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Market Manual 12: Capacity Auctions

Part 12.0: Capacity Auctions

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November 11. 2024

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

Document Change History

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Table of Contents

Table of Contents ..... **i**
List of Figures ..... **iv**
List of Tables ..... **iv**
Table of Changes ..... **v**
Market Transition ..... **vi**
Market Manual Conventions ..... **vii**
1 Introduction **1**
1.1 Purpose 1
1.2 Scope 2
1.3 Who Should Use this Market Manual 2
1.4 Applicability 2
1.5 Contact Information 3
2 Capacity Auction Overview **4**
2.1. Capacity Auction Process 4
2.2. Capacity Auction Timelines 4
2.3. Commitment Periods and Obligation Periods 6
2.4. Availability Window 6
2.5. Demand Curve Elements 7
2.5.1. Target Capacity 8
2.5.2. Capacity Auction Reference Price 8
2.5.3. Maximum and Minimum Auction Clearing Price 8
2.5.4. Capacity Limits 8
2.6. Zonal Constraints 9
2.7. Capacity Import Constraints 9
3 Pre-Auction Requirements **11**
3.1. Pre-Auction Reporting Obligations 11
3.2. Pre-Auction Authorization Process 12
3.3. Capacity Qualification 12
3.3.1 Capacity Qualification Request Submission 13
3.3.2 Capacity Qualification Assessment 16
3.4. Capacity Auction Deposit 20
3.4.1 Capacity Auction Deposits by Cash 21
3.4.2 Releasing Capacity Auction Deposits 21
4 Auction Mechanics **23**

4.1. Stage 1: Offer Submission and Validation 23
4.2. Stage 2: Auction Clearing 24
4.3. Stage 3: Post-Auction Reporting Obligations 26
5 Post-Auction Requirements 28
5.1. Participant Authorization 28
5.1.1 Prudential Support 28
5.2 Registration Requirements 28
5.2.1 Physical Demand Response Resource 30
5.2.2 Virtual Demand Response Resource 30
5.2.3 Contributor Management 31
5.3 Energy Market Participation 36
5.3.1 Outage Management / Non-Performance Events 36
5.3.2 Demand Response Contributor Outages 36
5.3.3 Measurement Data Submissions for Virtual C&I Hourly Demand Response Resources 37
5.3.4 Measurement Data Submissions for Virtual Residential hourly demand response Resources 39
5.3.5 Testing of Capacity Auction Resources 42
5.4 Measurement Data Audit 55
5.4.1 Capacity Market Participant's Responsibilities 56
5.4.2 Virtual C&I Hourly Demand Response Resource Audit 56
5.4.3 Audit Scheduling and Submission of Supporting Documents 56
5.4.4 Procedure to Conduct a Virtual C&I Hourly Demand Response Resource Audit 57
5.4.5 Audit Review and Remedial Actions 59
5.4.6 Closure of Audit 59
6 Settlements 60
6.1 Non-Performance Factors 60
7 Buy-out Process 62
8 Capacity Obligation Transfer 65
Appendix A: Template for Demand Response Residential Contributor Management Registration 68
Appendix B: Template for Measurement Data Control Sheet 69
Appendix C: Template for Generator-Backed Capacity Import Resource Test Activation Data Submission 70
Appendix D: Attestation for Capacity Auction Eligible Generation Resource 71
Appendix E: Attestation for Capacity Auction Eligible Storage Resource 72

Appendix F: Attestation for System-backed Capacity Auction Eligible Import Resource 73

Appendix G: Attestation for Generator-backed Capacity Auction Eligible Import Resource 74

References 75

List of Figures

Figure 2-4: Downward Sloping Demand Curve 7
Figure 4-1: Capacity Auction Mechanics Overview 23
Figure 4-2: Auction Selection Process with Zonal Limits 25
Figure 5-1: Randomized Control Trials (RC) Performance Evaluation 36
Figure 5-2: Sample CSV File Format for Measurement Data Submission for C&I hourly demand response 39
Figure 5-3: Sample CSV File Format for Measurement Data Submission for Residential Hourly Demand Response Resource 40

List of Tables

Table 3-1: Additional Information Required for Qualification Request Submission by Capacity Auction Resource Type 14
Table 3-2: Availability De-Rating Factor by Capacity Auction Resource Type 17
Table 3-3: e Adjustment Factor Calculation 19
Table 5-1: Testing Procedure by Capacity Auction Resource Type 42
Table 5-2: Capacity Test Performance Parameters by Capacity Auction Resource Type 45
Table 5-3: Capacity Test Performance Parameters for Generator-backed Capacity Import Resource 52
Table 6-1: Non-Performance Factors 60

Table of Changes

Reference (Section and Paragraph)	Description of Change
Sections 3.3.1, 3.3.2, 3.4, 4.1, 5.2	Added the process to participate with a new *capacity dispatchable load* in addition to a physical *hourly demand response resource*
Sections 3.4.2, 7	Added process for instances where the *IESO* has applied a buy-out pursuant to MR Ch. 7, ss. 18.4.4
Section 5.3.5.1	Added *system-backed import resources* to the self-scheduled test framework with other *capacity auction resource* types. Removed previous *capacity auction capacity test* section for *system-backed import resources.*
Sections 7, 3.4	Moved process for returning *capacity auction deposit* after the completion of a buy-out from section 7 to section 3.4

Market Transition

A.1.1 This *market manual* is part of the *renewed market rules,* which pertain to:

A.1.1.1 the period prior to a *market transition* insofar as the provisions are relevant and applicable to the rights and obligations of the *IESO* and *market participants* relating to preparation for participation in the *IESO administered markets* following commencement of *market transition;* and

A.1.1.2 the period following commencement of *market transition* in respect of all the rights and obligations of the *IESO* and *market participants.*

A.1.2 All references herein to chapters or provisions of the *market rules* or *market manuals* will be interpreted as, and deemed to be references to chapters and provisions of the *renewed market rules.*

A.1.3 Upon commencement of the *market transition*, the *legacy market rules* will be immediately revoked and only the *renewed market rules* will remain in force.

A.1.4 For certainty, the revocation of the *legacy market rules* upon commencement of *market transition* does not:

A.1.4.1 affect the previous operation of any *market rule* or *market manual* in effect prior to the *market transition*;

A.1.4.2 affect any right, privilege, obligation or liability that came into existence under the *market rules* or *market manuals* in effect prior to the *market transition*;

A.1.4.3 affect any breach, non-compliance, offense or violation committed under or relating to the *market rules* or *market manuals* in effect prior to the *market transition*, or any sanction or penalty incurred in connection with such breach, non-compliance, offense or violation; or

A.1.4.4 affect an investigation, proceeding or remedy in respect of:

(a) a right, privilege, obligation or liability described in subsection A.1.4.2; or

(b) a sanction or penalty described in subsection A.1.4.3.

A.1.5 An investigation, proceeding or remedy pertaining to any matter described in subsection A.1.4.3 may be commenced, continued or enforced, and any sanction or penalty may be imposed, as if the *legacy market rules* had not been revoked.

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.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.18.1**). 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*.

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

- authorization as a *capacity auction participant*;
- submission of a *capacity qualification request* to determine a *capacity auction resource's unforced capacity*
- submission of a *capacity auction deposit*;
- submission of *capacity auction offers* by *capacity auction participants*;
- processing of submitted *capacity auction offers* by the *IESO* and determining *capacity obligations*;
- reporting of auction results and *capacity* obligations by the *IESO*;
- *energy market participation* requirements by *capacity market participants*;
- testing of *capacity auction resources* by the *IESO*; and
- *settlement process* applicable to *capacity obligations* and *capacity prudential support obligations*.

In support of these aspects, this *market manual* details the conditions, actions, and timelines specific to the *capacity auction* by *market participants* and the *IESO*. This *market 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.*

1.2 Scope

This *market manual* supplements the following *market rules*:

- MR Ch.1 s.13.3: Force Majeure
- MR Ch.2 s.2: Classes of Market Participants
- MR Ch.2 s.5B: Capacity Prudential Requirements
- MR Ch.7 s.7.5: Compliance with Dispatch Instructions
- MR Ch.7 s.18: Capacity Auctions
- MR Ch.7 s.19: Capacity Market Participants with Capacity Obligations
- MR Ch.9 s.4.13: Capacity Obligations
- MR Ch.9 App.9.2: Data Inputs and Variables

1.3 Who Should Use this Market Manual

The Capacity Auctions *market 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 qualify their *auction capacity* ahead of *capacity auction*;
- *capacity auction participants* seeking to submit *capacity auction offers* into the *capacity auction*;
- *capacity market participants* seeking to register *facilities* and associated *capacity auction 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 s.18.1A)

Pursuant to **MR Ch.7 s.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 **MR Ch.7 ss.18.1A.3** and **18.1A.1.1** that expressly exclude the application of **MR Ch.7ss.18.1A.1** and **18.1A.2**). The versions of the *market 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* except as provided by **MR Ch.7 ss.18.1A.3** and **18.1A.1.1** .

Market participants consulting this *market manual* must verify that they are consulting the version of the *market 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 Capacity Auction Rules 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. Stakeholders are encouraged to participate in the evolution of this *market manual* via this process.

To contact the *IESO*, *market participants* 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. *IESO* Customer Relations staff will respond as soon as possible.

– End of Section –

2 Capacity Auction Overview

Capacity auctions acquire *auction capacity* for one *capacity auction 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:

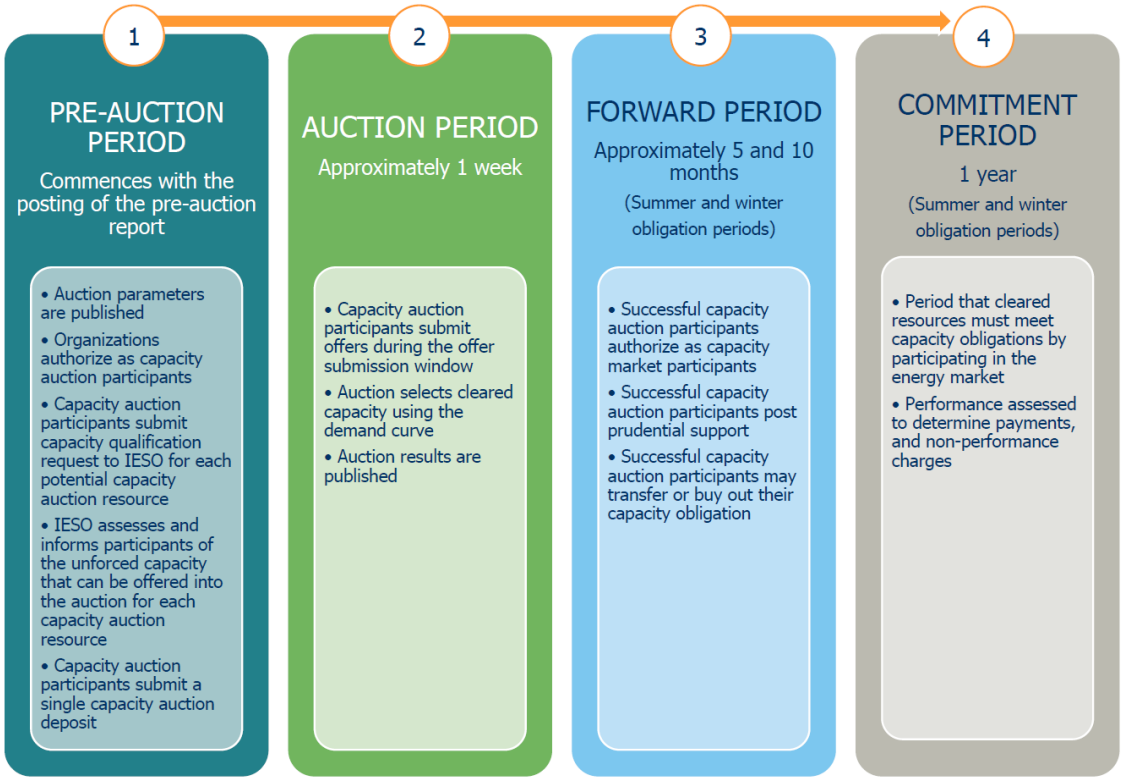

Figure 2-1: Capacity Auction Process

2.2. Capacity Auction Timelines

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

- The *IESO* will *publish* a pre-auction report prior to the start of the *capacity qualification request* submission window for the *capacity auction.*

- Any person intending to participate in the *capacity auction* must complete their authorization as *capacity auction participants* in advance of initiating a *capacity auction*, the *capacity qualification assessment* window as specified in the pre-auction report.
- *Capacity auction participants* are required to submit a *capacity qualification request* during the *capacity qualification request* submission window, and identify each potential *capacity auction resource* and its corresponding *installed capacity* (*ICAP*).
- The *IESO* will complete a capacity qualification assessment to determine the *unforced capacity* of each potential *capacity auction resource,* and will notify the *capacity auction participant* of this value at the end of the capacity qualification assessment window as specified in the pre-auction report.
- *Capacity auction participants* are required to submit the *capacity auction deposit* by 16:00 EST 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 *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 *offer* submission window.
- The *IESO* will process all submitted *capacity auction offers,* determine *capacity auction* clearing prices and quantities, and prepare and *publish* both the public and confidential post-auction reports by 16:00 EST, four *business days*, following the day on which the *offer* submission window closes.

2.3. Commitment Periods and Obligation Periods

The *capacity auction commitment 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 market* and the *real-time 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 beginning three *business days* following the *IESO* publishing the auction results, 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*.

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 seasonal demand curves, and will therefore have their own *capacity auction clearing prices* and quantities. *Capacity auction participants* will receive a separate *capacity obligation* for each *obligation* 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 13 to Hour Ending 21) and the winter *availability window* will consist of *business days* from 16:00 to 21:00 EST (Hour Ending 17 to Hour Ending 21).

All *capacity market participants* with a *capacity obligation* will receive an availability payment associated with their *capacity obligation(s).* Availability payments may be offset with non-performance charges in accordance with ~~**MM 5.5**~~ **MR. Ch.9 ss.4.13** during the associated *obligation period*.

2.5. Demand Curve Elements

(MR Ch.7 s.18.5.2)

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;*
- *Capacity auction reference* price;
- A maximum and minimum *capacity auction clearing price;* and
- 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.

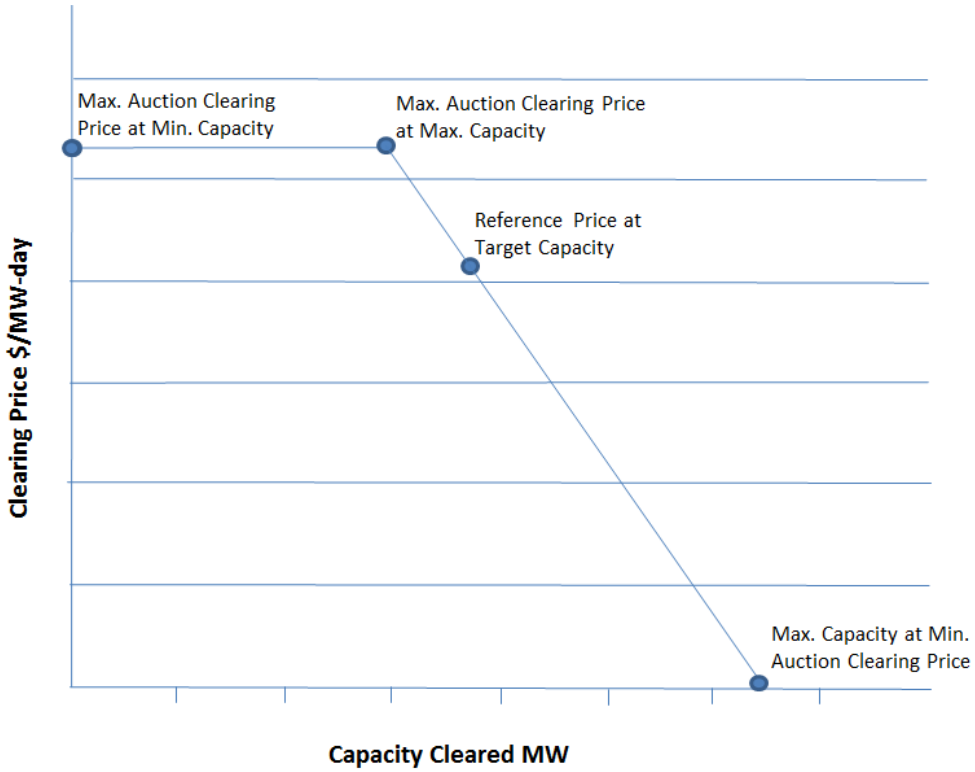

Figure 2-4: Downward Sloping Demand Curve

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 s.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.

2.5.2. Capacity Auction Reference Price

(MR Ch.7 s.18.5.2)

The *capacity auction reference price* for each *obligation period* shall be *published* by the *IESO* in the pre-auction report.

2.5.3. Maximum and Minimum Auction Clearing Price

(MR Ch.7 s.18.5.2)

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 1.5 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 s.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 *capacity 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.

2.6. Zonal Constraints

(MR Ch.7 s.18.5.3)

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 electrical zone.

Each electrical 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 *hourly demand response* resources) that can be acquired. This limit will not set the zonal *capacity auction clearing price*.

A set of *capacity auction zonal constraints* will also be defined for groups of electrical zones that are located behind a single limiting transmission interface. These include:

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

The *capacity auction* will establish an Ontario-wide *capacity auction clearing price* in addition to 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 *electricity* systems may be used to acquire *auction capacity* for the *capacity auction.* The *IESO* will establish maximum *capacity import* constraints that can be

cleared in the *capacity auction.* These constraints apply to *system-backed capacity import resources* and *generator-backed capacity import resources.*

Capacity auction offers associated with eligible *system-backed capacity import resources* and *generator-backed capacity import resources* will clear the *capacity auction* subject to the following constraints:

- maximum amount of *auction capacity* that may be provided by the combination of *system-backed capacity import resources* and *generator-backed capacity import resources.* When this constraint is binding it will not determine the *capacity auction clearing price*; and
- maximum amount of *auction capacity* that may be provided by all *system-backed capacity import resources* or *generator-backed capacity import resources* at each external interface. When this constraint is binding it will not determine the zonal *capacity auction clearing price* or zone group *capacity auction clearing price.*

System-backed capacity import resources and *generator-backed capacity import resources* will be subject to the *capacity auction 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 either *system-backed capacity import resources* or *generator-backed capacity import resources,* and the *capacity auction resources* located within the *electrical zone* the interface borders. The *IESO* shall *publish* capacity import constraints in the pre-auction reports.

– End of Section –

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 requirements.

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 also participant authorization, capacity qualification, and *capacity auction deposit* requirements for *market participants* who wish to participate in the *capacity auction,* as further explained below.

3.1. Pre-Auction Reporting Obligations

(MR Ch.7 ss.18.5.2 and 18.5.4)

Prior to the *capacity auction*, the *IESO* shall *publish* a pre-auction report for both *obligation periods* that includes the reference points listed in **MR Ch.7 s.18.5.2**, as well as:

- *Capacity auction zonal constraints* for each electrical zone, and groups of zones as explained in section 2.6 of this *market manual*; and
- capacity import constraints as explained in section 2.7.
- eligible external interfaces for use by *system-backed capacity import resources* and *generator-backed capacity import resources*

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

- the dates for *capacity auction participants* to submit a *capacity qualification request*;
- the date by which the *IESO* will notify *capacity auction participants* of the *unforced capacity* of their potential *capacity auction resource*;
- the date by which *capacity auction participants* must post a *capacity auction deposit*;
- 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.18.5.4**); 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 s.2.1.1)

All prospective participants who wish to participate in the *capacity auction* are required to authorize as *capacity auction participants* 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 section 5.1. Market authorization processes are further detailed in **MM 1.5**.

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

- *generator*
- *wholesale consumer*
- *energy trader*
- *electricity storage participant*

3.3. Capacity Qualification

(MR Ch.7 ss.18.2A, 18.5.4)

Capacity auction participants who wish to participate in a *capacity auction* shall complete the capacity qualification process for each potential *capacity auction resource.* This process includes

- The submission of a *capacity qualification request* by the *capacity auction participant,* including any additional information that is required based on the *capacity auction resource* type as outlined in section 3.3.1*,* and;
- The capacity qualification assessment by the *IESO* to determine the potential *capacity auction resource's unforced capacity* that can be *offered* into a *capacity auction*.

Each potential *capacity auction resource* will represent a single *resource* according to the registration procedures described in **MM 1.5**.

A *capacity auction participant* may revise a *capacity qualification request* up until the *capacity qualification request* submission window closes~~,~~ and may withdraw a *capacity qualification request* up until the capacity qualification assessment window closes, per the timelines detailed in the pre-auction report. Both actions are completed in Online IESO[1].

[1] Online IESO is an online tool for *market participants* to submit data to the *IESO*; accessible at Online IESO.

For greater certainty, any person who is not an authorized c*apacity auction participant* may not submit a *capacity qualification request.*

3.3.1 Capacity Qualification Request Submission

(MR Ch.7 s.18.2.1)

Prior to the deadline specified in the pre-auction report, *capacity auction participants* wishing to participate in an upcoming *capacity auction* are required to submit to the *IESO*, via Online IESO, the following information in order to complete the *capacity qualification request*:

- The *ICAP* of each potential *capacity auction resource* for each *obligation period*.
    - For *generator-backed capacity auction eligible import resources,* the ICAP must be provided for each *generator-backed import contributor*
    - For *capacity auction eligible storage resources* and *generator-backed import contributors* that are *storage facilities,* the *ICAP* will be determined using additional information provided by the *capacity auction participant* as outlined in Table 3-1
- 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* that will satisfy a *capacity obligation* during the *capacity auction commitment period.*

If a *capacity auction participant* is qualifying a new *capacity dispatchable load resource,* in addition, they may also qualify a physical *hourly demand response resource.* The physical *hourly demand response resource* may be used in the event that the registration requirements applicable to the new *capacity dispatchable load resource* cannot be met, as detailed in section 5.2.

Additional information is required for each *capacity auction resource* type, as specified in Table 3-1.

Table 3-1: Additional Information Required for Qualification Request Submission by Capacity Auction Resource Type

Capacity Auction Resource Type	Additional Information Required
Capacity generation resources	• The *facility* and associated *resource* that will satisfy the *capacity obligation* • A signed attestation acknowledging that the *generation resource* that will satisfy the *capacity obligation* meets the requirements of a *capacity auction eligible generation resource.* This attestation can be found in Attestation for Capacity Auction Eligible Generation Resource
Capacity storage resources	• The temperature-sensitive maximum power rating of the *resource* that can be sustained for 1 hour (Full Power Operating Mode) • The temperature-adjusted maximum amount of *energy* in MWh (Energy Rating), that the *resource* is capable of delivering when it is fully charged ◦ These two variables will be used to determine the *ICAP* of the *capacity storage resource* using the following formula: • $\text{ICAP} = [\min(\text{Full Power Operating Mode}, \frac{\text{Energy Rating}}{\text{4 hours}})]$ • The *facility* and associated *resource* that will satisfy the *capacity obligation* • A signed attestation acknowledging that the *electricity storage resource* that will satisfy the *capacity obligation* meets the requirements of a *capacity auction eligible storage resource.* This attestation can be found in Attestation for Capacity Auction Eligible Storage Resource
Capacity dispatchable load resources	• The *facility* and associated *resource* that will satisfy the *capacity obligation* • If there is no *facility,* the zonal location of the potential *capacity dispatchable load resource.* Participants may choose from the ten electrical zones to submit *capacity auction offers*
System-backed capacity import resources	• The external interface that will be used to deliver the *auction capacity* • A signed attestation acknowledging that the eligibility requirements associated with a *system-backed capacity auction eligible import resource* have been met • This attestation can be found in Attestation for System-backed Capacity Auction Eligible Import Resource
Generator-backed capacity import resources	• The external interface that will be used to deliver the *auction capacity* • A signed attestation acknowledging that the eligibility requirements associated with a *generator-backed capacity auction eligible import resource* have been met. This

Capacity Auction Resource **Type**	**Additional Information Required**

	attestation can be found in Attestation for Generator-backed Capacity Auction Eligible Import Resource
	• Proof of deliverability to the Ontario border in one of the following forms:
	  • For *generator-backed capacity auction eligible import resources* located within the New York Independent System Operator (NYISO) *control area*, proof that the resource holds Capacity Resource Interconnection Service (CRIS) status;
	  • For *generator-backed capacity auction eligible import resources* located within the Hydro Quebec *control area*, confirmation of firm transmission service from the transmission operator, or;
	  • For *generator-backed capacity auction eligible import resources* located within any *control area*, proof of ownership of a direct transmission line to the Ontario border
	
	For each *generator-backed import contributor* that is an *electricity storage unit*, the following must be submitted:
	
	• The temperature-sensitive maximum power rating of the *resource* that can be sustained for 1 hour (Full Power Operating Mode)
	• The temperature-adjusted maximum amount of *energy* in MWh (Energy Rating), that the *resource* is capable of delivering when it is fully charged
	  • These two variables will be used to determine the *ICAP* of the *capacity storage resource* using the following formula:
	
	$$\text{ICAP} = [\min(\text{Full Power Operating Mode}, \frac{\text{Energy Rating}}{4 \text{ hours}})]$$
	
	• Resource name
	• Resource ID (i.e. the unique numeric identifier for the *generation facility* as assigned by an external jurisdiction*)*
	• *Elapsed time to dispatch*
	
	For each *generator-backed import contributor* that is a *generation facility*, the following also must be submitted*:*
	
	• Accredited *unforced capacity* rating as provided from an *IESO*-approved external jurisdiction
	• Fuel type
	• *minimum loading point*
	• *Elapsed time to dispatch*
	• Resource name

Capacity Auction Resource **Type**	**Additional Information Required**
	• Resource ID (i.e. the unique numeric identifier for the *generation facility* as assigned by an external jurisdiction)
Hourly demand response (HDR) resources	• The *facility* and associated *resource* that will satisfy the *capacity obligation* • If there is no *facility,* the zonal location of the potential *demand response resource* and/or *demand response contributors* for which they are willing to submit *offers*, the obligation type (physical or virtual) and contributor type (Residential or Commercial & Industrial) • The obligation type (physical or virtual) and *demand response contributor* type (Residential or Commercial & Industrial). Refer to section 5.2.1 for details on submitting *demand response contributor* information in the *forward period* and *obligation period*.

3.3.2 Capacity Qualification Assessment

(MR Ch.7 s.18.2A)

Based on the information provided by the *capacity auction participant* as part of the *capacity qualification request*, the *IESO* will do as follows to assess each potential *capacity auction resource's unforced capacity*:

- ensure that the *capacity market participant* has not been disqualified from *capacity auction* participation as outlined in MR Ch.7*;* and
- determine the *unforced capacity* that each potential *capacity auction resource* can *offer* into the *capacity auction* for the summer and/or winter *obligation periods* using a *resource*-specific calculation as outlined in MR Ch.7*.* This calculation may include applying an *availability de-rating factor* and performance adjustment factor, as applicable*,* and outlined below in this section*.*

Availability De-Rating Factor

Equivalent Forced Outage Rate on Demand ($EFOR_d$)

An $EFOR_d$ is used to calculate the *availability de-rating factor* for *capacity auction eligible generation resources* that are *dispatchable* thermal, and *capacity auction eligible storage resources.* The $EFOR_d$ applicable to each *resource* type shall be calculated in accordance with the *IESO's* Annual Planning Outlook.

Top 200 Hours of Ontario Demand

The top 200 hours of Ontario Demand per season approach is used to assess performance during the roughly 5% of peak hours per year~~,~~ and is used as part of the *availability de-rating factor* for *capacity generation resources* that are *dispatchable* hydroelectric *generation resources*, and *capacity dispatchable load resources*. This sample size is expected to capture an accurate reflection of the *capacity auction resource's* contributions and availability during hours of system peak.

Ontario Demand is determined in accordance with the methodology detailed in ~~section 4.5.2.1 of~~ **MM 5.6 ss. 4.5.2.1**.

Table 3-2: Availability De-Rating Factor by Capacity Auction Resource Type

Capacity Auction Resource **Type**	*Availability De-Rating Factor* **Calculation**
Capacity auction eligible generation resource (*Dispatchable* Thermal)	1- $EFOR_d$ Where: $EFOR_d$ is based on 5 years of historical data. For *capacity generation resources* with less than 5 years of historical data, the $EFOR_d$ will be the median $EFOR_d$ of Ontario's entire thermal generation fleet over the previous 5 year period, excluding Lennox Generating Station.
Capacity auction eligible generation resource (*dispatchable* hydroelectric *generation resources*)	$\text{Median}[\frac{\text{AQEI+RT\_QSOR}}{\text{MAPC}}]$ in Top 200 hours of Ontario Demand per *obligation period* for the last 5 years Where: i. AQEI is the Allocated Quantity of Energy Injected, as defined in **MR Ch.9 Appendix 9.2** ii. RT_QSOR is the Scheduled Quantity of Class r Operating Reserve, as defined in **MR Ch.9 App.9.2** • MAPC is the Maximum Active Power Capability, in MW, under any conditions without *station service* being supplied by the *generation unit* For *capacity auction eligible generation resources* that are *dispatchable* hydroelectric *generation resources* with less than 5 years of historical data, the median value will be calculated using the data of all *dispatchable* hydroelectric *generation resources* located in the electrical zone in which the *capacity auction eligible generation resource* is located. Where there is no *dispatchable* hydroelectric *generation resources* in such electrical zone,

Capacity Auction Resource **Type**	*Availability De-Rating Factor* **Calculation**
	the median value will be calculated using the data of all *dispatchable* hydroelectric *generation resources* in Ontario.
Capacity auction eligible storage resource	1- $EFOR_d$ Where: $EFOR_d$ equals 5%
Capacity dispatchable load resource	$\text{Median}(\frac{\text{hourly } bids \text{ quantity}}{\text{maximum seasonal energy } bid \text{ quantity}})$ in top 200 hours of Ontario Demand per *obligation period* from the most recent complete *obligation period* Where: • 'Hourly *bids* quantity' is the quantity of *energy*, in MW, that was *bid* in the *real-time market* for an hour at an amount less than the *MMCP* • 'Maximum seasonal energy *bid* quantity' is the maximum *bid* quantity, in MW, submitted in the *real-time market* for a given *obligation period* For *capacity dispatchable load resources* without data from the most recent complete *obligation period,* the median value will be calculated using the data of all *capacity dispatchable load resources* in Ontario, excluding Sir Adam Beck Pump Generating Station and *electricity storage resources.*

Performance Adjustment Factor

A *performance adjustment factor* is calculated for each *obligation period* and is based on a *capacity auction resource's* performance in a *capacity auction capacity test* that was conducted in accordance with section 5.3.54. The *capacity auction capacity test* performance that is used by the *IESO* in the calculation of the *performance adjustment factor* will be from the most recent seasonal *obligation period* for which data is available.

The *performance adjustment factor* will be calculated as outlined below.

If a *capacity auction resource* either:

1. Passed the *capacity auction capacity test* in the applicable *obligation period,* or;

2. Was not subject to a *capacity auction capacity test* in the applicable *obligation period*,

The *performance adjustment factor* will be equal to 1. This will result in no impact to the *capacity auction resource's unforced capacity*.

If the *capacity auction resource* failed the *capacity auction capacity test* in the applicable *obligation period,* the *performance adjustment factor* will be calculated in accordance with Table 3-3.

Table 3-3: Performance Adjustment Factor Calculation

Submitted *Installed Capacity (ICAP)*	*Performance Adjustment Factor*
Less than or equal to the PAF ~~=~~ Delivered MW from the most recent applicable seasonal *capacity auction capacity test* Where: PAF Delivered MW is as described in section 5.3.5~~4 of this manual~~	*performance adjustment factor* = 1 This will result in no impact to the *capacity auction resource's unforced capacity*
Greater than or equal to the *cleared ICAP* the *capacity auction resource* was assessed against in the most recent applicable seasonal *capacity auction capacity test*	*Performance adjustment factor* = PAF Delivered MW / Previous *cleared ICAP* Where: PAF Delivered MW is as described in section 5.3.5~~4 of this manual~~ Previous *cleared ICAP* is the *cleared ICAP* the *capacity auction resource* was assessed against in the most recent applicable seasonal *capacity auction capacity test*
Less than *cleared ICAP* the *capacity auction resource* was assessed against in the most recent applicable seasonal *capacity auction capacity test* and greater than the PAF Delivered MW from the most recent applicable seasonal *capacity auction capacity test*	*Performance adjustment factor* = PAF Delivered MW / *ICAP* Where: PAF Delivered MW is as described in section 5.3.5~~4 of this manual~~

Submitted *Installed Capacity (ICAP)*	*Performance Adjustment Factor*
Where: PAF Delivered MW is as described in section 5.3.54 ~~of this manual~~	

If the *performance adjustment factor* calculated pursuant to Table 3-3 is less than 0.75, a *performance adjustment factor* of 0.75 will be applied.

Any *performance adjustment factor* applied will not be reassessed as a result of a measurement data audit conducted pursuant to section 5.4.

If a *capacity auction participant* is qualifying a new *capacity dispatchable load resource* and elected to, in addition, qualify a physical *hourly demand response resource* per section 3.3.1, the *capacity dispatchable load resource* shall adopt the *performance adjustment factor* of the physical *hourly demand response resource,* if applicable.

3.4. Capacity Auction Deposit

(MR Ch.7 ss.18.2.1, 18.3.1, 18.4.1. and 18.4.2)

Following the receipt of the *unforced capacity* from the *IESO,* all *capacity auction participants* wishing to submit *capacity auction offers* into the *capacity auction* are each required to provide to the *IESO* a single *capacity auction deposit.* The submission of the *capacity auction deposit* is confirmed via Online IESO.

The purpose of this deposit is to establish the creditworthiness of the *capacity auction participant* for auction activities. The *capacity 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 that a *capacity auction participant* is required to submit for each *obligation period*, as follows:

Capacity auction deposit = 3% * (total *unforced capacity* * maximum auction clearing price per MW-day) * 125 *business days*

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

If a *capacity auction participant* is qualifying a new *capacity dispatchable load resource* and elected to, in addition, qualify a physical *hourly demand response resource* per section 3.3.1, only a single deposit is required. That deposit will be calculated based on the physical *hourly demand response resource.*

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) * 125 *business days*

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*.

3.4.1 Capacity Auction Deposit~~s by Cash~~ Payment

Capacity auction deposits by cash shall be submitted by *electronic funds transfer* to an *IESO*-designated account. Letters of credit must be submitted to the *IESO* in original hard copy form. The *IESO* will not pay interest on cash deposits.

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 buy-out ~~request~~, the *IESO* will release the *capacity auction deposit* within 10 *business days* of a *capacity auction participant's* request, under the following conditions:

- The *capacity auction participant* elected to be, or was deemed to be in accordance with **MR Ch. 7 s. 18.4.4**, subject to the *capacity obligation* buy-out *settlement amount* and the *IESO* has received payment for such *settlement amount*

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) * 125 *business days*

– End of Section –

4 Auction Mechanics

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

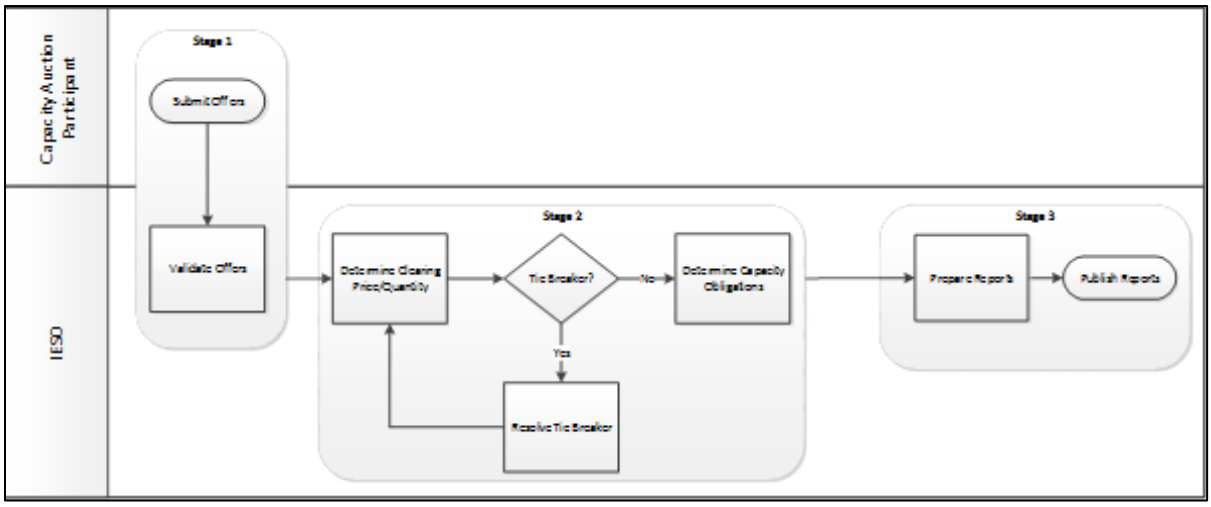

Figure 4-1: Capacity Auction Mechanics Overview

4.1. Stage 1: Offer Submission and Validation

(MR Ch.7 s.18.6.3)

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

Capacity auction participants that qualified a new *capacity dispatchable load resource* and elected to, in addition, qualify a physical *hourly demand response resource* per section 3.3.1, must only submit a *capacity auction offer* for their physical *hourly demand response resource*.

Note: Should the physical *hourly demand response resource* clear the *capacity auction* with a *capacity obligation*, upon completion of the applicable registration activities pertaining to the *capacity dispatchable load resource* during the *forward period* as outlined in section 5.2, the *capacity obligation* may be transferred to the *capacity dispatchable load resource* as outlined in section 7 in advance of the *capacity obligation* transfer deadline.

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 s.18.6.3.2**).

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.

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 s.18.6.3.4**). 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.

4.2. Stage 2: Auction Clearing

(MR Ch.7 s.18.7)

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, per the timelines detailed in section 2.2 .

For each *obligation period*, the *IESO* shall determine the *capacity obligation* for each *capacity auction participant's capacity auction resource* (**MR Ch.7 s.18.7.3**), 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* for a specific

electrical zone, 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*.

When there is a *capacity auction offer* not selected, either partially or in full, due to the total maximum *capacity auction zonal constraint* for a group of electrical zones, the *capacity auction clearing price* for all zones incorporated in that group of zones that haven't reached their individual maximum *capacity auction zonal constraints* will be set at the lesser of:

- the price associated with the next economic quantity from a *capacity auction offer* in the same group of zones 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.

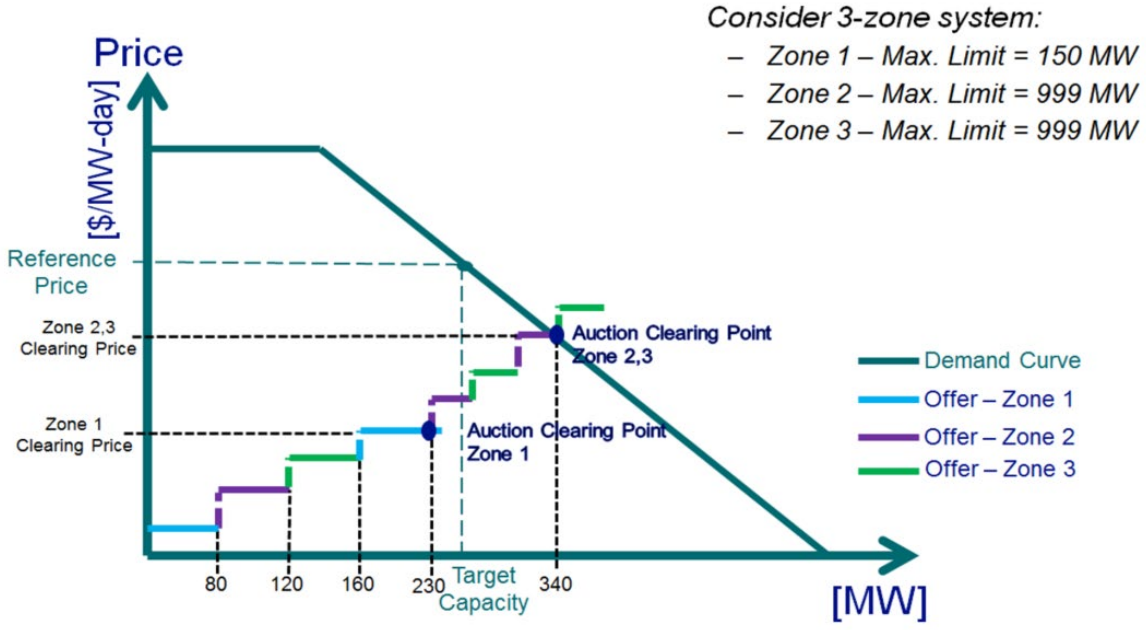

Figure 4-2: Auction Selection Process with Zonal Limits

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., This 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[2] shall be selected as the successful *capacity auction offer* (**MR Ch.7 s.18.7.5**).

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 s.18.7.4**). *Resources* with a *capacity obligation* will be designated a *capacity auction resource* for the duration of the *capacity auction commitment period.*

4.3. Stage 3: Post-Auction Reporting Obligations

(MR Ch.7 s.18.8)

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 s.18.8**):

- The Ontario-wide *capacity auction clearing price*;
- 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;

The *IESO* will also issue confidential post-auction reports to each *capacity auction participant* with the following information for each *capacity auction resource:*

[2] 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.

- *capacity obligation(s),* and *cleared ICAP* as calculated pursuant to MR Ch.7 s.18.8
- the *capacity auction clearing price* applicable to the *capacity auction resource,* and;
- the *obligation period.*

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 s.18.2.3)

There are post-auction authorization and registration requirements for *capacity auction participants* who have successfully secured one or more *capacity obligations*. Such participants are required to become authorized as *capacity market participants*. This authorization enables *capacity market participants* to participate in the *energy market* to satisfy a *capacity obligation.*

In addition to authorization as a *capacity market participant, market participants* with *generator-backed capacity import resources and system-backed capacity import resources* must be authorized as an *energy trader* authorized for import transactions.

In the case of *capacity market participants with system-backed capacity import resources* or *generator-backed 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 **MM 1.3**: Identity Management Operations Guide.

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

5.1.1 Prudential Support

(MR Ch.2 s.5B)

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 **MM 5.4**: Prudential Support.

5.2 Registration Requirements

(MR Ch.7 s.18.4.4 and MR Ch.7 s.19.2.6)

The following section describes the registration requirements for participation in the *energy market*. All registration requirements are initiated and completed in Online IESO.

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.*

- For existing *capacity auction resources,* this is done during the capacity qualification process in the pre-auction period, or
- For new *demand response resources* (i.e. *demand response resources* that did not exist at the time of the capacity qualification process), this is done during the *forward period* (upon completion of registration of the *energy market resources*).
- For *capacity auction participants* with a *system-backed capacity import resource* or *generator-backed capacity import resource,* a *boundary entity resource* will be automatically assigned to the *capacity obligation* during capacity qualification in the pre-auction period, and registration of a *facility* in the *energy market* is not required.

Any *market participant* seeking to register their *facility* and associated *capacity auction resource* must follow the processes and timelines outlined in **MM 1.5**.

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 s.18.4.4**. Upon completion, the *capacity market participant* can assign the newly registered *resource* with their applicable *capacity obligation.*

Where a *capacity auction participant* obtained a *capacity obligation* for a physical *hourly demand response resource* with the intention to deliver on the c*apacity obligation* using a qualified *capacity dispatchable load resource*, the market registration processes should be completed for the *capacity dispatchable load resource.* Upon completion, the *capacity obligation* may be transferred from the physical *hourly demand response resource* to the *capacity dispatchable load resource.* The transfer must be completed in advance of the *capacity obligation* transfer deadline, as outlined in section 7. If the registration process cannot be completed for the new *capacity dispatchable load resource*, then it must be completed for the physical *hourly demand response resource.*

Except in the case of a *system-backed capacity import resource* and *generator-backed capacity import resource,* a *capacity market participant* with a physical *capacity obligation* must be the registered owner of the *resource* associated with the *capacity auction resource*, as described in **MM 1.5**. *Capacity market participants* participating

with a *generator-backed capacity import resource* must be the owner of the *generator backed import contributors* as attested to during the *capacity qualification request* in the pre-auction period. *Capacity market participants* participating with virtual *hourly demand response resources* may include physical or virtual *non-dispatchable loads* owned by a third party as *demand response contributors*. As per **MR Ch.7 s.19.2.6**, *load equipment* that is associated with a *dispatchable load* or *price responsive load* shall not be registered as a *demand response contributor.*

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 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 s.18.4.4**.

5.2.1 Physical Demand Response Resource

To register a *facility* and associated *capacity auction resource* in accordance with **MM 1.5**, 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 *hourly demand response resource* or as *a dispatchable load* (for example*,* a *non-dispatchable load* could be registered as an *hourly demand response resource*). This registration process 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 Resource

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 *hourly demand response resource* and must register only one *demand response resource* for each *capacity obligation. Capacity market participants* with a virtual *hourly demand response resource* must indicate the contributor type associated with such virtual *hourly*

demand response resource (residential or commercial/ industrial/ institutional load type, as applicable).

Capacity market participants with a virtual *capacity obligation* participating with a virtual *hourly demand response resource* may include multiple *demand response contributors,* provided such *demand response contributors* are of the same contribution type as the virtual *hourly demand response resource. Demand response contributors* for a virtual *hourly demand response 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 5.2.3.

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 *hourly demand response resources* in that zone (with a maximum of one resource for each contributor type per zone).

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 *hourly demand response 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* for a virtual *hourly demand response*:

1. Virtual *hourly demand response* resources consisting of commercial, industrial, institutional and/or *non-dispatchable loads* (C&I) that can be classified as:
    a. Virtual C&I *demand response contributors*; and
    b. Physical C&I *demand response contributors*.
2. Virtual *hourly demand response resources* consisting of residential[3] smart-metered loads that can be classified as:
    a. Virtual residential *demand response contributors*

5.2.3.1 Virtual C&I demand response Contributors Registration Requirements

For virtual C&I *demand response* contributors, the information must satisfy the following applicable requirements:

iii. 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*;

- The *capacity market participant* may use the zonal map tool located on the IESO Zonal Map page to confirm the electrical zone for the associated *demand response contributor*;

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

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

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

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

[3]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.

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

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

ix. 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*;

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

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

xii. 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:

- *facility*/contributor name, physical address;
- *embedded connection point*(s) (point of sale) to the LDC;
- location of distribution transformer;
- location of breakers, disconnect switches, etc.;
- location of the *metering installation* and *meter* point reference identification (as indicated on contributors' Record of Installation); and
- generation location and nameplate information (MVA/kVA rating, output voltage)

5.2.3.2 Physical C&I hourly demand response Contributors Registration Requirements

(MR Ch.7 s.19.2)

For physical C&I *demand response* 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 *hourly demand response 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 hourly demand response Contributors Registration Requirements

For virtual residential *demand response*, 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 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 section 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 *hourly demand response 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 *hourly demand response 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 **MM 5.5**).

5.2.3.4 Randomized Controlled Baseline Methodology

For *hourly demand response resources* associated with either virtual or physical C&I contributors, performance is evaluated using a historical baseline (as described in **MM 5.5**).

For *hourly demand response 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.

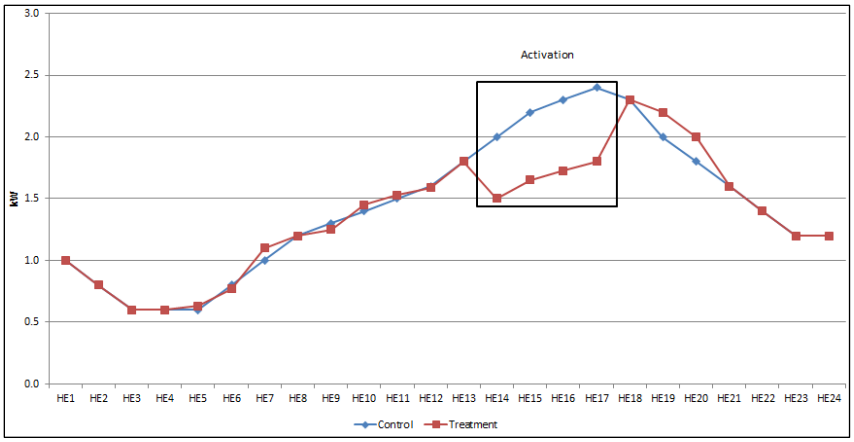

Figure 5-1: Randomized Control Trials (RC) Performance Evaluation

Refer to **MM 5.5** for a further description of how residential *hourly demand response resource* 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 market* and *real-time market* as set out in **MM 4.1**. *Capacity market participants* are required to follow *dispatch instructions* as set out in **MM 4.3**.

All *capacity auction resources* will be subject to test activations in the *real-time market*, as set out in section 5.3.54. *Capacity market participants* with *capacity obligation(s)* associated with *hourly demand response resources* will be compensated for *capacity auction dispatch tests* and *emergency operating state* activations, as detailed in **MM 5.5**.

5.3.1 Outage Management / Non-Performance Events

Capacity market participants with a *capacity auction resource*, except for *capacity market participants* with *system-backed capacity import resources,* are required to submit *outage* requests as per the requirements for the applicable *resource* type set out in **MM 7.3** and must update their *energy offers/energy bids* to reflect the available *auction capacity* of the *resource* during the *outage*. *Capacity market participants* with *hourly demand response resources* are required to maintain records of all non-performance events as set out in **MM 7.3**.

Capacity market participants with virtual *hourly demand response resources* that experience a *contributor outage* that meets the requirements of MR Ch.7 s.19.4.10A may report it in accordance with section 5.3.2.

5.3.2 Demand Response Contributor Outages

(MR Ch.7 ss.19.4.10A, 19.4.10B)

Capacity market participants may temporarily exclude one or more *demand response contributor(s)* from their virtual C&I *hourly demand response resource* due to a *contributor outage* that meets the requirements set out in the *market rules*.

In order to declare a *contributor outage*, a written request must be submitted to the *IESO* by the registered *capacity auction* contact via email to customer.relations@ieso.ca within 5 business days following the activation event.

The email must contain the following information for each activation event which the *capacity market participant* declares a *contributor outage*:

- *Capacity market participant* name
- *Capacity obligation* ID
- *Capacity auction resource* name and ID
- Date of activation
- Name and ID of *Demand response contributor* on *outage*
- Start and stop time of the *outage*
- *Bids* reduction in MW for the activation, if applicable

5.3.3 Measurement Data Submissions for Virtual C&I Hourly Demand Response Resources

Each virtual C&I *hourly demand response 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 only for months in which they are activated for their *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.

5.3.3.1. Processing of Measurement Data

Virtual C&I *hourly demand response 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:

- 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
- 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

The measurement data submission is the summation of all *demand response contributors* by channel per interval. If there are virtual *demand response contributors* with declared *contributor outage(s)*, the *capacity market participant* shall exclude the data of the virtual C&I *demand response contributors* on *outage* from the summation and submission.

- If there are multiple activations within one month and a *contributor outage* has been declared in relation to at least one such activation, the *capacity market participant* shall submit measurement data for each activation through Online IESO.

5.3.3.2. 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 a CSV (comma separated values) file format compatible with the *IESO*'s Meter Data Acquisition System, containing two channels of 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 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 hourly demand response

5.3.4 Measurement Data Submissions for Virtual Residential hourly demand response Resources

Capacity market participants are required to submit aggregated hourly (60-minute interval) measurement data only 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 each 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*.

5.3.4.1 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 a CSV (comma separated values) file format containing two channels of 60-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 5-3 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' withdrawn energy in kWh up to three decimal places, in numeric value "###.###",
    - Channel 2: Shall remain zero (with respect to the exclusion of 'net-metered' customers under residential *hourly demand response resource*),

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.

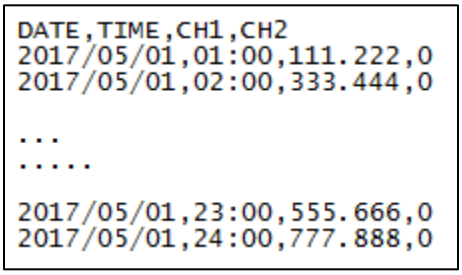

Figure 5-3: Sample CSV File Format for Measurement Data Submission for Residential Hourly Demand Response Resource

5.3.4.2 Timelines for Data Submission and Processing

(**MR. Ch.9 s.4.13**)

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 s.4.13**.

Capacity market participants must retain individual *demand response contributor* 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.*

5.3.4.3 VEE Process for Virtual C&I Hourly Demand Response Contributors

For virtual C&I *demand response 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 *demand response contributors* to account for the missing period:
    - 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.
    - 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:Template for Measurement Data Control Sheet ~~**Error! Reference source not found.**~~.

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 *capacity auction commitment period*, the actual measurement data submitted at the time of the audit along with the measurement data control sheet (if applicable) or with declared *contributor outage(s)*.

5.3.5 Testing of Capacity Auction Resources

(MR Ch.7 ss.19.4.11, 19.5.7, 19.7.7, 19.9.6, 19.9B.7, and 19.11.7)

5.3.5.1 Capacity Auction Capacity Test

Hourly Demand Response Resources, Capacity Dispatchable Load Resources, Capacity Generation Resources, System-Backed Capacity Import Resources, and Capacity Storage Resources

Each *obligation period*, the *IESO* will determine a consecutive five-*business day* window (the "**testing window**") within which applicable *capacity auction resources* shall conduct their *capacity auction capacity test.* The *IESO* shall issue an advisory notice indicating when the testing window will be scheduled, a minimum of 10 *business days* in advance of the testing window. To execute a *capacity auction capacity test*, the *capacity market participant* will be required to schedule their *capacity auction resource* for activation in the *energy market* to its *cleared ICAP* and then deliver to that *cleared ICAP* amount for a *resource*-specific duration of time, within the testing window and within the applicable *availability window*~~.~~.

Refer to Table 5-1 below for more details on the specific testing procedure that *capacity market participants* shall follow to fulfill their *capacity auction capacity test* requirements for each *capacity auction resource* type.

Table 5-1: Testing Procedure by Capacity Auction Resource Type

Capacity Auction Resource Type	Testing Procedure
Capacity generation resources	1. Submit *offers* in both the *day-ahead market* and *real-time market* that ensure the *resource* receives a *day-ahead schedule* and *real-time schedule*, respectively, in the *energy market* to at least the greater of its *cleared ICAP* and its *minimum loading point* for at least **four consecutive hours** 2. Deliver, within the parameters defined in Table 5-2 below, at least the greater of either its *cleared ICAP* and its *minimum loading point* for **four consecutive hours** ~~Notify the *IESO* of the specific day, hours and *dispatch intervals* for which capacity test performance should be assessed in accordance with the Data Submission Requirements outlined below.~~
C~~c~~apacity storage resources	1. Submit *offers* that ensure the *resource* receives a generation schedule in the *energy market* to

Capacity Auction Resource Type	Testing Procedure
	at least the greater of its *cleared ICAP* and its *minimum loading point* for at least **four consecutive hours** 2. Inject, within the parameters defined in Table 5-2 below, at least the greater of either its *cleared ICAP* and its *minimum loading point* for **four consecutive hours**
Capacity dispatchable loads	1. Submit *bids* in both the *day-ahead market* and *real-time market* that ensure: (a) the *resource* gets a *day-ahead schedule* and *real-time schedule*, respectively, to consume at least its *cleared ICAP;* (b) the *resource* gets a *day-ahead schedule* and *real-time schedule*, respectively, for the subsequent hour to consume an amount that is lower than its *day-ahead schedule* and *real-time schedule*, respectively, for the previous hour by an amount at least equal to its *cleared ICAP*[4]. 2. Deliver (reduce withdrawal of *energy* and hold), within the parameters defined in Table 5-2 below, at least the *resource's cleared ICAP* for at least **three consecutive *dispatch intervals,*** excluding ramp intervals required to respect the resource's ramp rate ~~Notify the *IESO* of the specific day, hours and *dispatch intervals* for which capacity test performance should be assessed in accordance with the Data Submission Requirements outlined below.~~
Hourly demand response resources	1. Submit *bids* in both the *day-ahead market* and *real-time market* that will ensure the *resource* receives an activation notice to reduce withdrawal of energy by an amount at least equal to its *cleared ICAP* for **four consecutive hours**

[4] Note - availability charges may apply as specified in ~~**MM 5.5**~~ **MR. Ch.9 s.4.13** if the *capacity dispatchable load* reduces its *bid* quantity in either the *day-ahead market* or *real-time market*

Capacity Auction Resource Type	Testing Procedure
	2. Deliver, within the parameters defined in Table 5-2 below, at least the *resource's cleared ICAP* ~~Notify the *IESO* of the specific day, hours and *dispatch intervals* for which capacity test performance should be assessed in accordance with the Data Submission Requirements outlined below.~~
System-backed capacity import resources	1. Submit *energy* import *offers* in both the *day-ahead market* and *real-time market* that ensure the *resource* receives a *real-time schedule,* using the designated *boundary entity resource* associated with the *control area* for which the *capacity import resource* originates, to import *energy* to at least its *cleared ICAP* for at least **four consecutive hours** ~~1.~~2. Deliver, within the parameters defined in Table 5-2 below, at least the *resource's cleared ICAP* for **four consecutive hours**

Note – the *demand response bid price thresholds* for *hourly demand response resource*s and *capacity dispatchable loads* will be removed for all hours of the *availability window* during the testing window.

Data Submission Requirements

Capacity market participants must notify the *IESO* of the specific day, hours and *dispatch intervals* for which they wish their performance to be assessed. This notification can be sent in the form of an email to capacity.auction@ieso.ca with the subject heading "Capacity Auction Capacity Test: Participant Name, Obligation ID", and must be sent by the following due date:

- For *capacity dispatchable load resources, capacity generation resources,* physical *hourly demand response resources, system-backed capacity import resources,* and *capacity storage resources,* no later than five *business days* after the end of the testing window,
- For virtual *hourly demand response resources,* no later than the measurement data submission deadline associated with the month in which the *capacity auction capacity test* was conducted*,* as outlined in section 5.3.3*.*

In addition:~~,~~

- *C~~c~~apacity market participants* with virtual *hourly demand response resources* must submit measurement data in accordance with section 5.3.3*.*

- Failure of a *capacity market participant* to notify the *IESO* by the applicable deadline may result in non-performance charges as specified in **MM 5.5** and failure of the *capacity auction capacity test* as specified below.

Capacity Auction Capacity Test Performance Assessment

The *IESO* will assess the performance results (rounded to one decimal place) of the *capacity auction capacity test* using the parameters listed in Table 5-2 below.

Table 5-2: Capacity Test Performance Parameters by Capacity Auction Resource Type

Capacity Auction Resource Type	If...	Then...
Capacity generation resource	The *capacity auction resource* supplies, on average for each hour of its 4 consecutive hour test duration, at least 95% of its *cleared ICAP*	The test is a pass
	The *capacity auction resource* supplies, on average for any hour of the test, less than 95% of its *cleared ICAP*	The test is a fail
~~c~~*Capacity storage resource*	The *capacity auction resource* injects, on average for each hour of its 4 consecutive hour test duration, at least 95% of its *cleared ICAP*	The test is a pass
	The *capacity auction resource* injects, on average for any hour of the test, less than 95% of its *cleared ICAP*	The test is a fail
Capacity dispatchable load resource	The *capacity auction resource* reduces its withdrawal of *energy*, on average over at least 3 consecutive *dispatch intervals* (excluding ramp intervals required to respect the *resource's* ramp rate), by at least 95% of its *cleared ICAP*	The test is a pass
	The *capacity auction resource* reduces its withdrawal of *energy*, on average over at least 3 consecutive *dispatch intervals* (excluding ramp intervals required to respect the *resource's* ramp rate), by less than 95% of its *cleared ICAP*	The test is a fail
Hourly demand response resource	The *capacity auction resource* reduces its withdrawal of *energy*, on average for each hour of its 4 consecutive hour test duration, by at least 90%	The test is a pass

Capacity Auction Resource Type	If...	Then...
	of its *cleared ICAP* as determined pursuant to section 3.4.3.5 of **MM 5.5**	
	The *capacity auction resource* reduces its withdrawal of *energy*, on average for any hour of the test, by less than 90% of its *cleared ICAP* as determined pursuant to section 3.4.3.5 of **MM 5.5**	The test is a fail
System-backed capacity import resource	The *capacity auction resource* successfully schedules[5] an import transaction into Ontario for each hour of its 4 consecutive hour test duration, to at least its *cleared ICAP*, and is not partially or fully curtailed.	The test is a pass
	The *capacity auction resource* does not successfully schedule an import transaction into Ontario for each hour of its 4 consecutive hour test duration, to at least its *cleared ICAP* Or The *capacity auction resource* successfully schedules an import transaction into Ontario for each hour of its 4 consecutive hour test duration, to at least its *cleared ICAP* and is fully or partially curtailed	The test is a fail

Following the assessment of the *capacity auction capacity test* by the *IESO,* the *IESO* shall notify the *capacity market participant* of the result including the following information:

- Confirmation of the day, hours and *dispatch intervals* used in the assessment
- The amount of *auction capacity* determined to have been delivered by the *capacity auction resource* over the *resource* specific amount of time detailed in Table 5-2
- Confirmation of whether the *capacity auction resource* has passed or failed the *capacity auction capacity test* in accordance with the parameters detailed in Table 5-2

If the *capacity market participant* does not notify the *IESO* of their completed *capacity auction capacity test* by the deadline stated above, the *capacity auction*

[5] A successfully scheduled import transaction for a *system-backed capacity import resource* is one that meets the applicable import offer requirements outlined in **MM 4.1 s.4.1**

resource will be deemed to have delivered zero MW which will result in a failure of the *capacity auction capacity test*.

~~Failure of the *capacity auction capacity test* may result in the application of a *performance adjustment factor* in a future *capacity auction* which will be calculated in accordance with section 3.3.2.~~

PAF Delivered MW

If a *capacity auction resource* fails the *capacity auction capacity test,* the *IESO* will use the performance results as calculated pursuant to Table 5-2 to determine a PAF Delivered MW value. The PAF Delivered MW will be used to determine the *performance adjustment factor* pursuant to section 3.3.2 ~~of this market manual~~.

For an *hourly demand response resource,* the PAF Delivered MW is the four-hour average reduction in withdrawal of *energy* in the *capacity auction capacity test*. If the PAF Delivered MW value is greater than 90% of the *hourly demand response resource's cleared ICAP*, then the PAF Delivered MW will be equal to 90% of the *cleared ICAP*.

For a *capacity generation resource* or *capacity storage resource,* the PAF Delivered MW is the four-hour average injection of *energy* in the *capacity auction capacity test*. If the PAF Delivered MW value is greater than 95% of the *capacity auction resource's cleared ICAP*, then the PAF Delivered MW will be equal to 95% of the *cleared ICAP*.

For a *capacity dispatchable load resource*, the PAF Delivered MW is the average reduction in withdrawal of *energy* over the three consecutive *dispatch intervals* of the *capacity auction capacity test.* If the PAF Delivered MW value is greater than 95% of the *capacity auction resource's cleared ICAP,* then the PAF Delivered MW will be equal to 95% of the *cleared ICAP.*

For a *system-backed capacity import resource,* the PAF Delivered MW is calculated by averaging the hourly amount of *energy* successfully scheduled by the *system-backed capacity import resource* from all hours of the *capacity auction capacity test*. If the PAF Delivered MW value is greater than the *system-backed capacity import resource's cleared ICAP,* then the PAF Delivered MW will be equal to the *cleared ICAP.*

Allowable Exceptions

The *IESO* will, where the circumstances permit, schedule an additional testing window if a *capacity auction resource* is unable to complete the *capacity auction capacity test* during the entirety of the first testing window in the following circumstances:

- The *capacity auction resource* is unable to complete the *capacity auction capacity test* during the testing window due to an *outage* caused by a third-party *market participant.* In such cases, the *capacity market participant* must notify the *IESO* by emailing capacity.auction@ieso.ca no later than five *business days* after the end of the testing window and provide evidence, originating from the third party *market participant*, that the failure to complete the *capacity auction capacity test* was due to the actions of the third party.
- The *capacity auction resource* is unable to complete the *capacity auction capacity test* during the testing window due to a *force majeure event*. In such cases, the *capacity market participant* must adhere to the force majeure requirements as outlined in **MR Ch.1 s.13.3**, and also must notify the *IESO* of the inability to complete the *capacity auction capacity test* by emailing capacity.auction@ieso.ca no later than 5 *business days* following the end of the testing window. In the email, the *capacity market participant* must provide proof that they have adhered to the force majeure requirements in the *market rules.*
- The *capacity auction resource* is unable to complete the *capacity auction capacity test* during the testing window as doing so would endanger the safety of any person, damage equipment, or violate any *applicable law* as outlined in **MR Ch.7 s.7.5.3**. In such cases, the *capacity market participant* must adhere to the requirements as outlined in **MR Ch.7 s.7.5.2**, and also must notify the *IESO* of the inability to complete the *capacity auction capacity test* by emailing capacity.auction@ieso.ca no later than 5 *business days* following the end of the testing window. In the email, the *capacity market participant* must provide proof that they have adhered to the requirements in the *market rules.*
- A *system-backed capacity import resource* is unable to complete the *capacity auction capacity test* during the testing window due to a bona fide and legitimate reason as outlined in **MR Ch.7 s.7.5.8A.** (Reason codes are found in **MM 4.3, s.4.5**). In such cases, it is the responsibility of the *capacity market participant* to notify the *IESO* of the inability to complete the *capacity auction capacity test* by emailing capacity.auction@ieso.ca no later than 5 *business days* following the end of the testing window. In the email, the *capacity market participant* must provide proof that the *IESO* has been notified and has approved the bona fide or legitimate reason.

Assessment of In-Period Cleared UCAP Adjustment for Hourly Demand Response Resources

The *IESO* will apply an in-period *cleared UCAP* adjustment in accordance with **MR Ch.7 s.19.4.18**.

An in-period *cleared UCAP* adjustment will apply in the form of a de-rate using the following formula:

In-Period *Cleared UCAP* Adjustment De-rate = 1 – (Delivered MW/*cleared UCAP*)

Where:

- Delivered MW is equal to the average amount of *auction capacity* delivered by the *hourly demand response resource* over the four-hour *capacity auction capacity test*, and;

Using this de-rate, the *cleared UCAP* of the *hourly demand response resource* will be adjusted using the following formula:

Adjusted *cleared UCAP = cleared UCAP* X (1 - in-period *cleared UCAP* adjustment de-rate)

Any in-period *cleared UCAP* adjustment will not be reassessed as a result of a measurement data audit conducted pursuant to section 5.4.

~~System-Backed Capacity Import Resources~~

~~The *IESO* may direct *system-backed capacity import resources* to perform up to two *capacity auction capacity tests* per *obligation period*. Tests will be scheduled to occur during the *availability window* of the *dispatch day*.~~

~~The test will be conducted as follows:~~

- ~~Up to two hours in advance of any test, applicable *system-backed capacity import resources* will receive a schedule to import *energy* to at least its *cleared ICAP* in the last hour of pre-dispatch prior to the *dispatch hour* (PD-1). Tests may be scheduled for a duration of up to four consecutive hours.~~
- ~~If the *system-backed capacity import resource* being tested is successfully[6] scheduled in pre-dispatch and:~~
  - ~~is not curtailed, the test will be a pass,~~
  - ~~is fully or partially curtailed with reason code "OTH" or "MrNh"[7], the test will be a fail,~~
  - ~~is fully or partially curtailed with any other reason code, the test will be invalid.~~
- ~~Failure of the test will result in the applicable charges as specified in **MM 5.5**.~~
- ~~An invalid test will be rescheduled at the *IESO*'s discretion.~~

~~If a *system-backed capacity import resource* is unable to comply with the *capacity auction capacity test* on the *dispatch day* for a bona fide and legitimate reason as outlined in **MR Ch.7 s.7.5.8A**, or due to a *force majeure event*, it is the responsibility of the *capacity market participant* to notify the *IESO*, and update the *energy offers* in accordance with **MM 4.1**. In such cases, the *IESO* will confirm that~~

~~[6] A successfully scheduled import transaction for a *system-backed capacity import resource* is one that is meets the applicable import offer requirements outlined in the "Capacity Imports" section of **MM 4.2**.~~

~~[7] These curtailment reason codes are described in section 4.5 of **MM 4.3**.~~

~~the *system-backed capacity import resource* has met the relevant *market rule* requirements and may reschedule a subsequent *capacity auction capacity test*.~~

~~Following the assessment of the *capacity auction capacity test* by the *IESO*, the *IESO* shall notify the *capacity market participant* of the result including the following information:~~

- ~~Confirmation of the day, hours and *dispatch intervals* used in the assessment;~~
- ~~The amount of *auction capacity* determined to have been delivered by the *system-backed capacity import resource* over the duration of the test; and~~
- ~~Confirmation of whether the *capacity auction resource* has passed or failed the *capacity auction capacity test* in accordance with the parameters detailed above in this section.~~

~~Failure of the *capacity auction capacity test* may result in the application of a *performance adjustment factor* in a future *capacity auction* which will be calculated in accordance with section 3.3.2.~~

~~PAF Delivered MW~~

~~If the *system-backed capacity import resource* fails the *capacity auction capacity test,* the *IESO* will determine the *performance adjustment factor* pursuant to section 3.3.2 of this *market manual* using the PAF Delivered MW value.~~

~~The PAF Delivered MW is calculated by averaging the hourly amount of energy scheduled by the system-backed capacity import resource from all hours of the capacity auction capacity test. If the PAF Delivered MW value is greater than the *system-backed capacity import resource's cleared ICAP,* then the PAF Delivered MW will be equal to the *cleared ICAP.*~~

Generator-Backed Capacity Import Resources

A *capacity market participant* with a *generator-backed capacity import resource* must complete a *capacity auction capacity* test once per *obligation period.* To complete the test activation, the *capacity market participant* must successfully schedule:

- its *generator-backed import contributor(s)* in their host energy market to supply at least, in aggregate, the *generator-backed capacity import resource's cleared ICAP,* and supply at least 95% of the *cleared ICAP* into the host *control area's* grid for four consecutive hours within the *availability window*, on a date that falls within the first two months of the applicable *obligation period*, and;

- An import transaction from the host *control area* into Ontario at the designated intertie[8] of at least the *capacity auction resource's cleared ICAP* for at least one hour that coincides with the timing of the scheduled four-hour test activation.

Data Submission Requirements

The data submission for each *generator-backed capacity import resource* must consist of revenue-grade *meter* data that meets the market participation requirements of the host *control area operator* in which it is located, and must include the following:

- Resource ID of each *generator-backed import contributor(s)* associated with the test activation of the *generator-backed capacity import resource;*
- Date (YYYY/MM/DD), hours (HH), and intervals (MM) the *capacity auction capacity test* was completed; and
- MWh injected from each *generator-backed import contributor(s)* associated with the test activation of the *generator-backed capacity import resource* for each interval, provided to one decimal place.

The data shall be provided on a five-minute interval basis and shall be verified as complete and accurate by the host *control area operator*. The data submission must be sent as an excel file to capacity.auction@ieso.ca and should have the subject heading "Capacity Auction Capacity Test: Participant Name, Obligation ID". A sample template for the data submission can be found in Template for Generator-Backed Capacity Import Resource Test Activation Data Submission.

Timelines for Data Submission

The data set must be provided to the *IESO* no later than five *business days* following the end of the second month of the *obligation period* for which the data relates. The *IESO* will review all data submissions and respond to the *capacity market participant* with notice of any errors or clarifications. The *capacity market participant* will then have two *business days* from the date the *IESO* provides such notice to respond, or correct and resubmit the data file to capacity.auction@ieso.ca.

Failure of a *capacity market participant* to provide the data set in a timely, complete or accurate manner may result in non-performance charges as specified in **~~MM 5.5~~ MR. Ch.9 s.4.13.**

Performance Assessment

[8] Refer to ~~the "Capacity Imports" section 4.7 ("Capacity Import Scheduling") in~~ **MM 4.1 s.4.1** and **MM 4.~~2~~3 s.4.7** for more information on import *offer* requirements for *generator-backed capacity import resources.*

The *IESO* will assess the results of the *capacity auction capacity test* using the parameters in Table 5-3 below.

Table 5-3: Capacity Test Performance Parameters for Generator-backed Capacity Import Resource

If the *generator-backed capacity import resource*...	Then...
1. Demonstrates through its data submission, on average for each hour of its 4 consecutive hour test duration, an injection of electricity equal to or greater than 95% of its *cleared ICAP* into the host control area's grid, and 2. Successfully schedules in the *day-ahead market* and/or the *real-time market* the corresponding import transaction[9] equal to or greater than its *cleared ICAP* into Ontario for at least one of the four consecutive test hours	The test is a pass
1. Demonstrates through its data submission, on average for any hour of its 4 consecutive hour test duration, an injection of electricity less than 95% of its *cleared ICAP* into the host control area's grid, or 2. Is unable to successfully schedule in the *day-ahead market* and/or the *real-time market* the corresponding import transaction[9] equal to or greater than its *cleared ICAP* into Ontario for at least one of the four consecutive test hours	The test is a fail

Following the assessment of the *capacity auction capacity test* by the *IESO,* the *IESO* shall notify the *capacity market participant* of the result including the following information:

- Confirmation of the day, hours and intervals used in the assessment
- The amount of *auction capacity* determined to have been delivered by the *capacity auction resource* over the test duration
- Confirmation of whether the *generator-backed capacity import resource* has passed or failed the *capacity auction capacity test* in accordance with the parameters detailed in Table 5-3

[9] A successful import transaction for a *generator-backed capacity import resource* is one that is neither partially nor fully curtailed, and meets the applicable import offer requirements outlined in ~~section 4.1 ("Energy Import, Energy Export, and Supply Operating Reserve Transactions") of **MM 4.1.**~~the "Capacity Imports" section of ~~**MM 4.2.**~~ **MM 4.1 s.4.1**

~~Failure of the *capacity auction capacity test* may result in the application of a *performance adjustment factor* in a future *capacity auction* which will be calculated in accordance with section 3.3.2.~~

PAF Delivered MW

If the *generator-backed capacity import resource* fails the *capacity auction capacity test,* the *IESO* will determine the *performance adjustment factor* pursuant to section 3.3.2 of this *market manual* using the PAF Delivered MW value.

The PAF Delivered MW is the four-hour average injection of *energy* by the *generator-backed import contributors* in the *capacity auction capacity test*. If the PAF Delivered MW value is greater than 95% of the *generator-backed import resource*'s *cleared ICAP,* then the PAF Delivered MW will be equal to 95% of the *cleared ICAP*.

Allowable Exceptions

The *IESO* will, if the circumstances permit, schedule a second testing window if a *generator-backed capacity import resource* is unable to complete the *capacity auction capacity test* during the entirety of the first two months of the *obligation period* in the following circumstances.

1. The *generator-backed capacity auction import resource* is unable to complete the *capacity auction capacity test* during the testing window due to a due to a *force majeure event*. In such cases, the *capacity market participant* must adhere to the force majeure requirements as outlined in **MR Ch.1 s.13.3**, and also must notify the *IESO* of the inability to complete the *capacity auction capacity test* by emailing capacity.auction@ieso.ca no later than 5 *business days* following the end of the testing window. In the email, the *capacity market participant* must provide proof that they have adhered to the force majeure requirements in the *market rules.*
2. The *generator-backed capacity auction eligible import resource* is unable to complete the *capacity auction capacity test* during the testing window due to a bona fide and legitimate reason as outlined in **MR Ch.7 s.7.5.8A**. In such circumstances, the *capacity market participant* must notify the *IESO* of the inability to complete the *capacity auction capacity test* by emailing capacity.auction@ieso.ca no later than 5 *business days* following the end of the testing window. In the email, the *capacity market participant* must provide proof that the *IESO* has been notified and has approved the bona fide or legitimate reason.

5.3.5.2 Capacity Auction Dispatch Tests

(MR Ch.7 ss.19.4.11, 19.5.7, 19.7.7, 19.11.7)

The *IESO* may perform up to two *capacity auction dispatch tests* per *obligation period*. *Capacity auction dispatch tests* for all applicable *capacity auction resource*

types will be scheduled in the *real-time market* for a duration of up to four hours within the *availability window* of the *dispatch day*.

Capacity Generation Resources, Capacity Storage Resources, and Capacity Dispatchable Load Resources

Capacity auction dispatch tests for *capacity generation resources, capacity storage resource*s and *capacity dispatchable loads* will be conducted as follows:

- The *IESO* will schedule in the *real-time market* a *capacity generation resource or capacity storage resource* to its applicable *offer* quantity in MW in advance of the *capacity auction dispatch test* and provide notice of such *capacity auction dispatch tests* as follows:
    - Up to one hour for *capacity generation resources that are quick start resources and capacity storage resources,* based on their *offer* quantity in the *real-time market*.
    - Day-ahead notification for *capacity generation resources* that are *non-quick start resources,* based on their *offer* quantity in the *day-ahead market* .
- The *IESO* will schedule in the *real-time market* a *capacity dispatchable load* to reduce their *energy* withdrawal by an amount equal to at least its *demand response energy bid* up to one hour in advance of the *capacity auction dispatch test*.

If the *capacity auction resource* demonstrates it was able to follow its *dispatch instructions* within the applicable compliance dead band as per the Market Rule Interpretation Bulletin (IMO_MKRI_0001), the test will be a pass. Otherwise, the test will be a fail.

In advance of the scheduled *capacity auction dispatch test* activation, if the *capacity market participant* is aware of a planned or *forced outage* that will make the *capacity auction resource* unable to comply with the *capacity auction dispatch test* on the *dispatch day* in accordance with their *offered/bid* MW amount, the *capacity market participant* shall notify the *IESO* about its inability to start and complete the *dispatch* test activation, according to the *outage* reporting requirements for the applicable *capacity auction resource* type as specified in **MM 7.3** and update the *energy offers/bids* in accordance with **MM 4.1**.

The *capacity market participant* with a *capacity generation resource* that is a *non-quick start resource* assumes the risk of failing the test activation if a *forced outage* occurs during the ramp-up period resulting in the *resource* being unable to deliver its *offered* MW amount during the *capacity auction dispatch test*.

If the affected *capacity market participant* has notified the *IESO* accordingly and updated its *energy offers/bids* where applicable, the *capacity auction dispatch test* will not be recorded as a failure and may be rescheduled by the *IESO* following the completion of the *outage*.

Hourly Demand Response Resources

Capacity auction dispatch tests for *hourly demand response resources* will be conducted as follows:

- *Capacity market participants* with *hourly demand response resources* will receive a standby notice on the day prior to the *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 *capacity auction dispatch test*. *Resources* will receive a schedule in pre-*dispatch* and the *real-time market*, regardless of the *demand response energy bid* price submitted.

If the *hourly demand response resource* being tested demonstrates a reduction of electricity withdrawal from the *IESO-controlled grid* equal to their *demand response energy bid* within a 15% dead-band for every *dispatch interval* for the duration of the test (up to 4 hours), the test will be a pass. Otherwise, the test will be a fail.

In advance of the *capacity auction dispatch test*, if the *capacity market participant* is aware of a non-performance event that will make the *hourly demand response resource* being tested unable to comply with the *capacity auction dispatch test* on the *dispatch day*, the *capacity market participant* shall manage its non-performance event as described in **MM 7.3**. If the non-performance event indicates that the entirety of the *hourly demand response resource's demand response energy bid* is unavailable, the *capacity auction dispatch test* will not be a failure and may be rescheduled by the *IESO* following the completion of the non-performance event.

An *hourly demand response resource's capacity auction dispatch test* is considered valid, unless:

- The *capacity market participant* provides advanced notice to the *IESO* of a non-performance event, in accordance with **MM 7.3**, that would reduce its *demand response energy bids* to 0 MW,
- The *IESO* did not send a standby or activation notification in advance of the test 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* shall inform *capacity market participants* with *hourly demand response resources* about the test cancellation.

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 *hourly demand response 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 Hourly Demand Response Resource Audit

Virtual C&I *hourly demand response resource* audit will be conducted by evaluating each *demand response contributor* that is mapped to the selected Virtual C&I *hourly demand response 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 *hourly demand response resource*. All processes related to the virtual C&I *hourly demand response resource* audit will be managed through the Online IESO.

5.4.3 Audit Scheduling and Submission of Supporting Documents

The Virtual C&I *hourly demand response 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, including *demand response contributors* with a declared *contributor outage*. 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 5.3.3, including *demand response contributors* with a declared *contributor outage*. 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[10] for the audit month and an additional two months of baseline.
- actual measurement data[11] meets the criteria defined in section 5.4.4.

5.4.4 Procedure to Conduct a Virtual C&I Hourly Demand Response Resource Audit

The Virtual C&I *hourly demand response resource* 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, and that declared *contributor outages* meet the requirements set out in **MR Ch.7 s.19.4.10A**.
2. Step 2[12] 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*

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

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

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

during activation months in accordance with the *demand response* measurement data submission timelines).

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 *demand response contributor* is compared against the total monthly consumption indicated in the LDC billing statement for that *demand response 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

These reconciliation checks verify the *demand response 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 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 "Closed with Observations" if the intervals from the submitted measurement data are outside the +/-1% threshold when compared to intervals from the LDC verified five-minute interval *meter* data. An audit may be "Closed with Observations" if a *capacity market participant* has declared a *contributor outage* but the submitted *demand response contributor meter* data does not meet all the criteria as set out in **MR Ch.7 s.19.4.10A**.

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 an *hourly demand response resource*, the aggregator is required to submit actual *meter* data for each *demand response contributor* that makes up that *hourly demand response 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 s.4.13)

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 *hourly demand response resource* audit is considered 'Complete' when:
    a. *Demand response contributor*s 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 *hourly demand response r*esource audit is 'Closed with Observations' when it is concluded that actual measurement data and supporting documentation differs from submitted measurement data and supporting documentation **MR Ch.9 s.4.13.10** 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 **MM 5.7**. Details on how the costs will be recovered are provided in **MM 5.5**.

Capacity market participants will be paid availability payments~~,~~ and may be eligible for *capacity auction dispatch test* activation/emergency operating state activation payments, as detailed in **MM 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:

1. availability requirements are not met (i.e. availability charge);
2. measurement data submission was not accurate, timely or complete (i.e. administration charge);
3. *dispatch instructions* were not followed (i.e. *dispatch* charge); and
4. failing a *capacity auction dispatch test* activation (i.e. capacity charge).

Non-performance charges will be calculated and settled as detailed in ~~**MM 5.5**~~ **MR. Ch.9 s.4.13**.

6.1 Non-Performance Factors

The *capacity auction* non-performance factors (CNPF) referenced in **MM 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

Month	Factor
July	2.0
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 request a full or partial buy-out of their *capacity obligations* at any time during the *forward period* or *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*. 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 ~~**MM 5.5**~~ **MR. Ch.9 s.4.13** for details on how the buy-out charge is calculated prior to initiating the buy-out process.

~~In order t~~To initiate a buy-out, a request must be submitted to the *IESO* using Online IESO by the registered *capacity auction* contact. A separate request must be submitted for each *capacity obligation* and must contain the following information:

- *capacity obligation* ID;
- effective date of the buy-out request~~[13]~~;
  - For a *capacity auction 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*.
  - If a buy-out would be effective during an *obligation period*, the effective date of the buy-out request cannot be sooner than two *business days* following the date that the *IESO* receives the buy-out request.
- buy-out *obligation period*: Specify the *obligation period* the buy-out is being requested for;
- buy-out electrical zone;
- *capacity auction resource*; and
- buy-out capacity: Specify the capacity of the buy-out request in MW, to one decimal place. In the case of a partial buy-out request, the remaining

~~[13] For a *capacity auction participant* or *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*.~~

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

a. Approve the buy-out request; if the participant has requested a partial buy-out, the *IESO* will notify it of the revised *capacity obligation*.

OR

b. Reject the buy-out request and provide a reason for rejection.

The *IESO* will then process the buy-out request within five *business days* and notify the participant of the buy-out charge.

- ~~If the participant has requested a full buy-out of all its *capacity obligations*: The *IESO* will refund its *capacity auction deposit* amount, at the participant's request, within ten *business days* after the *IESO* has received payment for the buy-out charge.~~

If the participant has requested a partial buy-out of its *capacity obligation:*

vii. The *IESO* will notify the *capacity auction participant* or *capacity market participant* of the revised *capacity obligation* and associated *cleared ICAP*. The *cleared ICAP* will be revised based on the *availability de-rating factor* and *performance adjustment factor* applied at the time of the capacity qualification for the *obligation period* in which the partial buy-out is being completed, and pursuant to **MR Ch.7 s.18.8**.

- If the *capacity prudential support obligation* is revised downward due to a buy-out, the *IESO* will refund the difference, at the participant's request, after the *IESO* has received the payment for the buy-out charge, except in the case that a buy-out is associated with a *capacity obligation* for an *hourly demand response resource* for which *capacity auction capacity test* results are pending. In this circumstance, the *capacity prudential support* attributed to that *capacity obligation* will not be returned until the *capacity auction capacity test* results have been released and any in-period *cleared UCAP* adjustment charge settlement amount, calculated pursuant to MR Ch.9 s.4.13.8, in relation to such *capacity auction capacity test*, has been received by the *IESO*. The revised *capacity prudential support obligation* will be based on the revised *capacity obligation*.
- The *IESO* will release the *capacity auction deposit,* if applicable, as outlined in section 3.4.2.

Where the *IESO* has applied a buy-out pursuant to MR Ch. 7, s.18.4.4, the buy-out will have an effective date of the first day of the *obligation period.* The *IESO* will notify the *capacity auction participant* or *capacity market participant* of the buy-out.

– End of Section –

8 Capacity Obligation Transfer

(MR Ch.7 s.18.9)

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 **MR Ch.7 s.18.9**. 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 **MM 5.4 s.8**), or the revised *capacity auction deposit* (as specified in 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* and associated *cleared ICAP*. The *cleared ICAP* will be revised based on the *availability de-rating factor* and *performance adjustment factor* applied at the time of the capacity qualification for the *obligation period* in which the transfer is being completed, and pursuant to **MR Ch.7 s.18.9**.

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 report. For example, a *capacity auction participant* receives a *capacity obligation* of 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 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 reassessment of its *capacity auction deposit* and/or *capacity prudential support obligation*, if applicable, as specified in section 3.4 and in **MM 5.4**.

– 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 –

Appendix C: Template for Generator-Backed Capacity Import Resource Test Activation Data Submission

Resource ID	Day	Hour	Interval	MWh

Appendix D: Attestation for Capacity Auction Eligible Generation Resource

Italicized terms found within this attestation have the meaning ascribed to them in Chapter 11 of the *market rules*, which may be found at Market Rules & Manuals Library.

By participating in the *capacity auction* through use of a *generation facility* and by clicking " ACCEPT" below, you attest to the following:

1. The *resource(s)* which the *capacity auction participant* is submitting in the capacity qualification process is a *non-committed resource* associated with a *generation facility;*

2. The *resource(s)* meet(s) the requirements of a *capacity auction eligible generation resource,* which is defined as follows:

   capacity auction eligible generation resource means a *generation resource* that is a *non-committed resource,* associated with a *connected facility* at the commencement of the capacity qualification process for a given *capacity auction*, and which is registered as *dispatchable* with the *IESO* prior to the *obligation period* in accordance with the timelines specified in the applicable *market manual*.

   [Note: *Capacity auction eligible generation resources* are not required to be registered as *dispatchable* with the IESO at the time this attestation is made.]

3. Such *resource(s)* are a *connected facility*;

4. Such *resource(s)* will be registered as *dispatchable* prior to the *obligation period* in accordance with the timelines specified in the applicable *market manual;* and

5. You have authority to make this attestation on behalf of the participating *capacity auction participant.*

Appendix E: Attestation for Capacity Auction Eligible Storage Resource

Italicized terms found within this attestation have the meaning ascribed to them in Chapter 11 of the *market rules*, which may be found at: Market Rules & Manuals Library.

By participating in the *capacity auction* through use of an *electricity storage facility,* and by clicking "ACCEPT" below, you attest to the following:

1. The *resource(s)* which the *capacity auction participant* is submitting in the capacity qualification process is a *non-committed resource* associated with an *electricity storage facility;*
   •
2. The *resource(s)* meet(s) the requirements of a *capacity auction eligible storage resource*, which is defined as follows:

   capacity auction eligible storage resource means a *electricity storage resource* that is a *non-committed resource* associated with a *connected facility* at the commencement of the capacity qualification process for a given *capacity auction,* and which is registered as *dispatchable* with the *IESO* prior to the *obligation period* in accordance with the timelines specified in the applicable *market manual;*

   [Note: *Capacity auction eligible storage resources* are not required to be registered as *dispatchable* with the *IESO* at the time this attestation is made.]

3. Such *resource(s)* are a *connected facility*;

4. Such *resource(s)* will be registered as *dispatchable* prior to the *obligation period* in accordance with the timelines specified in the applicable *market manual;* and
   •
5. You have authority to make this attestation on behalf of the participating *capacity auction participant.*

Appendix F: Attestation for System-backed Capacity Auction Eligible Import Resource

Italicized terms found within this attestation have the meaning ascribed to them in Chapter 11 of the *market rules*, which may be found at Market Rules & Manuals Library.

By participating in the *capacity auction* through use of a *boundary entity resource,* and by clicking "ACCEPT" below, you attest to the following:

1. Such agreements or arrangements have been made, in connection with your participating *resource(s)* as are necessary in order to ensure that:
    - capacity imports 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) for the host jurisdiction will remove any capacity (MW) related to a *capacity obligation* associated with from its adequacy assessments.
    -
2. Your participating *resource(s)* meet(s) the definition of *system-backed capacity auction eligible import resource.* That definition reads as follows:
   system-backed capacity auction eligible import resource means a *capacity auction resource* associated with a *boundary entity resource* that is available to enroll capacity that a neighbouring *control area operator* is willing to allocate to Ontario, if a *capacity obligation* is secured, for the duration of the applicable *obligation period*, which capacity would be deemed to be supplied from the entire system of the neighbouring *control area*. The allocated capacity must not otherwise be – in whole or in part – contracted to or otherwise obligated to be provided to the *IESO*, the *OEFC*, or another *control area operator* during the entire duration of a given *obligation period*;

3. You have authority to make this attestation on behalf of the participating *capacity auction participant.*

Appendix G: Attestation for Generator-backed Capacity Auction Eligible Import Resource

Italicized terms found within this attestation have the meaning ascribed to them in Chapter 11 of the *market rules*, which may be found at Market Rules & Manuals Library.

By participating in the *capacity auction* through use of a *boundary entity resource,* and by clicking "ACCEPT" below, you attest to the following:

1. The *capacity auction participant* is the registered owner as registered in the host *control area*, or legally owns, holds rights equivalent to ownership, or has an exclusive legal relationship with the legal owner to utilize the facility(ies) or specific equipment within a facility in regards to its own participation in the *capacity auction* and to satisfy a potential *capacity obligation*;

2. The *capacity auction participant* has confirmed with their host *control area operator* that the capacity being offered into the *capacity auction* can be removed from the host *control area's resource* adequacy processes in the planning and real-time timeframes for the applicable *obligation period(s)*.

3. The *resource(s)* which the *capacity auction participant* is submitting in the capacity qualification process meet(s) the requirements of a *generator-backed capacity auction eligible import resource,* which is defined as follows:

   generator-backed capacity auction eligible import resource means one or more *generator-backed import contributors.* No portion of the capacity that is being offered into the *IESO capacity auction* may be *over committed capacity;*

   The definition of *generator-backed import contributor* is as follows:

   generator-backed import contributor means an existing in-service *generation facility* or *storage facility* associated with a *generator-backed capacity auction eligible import resource,* and which is located in a neighbouring *control area* that has an agreement with the *IESO* to allow for the trade of capacity, is able to enroll in accordance with the applicable *market manual,* has been in operation for at least one year prior to the *capacity auction*, is a resource type that is currently enabled to participate in the *IESO's capacity auction*, and is able to transmit energy from the *generation facility* or *storage facility* to the Ontario border;

4. You have authority to make this attestation on behalf of the participating *capacity auction participant.*

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 4.1: Submitting Dispatch Data in the Physical Markets
IMP_PRO_0034	Market Manual 4.3: Operation of the Real-Time Markets
MDP_PRO_0045	Market Manual 5.4: Prudential Support
MDP_PRO_0033	Market Manual 5.5: IESO Administered Markets Settlement Amounts
IMP_PRO_0035	Market Manual 7.3: Outage Management
	Market Manual 5.6: Non-Market Settlement Programs

– End of Document –