pro-rata basis across all allocated quantities of energy withdrawn at all RWMs. Under a separate initiative from MRP, the IESO is undertaking a review of Ontario's TR market. The TR Market Review will address where and how the real-time intertie congestion will be collected and settled. Congestion rents collected due to intertie congestion will continue to be available to the TR clearing account to fund TRs.	
3.7.15 Transmission Rights	Clarification	The review will assess the objectives and benefits of Ontario's TR market, to identify potential improvements, and to ensure compatibility and alignment with the future renewed energy market.	The review has assessed the objectives and benefits of Ontario's TR market and identified high-value opportunities to improve the efficiency and functioning of the TR market. The review will also identify potential changes required to ensure compatibility and alignment with the future renewed energy market.	
3.7.16.2 Changes to Generation Station Service Rebate (GSSR)	Design Change	N/A	• Fuel Cost Compensation Uplift	Design change in response to stakeholder feedback. Added new uplift charge to the list of charges applicable to GSSR
3.10	Clarification	The IESO, in collaboration with the appropriate regulatory bodies will review relevant legislation and regulation to identify what amendments may be required as a result of MRP. The settlement process will directly incorporate any amendments into the settlement calculations.	The IESO, in collaboration with the appropriate regulatory bodies will review relevant legislation, regulation and Ontario Energy Board (OEB) Codes to identify what amendments may be required as a result of MRP. The settlement process will directly incorporate any amendments into the settlement calculations.	
3.12.1 Notice of Disagreement	Clarification	• the Ontario zonal price of energy for any dispatch interval in a given settlement hour; or	• the DAM Ontario zonal price of energy for any dispatch interval in a given settlement hour; or	

Section	Reason	Original Text	Revised Text	Comments
3.13 Market Power Mitigation	Conforming Change	Ex-ante mitigation for economic withholding will be performed by the ex-ante mitigation functions of the DAM, and PD and RT calculation engines.	Ex-ante mitigation for economic withholding will be performed by the ex-ante mitigation functions of the DAM and PD calculation engines.	
3.13.1.3 RT Make-Whole Payment (RT_MWP)	Conforming Change	1. the RT_MWP based on energy and operating reserve schedules and prices produced by the calculation engine and mitigated for impact dispatch data submitted to the RT calculation engine for energy and operating reserve; and	1. the RT_MWP based on energy and operating reserve schedules and prices produced by the calculation engine and mitigated for impact dispatch data used by the RT calculation engine for energy and operating reserve; and	
3.13.1.4 RT Generator Offer Guarantee	Conforming Change	1. the RT_GOG based on energy and operating reserve schedules and prices produced by the calculation engine and mitigated for impact dispatch data submitted to the RT calculation engine for energy and operating reserve; and	1. the RT_GOG based on energy and operating reserve schedules and prices produced by the calculation engine and mitigated for impact dispatch data used by the RT calculation engine for energy and operating reserve; and	
3.13.1.5 DAM Balancing Credit (DAM_BC)	Conforming Change	1. the DAM_BC based on energy and operating reserve schedules and prices produced by the calculation engine and the mitigated for impact dispatch data submitted to the RT for energy and operating reserve; and	1. the DAM_BC based on energy and operating reserve schedules and prices produced by the calculation engine and the mitigated for impact dispatch data used by the RT calculation engine for energy and operating reserve; and	
3.13.1.6 Real-Time Ramp Down Settlement Amount (RT_RDSA)	Conforming Change	1. the RT_RDSA based on energy and operating reserve schedules and prices produced by the calculation engine and mitigated for impact dispatch data submitted to the RT for energy and operating reserve in the hour prior to the ramp down period; and	1. the RT_RDSA based on energy and operating reserve schedules and prices produced by the calculation engine and mitigated for impact dispatch data used by the RT calculation engine for energy and operating reserve in the hour prior to the ramp down period; and	
4	Other	This inventory is based on version 1.0 of the detailed design, and any revisions required to this section as a result of design changes to version 1.0 will be incorporated in the market rule amendment process. As a result, the inventory will not be updated after its publication in version 1.0 of this detailed design.	[Deleted]	
Table 4-2	Clarification	Section 3B.X New Hourly Physical Transaction Settlement Amount • This section will include the formulation of the Hourly Physical Transaction Settlement Amount as follows: o For physical bilateral contracts, the difference between the day-ahead market quantities sold and bought multiplied by the applicable day-ahead market price (nodal for delivery points and zonal for intertie metering points). o For all facility/transaction types except price responsive loads, the difference between the day-ahead market scheduled quantity for injection and the day-ahead market quantity scheduled for withdrawal multiplied by the applicable day-ahead market price (nodal for delivery points and zonal for intertie metering points).	Section 3B.X New Hourly Physical Transaction Settlement Amount • This section will include the formulation of the Hourly Physical Transaction Settlement Amount as follows: o For physical bilateral contracts, the difference between the day-ahead market quantities sold and bought multiplied by the applicable day-ahead market price. o For all facility/transaction types except price responsive loads, the difference between the day-ahead market scheduled quantity for injection and the day-ahead market quantity scheduled for withdrawal multiplied by the applicable day-ahead market price.	

Section	Reason	Original Text	Revised Text	Comments
Table 4-2	Correction	Section 3B.X New Hourly Physical Transaction Settlement Amount • This section will include the formulation of Hourly Physical Transaction Settlement Amount as follows: o For physical bilateral contracts, the difference between the real-time market quantities sold and bought multiplied by the applicable real-time market price (nodal for delivery points and intertie settlement price for intertie metering points). o For all facility/transaction types except non-dispatchable loads and price responsive loads, the difference between the day-ahead market quantity scheduled for injection and the actual injection quantity, less the difference between the day-ahead market quantity scheduled for withdrawal and the actual withdrawal quantity, multiplied by the applicable day-ahead market price (nodal for delivery points and intertie settlement price for intertie metering points).	Section 3B.X New Hourly Physical Transaction Settlement Amount • This section will include the formulation of Hourly Physical Transaction Settlement Amount as follows: o For physical bilateral contracts, the difference between the real-time market quantities sold and bought multiplied by the applicable real-time market price. o For all facility/transaction types except non-dispatchable loads and price responsive loads, the difference between the day-ahead market quantity scheduled for injection and the actual injection quantity, less the difference between the day-ahead market quantity scheduled for withdrawal and the actual withdrawal quantity, multiplied by the applicable real-time market price.	
Table 4.2	Conforming Change	Section 3B.X New Day-Ahead Market Make-Whole Payment • The "Day-Ahead Market Make-Whole Payment Uplift": o Does not include the Day-Ahead Market Make-Whole Payments made to imports and the Day-Ahead Market Generator Offer Guarantee payments to a not a quick start facility scheduled in the reliability scheduling pass of the Day-Ahead Market Calculation Engine; and is • The "Day-Ahead Market Reliability Scheduling Uplift": o Includes the Day-Ahead Market Make-Whole Payments made to imports and the Day-Ahead Market Generator Offer Guarantee payments to a non-quick start generation facility scheduled in the reliability scheduling pass of the Day-Ahead Market Calculation Engine.	Section 3B.X New Day-Ahead Market Make-Whole Payment • The "Day-Ahead Market Make-Whole Payment Uplift": o Does not include the Day-Ahead Market Make-Whole Payments made to imports and the Day-Ahead Market Generator Offer Guarantee payments to a not a quick start facility scheduled in the Reliability Scheduling and Commitment Pass of the Day-Ahead Market Calculation Engine; and is • The "Day-Ahead Market Reliability Scheduling Uplift": o Includes the Day-Ahead Market Make-Whole Payments made to imports and the Day-Ahead Market Generator Offer Guarantee payments to a non-quick start generation facility scheduled in the Reliability Scheduling and Commitment Pass of the Day-Ahead Market Calculation Engine.	

Section	Reason	Original Text	Revised Text	Comments
Table 4.2	Conforming Change	N/A	Section 4A.X New Fuel Cost Compensation Credit Settlement Charge This new section sets out the market rules around the settlement of fuel cost compensation credit due to de-commitment. • Eligibility criteria: o Eligible facility/transaction type: non-quick start generation facility o The non-quick start generation facility received a commitment in the day-ahead market or in pre-dispatch; and o The non-quick start generation facility is de-committed by the IESO for reliability, security or adequacy reasons prior to the start of the commitment. • The section will include details on the determination of the Fuel Cost Compensation due to De-Commitment: o The market participant may claim, in the manner specified in the applicable market manual, reimbursement of financial losses related to the de-commitment of the non-quick start generation facility committed in the day-ahead market or in pre-dispatch. • The Fuel Cost Compensation Credit Settlement charges will be recovered from market participants through the “Fuel Cost Compensation Uplift”. The “Fuel Cost Compensation Uplift” will be allocated on a pro-rata basis to all real-time market loads and exports on a monthly basis.	Design change in response to stakeholder feedback.
Table 5-7	Clarification	Training Materials: ONLSF_GUIDE_EXT Guide to Settlement Claims and Data via Online IESO • Update references from HOEP to Ontario zonal price	Training Materials: ONLSF_GUIDE_EXT Guide to Settlement Claims and Data via Online IESO • HOEP will no longer exist in the future market. The price used to settle RESOP, HCI and FIT will be determined by the OEB.	
Figure 6-1	Conforming Change	Data flow from DAM Calculation Engine - Enhanced Mitigated Dispatch Data Mitigation Test results (Typical DA,PD and RT)	Data flow from DAM Calculation Engine - Enhanced Mitigated Dispatch Data Mitigation Test results (Typical DA,PD)	
Table 6-1	Conforming Change	Flow : DAM Prices and Schedules This flow includes all data to be received from the DAM calculation engine, including:	Flow : DAM Prices and Schedules This flow includes all data to be received from the DAM calculation engine, the prices and schedules used in Process P1 could include ex-ante mitigation results produced by DAM calculation engine. This dataflow includes:	

Section	Reason	Original Text	Revised Text	Comments
Table 6-1	Conforming Change	Flow : DAM Commitment • Hourly schedules, in MWh, from the last DAM calculation engine pass prior to the reliability scheduling pass for energy injected at: o Intertie metering points for imports; and o Delivery points for non-quick start generation facilities; • Hourly schedules, in MWh, from the reliability scheduling pass of the DAM calculation engine for energy injected at: o Intertie metering points for imports; and o Delivery points for NQS generation facilities; • Hourly schedules, in MW, from the last DAM calculation engine pass prior to the reliability scheduling pass for 10-minute spinning operating reserve at: o Delivery points for NQS generation facilities; • Hourly schedules, in MW, from the last DAM calculation engine pass prior to the reliability scheduling pass for 10-minute non-spinning and 30-minute operating reserve at: o Delivery points for NQS generation facilities; and o Intertie metering points for imports; • Hourly schedules, in MW, from the reliability scheduling pass of the DAM calculation engine for 10-minute spinning operating reserve at: o Delivery points for non-quick start generation facilities; • Hourly schedules, in MW, from the reliability scheduling pass of the DAM calculation engine for 10-minute non-spinning and 30-minute operating reserve at:	Flow : DAM Commitment • Hourly schedules, in MWh, from the Pass 1 Market Commitment and Market Power Mitigation for energy injected at: o Intertie metering points for imports; and o Delivery points for non-quick start generation facilities; • Hourly schedules, in MWh, from the Pass 2 Reliability Scheduling and Commitment of the DAM calculation engine for energy injected at: o Intertie metering points for imports; and o Delivery points for NQS generation facilities; • Hourly schedules, in MW, from the Pass 1 Market Commitment and Market Power Mitigation for 10-minute spinning operating reserve at: o Delivery points for NQS generation facilities; • Hourly schedules, in MW, from the Pass 1 Market Commitment and Market Power Mitigation for 10-minute non-spinning and 30-minute operating reserve at: o Delivery points for NQS generation facilities; and o Intertie metering points for imports; • Hourly schedules, in MW, from the Pass 2 Reliability Scheduling and Commitment of the DAM calculation engine for 10-minute spinning operating reserve at: o Delivery points for non-quick start generation facilities; • Hourly schedules, in MW, from the Pass 2 Reliability Scheduling Commitment of the DAM calculation engine for 10-minute non-spinning and 30-minute operating reserve at:	
Table 6-1	Conforming Change	Flow : RT Prices and Schedules This flow includes all data to be received from the RT calculation engine, including:	Flow : RT Prices and Schedules This flow includes all data to be received from the RT calculation engine, the prices and schedules used in Process P1 could include ex-ante mitigation results produced by PD calculation engine producing mitigated dispatch data for price failures then used by the RT calculation engine. This dataflow includes:	

Section	Reason	Original Text	Revised Text	Comments
Table 6.2	Conforming Change	Flow: DAM Commitment • Hourly schedules, in MWh, from the last DAM calculation engine pass prior to the reliability scheduling pass for energy; • Hourly schedules, in MWh, from the reliability scheduling pass of the DAM calculation engine for energy; • Hourly schedules, in MW, from the last DAM calculation engine pass prior to the reliability scheduling pass for 10-minute spinning, 10-minute non-spinning and 30-minute operating reserve; and • Hourly schedules, in MW, from the reliability scheduling pass of the DAM calculation engine for 10-minute spinning, 10-minute non-spinning and 30-minute operating reserve.	Flow: DAM Commitment • Hourly schedules, in MWh, from Pass 1 Market Commitment and Market Power Mitigation for energy; • Hourly schedules, in MWh, from Pass 2 Reliability Scheduling and Commitment of the DAM calculation engine for energy; • Hourly schedules, in MW, from Pass 1 Market Commitment and Market Power Mitigation for 10-minute spinning, 10-minute non-spinning and 30-minute operating reserve; and • Hourly schedules, in MW, from Pass 2 Reliability Scheduling and Commitment of the DAM calculation engine for 10-minute spinning, 10-minute non-spinning and 30-minute operating reserve.	
Table 6.2	Conforming Change	Flow : Mitigation Test Results The results of these conduct tests performed by the DAM, PD and RT calculation engines and the system conditions under which these conduct tests are performed are required by the settlement process to determine the need for and application of make-whole payment impact test thresholds.	Flow : Mitigation Test Results The results of these conduct tests performed by the DAM and PD calculation engines and the system conditions under which these conduct tests are performed are required by the settlement process to determine the need for and application of make-whole payment impact test thresholds.	
Table 6.2	Conforming Change	Flow : Enhanced Mitigated Dispatch Data The DAM, PD and RT calculation engines generate mitigated for conduct dispatch data upon failure of ex-ante mitigation of economic withholding conduct tests for each generation resource. […] Enhanced mitigated for conduct dispatch data will be provided to the settlement process by the DAM, PD and RT calculation engines for generation units subjected to conduct testing and will may include:	Flow : Enhanced Mitigated Dispatch Data The DAM and PD calculation engines generate mitigated for conduct dispatch data upon failure of ex-ante mitigation of economic withholding conduct tests for each generation resource. […] Enhanced mitigated for conduct dispatch data will be provided to the settlement process by the DAM and RT calculation engines for generation units subjected to conduct testing and may include:	
Table 6.2	Clarification	Flow : Energy and OR Settlement Amounts • All settlement amounts computed in Process P1, P2, which need to be sent to process P5 to allow for the production of the preliminary and final settlement statements and settlement data files.	Flow : Energy and OR Settlement Amounts • All settlement amounts computed in Process P1, P2, which need to be sent to process P5 to allow for the production of the preliminary and final settlement statements and settlement data files. The hourly DAM Ontario Zonal Price and derived hourly Load forecast deviation charge (LFDC) for non-dispatchable loads will be included in the preliminary and final settlement statements.	

Section	Reason	Original Text	Revised Text	Comments
6.1.5 Process P5 - Produce Settlement Statements and Data Files	Clarification	Process P5 is collects the settlement amounts received from Processes P1, P2, P3 and P4 and data used by the settlement process including: [...] • NoD resolution details from Process P7.	Process P5 collects the settlement amounts received from Processes P1, P2, P3 and P4 and data used by the settlement process as well as NoD resolution data and any recalculation adjustments from Process P7 and Process P8. The settlement amounts received include: [...] • NoD resolution details • Recalculation adjustments	
Table 6-5	Clarification	Flow : Energy and OR Settlement Amounts • Day-ahead market and real-time market charges, credits and uplifts as calculated in Process P2, described as outputs in Table 6 2.	Flow : Energy and OR Settlement Amounts • Day-ahead market and real-time market charges, credits and uplifts as calculated in Process P2, described as outputs in Table 6 2. This data set includes Load forecast deviation charge(LFDC) for non-dispatchable loads.	
6.1.7 Process P7 - Notice of Disagreement Process	Clarification	However, in the case of settlement amounts from the settlement process, the market participant can raise a NoD only after the settlement amount has appeared on a preliminary settlement statement from Process P5.	However, in the case of settlement amounts from the settlement process, the market participant can raise a NoD after the settlement amounts have appeared on a preliminary settlement statement from Process P5 or if an expected settlement amount is deemed missing on a preliminary settlement statement by a market participant.	
Table A-1	Design Change	Fuel Cost Compensation IESO_FORM_1654 Obsolete. Not required in future market.	Fuel Cost Compensation IESO_FORM_1654 Changed to include DAM and PD timeframe.	Design change in response to stakeholder feedback.
Appendix D : Settlement Amounts; Existing Legislation-Related Settlement Amounts	Clarification	N/A	Any adjustments required to the settlement amounts as directed by the appropriate regulatory bodies will be applied subsequent to the calculation of day-ahead and real-time market settlement amounts.	

15. Market Billing and Funds Administration

Section	Reason	Original Text	Revised Text	Comments
3.3	Clarification	3.3. Definition of Transactions	3.3. Types of Transactions	
3.3.1	Clarification	3.3.1. Definition of Physical and Virtual Transactions The formal definitions of these two transaction types are as follows:	3.3.1. Physical and Virtual Transactions The description of these two transaction types are as follows:	
3.3.2	Clarification	3.3.2. Definition of Financial Transactions The formal definition of a financial transaction is:	3.3.2. Financial Transactions The description of a financial transaction is:	
3.3.1	Correction	• Virtual Transaction: A purchase or sale of energy in the day-ahead market with subsequent consumption or delivery of energy in the real-time market during the corresponding real-time settlement hour.	• Virtual Transaction: A purchase or sale of energy in the day-ahead market with no subsequent consumption or delivery of energy in the real-time market during the corresponding real-time settlement hour.	
3.3.2	Clarification	• Financial Transaction: a financial hedge in one or both of the (i) day-ahead market by means of a virtual transaction[4], or (ii) the TR market.	• Financial Transaction: a financial hedge in one or both of the (i) day-ahead market by means of a virtual transaction[4], or (ii) the TR market [5]. New footnote [5] added: "Transmission rights (TRs) entitle the owner to a payment when there is congestion at the intertie. TR owners must hold the rights in the same direction as the congestion to receive payment."	
3.5.2	Conforming Change	See Appendix D for a listing of settlement amounts that will be new, amended, replaced or will be disposed of under MRP	Refer to Appendix D of the Market Settlements detailed design document for a listing of settlement amounts that will be new, amended, replaced or will be disposed of under MRP	
3.6.4	Correction	The IESO will continue to produce manual invoices, when required, for various costs relating to the physical market and for virtual transactions that are not included in the settlement charge types that form part of the settlement statements.	The IESO will continue to produce manual invoices, when required, for various costs relating to the physical market that are not included in the settlement charge types that form part of the settlement statements.	
3.5.5.	Clarification	Footnote [9]: Example, for the current billing period October 1-31, 2019: prepayments received as of October 15 (business day 10 of the current billing period) to October 31 (trading day N, last day of the current billing period) and November 1-14 (trading day N+1 to 9 business days) will be aggregated and included on the current billing period's invoice, issued November 15, 2019.	Footnote [9]: Example, for the billing period October 1-31, 2019: prepayments received as of October 15 (business day 10 of the billing period) to October 31 (trading day N, last day of the billing period) and November 1-14 (trading day N+1 to 9 business days) will be aggregated and included on the billing period's invoice, issued November 15, 2019.	

Section	Reason	Original Text	Revised Text	Comments
4	Other	This inventory is based on version 1.0 of the detailed design, and any revisions required to this section as a result of design changes to version 1.0 will be incorporated in the market rule amendment process. As a result, the inventory will not be updated after its publication in version 1.0 of this detailed design.	[Deleted]	
4	Other	The inventory is developed in Table 4 1, which describes the impacts to the market rules and classifies them into the following three types:	The inventory is developed in Table 4 1, which describes the impacts to Chapter 9 of the market rules and classifies them into the following three types:	
4	Other	Table 4 1: Market Rule Impacts	Table 4 1: Market Rule Chapter 9 Impacts	
5.1	Correction	Table 5 1: Impacts to Market-Facing Procedures	Table 5 1: Impacts to Market Manual 5: Settlements	
Appendix D: Settlement Amounts	Conforming Change	The tables that follow identify the settlement amounts that will be new, amended, replaced or disposed of under the MRP. NOTE: The settlement amounts below are subject to change pending the completion of the Market Settlement detailed design document. Table D-1: New Settlement Amounts Table D-2: Amended Settlement Amounts Table D-3: Replaced Settlement Amounts Table D-4: Replaced TR Settlement Amounts Table D-5: Disposed of Settlement Amounts	[Deleted]	Replaced with reference to the Market Settlement detailed design document.

– End of Document –