PUBLIC

MANUAL

Part 12.0: Capacity Auctions

Issue 13.2-MRP~~Issue 13.1-MRP~~
December 20, 2022~~September 9, 2022~~

This market manual provides guidance to *market participants* on the operation of the *capacity auction* process

Document Change History

Issue	Reason for Issue	Date
For changes prior to 2017, refer to versions 13.0 and prior.		
5.0	Issue released in advance of Baseline 37.0	January 11, 2017
6.0	Issue released in advance of Baseline 37.1	March 31, 2017
7.0	Issue released in advance of Baseline 42.1	October 15, 2019
8.0	Issue released in advance of Baseline 43.1. These changes are applicable to the *demand response auction* held in December 2019, for the *commitment period* beginning May 1, 2020.	April 23, 2020
9.0	Issue released in advance of Baseline 43.1. These changes are applicable to *capacity auctions* to be for *commitment periods* beginning on or after May 1, 2021.	May 4, 2020
10.0	Issue released in advance of Baseline 44.0	June 29, 2020
11.0	Issue released for Baseline 44.0	September 16, 2020
12.0	Updated to meet accessibility requirements pursuant to the *Accessibility for Ontarians with Disabilities Act*	December 2, 2020
13.0	Issue released for Baseline 46.0	September 15, 2021
13.1	Issue released as part of MRP Interim Alignment Batch	September 9, 2022
13.2	Issue released as part of MRP Interim Alignment Batch	December 20, 2022

Related Documents

Document ID	Document Title
N/A	

Table of Contents

List of Figures

List of Tables

Table of Changes

Reference (Section and Paragraph)	Description of Change

Market Manual Conventions

The standard conventions followed for *market manuals* are as follows:

- The word 'shall' denotes a mandatory requirement;

- References to *market rule* sections and sub-sections may be abbreviated in accordance with the following representative format: '**MR Ch.1 ss.1.1-1.2**' (i.e. *market rules,* Chapter 1, sections 1.1 to 1.2);

- References to *market manual* sections and sub-sections may be abbreviated in accordance with the following representative format: '**MM 1.5 ss.1.1-1.2**' (i.e. *market manual* 1.5, sections 1.1 to 1.2);

- Internal references to sections and sub-sections within this manual take the representative format: 'sections 1.1 – 1.2';

- Terms and acronyms used in this *market manual* in its appended documents that are italicized have the meanings ascribed thereto in **MR Ch.11**;

- All user interface labels and options that appear on the IESO gateway and tools are formatted with the bold font style; and

- Data fields are identified in all capitals.

— End of Section —

1.   Introduction

1.1.   Purpose

(MR Ch.2, Ch.3, Ch.7 and Ch.9)

The *IESO* will conduct *capacity auctions* for the purpose of acquiring *auction capacity* through a competitive auction process (**MR** Ch. -7 , S **ss**.18.1 of the *market rules*).). The "Capacity Auctions" manual is designed to provide *market participants* with an introduction to the *capacity auction*, operated by the *IESO* for the *IESO-administered markets* and the specific steps to be followed to conduct the auction. The manual also provides information on *market participants'* eligibility criteria, auction timelines, *energy market* participation, and *settlement process*.

1.2.   Scope

Capacity auctions, with respect to *IESO-administered markets*, are comprised of the following aspects:

- *market participant* authorization;

- enrollment into an upcoming *capacity auction* by *capacity auction participants*;

- submission of *capacity auction offers* by *market participants*;

- processing of submitted *capacity auction offers* by the *IESO* and determining *capacity obligations*;

- reporting obligations by the *IESO*;

- *energy market participation* requirements, including registration of *demand response resources* solely for the purposes of the *capacity auction*;

- testing of *capacity auction resources*; and

- *settlement process* and *capacity prudential support obligations*.

In support of these aspects, this manual details the conditions, actions, and timelines specific to the *capacity auction* by *market participants* and the *IESO*. This manual also details the *energy market* participation requirements, *settlement process*, and *capacity prudential support obligations* for the *capacity auctions* by *market participants* and the *IESO*. The manual is based on obligations expressed in the "Market Rules" (Ch. 2, Ch. 3, Ch. 7, and Ch. 9).

The document points to other *market manuals* and *market rules* that provide additional information.

1.2.   Scope of the Market Manual

This *market manual* contains the following sections:

- Section 2: Capacity Auction Overview
- Section 3: Pre-auction Requirements
- Section 4: Auction Mechanics
- Section 5: Post-auction Requirements
- Section 6: Settlements
- Section 7: Buy-out Process
- Section 8: Capacity Obligation Transfer
- Appendix A: Template for Demand Response Residential Contributor Management Registration
- Appendix B: Template for Measurement Data Control Sheet

1.3.   Who Should Use this Market Manual

The Capacity Auctions manual is meant to be used by all those undertaking the following activities:

- applicants seeking authorization as a *capacity auction participant* and/or *capacity market participant* for a *capacity auction*;
- *capacity auction participants* seeking to enroll *auction capacity* into the *capacity auction*;
- *capacity auction participants* seeking to submit *capacity auction offers* into the *capacity auction*;
- *capacity market participants* seeking to register ~~facilities~~resources in order to meet their *capacity obligations* through the *energy market*; and
- *capacity market participants* seeking to satisfy a *capacity obligation* by participating in the *energy market*.

1.4.   Applicability

(MR Ch.7 ss.18.1A)

Pursuant to *market rules* Chapter 7, section 18.1A, a *market participant* that participates in a *capacity auction* will, until the end of that *capacity auction's commitment period*, remain subject to those *market manual* provisions and corresponding *market rules* that were most recently in effect at the time of the holding of that *capacity auction* (except as provided by section 18.1A.3 in regards

to *urgent amendments*). The versions of the manuals in effect at the start of the *capacity auction* offer submission window specify the rights and obligations related to participation, satisfaction of *capacity obligations,* and performance of other requirements directly related to participation (notwithstanding any amendments that may have been made subsequent to the relevant *capacity auction*).

Market participants consulting this *market manual* ~~12~~ must verify that they are consulting the version of the manual corresponding to the *capacity auction* in which they participated or wish to participate.

An archive of *market manuals* corresponding to particular *capacity auctions,* organized by date, can be found on the [Market Rules and Manuals page (http://www.ieso.ca/en/Sector-Participants/Market-Operations/Market-Rules-And-Manuals-Library)](http://www.ieso.ca/en/Sector-Participants/Market-Operations/Market-Rules-And-Manuals-Library).

1.5.   Contact Information

Changes to this *market manual* are managed via the IESO Change Management process, which can be found on the [Change Management Overview page (http://www.ieso.ca/sector-participants/change-management/overview)](http://www.ieso.ca/sector-participants/change-management/overview). Stakeholders are encouraged to participate in the evolution of this *market manual* via this process.

To contact the *IESO*, you can email IESO Customer Relations at customer.relations@ieso.ca or use telephone or mail. Telephone numbers and the mailing address can be found on the [Contact page (http://www.ieso.ca/corporate-ieso/contact)](http://www.ieso.ca/corporate-ieso/contact). IESO Customer Relations staff will respond as soon as possible.

– End of Section –

2.   Capacity Auction Overview

Capacity auctions acquire *auction capacity* for one *commitment period,* which consists of two *obligation periods,* referred to as summer and winter periods.

2.1.   Capacity Auction Process

Figure 2-1 below shows a representative *capacity auction* process overview:
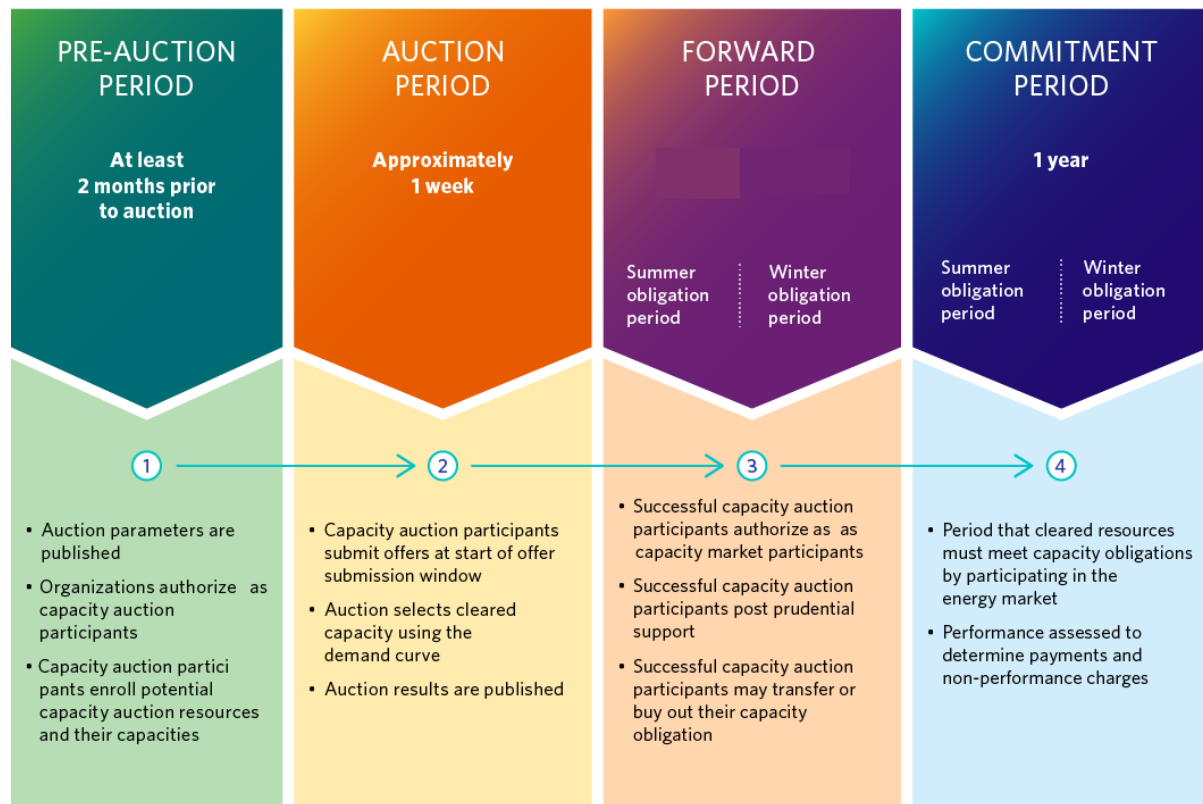
Figure 2-1: Capacity Auction Process

Market participants who wish to participate in the *capacity auction* are required to authorize as *capacity auction participants* and complete the capacity enrollment process in order to submit their *capacity auction offers* into the *capacity auction*. Upon validating all submitted offers, the *IESO* will process the *offers*, determine the clearing price for each *electrical zone*, determine the quantity of *auction capacity* cleared and prepare and *publish* the post-auction reports. All *capacity auction participants* that successfully obtain at least one *capacity obligation* are required to authorize as *capacity market participants,* and provide *capacity prudential support* as determined by the *IESO. Demand response resources* may receive a *capacity obligation* prior to registering *facilities.* During the *forward period*, these *demand*

response resources must register ~~facilities~~resources in the IESO registration system as described in ~~"Market Manual~~**MM** **1.5**: Market Registration Procedures~~"~~ and assign the associated *demand response resource* to the *capacity obligation.*

2.2.   Capacity Auction Timelines

Ontario's *capacity auction* follows the following timelines:

- The *IESO* will *publish* a pre-auction report no less than two months prior to the start of the offer submission window for the *capacity auction.*

- *Market participants* intending to participate in the *capacity auction* must complete their authorization as *capacity auction participants* at least 40 *business days* in advance of the *capacity auction*, or within such other period as set by the *IESO* in its sole and absolute discretion[1].

- *Market participants* intending to participate in the *capacity auction* are required to complete the capacity enrollment process and afterwards submit the *capacity auction deposit* amount at least five *business days* prior to the start of the offer submission window for the *capacity auction*.

- The *capacity auction* will accept offers from *capacity auction participants* on the date announced in the pre-auction report, starting at 09:00 EST and ending on the next *business day* at 23:59 EST. This period is referred to as the auction offer submission window. *Capacity auction participants* intending to participate in the *capacity auction* must have submitted their *capacity auction offers* to the *IESO* during the auction offer submission window.

- The *IESO* will process all submitted *capacity auction offers,* determine clearing prices and quantities, and prepare the post-auction reports within four *business days*, following the day on which the auction offer submission window closes.

- The *IESO* will *publish* both public and confidential reports post auction.

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[1] Should the *IESO* determine another period for *market participants* to complete authorization as a *capacity auction participant,* this period will be published in the "Auction Timelines" posted on the *IESO* website.

The following figure illustrates the *capacity auction* timelines:

at least 2 months prior to the start of the *auction period*	• IESO publishes pre-auction report
by 16:00 EST 40 *business days* prior to the start of the *auction period,* or within such other period as set by the IESO in its sole and absolute discretion.	• *Market participants* must have been authorized as *capacity auction participants*
by 16:00 EST 5 *business days* prior to the start of the *auction period*	• *Capacity auction participants* must have completed the capacity enrollment process and have submitted the capacity auction deposit amount to the IESO
from 9:00 EST on first day of the *auction period*	• *Capacity auction participants* can submit *capacity auction offers.* This is the start of the auction offer submission window.
by 16:00 EST 4 *business days* after auction offer submission window closes	• IESO processes offers, determines clearing prices/quantities and prepares post-auction reports
by 16:00 EST 3 *business days* prior to forward period start	• *IESO publishes* post-auction reports (confidential and public)

Figure 2-2: Capacity Auction Timeline

2.3.   Commitment Periods and Obligation Periods

The c*ommitment period* is the period of time for each *capacity auction* over which it secures *auction capacity*. It consists of two *obligation periods,* which are the periods of time for which a *capacity market participant* is required to satisfy its *capacity obligation* through the *day-ahead* ~~commitment~~*market* process and *energy market.*

There are two seasonal *obligation periods* for a *capacity auction*, defined as:

- Summer – May 1 to October 31

- Winter – November 1 to April 30

Forward period means the period of time immediately following a *capacity auction*, to the commencement of an *obligation period.* The length of the forward period will vary depending on the date of a *capacity auction* relative to its *obligation period*.
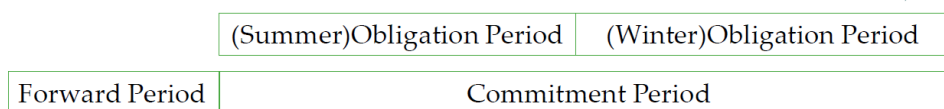
Figure 2-3: Periods of Time Related to Capacity Auctions

Capacity auction participants may choose to submit *capacity auction offers* into either one or both of the *obligation periods*. The auction for both *obligation periods* requires separate *capacity auction offers* for each of the *obligation periods*. The two *obligation periods* will be evaluated individually using the submitted *capacity auction offers* compared to pre-determined demand curves, and will therefore have their own *capacity auction clearing prices* and quantities. ~~Participants~~*Capacity auction participants* will receive a set of separate *capacity obligations* for each period, where applicable, if they successfully clear the auction. *Capacity auction participants* who secure a position in a *capacity auction* are required to complete their authorization and registration requirements, as applicable, during the *forward period*, as explained in section 5 of this manual.

2.4.   Availability Window

(MR Ch.7 ss.19.4.1, 19.5.1, 19.7.1, 19.9.1 and 19.11.1)

The summer *availability window* will consist of *business days* from 12:00 to 21:00 EST (~~hour ending~~Hour Ending 13 to ~~hour ending~~Hour Ending 21) and the winter *availability window* will consist of *business days* from 16:00 to 21:00 EST (~~hour ending~~Hour Ending 17 to ~~hour ending~~Hour Ending 21).

Capacity market participants satisfying a *capacity obligation with demand response resources* will receive an availability payment associated with their *capacity obligation(s).* Availability payments may be offset with non-performance charges in accordance with Market Manual 5.5: Physical Markets Settlements Statements during the associated *obligation period* ~~(Ch. 7, S. 19.5.1 and 19.4.1 of the *market rules*)~~.

Capacity market participants satisfying a *capacity obligation with capacity generation resources, capacity storage resources* and *capacity import resources* will receive an availability payment associated with their *capacity obligation.* Availability payments may be offset with non-performance charges in accordance with Market Manual 5.5: Physical Markets Settlements Statements during the associated *obligation period* ~~(Ch. 7, ss. 19.7.1, 19.9.1, and 19.11.1 of the *market rules*)~~.

2.5.   Demand Curve Elements

A *capacity auction* demand curve is a representation of the *IESO's* willingness to acquire *auction capacity*; it defines the prices that the *IESO* is willing to pay for varying levels of *auction capacity* along the curve. The shape of the demand curve impacts the quantity (MW; the X-axis) and price ($/MW-day; the Y-axis) of *auction capacity* that will be acquired through an auction. The *capacity auction* uses a downward-sloping demand curve defined by the following parameters and illustrated in Figure 2-4 below:

- Target capacity

- Reference price

- Maximum and minimum auction clearing prices

- Capacity limits

Given the dynamic nature of the *energy market*, the *IESO* will review the demand curve parameters at least once every three years to ensure it is reflective of the current market conditions and system needs.
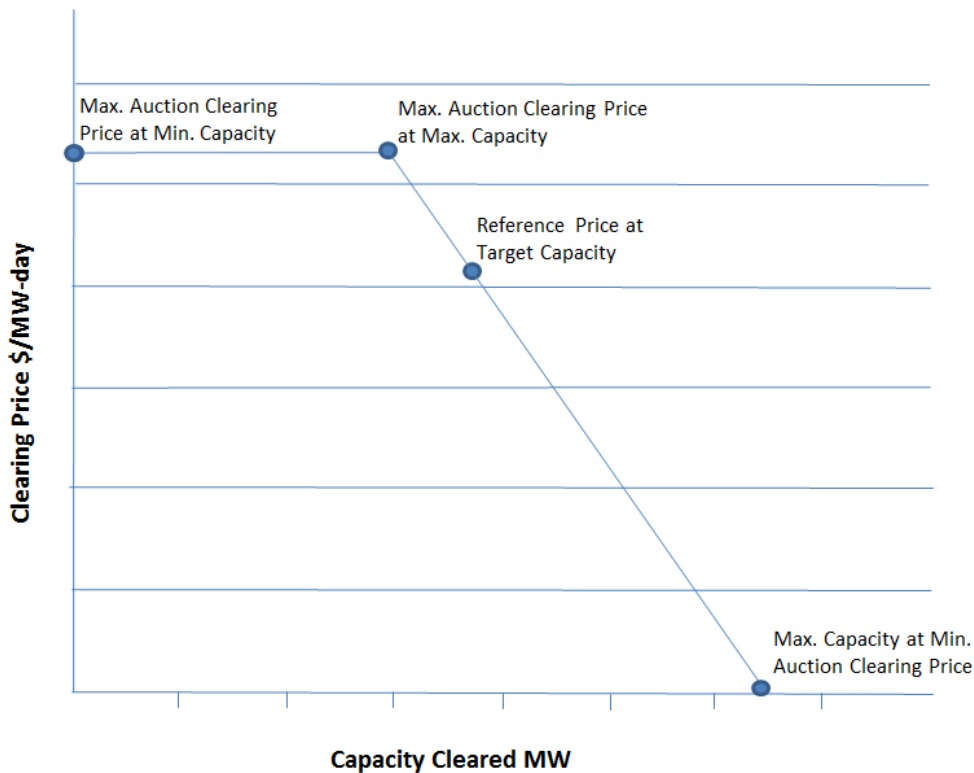
Figure 2-4: Downward Sloping Demand Curve

The key reference points on the downward-sloping curve shown above are further elaborated in the sections below.

2.5.1.   Target Capacity

(MR Ch.7 ss.18.5.2)

The *target capacity* for each *obligation period* will be determined based on the *reliability* need or any additional need identified by the *IESO*. The *target capacity* for each *obligation period* shall be *published* by the *IESO* in the pre-auction report (Ch. 7, S.18.5.2 of the *market rules*)..

2.5.2.   Reference Price

(MR Ch.7 ss.18.5.2)

The *capacity auction reference price* represents the price at which *resources* are incented to enter the market and recover the necessary costs to make their capacity available, recognizing their revenue opportunities and avoided costs in the *energy market*. The reference price is directly associated with the *target capacity* as another key reference point in the demand curve. ~~(Ch. 7, S. 18.5.2 of the *market rules*).~~

The *capacity auction reference price* for each *obligation period* shall be *published* by the *IESO* in the pre-auction report ~~(Ch. 7, S.18.5.2 of the *market rules*).~~.

2.5.3.   Maximum and Minimum Auction Clearing Price

The maximum *capacity auction clearing price* is the maximum price that a *capacity market participant* may be paid for *auction capacity*. The maximum *capacity auction clearing price* is set at a multiple of 1.25 times the *capacity auction reference price*.

The minimum *capacity auction clearing price* is $0/MW-day.

The maximum and minimum *capacity auction clearing price* for each *obligation period* shall be *published* by the *IESO* in the pre-auction reports.

2.5.4.   Capacity Limits

(MR Ch.7 ss.18.5.2)

The capacity limits used in the demand curve are:

- the minimum capacity;
- the maximum capacity at maximum *capacity auction clearing price*; and
- the maximum capacity.

The minimum capacity is the minimum amount of *auction capacity* that the *IESO* will clear through a *capacity auction* for each *obligation period*.

The maximum capacity at maximum *capacity auction clearing price* will be determined based on the following formula:

$$MaxCap(MACP) = \frac{RP \times TC}{MaxP}$$

Where:

- MaxCap(*MACP*) is the maximum capacity at the maximum *auction clearing price*;
- RP is the *capacity auction reference price*;
- TC is the *target capacity*; and
- MaxP is the maximum *capacity auction clearing price*.

The maximum capacity is the maximum amount of *auction capacity* which the *IESO* will clear through the auction. The maximum capacity is determined by forming a straight line between the points defined by the maximum capacity at the maximum *capacity auction clearing price* and the *target capacity* at the *capacity auction reference price,* and extending this line to the price of $0/MW-day. The capacity limits for each *obligation period* shall be *published* by the *IESO* in the pre-auction report ~~(Ch. 7, S.18.5.2 of the~~ *~~market rules~~*~~)~~..

2.6. Zonal Constraints

The ten *electrical zones* of Ontario are used to acquire *auction capacity* for the *capacity auction*. The *IESO* establishes zonal requirements or limits that will be used to set any minimum and maximum capacity limits, respectively, that can be cleared in the *capacity auction* for each zone.

Each zone has a set of *capacity auction zonal constraints* defined. These include:

- minimum amount of *auction capacity* to be acquired;

- total maximum amount of *auction capacity* that can be acquired; and

- maximum amount of *auction capacity* from resources not revenue-metered by the *IESO* (i.e. virtual resources) that can be acquired. This limit will not set the zonal *capacity auction clearing price*.

The *capacity auction* will establish an Ontario-wide *capacity auction clearing price* as well as possible zone specific *capacity auction clearing prices*. The *IESO* shall *publish capacity auction zonal constraints* in the pre-auction reports.

2.7. Capacity Import Constraints

The external interfaces between the *IESO-controlled grid* and neighbouring systems may be used to acquire *auction capacity* for the *capacity auction.* The *IESO* will establish maximum *capacity import* limits that can be cleared in the *capacity auction.* These limits apply to *capacity import resources.*

Capacity auction offers associated with eligible c*apacity import resources* will clear the *capacity auction* subject to the following constraints:

- maximum amount of *auction capacity* that may be provided by all *capacity import resources.* When this constraint is binding, it will limit the amount of *capacity import resources* that clear, however, it will not determine the *capacity auction clearing price*; and

- maximum amount of *auction capacity* that may be provided by all *capacity import resources* at each external interface. When this constraint is binding, it will limit the amount of *capacity import resources* that clear at each external interface, however, it will not determine the zonal *capacity auction clearing*

price. External interfaces not listed in the pre-auction report indicate that they border upon a jurisdiction where there is no associated agreement between the relevant balancing authorities.[2]

Capacity import resources will be subject to the zonal constraints in the external interface's bordering *electrical zone*, as described in section 2.6. As such, there will be no price separation for *capacity import resources* and resources within the *electrical zone* the interface borders. The *IESO* shall *publish* capacity import constraints in the pre-auction reports.

– End of Section –

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[2] Agreements between the relevant balancing authorities will, at a minimum set out requirements for firm transactions and confirmation that capacity transacted as a result of a *capacity auction* will be coordinated between the balancing authorities (e.g. removed from applicable *adequacy* assessments).

3.   Pre-Auction Requirements

In order to conduct the *capacity auction* in a consistent and transparent manner, the *IESO* and the *market participants* must satisfy certain pre-auction obligations.

The *IESO* shall prepare a pre-auction report containing *capacity auction* related information and *publish* it in advance of the auction, as explained in section 3.1 below. There are pre-auction authorization, enrollment, and *capacity auction deposit* requirements for *market participants* who wish to participate in the *capacity auction,* as further explained in below.

3.1.   Pre-Auction Reporting Obligations
(MR Ch.7 ss.18.5.2.1, 18.5.2.2 and 18.5.4)

Prior to the *capacity auction*, the *IESO* shall *publish* a pre-auction report ~~to include the following reference points,~~ for both *obligation periods* ~~(Ch. 7, S. 18.5.2 of the market rules):~~that includes the reference points listed in **MR Ch.7 ss.18.5.2.1**, as well as:

- ~~Target capacity~~
- ~~Capacity auction reference price~~
- ~~Minimum and maximum capacity auction clearing prices~~
- ~~Minimum and maximum *auction capacity* to be secured~~
- ~~Maximum auction capacity to be secured at the maximum capacity auction clearing price~~
- ~~Zonal~~zonal limitations for each *electrical zone*, as explained in ~~Section 2.6~~section 2.6 of this *market* manual~~;~~ and
- ~~Capacity~~capacity import constraints as explained in ~~Section 2.7 of this manual~~section 2.7.

In addition to these reporting obligations, the *IESO* will also *publish:*

- the timelines for *capacity auction participants* to enroll potential *capacity auction resources* and the amount of *auction capacity* that they are willing to provide for each potential *capacity auction resource*;
- the dates that the *IESO* will conduct the *capacity auctions* as well as the date by which the *IESO* will *publish* the public and confidential post-auction reports (**MR** Ch.7~~, S.~~ **ss.**18.5.4 ~~of the *market rules*~~); and

- a link to a mapping tool to assist with the determination of which zone *capacity auction resources* are located, based on their physical address.

3.2.   Pre-Auction Authorization Process

(MR Ch.2 ss.2.1.1.1.11 and 2.1.1.1.12)

All prospective participants who wish to participate in the *capacity auction* are required to authorize as *capacity auction participants* (Ch. 2, S. 2.1.1.1.11 and 2.1.1.1.12 of the *market rules*) through the *IESO*'s market registration process. The *capacity auction participant* shall authorize as a *capacity market participant* during the *forward period* if a *capacity obligation* is awarded, per Sectionsection 5.1. *Market* authorization processes are further detailed in "Market Manual**MM** **1.5**: Market Registration Procedures"..

In addition to authorization as a *capacity auction participant, market participants* may be authorized as one of the following classes described in Market Manual 1.5, as applicable:

- *generator*

- load

- *energy trader*

- *electricity storage participant*

3.3.   Capacity Enrollment

(MR Ch.7 ss.19.4.8, 19.5.4, 19.7.4, 19.9.4 and 19.11.4)

Capacity auction participants who wish to participate in a given *capacity auction* shall identify to the *IESO* the eligible *capacity auction resource(s)* with which they would intend to provide *auction capacity* for the duration of the relevant *obligation period,* as well as the maximum quantity of *auction capacity* that they might wish to provide from each individual eligible *capacity auction resource*. This submitted quantity shall be used to set the *capacity auction participant's enrolled capacity* for that auction*. The enrolled capacity* represents the maximum *auction capacity* that can be offered by the *capacity auction resource* in a given *capacity auction* for either *obligation period. The IESO* will communicate the submission deadline via the pre-auction report.

Each potential *capacity auction resource* will represent a single resource according to the registration procedures described in "Market Manual 1.5: Market Registration Procedures".**MM 1.5**.

Authorized *capacity auction participants* are required to submit, via Online IESO[3], the following information in order to complete the capacity enrollment process:

- The amount of potential *auction capacity*, not less than 1 MW per *capacity auction resource*, that they could reliably provide, and may be willing to offer, in each *obligation period*.

- The *obligation period(s)* for which they may wish to submit *capacity auction offers*. Participants may choose to submit *capacity auction offers* for one or both *obligation periods*.

- The type of *capacity auction resource* (i.e. *capacity import resource*, *capacity generation resource, hourly demand response* (HDR) *resource, capacity dispatchable load resource, capacity storage resource*) that will satisfy a *capacity obligation* during the *commitment period* and for HDR *resources,* the obligation type (e.g. physical or virtual) and contributor type (e.g. Residential or Commercial & Industrial)*.* Refer to section 5.3.2 for details on submitting *demand response contributor* data information.

- If the *resource ~~type~~* is a *capacity generation resource* or *capacity storage resource*, a signed attestation declaring that the *generator* that will deliver *auction capacity* meets the requirements of a *capacity auction eligible generation resource* or *capacity auction eligible storage resource, respectively*, as set out in ~~Chapter 11, Definitions~~**MR Ch.11**.

- For eligible *capacity auction resources* located in Ontario:

  - the ~~*registered*~~ *facility* and associated *resource* that will satisfy the *capacity obligation*; or

  - the zonal location of *demand response resources* and/or *demand response contributors* for which they are willing to submit *offers*. ~~Participants~~*Capacity auction participants* may choose from the ten electrical zones to submit *capacity auction offers*. The *IESO* shall *publish* zonal constraints in the pre-auction reports, as explained in section 3.1 of this manual.

- For *capacity import resources*:

  - the external interface that will be used to deliver the *auction capacity;* and

  - a signed attestation acknowledging that all eligibility requirements have been met*,* as set out in ~~Chapter 11 of the *market rules*~~**MR Ch.11**

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[3] Online IESO is an online tool for *market participants* to submit data to the *IESO*; accessible at Online IESO (https://online.ieso.ca)*.*

and that has taken such actions as are necessary in order to ensure
that:

- capacity ~~imports~~*import resources* related to a *capacity obligation*
  will be offered into Ontario's *energy market* with firm 7F
  transmission service; and

- the planning authority(ies) responsible for *adequacy* assessment(s)
  will remove any MW related to a *capacity obligation* associated
  with from its *adequacy* assessments.

- Confirmation of having submitted the *capacity auction deposit* as determined
  by the *IESO*, further explained in section 3.4 of this manual.

Based on the information provided, the *IESO* will:

- verify the *capacity auction participant* has completed the authorization
  process as outlined in section 3.2 of this manual; and

- ensure the *capacity market participant* has not been disqualified from auction
  participation, due to failure to reduce consumption or supply *energy* pursuant
  to a *dispatch* or activation notice (**MR Ch.7 ss.19.4.8**, **19.5.4**, **19.7.4**,
  19.9.4 and **19.11.4** ~~of the~~ *~~market rules~~*).

3.4.   Capacity Auction Deposit

(MR Ch.7 ss.18.2.1, 18.3.1, 18.4.1.1, 18.4.1.2 and 18.4.2)

All *capacity auction participants* wishing to submit *capacity auction offers* into the
capacity auction are required to provide to the *IESO* a *capacity auction deposit*, no
less than five *business days* prior to the date which the *capacity auction* is to be
conducted (**MR Ch.7 ss.18.2.1** ~~of the~~ *~~market rules~~*).

The purpose of this deposit is to establish the creditworthiness of the *capacity
market participant* for auction activities. The pre-auction deposit is also intended to
ensure that the *capacity auction participant* fulfills any post-auction and *forward
period* obligations.

The *IESO* will calculate the *capacity auction deposit* amount a *capacity auction
participant* is required to submit for each *obligation period*, based on the amount of
enrolled capacity in each *obligation period* of the *capacity auction* (**MR Ch.7
ss.18.3.1** ~~of the~~ *~~market rules~~*)~~.~~).

The formula for calculating a *capacity auction participant's* pre-auction deposit
amount in a *capacity auction* is as follows:

Capacity auction deposit =   3% * (total *enrolled capacity* * maximum auction
                                   clearing price per MW-day) * number of *business
                                   days* in *obligation period*

The *IESO* may impose a higher *capacity auction deposit* requirement depending on creditworthiness of the *capacity auction participant* in the *IESO-administered market*.

For *capacity obligation* transfers, the *IESO* will determine and notify the *capacity transferee* if additional *capacity auction deposit* funds are required, as determined in section 8, to complete a transfer.

If additional *capacity auction deposit* funds are required, the formula for determining a *capacity transferee's* deposit for a transfer is as follows:

Capacity auction deposit =   3% * (transferred *auction capacity* * maximum auction clearing price per MW day) * number of *business days* in *obligation period*

However, the additional *capacity auction deposit* requirements from a transfer request may be satisfied by the *capacity transferee's* existing *capacity auction deposit*, if it has not been refunded back to the *capacity transferee*.

All *capacity auction participants* are required to submit a *capacity auction deposit* in one (or a combination of both) of the following forms:

- irrevocable commercial letter of credit, in a form acceptable to the *IESO* (**MR Ch.7 ss.**18.4.2 ~~of the~~ *~~market rules~~*), provided by an *IESO*-approved bank (**MR Ch.7 ss.**18.4.1.1 ~~of the~~ *~~market rules~~*), or

- cash deposits made to the *IESO* by or on behalf of the authorized *market participant* (**MR Ch.7 ss.**18.4.1.2 ~~of the~~ *~~market rules~~*). The *IESO* will not pay interest on cash deposits.

Letters of credit must be submitted to the *IESO* in original hard copy form.

3.4.1.   Capacity Auction Deposits by Cash

Capacity auction deposits by cash may be submitted by *electronic funds transfer* to an *IESO*-designated account. The *IESO* will verify all submitted *capacity auction deposits* for participation in a *capacity auction* by:

- reviewing the amount and type of deposit;

- verifying that it meets the submission timing requirements; and

- ensuring applicants are authorized as *capacity auction participants*.

3.4.2.   Releasing Capacity Auction Deposits

The *IESO* will release the *capacity auction deposit*, at the *capacity auction participant's* request, within five *business days* for:

- an unsuccessful *capacity auction participant* after the publication date of the post-auction report; or

- a successful *capacity auction participant* when the *capacity auction participant* is authorized as a *capacity market participant*, sufficient *capacity prudential support* is posted, and a *resource* is registered to satisfy each of the *capacity auction participant's capacity obligations* for each *obligation period*.

Upon completion of a successful *capacity obligation* transfer, the *IESO* will release all or a portion of a *capacity transferor*'s *capacity auction deposit* at the *capacity transferor's* request, within five *business days* under the following conditions:

- The *IESO* will release the *capacity auction deposit* if the *capacity transferor's* remaining *capacity obligations* are 0 MW; or has at least one *resource* registered and sufficient *capacity prudential support* is posted to meet the *capacity auction participant's capacity obligation* in each *obligation period* in each of the cleared *electrical zones*; or

- The *IESO* will release a portion of the *capacity auction deposit*, if the above condition is not met, determined by the following formula:

Partial *capacity auction deposit* release = 3% * (transferred *auction capacity* * maximum auction clearing price per MW day) * number of *business days* in *obligation period*

— End of Section —

4.   Auction Mechanics

The *capacity auction* mechanics involves a three-stage process, as displayed in Figure 4-1 below:
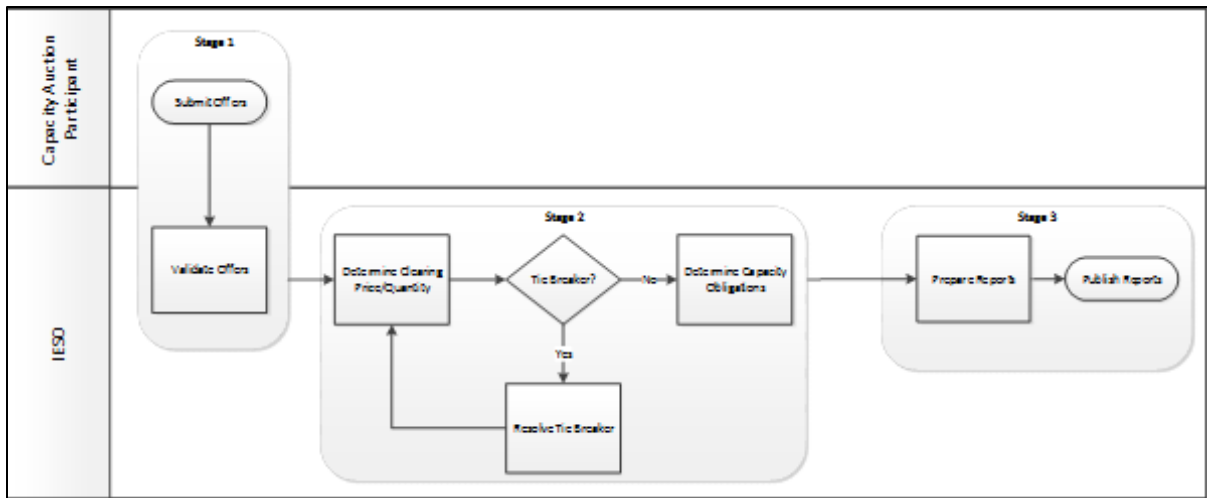
Figure 4-1: Capacity Auction Mechanics Overview

4.1.   Stage 1: Offer Submission and Validation

(MR Ch.7 ss.18.6.3.2 and 18.6.3.4)

Capacity auction participants are required to submit *capacity auction offers* via Online IESO, following the auction timelines detailed in section 2.2 of this manual. Each *capacity auction participant* may submit a c*apacity auction offer* associated with each potential *capacity auction resource* identified during the capacity enrollment process for any quantity between 1 MW and the *enrolled capacity* in the pre-auction process, using *offer* laminations reflecting the price of providing the various levels of capacity.

Capacity auction offers must be submitted on an *obligation period* basis. A complete *capacity auction offer* includes a set of up to 20 monotonically increasing *price-quantity pairs* with the total *offered* quantity across all laminations equal to or less than the *enrolled capacity* for the potential *capacity auction resource*. The *capacity auction offer* quantity must increase with every new lamination added to an *offer* set (**MR Ch.7 ss.**18.6.3.2 of the *market rules*).

A *capacity auction participant* may revise a *capacity auction offer* in Online IESO up until the *capacity auction offer* window closes, per the timelines detailed in section 2.2 of this manual.

A capacity auction offer will apply for the entire *obligation period*. The prices offered represent the minimum price at which the *capacity auction participant* is willing to provide each incremental quantity of *auction capacity*.

A capacity auction offer must also specify, for each *price-quantity pair*, whether the entire *auction capacity* represented in the lamination must be cleared in full or whether it may be partially cleared (**MR Ch.7 ss.18.6.3.4** ~~of the *market rules*~~). A full flag indicates to the *IESO* that the *capacity auction participant* is only willing to clear the auction with the full amount of *auction capacity* offered in that lamination. A partial flag indicates to the *IESO* that the *capacity auction participant* is willing to clear the auction in 0.1 MW increments of the offer in that lamination.

The *capacity auction* participant must be ready to provide *auction capacity* in the amount of their *capacity obligation* by the first day of the *obligation period* or be subject to non-performance charges as explained in section 6 of this manual.

4.2.   Stage 2: Auction Clearing

(MR Ch.7 ss.18.7.3 – 18.7.5)

Once the *capacity auction offer* submission window closes, the *IESO* will review all *capacity auction offers* to determine the *capacity auction clearing price* for each zone, as per the timelines detailed in section 2 of this manual.

For each *obligation period*, the *IESO* shall determine for each *obligation period* the *capacity obligation* for each *capacity auction participant's capacity auction resource* (**MR Ch.7 ss.18.7.3** ~~of the *market rules*~~), following the process stated below.

The *IESO* will consider all *capacity auction offers* and clear them against a downward-sloping demand curve, utilizing an optimization model to maximize the social welfare (i.e. the area under the demand curve less supply costs). This clearing process will respect all *capacity auction zonal constraints* and capacity import constraints. The clearing process will determine the *capacity auction clearing price* for each zone. When there is a *capacity auction offer* not selected, either partially or in full, due to the total maximum *capacity auction zonal constraint*, the *capacity auction clearing price* for that zone will be set at the lesser of:

- the price associated with the next economic quantity from a *capacity auction offer* in the same zone that would have cleared but for the total maximum *capacity auction zonal constraint*; or

- the Ontario-wide capacity auction clearing price.

The Ontario-wide *capacity auction clearing price* will be set equal to the price associated with *demand* curve for the quantity equal to the last-cleared *price-quantity pair* associated with a *capacity auction offer*. The total quantity cleared through a *capacity auction* may clear above the *demand* curve where doing so will

maximize the overall objective function. An example of the auction clearing process, including zonal limitations, is shown in Figure 4-2.
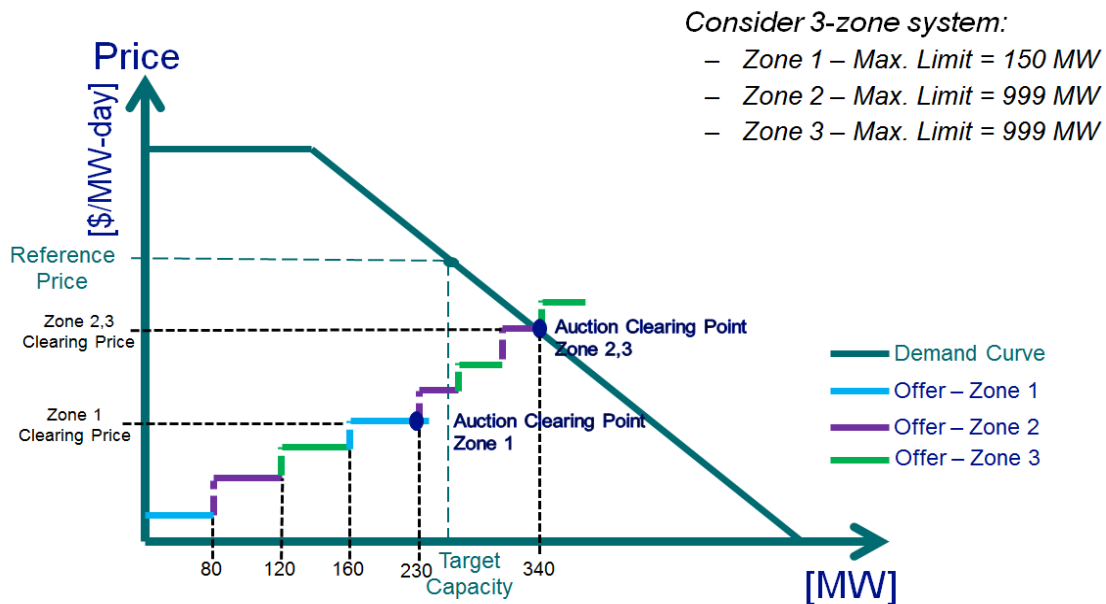
Figure 4-2: Auction Selection Process with Zonal Limits

In the example illustrated in Figure 4-2, Zone 1 has a total maximum *capacity auction zonal constraint* of 150 MW. All *offers* are stacked by increasing price against the *demand* curve for the *obligation period*. As shown in the figure, after clearing the first offer of 80 MW from Zone 1, the auction engine can only partially clear the second offer (70 MW) at which point the total cleared quantity in Zone 1 is equal to the total maximum *capacity auction zonal constraint*. If the auction engine determines that the un-cleared quantity from the second offer in Zone 1 would have cleared but for the total maximum *capacity auction zonal constraints*, a zonal *capacity auction clearing price* will be determined, in the manner described above. The overall procurement will continue and the *capacity auction offers* will clear until the intersection with the demand curve at 340 MW, which will also set the *capacity auction clearing price* for Zone 2 & 3, and is also referred to as the Ontario-wide *capacity auction clearing price*.

If the *IESO* receives two or more *capacity auction offers* at the same price for the last available quantity, the *capacity auction offer* with the earlier time stamp[4] shall be selected as the successful *capacity auction offer* (**MR Ch.7 ss.**18.7.5 ~~of the~~ *~~market rules~~*).

Once the *capacity auction clearing price* and quantity are set, the *IESO* shall determine for each *obligation period*, the *capacity obligations* for each *capacity auction participant* and its *capacity auction resource(s)* (**MR Ch.7 ss.**18.7.4 ~~of the~~

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[4] A time stamp refers to the time recorded by Online IESO when a *capacity auction participant* submits or revises an offer during the two-*business day* offer submission window.

~~market rules~~). *Resources* with a *capacity obligation* will be designated a *capacity auction resource* for the duration of the *commitment period*.

4.3.   Stage 3: Post-Auction Reporting Obligations

(MR Ch.7 ss.18.8 and 18.8.2)

Once the auction has been cleared and *auction capacity* quantities and clearing prices are determined for all zones, the *IESO* will prepare public and private reports to communicate this information, as explained below.

*T*he *IESO* shall *publish* public reports containing the following information for each *obligation period* (**MR Ch.7 ss.**18.8 ~~of the market rules~~):

- the *capacity auction clearing price* for each zone;

- the amount of *auction capacity* acquired through the auction for each zone by obligation type (i.e. physical or virtual);

- the successful *capacity auction participants* that received a *capacity obligation* and their respective total *capacity obligations* in each zone; and

- the total enrolled capacity of each *capacity auction participant* by obligation type and zone or external interface, as applicable.

The *IESO* shall *publish* a summary of the Ontario-wide *capacity auction clearing price* and the *auction capacity* quantity across all zones.

The *IESO* will also issue confidential post-auction reports to each *capacity auction participant* with the *capacity obligation(s)* for each *capacity auction resource,* the *capacity auction clearing price* applicable to the *capacity auction resource,* and *obligation period* (**MR Ch.7 ss.**18.8.2 ~~of the market rules~~).

If *capacity obligations* are modified as a result of a buy-out or *capacity obligation* transfer, the *IESO* will prepare public and confidential reports to communicate the information, as explained above.

– End of Section –

5.   Post-Auction Requirements

5.1.   Participant Authorization

(MR Ch.7 ss.18.2.3)

There are post-auction authorization and registration requirements for *capacity auction participants* who have successfully cleared and secured one or more *capacity obligations*. Such participants are required to become authorized as *capacity market participants* (Ch. 7, S.18.2.3 of the *market rules*).. This authorization enables *capacity market* participants to participate in the energy market to satisfy a *capacity obligation.*

In the case of *capacity market participants with capacity import resources*, all participation contact roles must be assigned to the *capacity market participant* or to an *affiliate* of the *capacity market participant*. Details with respect to contact roles are set out in "Market Manual**MM** **1.3**: Identity Management Operations Guide.

Post-auction *market participant* authorization processes are further detailed in "Market Manual**MM** **1.5**: Market Registration Procedures.

5.1.1.   Prudential Support

All *capacity auction participants* with a *capacity obligation* are encouraged to post *capacity prudential support* for the *obligation period*, at least 60 days prior to the *obligation period*.

Further details on *capacity prudential support* requirements are outlined in "Market Manual**MM** **5.4**: Prudential Support.

5.2   Registration Requirements

(MR Ch.7 ss.18.4.4)

In order to satisfy a *capacity obligation* in the *energy market,* a *resource* registered in the *energy market* must be assigned to each *capacity obligation.* The *resource* may be assigned during capacity enrollment in the pre-auction period or during the *forward period* for *demand response resources* that did not exist at the time of capacity enrollment (upon completion of registration of the *energy market* resources). Any *market participant* seeking to register their *facility* and/or *resource* must follow the processes and timelines outlined in "Market Manual**MM** **1.5**: Market Registration Procedures"..

This registration process must be completed at least 45 *business days* prior to the beginning of the *obligation period* for it to be effective as of the start of the *obligation*

period. If the process is not completed by 45 *business days* before the start of the *obligation period,* the *IESO* cannot guarantee that the registration will be effective as of the start of the *obligation period* and this may have consequences related to non-performance charges. For clarity, under all circumstances, the registration process must be completed prior to the commencement of the *obligation period* or be subject to **MR** **Ch.7** ~~ss.~~**18.4.4** ~~of the~~ *~~market rules~~* ~~.~~. Upon completion, the *capacity market participant* can assign the newly registered ~~*facility*~~*resource* with their applicable *capacity obligation.*

Except in the case of a *capacity import resource, the capacity market participant* with a physical *capacity obligation* must be the registered owner~~, as described in~~ ~~"Market Manual~~ **~~1.5: Market Registration Procedures",~~** of the ~~*registered*~~ ~~*facility*~~*resource* associated with the *capacity auction resource*, as described in **MM 1.5***. Capacity market participants* participating with virtual HDR *resources* may include physical or virtual *non-dispatchable loads* owned by a third party as *demand response contributors*.

Market participants that are seeking to change attributes of their *resources* (e.g., a *resource* may change its *bid* type ~~in the *IESO's* registration system~~), in the *IESO's* registration system in order to satisfy a *capacity obligation* must complete the market registration process, including possible commissioning tests, 45 *business days* prior to the start of the *obligation period* for it to be effective as of the start of the *obligation period*. If the process is not completed by 45 *business days* before the start of the *obligation period,* the *IESO* cannot guarantee that the registration will be effective as of the start of the *obligation period* and this may have consequences related to non-performance charges. For clarity, under all circumstances, the registration process must be completed prior to the commencement of the *obligation period* or be subject to **MR** **Ch.7** **ss.****18.4.4** ~~of the~~ *~~market rules~~*.

5.2.1.   Physical Demand Response

To register a *facility* in accordance with ~~"Market Manual~~**MM** **1.5**~~: Market Registration Procedures",~~, a *capacity market participant* with a physical *capacity obligation* providing *demand response capacity* with a transmission-connected *load facility* or with an *embedded load facility* that is revenue metered by the *IESO* must register their *demand response resource* as *an* HDR *resource* or as *a dispatchable load* (for example, a *non-dispatchable load* could be registered as an HDR *resource*). This *facility* registration includes the submission of *demand response capacity.*

A *capacity market participant* with a physical *capacity obligation* providing *demand response capacity* must register only one *demand response resource* for each *capacity obligation.*

5.2.2.   Virtual Demand Response

A *capacity market participant* with a virtual *capacity obligation* providing *demand response capacity* with a *facility* that is not revenue metered by the *IESO* must register their *demand response resource* as a virtual HDR *resource* and must register only one *demand response resource* for each *capacity obligation. Capacity market participants* with a virtual HDR *resource* must indicate the contributor type associated with such virtual HDR *resource* (residential or commercial/ industrial/ institutional load type, as applicable).

Capacity market participants with a virtual *capacity obligation* participating with a virtual HDR *resource* may include multiple *demand response contributors,* provided such *demand response contributors* are of the same contribution type as the virtual HDR *resource. Demand response contributors* for a virtual HDR *resource* may include multiple virtual (non-revenue metered) and/or physical (revenue metered) *non-dispatchable load(s)*. More information on the contributor management process is detailed in ~~Section 5.2.1.~~section 5.2.3.

A *capacity market participant* providing *demand response capacity* with both residential and commercial/industrial/institutional *demand response contributors* in the same zone must register two separate HDR *resources* in that zone (one for each contributor type).

5.2.3.   Contributor Management

As part of the contributor management registration process, the *capacity market participant* must submit individual *demand response contributor* information via Online IESO that will be associated with their registered virtual HDR *resource*(s). Each *capacity market participant* is responsible for maintaining its contributor registry throughout their *obligation period*.

The Online IESO interface allows *capacity market participants* to generate monthly contributor reports that provides a summary of their contributor participation information (resource IDs, meter point IDs, contributor type, and effective start/end dates), and corresponding *capacity obligations* secured under each of their respective virtual *demand response resource*(s).

The *capacity market participant* must submit their *demand response contributor* information through Online IESO within the specified submission window, but no later than the 14th *business day* prior to the start date of the effective month. Contributor registration requests will be processed and responded to by the *IESO*, including notice of approval or rejection, at least four *business days* before the start of the effective month. Rejections and/or failure to submit appropriate registration information by specified deadlines will defer the effective date of the changes to the next effective month. Refer to the latest Demand Response

Contributor Management and Measurement Data Submission Timelines posted on the *IESO* public website under Market Calendars.

Capacity market participants must also retain individual contributor *meter* data and all relevant supporting information for each respective contributor. The *IESO* may request such information in order to verify the accuracy of information disclosed by the *capacity market participant* at the time of an audit as detailed in section 5.4.

There are two categories of *demand response contributors* that can be registered to meet a *capacity obligation*:

1. Virtual HDR resources consisting of commercial, industrial, institutional and/or non-dispatchable loads (C&I) that can be classified as:

    a. Virtual C&I HDR contributors; and

    b. Physical C&I HDR contributors.

2. Virtual HDR resources consisting of residential[5] smart-metered loads that can be classified as:

    a. Virtual residential HDR contributors

5.2.3.1. Virtual C&I HDR Contributors Registration Requirements

For virtual C&I HDR contributors, the information must satisfy the following applicable requirements:

i.   Contributor name and physical address (street, city, province, postal code), where the physical address must be in the same *electrical zone* as the associated *demand response resource*;

    o The *capacity market participant* may use the zonal map tool located on the IESO Zonal Map page (http://www.ieso.ca/zonal.map/index.html) to confirm the *electrical zone* for the associated *demand response contributor*;

ii. Applicable licensed Local Distribution Company (LDC) name, and LDC account number indicated on the *demand response contributors'* LDC billing statement;

iii. *Demand response contributor* load class type (i.e., industrial, commercial, and/or institutional);

iv. Whether the *demand response* is to be provided via load interruption or behind-the-meter generation;

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[5]A residential customer refers to a smart-metered service account that is billed (by a licensed local distribution company) on a residential-rate class specified in a rate-order produced by the *Ontario Energy Board*. For the purposes of this program the term 'residential', as intended by the *IESO*, excludes 'net-metered' and/or 'unit sub-metered' customers.

- o If the *demand response* type is behind-the-*meter* generation, then the *capacity market participant* must specify the following *generator* name plate capacity information: model number, capacity in MW, fuel type and (if applicable) load following technology;

v. Identification of whether the *demand response contributor* is participating in other *demand response* or conservation initiatives;

vi. *Demand response capacity* of contributor in MW;

vii. A declaration of acknowledgement by the *capacity market participant* that the LDC has been notified of the *demand response contributors'* participation in a *capacity auction*;

viii. Data acquisition method used to collect *demand response contributor meter* data;

ix. Submission of LDC Billing statement for each LDC meter installation that is issued within three months of the *demand response contributor* effective date;

x. Submission of single line diagram (SLD) is required when the *demand response* type is behind-the-meter generation. SLD submissions (at a minimum) must include the following details:

- o *facility*/contributor name, physical address;

- o *embedded connection point*(s) (point of sale) to the LDC;

- o location of distribution transformer;

- o location of breakers, disconnect switches, etc.;

- o location of the *metering installation* and *meter* point reference identification (as indicated on contributors' Record of Installation); and

- o ~~If behind-the-meter generation, indicate~~ generation location and nameplate information (MVA/kVA rating, output voltage)

5.2.3.2. Physical C&I HDR Contributors Registration Requirements
(MR Ch.7 ss.19.2)

For physical C&I HDR contributors, the information must satisfy the following applicable requirements:

i. *non-dispatchable load* Resource ID (subject to confirmation from *non-dispatchable load* owner); and

ii. *demand response capacity* in MW.

As part of the contributor management process, any updates, revisions or amendments to *demand response contributor* information applicable to C&I HDR *resources* must be submitted using Online IESO for review and approval, including when:

- a new *demand response contributor* is added;

- an existing *demand response contributor* is removed; or

- an existing *demand response contributor*'s information is modified or amended.

In instances when a *demand response contributor* initiates a registration request to become a *dispatchable load* or *price responsive load*, the non-dispatchable load must be removed as a *demand response contributor* before the request will be accepted.

In instances when a new *demand response contributor* is added and/or an existing *demand response contributor* is removed, subject to *IESO*'s approval, the *capacity market participant* will be issued a new virtual *meter* point ID to reflect these changes. During a *demand* response activation event, the *capacity market participant* will be required to submit three months of measurement data under the issued virtual meter point ID, as detailed below.

5.2.3.3. Virtual Residential HDR Contributors Registration Requirements

For virtual residential HDR contributors, the information submitted to the *IESO* must satisfy the following applicable requirements.

Submitted on a monthly basis through Online IESO using an excel template (refer to Appendix A):

   i. *Demand response contributor* physical address (in the order of: street# & name, city, province, postal code), where the physical address must be in the same *electrical zone* as the associated *demand response resource*;

   - The *capacity market participant* may use the zonal map tool located on the IESO Zonal Map page (http://www.ieso.ca/zonal.map/index.html) to confirm the *electrical zone* for the associated contributor;

   ii. Applicable licensed Local Distribution Company (LDC) name and LDC account number indicated on contributors' LDC billing statement;

   iii. Indicator flagging the control group *demand response contributor*s, as defined in the section entitled "Randomized Control Trial Baseline Methodology"5.2.3.4 below, where there must be at least 350 control group *demand response contributor*s which are chosen randomly (i.e. using a process of selection in which each contributor has an equal probability of being chosen) each month by the *capacity market participant* from the total population of *demand response contributor*s under the residential HDR *resource*;

The following fields must be directly entered into the input fields in Online IESO:

iv.   *Demand response capacity* in MW (note: the total capability from only the treatment group contributors and must be equal to or greater than 1 MW);

v.   Total number of *demand response contributor*s in the treatment group as defined in the section entitled "Randomized Control Trial Baseline Methodology" below; and

vi.   Total number of *demand response contributors* in the control group.

As part of the residential contributor management process, the *capacity market participant* shall use the excel template available in Online IESO (refer to Appendix A) to submit *demand response contributor* information on a monthly basis.

Rejections and/or failure to submit appropriate contributor management registration information each month by the specified deadlines will exclude the residential HDR *resource* to participate in the *energy market* (submit *energy bids*) for that month, and result in Availability Charges to be applied (as further described in Market Manual 5, Part 5.5: Physical Markets Settlement Statements).

5.2.3.4.   Randomized Controlled Baseline Methodology

For HDR *resources* associated with either virtual or physical C&I contributors, performance is evaluated using a historical baseline (as described in Market Manual 5.5: Physical Markets Settlement Statements).

For HDR *resources* associated with virtual residential *demand response contributors*, a randomized controlled (RC) baseline methodology is used where two groups of contributors are established, as follows:

- a "treatment" group, where *demand response contributors* are activated to provide *demand* response upon receipt of the *demand* response standby and activation notice; and

- a randomized "control" group, where *demand response contributors* serve as a proxy for baseline consumption; therefore, are not activated to provide *demand* response. The "control" group *demand response contributors* are randomly selected using a process of selection in which each *demand response contributor* has an equal probability of being chosen each month.

The RC evaluates the consumption difference between the two groups of *demand response contributors* to determine the amount of *demand response capacity* delivered, as illustrated in Figure 5-1.
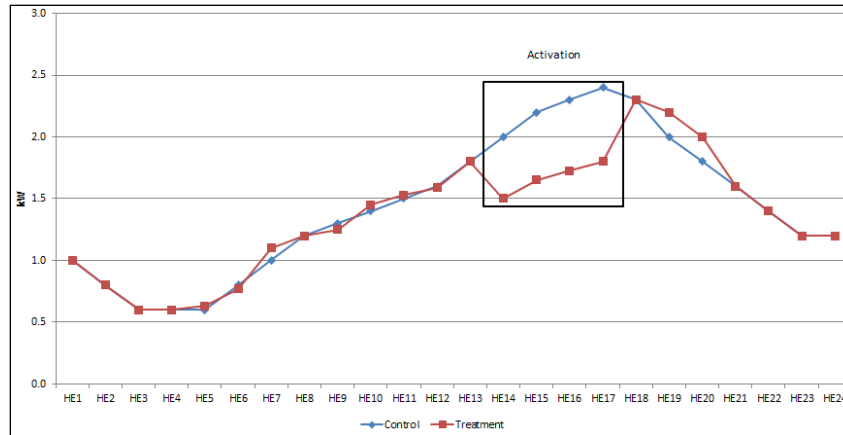
Figure 5-1: Randomized Control Trials (RC) Performance Evaluation

Refer to Market Manual 5.5: Physical Markets Settlement Statements for a further description of how residential HDR performance is evaluated and how settlements are calculated.

5.3   Energy Market Participation

In order to satisfy their *capacity obligation(s)*, *capacity market participants* will be required to submit *dispatch data* in the *day-ahead* ~~commitment process as set out in "Market Manual 9.2: Submitting Operational~~ *market* and ~~Market Data for the DACP", and in the~~ *real-time market* as set out in ~~"Market Manual~~**MM** **4.~~2~~1**: Submission of Dispatch Data in the ~~Real-Time Energy and Operating Reserve~~Physical Markets~~.~~ *Capacity market participants* are required to follow *dispatch instructions* as set out in ~~"Market Manual~~**MM** **4.3**: Real-Time Scheduling of the Physical Markets~~.~~

All *capacity auction resources* will be subject to test activations in the *real-time market*, as set out in section 5.3.3. *Capacity market participants* with *capacity obligation(s)* allocated to HDR *resources* will be compensated for out of market activations, including test activations, as detailed in Market Manual 5.5: Physical Markets Settlement Statements~~.~~

5.3.1.   Outage Management / Non-Performance Events

Capacity market participants with a *capacity auction resource*, except for *capacity market participants* with *capacity import resources,* are required to submit *outage* requests as set out in ~~"Market Manual~~**MM** **7.3**: Outage Management~~.~~ *Capacity*

market participants with HDR *resources* are required to inform the *IESO* of non-performance events[6] as set out in ~~Market Manual~~**MM** **7.3**.

5.3.2. Measurement Data Submissions for Virtual C&I HDR Resources

~~**For Virtual C&I** *HDR resource* **(s):**~~

Each Virtual C&I HDR *resource* is associated with a virtual *meter* point ID that reflects *demand response contributor* changes to a *capacity market participant's* virtual portfolio. *Capacity market participants* are required to submit three months of aggregated measurement data (on a five-minute interval basis) through Online IESO <u>only</u> for months in which they are activated for their *demand response capacity obligations*. The Online IESO data submission must include measurement data for the activation month and two previous months of historical data in a single three-month data file per virtual *meter* point ID.

5.3.2.1. Processing of Measurement Data

Virtual C&I HDR *resource* will have either a uni-directional *meter* (kWh delivered) or a bi-directional meter (kWh delivered and kWh received). *Capacity market participants* must adhere to the following methodology when aggregating *demand response contributor meter* data and submitting a consolidated three-month measurement data file:

- Virtual *demand response contributors* with a uni-directional *meter* type, the uni-directional interval meter readings will be recorded in the summation of Channel 1 (kWh delivered) energy quantities. Channel 2 (received) *energy* is recorded as zero for that *demand response contributor*

- Virtual *demand response contributors* with a bi-directional meter type, the *demand response contributor's* bi-directional interval meter readings must be netted (kWh delivered – kWh received) and recorded as follows:

  o if the resultant net kWh quantity is less than or equal to zero, then the total net kWh value will be zero and is recorded in the summation of Channel 1 (delivered) *energy* quantity for that interval. Channel 2 (received) *energy* is recorded as zero for that interval; or

  o if the resultant net quantity is greater than zero, then the total net value will be equal to the net amount and will be included in the summation of Channel 1 (delivered) *energy* quantity for that interval. Channel 2 (received) *energy* is recorded as zero for that interval

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[6] Non-performance event means an event determined by the *CMP* where a *demand response resource* is, in whole or in part, in a Demand Response *Outage* or otherwise unable to Curtail for a period of time.

The measurement data submission is the summation of all *demand response contributors* by channel per interval.

5.3.2.2.   File Format Requirements for Measurement Data Submissions

Measurement data submitted by *capacity market participants* through Online IESO, must adhere to the following requirements:

- must not include any measurement error corrections;

- must not include any loss adjustments;

- ~~must be provided in~~ ~~the following format:~~

- ~~A~~a CSV (comma separated values) file format compatible with the *IESO*'s Meter Data Acquisition System, containing two channels of ~~5~~five-minute engineering unit values (without any gaps or overlaps).

The CSV data file shall adhere to the following format (separated by commas) corresponding to each column name, as illustrated in Figure ~~6~~5-2 below,

- Row 1 (Main header): "DATE,TIME,CH1,CH2"

- Row 2 (Data intervals): "YYYY/MM/DD, HH:MM, ###.###,###.###", where:

  - Date: "YYYY/MM/DD", as in year/month/day

  - Time: "HH:MM", hour: minutes in Eastern Standard Time (EST),

  - Channel 1: Summation of all virtual contributors' energy withdrawn from the grid, in Numeric "###.###," in kWh up to three decimal places,

  - Channel 2: Summation of all virtual contributors' energy injected into the grid, in Numeric "###.###," in kWh up to three decimal places, and

The CSV data file must contain 288 rows of data per day, having a beginning time of 00:05 and an end time of 24:00.

```
DATE,TIME,CH1,CH2
2017/05/01,00:05,111.222,0
2017/05/01,00:10,333.444,0

...
.....

2017/05/01,23:55,555.666,0
2017/05/01,24:00,777.888,0
```

Figure 5-2: Sample CSV File Format for Measurement Data Submission for C&I HDR

5.3.3.   ~~For~~Measurement Data Submissions for Virtual Residential HDR Resources

Capacity market participants are required to submit aggregated hourly (60-minute interval) measurement data <u>only</u> for days in which they received *demand* response activations during the commitment month. Measurement data (single data file per virtual *meter* point ID for all activation days) must be submitted for <u>each</u> of the two groups of *demand response contributors* (treatment and control group) through Online IESO in accordance with the latest Contributor Management Timelines posted on the IESO public website under Market Calendars.

Subject to *IESO*'s approval, the *capacity market participant* will be assigned two unique Meter point IDs (MPID), one for the treatment group and one for the control group. The MPID format for each group is as follows:

- DRAT######### to represent the treatment group *demand response contributors*, and

- DRAC######### to represent the control group *demand response contributors*.

5.3.3.1. File Format Requirements for Measurement Data Submissions

Measurement data submitted by *capacity market participants* through Online IESO must adhere to the following requirements:

- must not include any measurement error corrections;

- must not include any loss adjustments;

- ~~must be provided in~~ ~~the following format:~~

- ~~A~~a CSV (comma separated values) file format containing two channels of 60<u>-</u>minute engineering unit values (without any gaps or overlaps<u>).</u>

The CSV data file shall adhere to the following format (separated by commas) corresponding to each column name, as illustrated in Figure 5-3 below,

- Row 1 (Main header): "DATE,TIME,CH1,CH2"

- Row 2 (Data intervals): "YYYY/MM/DD, HH:MM, ###.###,###.###", where:

    o Date: "YYYY/MM/DD", as in year/month/day

    o Time: "HH:MM", hour:minutes in Eastern Standard Time (EST),

    o Channel 1: Summation of all virtual contributors' withdrawn energy in kWh up to three decimal places, in numeric value "###.###",

    o Channel 2: Shall remain zero (with respect to the exclusion of 'net-metered' customers under residential HDR),

The CSV data file must contain 24 rows of data per day, having a beginning time of 01:00 and an end time of 24:00.

```
DATE,TIME,CH1,CH2
2017/05/01,01:00,111.222,0
2017/05/01,02:00,333.444,0

...
.....

2017/05/01,23:00,555.666,0
2017/05/01,24:00,777.888,0
```

Figure 5-3: Sample CSV File Format for Measurement Data Submission for Residential HDR

5.3.3.2. Timelines for Data Submission and Processing

(MR Ch.9 ss.4.7J)

Upon activation, *capacity market participants* must submit their measurement data no later than the 6th *business day* before the end of the subsequent month. Refer to the latest Demand Response Contributor Management and Measurement Data Submission Timelines posted on the *IESO* public website under Market Calendars for details.

The *IESO* will process all measurement data submissions and respond to the *capacity market participant* with notice of any errors by the 4th *business day* prior to the start of the effective month. The *capacity market participant* will then have (at a minimum of) two *business days* from the date the *IESO* provides such notice to correct and resubmit a revised measurement data file through Online IESO. Measurement data submissions not submitted by the specified deadlines will incur non-performance charges in accordance with **MR Ch.9 ss.4.7J** ~~of the *market rules*~~.

Capacity market participants must retain individual *demand response contributors* measurement data and all supporting information provided at the time of registration, for audit purposes for a period of seven (7) years. The *IESO* may request such information in order to verify the accuracy of information disclosed by the *capacity market participant.*

~~Validation, Estimation and Editing (VEE)~~5.3.3.3.   **VEE** Process for Virtual C&I HDR Contributors

For virtual C&I HDR contributors, if the *capacity market participant* has identified, within the measurement data submission deadline, that a portion of the measurement data is missing for particular *demand response contributor*(s), the *capacity market participant* shall:

- Collect data for all *demand response contributor*s for the period of three months excluding the missing period

- Utilize the following Validation, Estimation and Editing (VEE) criteria for virtual C&I HDR contributors to account for the missing period:

  o If the data is missing for any period outside the hours of a *demand response* activation event; measurement data for the missing period will be estimated to zero.

  o If the data is missing for any period within the *demand response* activation event; the *capacity market participant* shall take the highest five-minute interval *energy* value (kWh) from the entire three-month data set and estimate the missing period with that value.

Capacity market participants must submit a "Measurement Data Control Sheet" with each measurement data submission identifying *demand response contributor*s with VEE data (if applicable). A template of the "Measurement Data Control Sheet" can be found in Appendix B.

At the time of an audit, the *IESO* shall take into account all supporting information provided by the *capacity market participant* including measurement data submitted during the *commitment period*, the actual measurement data submitted at the time of the audit along with the measurement data control sheet (if applicable).

5.3.4.   Testing of Capacity Auction Resources

5.3.4.1. Testing of Capacity Generation Resources

The *IESO* may direct *capacity generation resources* to perform up to two activation tests per *obligation period* to verify that the resource is capable of satisfying its *capacity obligation*. Tests will be scheduled to occur during the *availability window* of the *dispatch day*.

The tests are conducted as follows:

- Applicable *resources* will be contacted by the *IESO* for test details. For *quick-start* ~~generators~~*generation resources*, the *IESO* will contact the *capacity market participant* up to one hour in advance of any exercise. *Non-quick start* ~~generators~~*generation resources* will be contacted one (1) *business day* in advance of any exercise.

- For *non-quick start* ~~generators~~*generation resources*, in the day-ahead timeframe and prior to ~~DACP~~*day-ahead market*, the *resource* will have a constraint applied to generate to the greater of either their (1) *capacity obligation* or *(2) minimum loading point for* the duration of at least their *minimum generation block run time* (MGBRT).

- For *quick-start* ~~generators~~*generation resources*, up to one hour in advance, the *resource* will have a constraint applied to generate to the greater of

either their (1) *capacity obligation* or *(2) minimum loading point for* the duration of at least their *minimum generation block run time* (MGBRT).

- The *registered market participant* for the ~~facility~~resource must ensure that *offers* are submitted.

- If a resource being tested demonstrates an injection of electricity into the *IESO-controlled grid* equal to or greater than their *capacity obligation* for every interval for the duration (up to 4 hours) of the test, the test will be deemed a success.

Failure of the test will result in the applicable charges as specified in Market Manual 5.5: Physical Markets Settlement Statements.

If a *capacity generation resource* is unable to comply with the test activation of the *auction capacity* on the *dispatch day*, it is the responsibility of the *capacity market participant* to notify the *IESO*, according to the *outage* reporting requirements specified for *generation facilities* as specified in ~~"Market Manual~~**MM** **7.3**~~: Outage Management"~~ and update the *energy offers* in accordance with ~~"Market Manual~~**MM** **4.**~~2: Submission of Dispatch Data in the Real-Time Energy and Operating Reserve Markets".~~**1.** Subsequent test activation will be rescheduled by the *IESO* following the completion of the *outage*.

The *IESO* may determine a test activation for a *capacity generation resource* is not required if all the following criteria are met:

- the *capacity generation resource* receives and follows sufficient *dispatch instructions* in the *energy market*;

- *dispatches* are within the *availability window*; and

- the *dispatches* are to at least the amount of their *capacity obligation*.

Failure of a *capacity generation resource* to perform a successful test activation may result in one or more of the following:

- non-performance charges as specified in Market Manual 5.5: Physical Markets Settlement Statements;

- a subsequent test activation to be scheduled by the *IESO*; or

- a compliance investigation to be performed by the *IESO*.

5.3.4.2. Testing of Capacity Storage Resources

The *IESO* may direct *capacity storage resources* to perform up to two activation tests per *obligation period* for each *capacity auction resource* to verify that the *resource* is capable of satisfying its *capacity obligation*. Tests will be scheduled to occur during the *availability window* of the *dispatch day* and will not take place if a real-time economic dispatch has already occurred within that day's *availability window*.

The tests are conducted as follows:

- ~~Applicable~~*Capacity market participant* for applicable *resources* will be contacted by the *IESO* ~~for~~with test details~~. The *IESO* will contact the *capacity market participant*~~ up to one hour in advance of any exercise.

- The *resource* will have a constraint applied to *generate* to its *capacity obligation* for the duration of the test.

- The *registered market participant* for the ~~*facility*~~*resource* must ensure that *offers* are submitted.

- If a *resource* being tested demonstrates an injection of electricity into the *IESO-controlled grid* equal to or greater than their *capacity obligation* for every interval for the duration (up to 4 hours) of the test, the test will be deemed a success.

Failure of the test will result in non-performance charges as specified in Market Manual 5.5: Physical Markets Settlement Statements.

If a *capacity storage resource* is unable to comply with the test activation of the *auction capacity* on the *dispatch day*, it is the responsibility of the *capacity market participant* to notify the *IESO*, according to the *outage* reporting requirements specified for *generation* ~~*facilities*~~*resources* as specified in ~~Market Manual~~**MM** **7.3**~~:Outage Management"~~ and update the *energy offers* in accordance with ~~"Market Manual~~**MM** **4.**~~2: Submission of Dispatch Data in the Real-Time Energy and Operating Reserve Markets".~~**1.** A subsequent test activation will be rescheduled by the *IESO* following the completion of the *outage*.

The *IESO* may determine a test activation for a *capacity storage resource* is not required if all the following criteria are met:

- the *capacity storage resource* receives and follows sufficient *dispatch instructions* in the *energy market*,

- *dispatches* are within the *availability window*, and

- *dispatches* are to at least the amount of their *capacity obligation*.

Failure of a *capacity storage resource* to perform a successful test activation may result in one or more of the following:

- non-performance charges as specified in Market Manual 5.5: Physical Markets Settlement Statements;

- a subsequent test activation to be scheduled by the *IESO*; or

- a compliance investigation to be performed by the *IESO*.

5.3.4.3. Testing of Capacity Dispatchable Load Resources

The *IESO* may direct *capacity dispatchable load resources* to perform up to two activation tests per *obligation period*, to verify that the *capacity dispatchable load resource* is capable of satisfying the *capacity obligation*. Tests will be scheduled to occur during the *availability window* of the *dispatch day.*

The tests are conducted as follows:

- Applicable *resources* will be contacted by the *IESO* for test details. The *IESO* will contact the *capacity market participant* up to one hour in advance of any exercise.

- The *resource* will have a constraint applied to *withdraw* to its *capacity obligation* for the duration of the test.

- The *registered market participant* for the ~~facility~~resource must ensure that *bids* are submitted related to the test.

- If a *resource* being tested demonstrates a reduction in *energy* withdrawal from the *IESO-controlled grid* equal to or greater than the *capacity obligation* for every interval for the duration (up to 4 hours) of the test, the test will be deemed a success.

Failure of the test will result in the applicable charges as specified in Market Manual 5.5: Physical Markets Settlement Statements.

If a *capacity dispatchable load resource* is unable to comply with the test activation on the *dispatch day*, it is the responsibility of the *capacity market participant* to notify the *IESO*, according to the *outage* reporting requirements specified for *dispatchable loads* as specified in ~~"Market Manual~~**MM** **7.3**~~: Outage Management"~~ and update the *demand response energy bids* in accordance with ~~"Market Manual~~**MM** **4.**~~2: Submission of Dispatch Data in the Real-Time Energy and Operating Reserve Markets".~~**1**. Subsequent test activations will be rescheduled by the *IESO* following the completion of the *outage*.

For a *capacity dispatchable load resource*, a test is deemed a success if the resource demonstrates a reduction in energy withdrawal that is equal to its *capacity obligation*. The *IESO* may determine a test for a *dispatchable load resource* is not required if the:

- *dispatchable load* receives and follows sufficient *dispatch* instructions in the *energy market*;

- *dispatches* are within the *availability window*; and

- *dispatchable load* demonstrates that the *capacity obligation* has been met.

The *IESO* may schedule test activation for *capacity dispatchable load resources* regardless of whether the above conditions are met, if there is evidence that the

resource is not able to deliver its *capacity obligation* at any time during the *obligation period*.

Failure of a *capacity dispatchable load resource* to perform successful test activation may result in one or more of the following:

- non-performance charges as specified in Market Manual 5.5: Physical Markets Settlement Statements;

- a subsequent test activation to be scheduled by the *IESO*, or

- a compliance investigation to be performed by the *IESO*.

5.3.4.4.   Testing of Hourly Demand Response Resources

The *IESO* may direct HDR *resources* to perform up to two activation tests per *obligation period.* These tests are conducted by the *IESO* to assess an HDR *resource's* ability to demonstrate a reduction in *energy* withdrawal from the *IESO-controlled grid* equal to or greater than the *capacity obligation* of the resource. The *IESO* will provide notification to *capacity market participants* one day in advance of the test with the actual test itself occurring during the *availability window* of the *dispatch day*. Testing for HDR *resources* is conducted for four hours, unless an HDR *resource* is qualified for reduced test duration.

For test activations, *capacity market participants* with HDR *resources* will receive a standby notice on the *pre-dispatch day* and an activation notice approximately 2 hours and 30 minutes in advance (but no later than 2 hours in advance) of the first *dispatch hour* of the test activation. *Resources* will receive a schedule in pre-*dispatch* and real-time, regardless of the *demand response energy bid* price submitted.

If an HDR *resource* with a *capacity obligation* is unable to comply with the test activation on the *dispatch day*, it is the responsibility of the *capacity market participant* manage its non-performance as described in "Market Manual 7.3: Outage Management".MM 7.3. If the non-performance event indicates that the entirety of the HDR *resource's demand response capacity* is unavailable, subsequent test activations will be rescheduled by the *IESO* following the completion of the non-performance event.

An HDR *resource* test activation is considered valid, unless:

- the *capacity market participant* provides notice of a non-performance event that would reduce the *demand response capacity* of the HDR *resource* to 0 MW;

- the *IESO* did not send either advisory, standby, or activation notifications in advance of the test activation as per the timelines specified above; or

- the *IESO* cancels the test prior to the start of the first *dispatch hour* of the test activation. The *IESO* will appropriately inform *capacity market participants* with HDR *resources* about the test cancellation.

The *IESO* may determine that a test activation for an HDR *resource* is not required if the *IESO* is able to verify that the HDR *resource* delivered an amount equal to its *capacity obligation* and satisfied the performance parameters defined below, during a previous activation within the same *obligation period.*

The *IESO* may schedule test activation for HDR *resources* regardless of whether the above conditions are met, if there is evidence that the resource is not able to deliver *demand response capacity* at any time during the *obligation period*.

A second test within an *obligation period* will not be required if the HDR *resource* delivers its *capacity obligation* through a non-test-based or test-based activation during that *obligation period*.

Failure of an HDR *resource* to perform successful test activation may result in one or more of the following:

- non-performance charges as specified in Market Manual 5.5: Physical Markets Settlement Statements;

- a subsequent test activation to be scheduled by the *IESO*;

- revocation of reduced test duration, where applicable; and/or

- a compliance investigation to be performed by the *IESO*.

Performance Parameters

Performance of an HDR *resource* means the *capacity obligation* for the HDR *resource* is delivered for each hour of the activation period within a 15% dead-band (e.g. at least 85% of the *capacity obligation* must be delivered).

Performance will be assessed using the following parameters:

- the load reduction, up to a maximum of 115% of an HDR *resource's* energy bid quantity, will be considered per five-minute interval.

- the load reduction across each five-minute interval will be summed for each activation hour (all 12 intervals) to determine the hourly load reduction.

Reduction of Test Length of HDR Resources

An HDR *resource* that has delivered its *capacity obligation* during a four-hour activation (non-test-based[7] or test-based) will be subsequently tested for a one-

---

[7] Non-test-based activation can refer to an in-market or *emergency* activation.

hour duration. Tests following unsuccessful four-hour activations shall continue as four-hour activations.

The *IESO* may revert the test duration for an HDR *resource* from one hour back to four hours upon provision of advance notice, identifying which conditions were not satisfied.

An HDR *resource's* one-hour test duration will be maintained provided:

a) The HDR *resource* has demonstrated delivery of *bid* quantity in all activations (non-test-based or test-based) since qualifying for reduced testing, where the bid quantity must be equal to its *capacity obligation* in at least one of two most recent activations (non-test-based or test-based)

   o Delivery of *bid* quantity means the load reduction for each hour of the activation period, within a 15% dead-band compared to its *demand response bid* quantity[8] (e.g. at least 85% of the *bid* quantity must be delivered), and

   o Has performed within the Performance Parameters stated above

b) The HDR *resource* has not increased its *capacity obligation* by more than 5 MW from the last successful four-hour activation (non-test-based or test-based).

5.3.4.5. Testing of Capacity Import Resources

The *IESO* may direct *capacity import resources* to perform up to two activation tests per *obligation period* for each *capacity auction resource* to verify that the *auction capacities* are deliverable. Tests will be scheduled to occur during the *availability window* of the *dispatch day*.

The tests are conducted as follows:

- Up to ~~2~~two hours in advance of any test, applicable *capacity import resources* will receive a constraint and a schedule should appear in PD-1. Tests may be scheduled for a duration of up to ~~4~~four hours.

- If a *capacity import resource* being tested is successfully scheduled in *pre-dispatch* and not curtailed and subject to a capacity charge as per ~~"Market Manual 4.3: Real-Time Scheduling of the Physical Markets",~~**MM 4.3**, the test will be deemed a success.

---

[8] *Bid* quantity means a statement of the quantity in the *day-ahead market* and the *real-time energy market,* greater than 1 MW, entered by a *capacity market participant* for an HDR *resource* to fulfill a *capacity obligation* availability requirement.

- Failure of the test will result in the applicable charges as specified in Market Manual 5.5: Physical Markets Settlement Statements.

If a *capacity import resource* is unable to comply with the test activation of the *auction capacity* on the *dispatch day*, it is the responsibility of the *capacity market participant* to notify the *IESO*, and update the *energy offers* in accordance with ~~"Market Manual 4.2: Submission of Dispatch Data in the Real-Time Energy and Operating Reserve Markets".~~**MM 4.1**. A subsequent test activation will be rescheduled by the *IESO* following the completion of the *outage*.

The *IESO* may determine a test activation for a *capacity import resource* is not required if all the following criteria are met~~. The~~:

- the *capacity import resource* receives and follows sufficient *dispatch instructions* in the *energy market*,

- the *dispatches* are within the *availability window*, and

- the *capacity import resource* demonstrates that its *capacity obligation* has been met.

Failure of a *capacity import resource* to perform a successful test activation may result in one or more of the following:

- non-performance charges as specified in Market Manual 5.5: Physical Markets Settlement Statements;

- a subsequent test activation to be scheduled by the *IESO*;, or

- a compliance investigation to be performed by the *IESO*.

5.4   Measurement Data Audit

The *IESO* conducts audits to assess and verify the completeness and accuracy of submitted *demand response* measurement data, and supporting information and documents including but not limited to the Local Distribution Company billing statements, and Single Line Diagrams. The audit procedures and processes described herein are specific to the Virtual C&I HDR *resources*.

5.4.1.   Capacity Market Participant's Responsibilities

This section covers the *capacity market participants'* responsibilities associated with performing measurement data audits.

The *capacity market participant* is responsible for:
- providing the *IESO* auditor with access to the information required;

- submitting information and evidence requested; and

- payment of non-performance charges, as outlined in section 6, if the audit requirements are not met

5.4.2. Virtual C&I HDR Resource Audit

Virtual C&I HDR *resource* audit will be conducted by evaluating each *demand response contributor* that is mapped to the selected Virtual C&I HDR *resource*. The *IESO* will establish audit results by conducting a review of the supporting information provided at the time of registration and documentations provided during the audit including Local Distribution Company (LDC) billing statements, and individual *demand response contributor* measurement data for the respective virtual C&I HDR *resource*. All processes related to the virtual C&I HDR *resource* audit will be managed through the Online IESO.

5.4.3. Audit Scheduling and Submission of Supporting Documents

The Virtual C&I HDR *Resource* audit can be categorized as follows:

- Full Audit

  - *Capacity market participants* are required to submit all required documents for all *demand response contributors*.

- Partial Audit

  - a spot check to evaluate and compare *meter* data interval(s) for one or more *demand response contributor*s against their respective LDC interval *meter* data; or

  - a manual selection of a set of *demand response contributor*s from a portfolio. In case of a manual selection, *capacity market participant* is required to submit all required documents for the selected *demand response contributor*s.

The default deadline is set to one calendar month from the date of issuance for the submission of all required supporting documentation:

5.4.3.1. Local Distribution Company Billing Statement

The *capacity market participants* are required to provide to the *IESO* a copy of Local Distribution Company (LDC) billing statement for all the *demand response contributor*s registered under the *capacity market participant's* portfolio. This information will be used by the *IESO* auditor to verify:

- the LDC account number with the information found in the *meter* registry; and

- the total energy presented on the LDC statement against the *meter* data file submitted for the individual *demand response contributor*.

5.4.3.2. Measurement Data

The *capacity market participants* are required to provide the *IESO* with individual *demand response contributor meter* data as explained in section 5.3.2. The *IESO* auditor will assess the following criteria at the time of audit:

- the participant is available to curtail its load on *business days* and hours during an *obligation period* as defined in this manual.

- the participant has submitted measurement data[9] for the audit month and an additional two months of baseline.

- actual measurement data[10] meets the criteria defined in section 5.4.4 of the document.

5.4.4.   Procedure to Conduct a Virtual C&I HDR Audit

The Virtual C&I HDR audit consists of two steps:

1. Step 1 of the audit reconciles actual *demand response contributor* measurement data to the *demand response contributors* LDC billing statement

2. Step 2[11] of the audit reconciles the sum of the *demand response contributor's* actual measurement data to the submitted measurement data (this is the measurement data provided by the *capacity market participant* during activation months in accordance with the *demand response* measurement data submission timelines).

5.4.4.1. Mechanism for Step 1 of the Audit Process

To determine the error in Step 1 of the audit process; the sum total of the actual measurement data file for a single contributor is compared against the total monthly consumption indicated in the LDC billing statement for that contributor. The difference between the two values shall be within 1% of the consumption indicated in the LDC statement.

Step 1 of the audit process consists of two individual reconciliation checks

1. Comparing the total kWh (energy) for a given month – Area under the curve

2. Comparing the highest kW (Power) value – Peak Demand

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[9] Submitted measurement data refers to the monthly data submissions for the *demand response resource* in accordance with the *demand response* submission timelines.

[10] Actual contributors' measurement data refers to the individually submitted Contributor Data through the DR Audit task in Online IESO.

[11] If a partial audit is conducted, the actual measurement data will only be assessed using Step 1 of the audit process.

These reconciliation checks verify the contributor's data against the total monthly consumption and the peak demand indicated on the LDC statement. However, these reconciliation checks do not provide adequate assurance that the data will reconcile on an interval by interval basis. As such, the *IESO* at its discretion, may request the *capacity market participant* to provide ~~5 min~~five-minute **LDC interval data** with a declaration stating that the data has been collected from the LDC. This data will then be compared against the data provided by the *capacity market participant* as part of the audit request. An audit can be deemed as "Complete with Observations" if the intervals from the submitted measurement data are outside the +/-1% threshold when compared to intervals from the LDC verified ~~5 min~~five-minute interval *meter* data.

5.4.4.2. Mechanism for Step 2 of the Audit Process

The *IESO* uses **Absolute Error Methodology** to determine the error in Step 2 of the audit process. The methodology is described below:

1. At the time of the audit of a *resource*, the aggregator is required to submit actual *meter* data for each contributor that makes up that *resource*.

2. The actual data is then compared to the submitted measurement data on a five-minute interval basis.

3. An absolute difference between the actual measurement data and submitted measurement data is taken.

4. Sum of the absolute difference is compared against the sum of the submitted measurement data.

5. This sum of the absolute difference should be within 1% of the summed submitted measurement data.

5.4.5.   Audit Review and Remedial Actions

The *IESO* will review supporting documents submitted by the *capacity market participant* for completeness and accuracy. If the review produces any findings, the *capacity market participant* shall be required to submit remedial evidence within the prescribed period as per the audit outcome. If findings are not resolved after one resubmission, the *IESO* shall close the audit with observations and determine a course of action in order to enforce compliance.

5.4.6.   Closure of Audit

(MR Ch.9 ss.4.7J)

Once the review of the submitted evidence is complete, the *IESO* will disclose the audit results to the *capacity market participant* and close the audit as follows:

1. Virtual C&I HDR *Resource* audit is considered 'Complete' when:

    a. Contributors actual measurement data reconciles with associated LDC billing statement (tolerance of +/- 1%); and

    b. Sum of actual measurement data reconciles with submitted measurement data (tolerance of +/- 1%)

2. A Virtual C&I HDR Resource audit is 'Closed with Observations' when it is concluded that actual measurement data and supporting documentation differs from submitted measurement data and supporting documentation (~~Ch. 9 s.4.7J.4)~~ i.e. that the audit reveals that data was outside the prescribed threshold in either Step 1 or Step 2 of the audit process).

– End of Section –

6.   Settlements

Capacity market participants with *capacity obligations* will be *settled*, for both payments and non-performance charges, using the *physical markets settlement process* as detailed in Market Manual 5.5: Physical Markets Settlement Statements. Details on how the costs will be recovered are also provided in Market Manual 5.5.

Capacity market participants will be paid availability payments as detailed in Market Manual 5.5. Applicable non-performance charges will apply when *energy market* participation requirements outlined in this manual are not met.

In general, non-performance charges occur for the following situations:

  i.   availability requirements are not met (i.e. availability charge);

  ii.   measurement data submission was not accurate, timely or complete (i.e. administration charge);

  iii. *dispatch instructions* were not followed (i.e. *dispatch* charge); and

  iv.   failing a test activation (i.e. capacity charge).

Non-performance charges will be calculated and settled as detailed in Market Manual 5.5.

6.1   Non-Performance Factors

The non-performance factors referenced in Market Manual 5.5 will use the factors listed in the table below for settling each *capacity obligation* for the month that is being settled.

Table 6-1: Non-Performance Factors

Month	Factor
January	2.0
February	2.0
March	1.5
April	1.0
May	1.0
June	1.5
July	2.0

Month	Factor
August	2.0
September	2.0
October	1.0
November	1.0
December	1.5

– End of Section –

7.   Buy-out Process

Successful *capacity auction participants* and *capacity market participants* have the option to buy-out of their *capacity obligations* at any time. A full or partial buy-out may be requested anytime during the *forward period* or the *obligation period*. The buy-out will be valid from the effective date of the buy-out request until the end of the associated *obligation period*. The effective date will be no sooner than the two *business days* following the date that the *IESO* receives the request to buy-out. Upon *IESO's* acceptance of a buy-out request, a buy-out charge will apply and is settled using the *physical markets settlement process* for the next available month-end *preliminary settlement statement*. Participants may refer to Market Manual 5.5: Physical Markets Settlement Statements for details on how the buy-out charge is calculated prior to initiating the buy-out process.

In order to initiate a buy-out, a written request must be submitted to the *IESO* by the registered *capacity auction* contact via email to: customer.relations@ieso.ca.

The email must contain the following information for each *capacity obligation* the participant requests to buy-out from:

- *capacity obligation* ID;

- effective date of the buy-out request[12];

- buy-out *obligation period*: Specify the *obligation period* the buy-out is being requested for;

- buy-out zone;

- *capacity auction resource*; and

- buy-out capacity: Specify the capacity of the buy-out request in MW. In the case of a partial buy-out request, the remaining *capacity obligation* must be greater than or equal to 1 MW. In the case of a full buy-out request, the remaining *capacity obligation* must be 0 MW.

The *IESO* will process the buy-out request within seven *business days.* At the end of this review period, the *IESO* will either:

a. Approve the buy-out request: The *IESO* will notify the participant of the applicable buy-out charge.

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[12] For a *capacity market participant* that has not registered a *resource* in the *energy market* for a *capacity obligation*, the effective date of the buy-out request must be specified as the first day of the associated *obligation period*.

- o If the participant has requested for a partial buy-out, the *IESO* will notify it of the revised *capacity obligation*.

- o If the participant has requested a full buy-out of all its *capacity obligations*, the *IESO* will refund its pre-auction deposit amount within ten *business days* after the *IESO* has received payment for the buy-out charge.

- o If the *capacity prudential support obligation* is revised downward due to a buy-out, the *IESO* will refund the difference after the *IESO* has received the payment for the buy-out charge. The revised *capacity prudential support obligation* will be based on the revised *capacity obligation*.

OR

b. Reject the buy-out request: The *IESO* will provide a reason for rejection.

– End of Section –

8.   Capacity Obligation Transfer

Capacity auction participants and *capacity market participants* may transfer their *capacity obligations* fully or partially. Once approved by the *IESO*, the *capacity obligation* transfer will be effective as of the first day of the associated *obligation period* and will be valid for the entirety of that *obligation period*.

A *capacity transferor* may request a full or partial *capacity obligation* transfer during the *forward period*, provided such request is made no later than 14 *business days* prior to the start of the *obligation period*.

In order to initiate a *capacity obligation* transfer, a request must be submitted to the *IESO* using Online IESO by the *capacity transferor*. A separate request must be submitted for each *capacity obligation* and contain the following information:

Capacity obligation ID and associated *capacity auction resource* belonging to the *capacity transferor*;

The name of the *capacity transferee*;

- The capacity (in MW) of the transfer request. For both transferee and transferor, the respective resulting *capacity obligations* cannot be between 0 and 1 MW (but, for greater certainty, can be 0 MW and can be equal to or greater than 1 MW); and

- The *obligation period* for which the transfer is being requested;

The request will not be considered by the *IESO* until the *IESO* receives, via Online IESO, confirmation from the *capacity transferee* that it accepts the new/additional *capacity obligation (*only when the *capacity transferor* and the *capacity transferee* are not the same *capacity auction participant)* and the name of the *capacity auction resource* that will accept the *capacity obligation.* If a *capacity auction participant* or a *capacity market participant* intends to submit multiple partial transfer requests in relation to a single *capacity obligation,* only one transfer request may be submitted at a time. The first request submitted must be approved by the *IESO* before the second request can be submitted.

The *IESO* will assess each *capacity obligation* transfer request in the order received by the *IESO* and determine whether the *capacity obligation* transfer request meets the criteria stipulated in ~~Chapter~~ **MR Ch.**7~~, Section~~ **ss.**18.9 ~~of the~~ *~~market rules~~*. These criteria include satisfying any revised *capacity prudential support obligation* or *capacity auction deposit*, as applicable:

- A revised *capacity prudential support obligation* is required if the *capacity obligation* to be transferred will be satisfied by the *capacity transferee's* existing resource that is registered to meet a *capacity obligation* for the same *obligation period* and for which sufficient *capacity prudential support*, prior to the transfer, has been posted, otherwise;

- A revised *capacity auction deposit* is required.

In either case, the *capacity transferee* must satisfy any revised *capacity prudential support obligation* (as specified in ~~Section~~ **MM 5.4 ss.**1.3.8 ~~of Market Manual 5.4~~), or the revised *capacity auction deposit* (as specified in ~~Section~~section 3.4), within five *business days* of receiving notification from the *IESO* of such requirement, or such longer period as agreed upon between the *IESO* and the *capacity transferee*. The *IESO* will notify the *capacity transferee* of any additional *capacity auction deposit* or *capacity prudential support obligation*, as required.

After all criteria are assessed, the *IESO* will approve or reject the *capacity obligation* transfer. If rejected, the *IESO* will provide a reason for rejection to both the *capacity transferor* and the *capacity transferee*.

If approved, the *IESO* will notify the *capacity transferor* and the *capacity transferee*. If the *capacity transferor* has requested a partial transfer, the *IESO* will notify the *capacity transferor* of the revised *capacity obligation*.

A *capacity transferee* who acquires a *capacity obligation* as a result of a transfer from a different zone will be settled based upon the *capacity auction clearing price* received when that first originally cleared the *capacity auction* (i.e. the original zone). The revised *capacity auction clearing price* will be included in the participant's confidential post-auction auction report. For example, a *capacity auction participant* receives a *capacity obligation* of ~~25MW~~25 MW in a *capacity auction* at a *capacity auction clearing price* of $100/MW-day. If the *capacity auction participant* accepts a *capacity obligation* transfer for an additional *auction capacity* of 50MW for the same *capacity auction resource* via a transfer from another zone where the *capacity auction clearing price* is $40/MW-day, the revised c*apacity obligation* for the *capacity auction resource* will be ~~75MW~~75 MW. Its revised (blended) *capacity auction clearing price* will be $60/MW-day, calculated from [(25 x $100) + (50 x $40)] ÷ 75 = $60/MW-day.

Upon completion of a successful transfer, the *capacity transferor* may request to reduce its *capacity auction deposit*, if applicable, as specified in section 3.4.

– End of Section –

Appendix A: Template for Demand Response Residential Contributor Management Registration

This template is available in Online IESO under residential contributor management:

Contributor Address	LDC Name	LDC Account#	Control Group Flag (Y/N)
(Street # & Name, City, Province, Postal Code)			
e.g. 123 Street Ave, Toronto, ON, L5C 2B3			

– End of Section –

Appendix B: Template for Measurement Data Control Sheet

This template is available in Online IESO.

Resource ID	Contributor ID	Contributor Name	Commitment Month	Time Interval for which data was estimated

– End of Section –

References

Document ID & Link	Document Title
MDP_RUL_0002	Market Rules for the Ontario Electricity Market
IMP_GDE_0088	Market Manual 1.3: Identity Management Operations Guide
PRO-408	Market Manual 1.5: Market Registration Procedures
MDP_PRO_0027	Market Manual 4.~~2~~1: Submission of Dispatch Data in the Physical Markets
IMP_PRO_0034	Market Manual 4.3: Real-Time Scheduling of the Physical Markets
MDP_PRO_0045	Market Manual 5.4: Prudential Support
MDP_PRO_0033	Market Manual 5.5: Physical Markets Settlements Statements
IMP_PRO_0035	Market Manual 7.3: Outage Management
~~IESO_MAN_0077~~	~~Market Manual 9.2: Submitting Operational and Market Data for the DACP~~

– End of Document –