MARKET MANUAL

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Market Manual 12: Demand Response Auction

Part 12.0: Demand Response Auction

Issue 4.0

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This procedure provides guidance to *market participants* on the operation of the *demand response auction* process

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Reference (Section and Paragraph)	Description of Change
Section 3.6	Edited sub section on Zonal Constraints to provide more clarity
Section 5.2	Edited sub section to reflect the new auction clearing process, stakeholdered in the Demand Response Working Group.

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1. Market Manuals

The *market manuals* consolidate the market procedures and associated forms, standards, and policies that define certain elements relating to the operation of the *IESO-administered markets*. Market procedures provide more detailed descriptions of the requirements for various activities than is specified in the "Market Rules". Where there is a discrepancy between the requirements in a document within a *market manual* and the "Market Rules", the "Market Rules" shall prevail. Standards and policies appended to, or referenced in, these procedures provide a supporting framework.

– End of Section –

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2. About This Manual

The "*Market Manual* 12: Demand Response Auction" is composed of the following sections:

Section	Name of Section
1.0	Market Manuals
2.0	About this Manual
3.0	Demand Response Auction Overview
4.0	Pre-Auction Requirements
5.0	Auction Mechanics
6.0	Post-Auction Requirements
7.0	Settlements
8.0	Buy-out Process

2.1 Purpose

The *IESO* will conduct a *demand response auction* for the purpose of procuring *demand response capacity* in Ontario through a competitive auction process (Ch. 7, S.18.1 of the *market rules*).The "Demand Response Auction" manual is designed to provide *market participants* with an introduction to the *demand response auction*, operated by the *IESO* to procure *demand response capacity* 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*.

2.2 Scope

The *demand response auction*, with respect to *IESO-administered markets*, comprises the following aspects:

- *Market participant* registration and authorization;
- Submission of *demand response auction offers* by *market participants*;
- Processing of submitted offers by *IESO* and determining *demand response capacity obligations*;
- Reporting obligations by the *IESO*;
- *Energy market* participation requirements; and
- *Settlement process* and *prudential support obligations*

In support of these aspects, this manual details the conditions, actions and timelines required for the *demand response auction* by *market participants* and the *IESO*. The manual is based on obligations expressed in the "Market Rules" (Ch. 2 and Ch. 7).

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

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2.3 Who Should Use This Manual

The "Demand Response Auction" manual is meant to be used by all those undertaking the following activities:

- Applicants seeking authorization as a *demand response auction participant* and/or *demand response market participant* under the *demand response auction*;
- *Demand response auction participants* seeking to submit *demand response auction offers* into the *demand response auction*; and
- *Demand response market participants* seeking to register *facilities* in order to meet their *demand response capacity obligations* through the *energy market.*

2.4 Conventions

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

- The world 'shall' denotes a mandatory requirement;
- Terms and acronyms used in this *market manual* including all Parts thereto that are italicized have the meanings ascribed thereto in Chapter 11 of the "Market Rules";
- Double quotation marks are used to indicate titles of legislation, publications, forms and other documents.

Any procedure-specific convention(s) shall be identified within the procedure document itself.

– End of Section –

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3. Demand Response Auction Overview

Demand response is the changing of electricity consumption patterns by end-use *consumers* in response to *market prices*. The *IESO* will use the *demand response auction* to acquire *demand response capacity* from *market participants* that are able to provide this capacity through the *energy market* in exchange for an availability payment.

The *demand response auction* will be conducted on an annual basis to procure *demand response capacity* for the upcoming summer and winter periods, also known as *commitment periods* (Ch. 7, S. 18.5.1 of the *market rules*). The breakdown of seasonal *commitment periods* is further explained in Section 3.3 of this manual.

3.1 Demand Response Auction Process

Figure 3-1 below shows the *demand response auction* process overview:

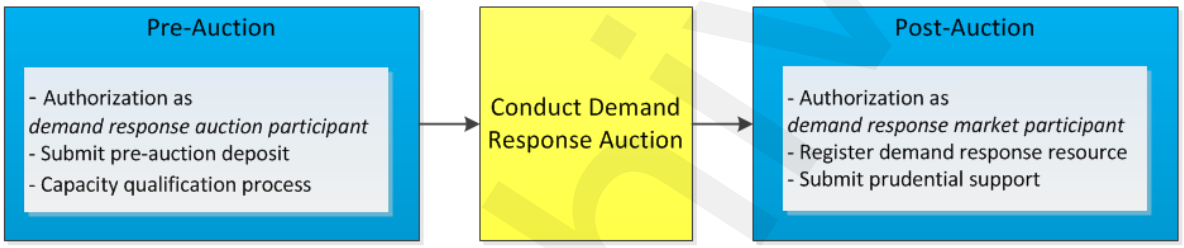


Figure 3-1: Demand Response Auction Process

Market participants who wish to participate in the *demand response auction* are required to be authorized as *demand response auction participants* and complete the capacity qualification process in order to submit their *demand response auction offers* into the *demand response auction*. Upon validating all submitted offers, the *IESO* will process the offers, determine the clearing price and quantity for each of Ontario's ten electrical zones, prepare and *publish* the post-auction reports. All *demand response auction participants* that successfully obtain a *demand response capacity obligation* through the *demand response auction* are required to register as *demand response market participant*, provide *prudential support* as determined by the *IESO*, and register their resources as demand response resources.

3.2 Demand Response Auction Timelines

Ontario's *demand response auction* will follow the following timelines:

- The *IESO* will *publish* a pre-auction report no less than 2 months prior to the start of the offer submission window for the *demand response auction.*

- *Market participants* intending to participate in the *demand response auction* must complete their authorization as *demand response auction participants* at least 40 *business days* in advance of the *demand response auction*.

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- *Market participants* indenting to participate in the *demand response auction* are required to complete the capacity qualification process and submit the *demand response auction deposit* amount at least 5 *business days* prior to the start of the offer submission window for the *demand response auction*.

- The *demand response auction* will be opened to accept offers from *demand response auction participants* on the first Wednesday of December starting at 09:00 EST. The offer submission window will close on the next *business day* at 23:59 EST. *Market participants* intending to participate in the *demand response auction* must have submitted their *demand response auction offers* to the *IESO* within this two-day timeframe.

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

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

The following figure illustrates the *demand response auction* timelines:

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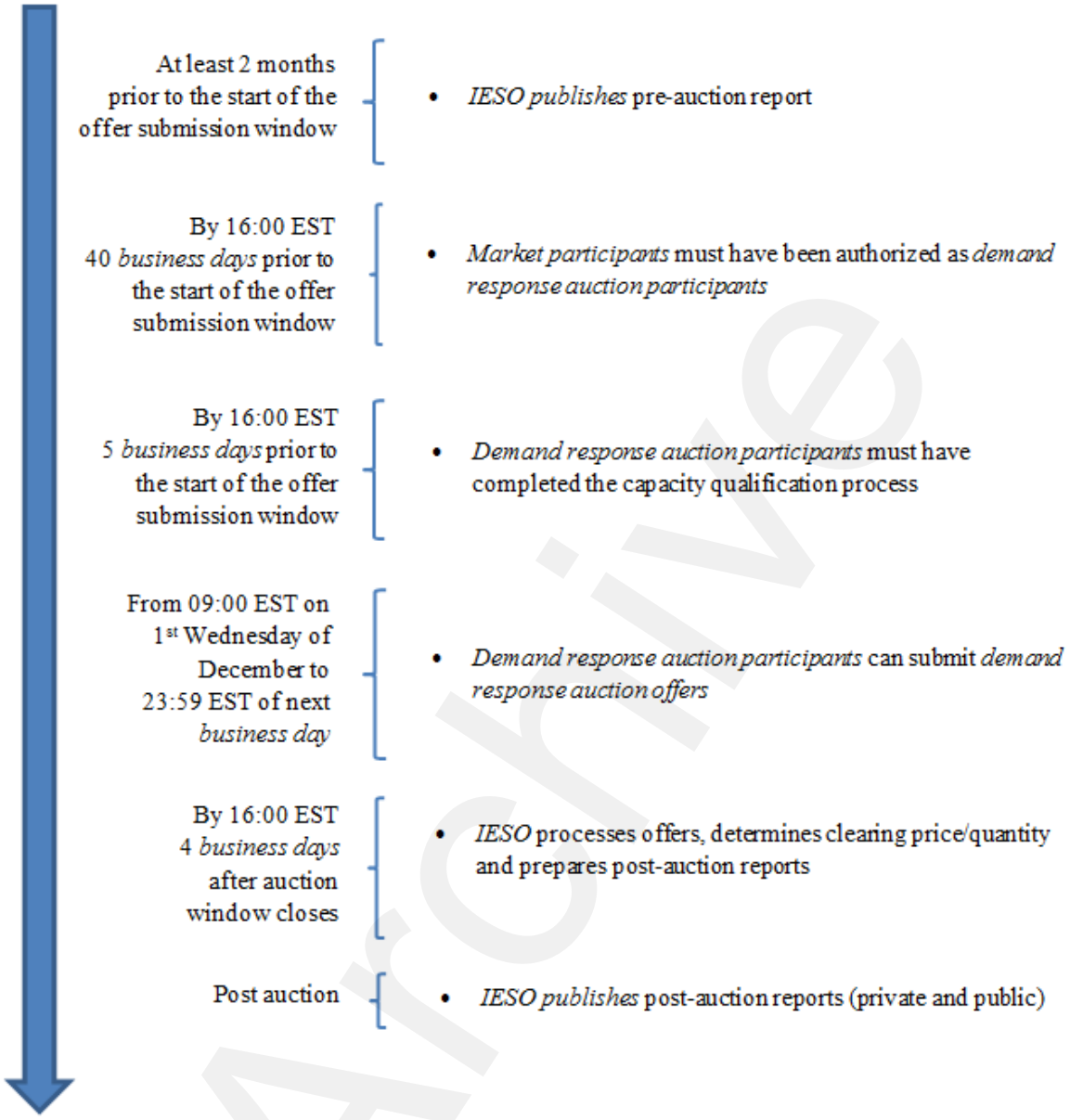


Figure 3-2: Demand Response Auction Timeline

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3.3 Commitment Periods

The c*ommitment period* is the length of time for which a successful *demand response auction participant* is required to make their *demand response capacity obligation* available for *dispatch* through the *energy market* during the availability window.

Some types of demand response resources will have different performance profiles over different seasons. Utilizing seasonal *commitment periods* fosters increased participation and provides greater flexibility for demand response resources to offer into the auction in a manner most consistent with their capability.

There are two seasonal *commitment periods* for the *demand response auction*, defined as:

- Summer – May 1 to October 31
- Winter – November 1 to April 30

Forward period is the period of time following the *demand response auction* to the first day of the *commitment period*, as shown in Figure 3-3. The length of the forward period for the summer *commitment period* will be approximately five months and the length of the forward period for the winter *commitment period* will be approximately eleven months.

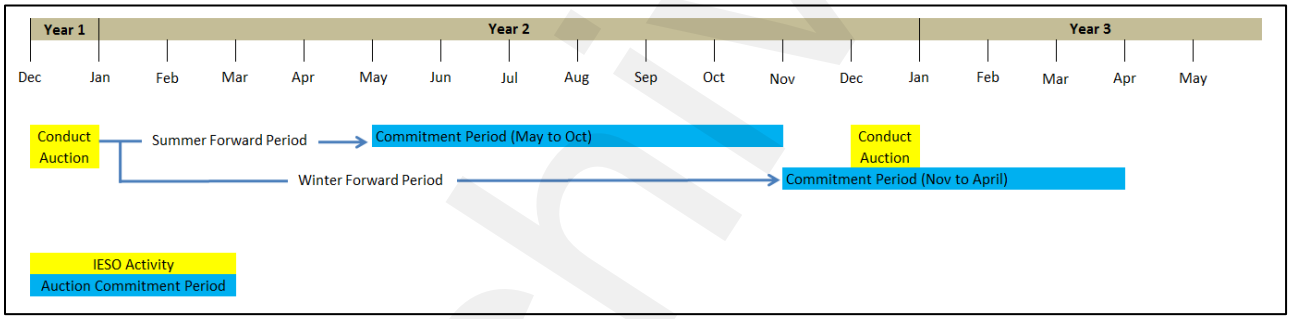


Figure 3-3: Commitment and Forward Periods

Demand response auction participants may choose to submit *demand response auction offers* into either one or both of the *commitment periods*. The auction for both *commitment periods* will take place at the same time in December, and will require separate *demand response auction offers* for each of the *commitment periods*. The two *commitment periods* will be evaluated individually using seasonal *demand response auction offers* compared to seasonal demand curves, and will therefore have their own *demand response auction clearing price* and quantity. Participants will receive a separate *demand response capacity obligation* for each period, where applicable, if they successfully clear the auction.

Market participants who wish to participate in the *demand response auction* are required to complete their authorization and registration requirements, during the forward period, as explained in Section 6 of this manual.

3.4 Availability Window

Availability window is the range of *business days* and hours during a *commitment period* that a demand response resource is expected to be available to provide demand response. The summer availability window will be *business days* from 12:00 to 21:00 EST (hour ending 13 to hour ending 21) and the winter availability window will be *business days* from 16:00 to 21:00 EST (hour ending 17 to hour ending 21).

Both resource types — *hourly demand response* resources and - *dispatchable loads*— are eligible for an availability payment associated with their *demand response capacity* by submitting bids in every hour of the availability window during the *commitment period* (Ch. 7, S. 19.5.1 and 19.4.1 of the *market rules*).

3.5 Demand Curve Elements

A *demand response auction* demand curve is a representation of the reference points against which the auction compares available *demand response auction offers* to supply *demand response capacity* for a pre-determined target. The *demand response auction* will make use of a downward-sloping demand curve defined by the following parameters and illustrated in Figure 3-4 below:

- Target capacity
- Reference price
- Maximum and minimum auction clearing prices
- Capacity limits

Given the dynamic nature of the *energy market*, the *IESO* will review the demand curve parameters at least once every three years to ensure it is reflective of the current market conditions and system needs.

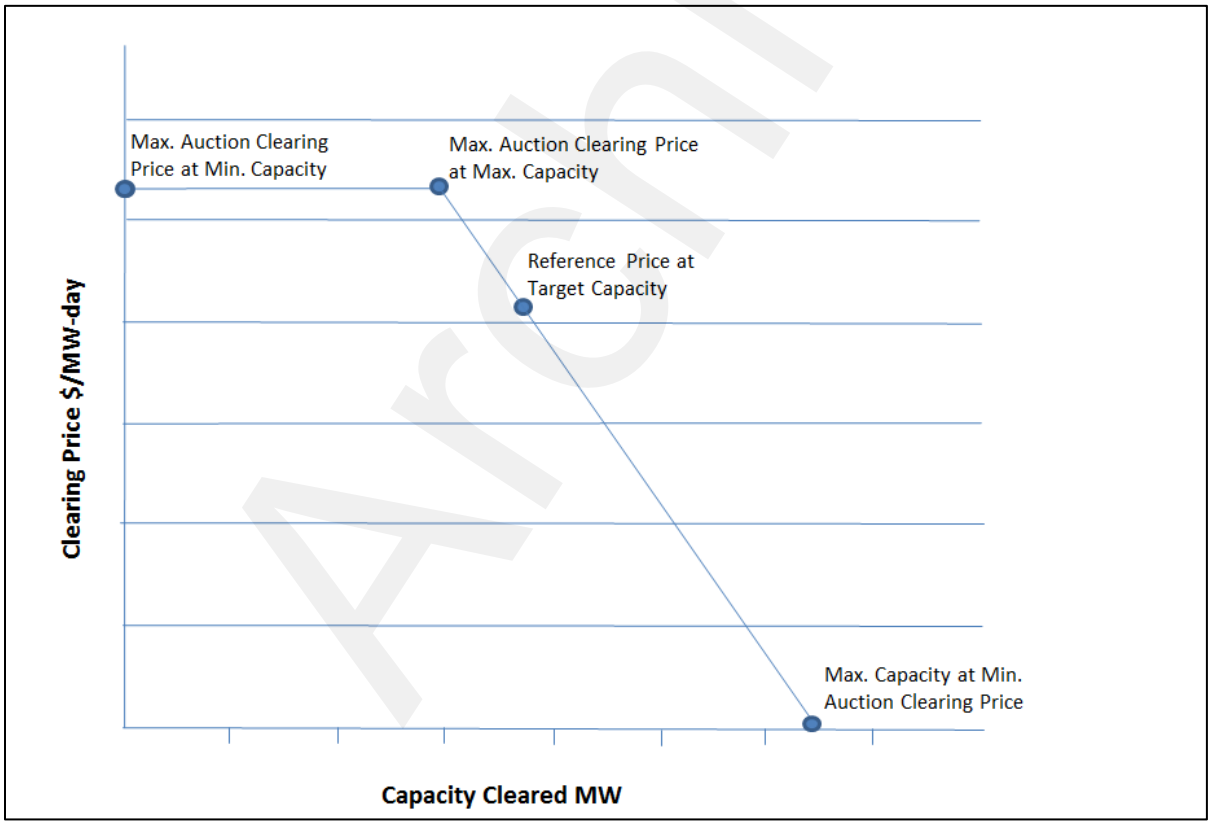


Figure 3-4: Downward Sloping Demand Curve

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

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3.5.1 Target Capacity

The target capacity for each *commitment period* will be determined based on the following factors (Ch. 7, S. 18.5.2 of the *market rules*):

- the amount of quantity exiting the *capacity based demand response program*,
- the target capacity from the previous *demand response auction*, and
- any additional needs identified by the *IESO*.

The *demand response target capacity* for each *commitment period* shall be *published* by the *IESO* in the pre-auction reports (Ch. 7, S.18.5.2 of the *market rules*).

3.5.2 Reference Price

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

The *demand response auction reference price* for each *commitment period* shall be *published* by the *IESO* in the pre-auction reports (Ch. 7, S.18.5.2 of the *market rules*).

3.5.3 Maximum and Minimum Auction Clearing Price

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

The minimum *demand response auction clearing price* will be $0/MW-day.

The maximum and minimum *demand response auction clearing price* for each *commitment period* shall be *published* by the *IESO* in the pre-auction reports (Ch. 7, S.18.5.2 of the *market rules*).

3.5.4 Capacity Limits

The three capacity limits used in the demand curve are:

- the minimum capacity,
- the maximum capacity at maximum auction clearing price, and
- the maximum capacity

The minimum capacity is the minimum amount of *demand response capacity* that the *IESO* will clear through the auction for each *commitment period*.

The maximum capacity at the maximum auction clearing price is the maximum amount of capacity which the *IESO* will clear through the auction at the maximum auction clearing price. The maximum capacity *at* maximum 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 *demand response auction reference price*,
- TC is the *demand response target capacity*, and
- MaxP is the maximum auction clearing price.

The maximum capacity is the maximum amount of *demand response capacity* which the *IESO* will clear through the auction. The maximum capacity will be determined by forming a straight line between the points defined by the maximum capacity at the maximum auction clearing price and the *demand response target capacity* at the *demand response auction reference price*, and extending this line to the price of $0/MW-day.

The capacity limits for each *commitment period* shall be *published* by the *IESO* in the pre-auction reports (Ch. 7, S.18.5.2 of the *market rules*).

3.6 Zonal Constraints

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

Each zone will have a set of *demand response zonal constraints* defined. These include

- minimum amount of demand response capacity to be procured
- total maximum amount of demand response capacity that can be procured
- maximum amount of demand response capacity from resources not revenue-metered by the IESO that can be procured. This limit will not set the zonal *demand response auction clearing price*.

The *demand response auction* may clear at different *demand response auction clearing prices* in different zones.

The *IESO* shall *publish demand response zonal constraints* in the pre-auction reports (Ch. 7, S.18.5.2 of the *market rules*).

– End of Section –

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4. Pre-Auction Requirements

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

The *IESO* shall prepare a pre-auction report containing *demand response auction* related information and *publish* it in advance of the auction, as explained in Section 4.1 below. There are pre-auction registration, authorization and *demand response auction deposit* requirements for *market participants* who wish to participate in the *demand response auction*, as further explained in Sections 4.2 and 4.3 below.

4.1 Pre-Auction Reporting Obligations

Prior to the *demand response auction*, the *IESO* shall *publish* a pre-auction report to include the following reference points, for each *commitment period* (Ch. 7, S. 18.5.2 of the *market rules*):

1. *Demand response target capacity*
2. *Demand response auction reference price*
3. Minimum and maximum *demand response auction clearing prices*
4. Minimum and maximum *demand response auction capacity limits*
5. Maximum *demand response auction capacity limits* at the maximum *demand response auction clearing price*
6. Zonal limitations for each electrical zone, as explained in Section 3.6 of this manual

In addition to these reporting obligations, the *IESO* will also provide to the *market participants:*

- the timelines for *demand response auction participants* to submit the amount of *demand response capacity* that they are willing to provide as *demand response auction offers*;
- the dates that the *IESO* will conduct the *demand response auction* as well as the date by which the *IESO* will *publish* the public and private post-auction reports (Ch. 7, S. 18.5.4 of the *market rules*); and
- a mapping of Local Distribution Centers (LDCs) to the *IESO*'s electrical zones.

4.2 Pre-Auction Authorization Process

All prospective participants who wish to participate in the *demand response auction* are required to be authorized as *demand response auction participants* (Ch. 2, S. 2.1.1.1.10 of the *market rules*). This would require participant authorization through the *IESO*'s market registration process. Market registration processes are further detailed in "Market Manual 1, Part 1.1: Participant Authorization, Maintenance and Exit".

4.3 Capacity Qualification

As part of the capacity qualification process, the *IESO* will determine the total maximum capacity a *demand response auction participant* can offer in the *demand response auction* – referred to as "qualified capacity".

Demand response auction participants who wish to participate in a given *demand response auction* shall provide to the *IESO* the quantity of capacity that they can provide from each individual resource

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or aggregated load resource, with supporting documentation that describes where the *facility* is electrically located and how the proposed demand reduction will be achieved (Ch. 7, S. 18.2.1 of the *market rules*). The IESO will communicate the submission deadline for this information via the pre-auction report.

Authorized *demand response auction participants* are required to submit, via Online IESO[1], the following information in order to qualify through the *demand response capacity* qualification process:

1. The amount of *demand response capacity*, not less than 1 MW per electrical zone, they are willing to provide.

2. The *commitment period* for which they are willing to submit offers. Participants may choose to submit offers for one or both *commitment periods*.

3. The zonal location of demand response resources and/or contributors for which they are willing to submit offers. Participants may choose from the ten electrical zones to submit offers. The *IESO* shall *publish* zonal constraints in the pre-auction reports, as explained in Section 4.1 of this manual.

4. Whether or not the *demand response resource* is revenue metered by the *IESO*. Refer to Section 6.3.2 for details on submitting meter data information.

5. The Load Reduction Plan.

6. Confirmation of having submitted the *demand response auction deposit* as determined by the *IESO*, further explained in Section 4.3.1 of this manual.

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

i. Verify the *demand response auction participant* has completed the authorization process as outlined in Section 4.2 of this manual, and
ii. Ensure the *demand response auction participant* or associated *market participant* has not been disqualified from auction participation, due to failure to reduce consumption pursuant to a dispatch or activation notice (Ch.7, S. 18.6.2 of the *market rules*).

4.3.1 Demand Response Auction Deposit

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

The purpose of this deposit is to establish the creditworthiness of the *market participant* for auction activities at the outset of the auction process. The pre-auction deposit is also intended to ensure that the *demand response auction participant* fulfills any auction and pre-*commitment period* obligations.

The *IESO* will calculate the *demand response auction deposit* amount a *demand response auction participant* is required to submit for each *commitment period*, based on the amount of qualified

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

capacity in each *commitment period* of the *demand response auction* (Ch. 7, S. 18.3.1 of the *market rules*).

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

Demand response auction deposit = 3% * (demand response qualified capacity * maximum auction clearing price per MW day) * number of *business days* in *commitment period*

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

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

a. Irrevocable commercial letter of credit, in a form acceptable to the *IESO* (Ch.7, S.18.4.2 of the *market rules*), provided by an *IESO*-approved bank (Ch.7, S.18.4.1.1 of the *market rules*), or
b. Cash deposits made to the *IESO* by or on behalf of the authorized *market participant* (Ch.7, S.18.4.1.2 of the *market rules*). The *IESO* will not pay interest on cash deposits.

Letter of Credit must be submitted to the *IESO* in original hard copy form.

Demand response auction deposits by cash may be submitted by *electronic funds transfer* to an *IESO*-designated account.

The *IESO* will verify all submitted *demand response auction deposits* for participation in the *demand response auction* by:

- Reviewing the amount and type of deposit,
- Verifying that it meets the submission timing requirements, and
- Ensuring applicants are authorized as *demand response auction participants*.

The *IESO* will release the deposit for each successful *demand response auction participant* when the *demand response auction participant* is authorized as a *demand response market participant*, sufficient *prudential support* is posted and at least one resource is registered to meet the obligation awarded to the participant for each *commitment period* in each of the cleared electrical zones. The *IESO* will refund deposits for unsuccessful auction participants, within ten *business days* from the publication date of the post-auction report.

– End of Section –

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5. Auction Mechanics

Demand response auction mechanics involves a 3-stage process, as displayed in Figure 5-1 below:

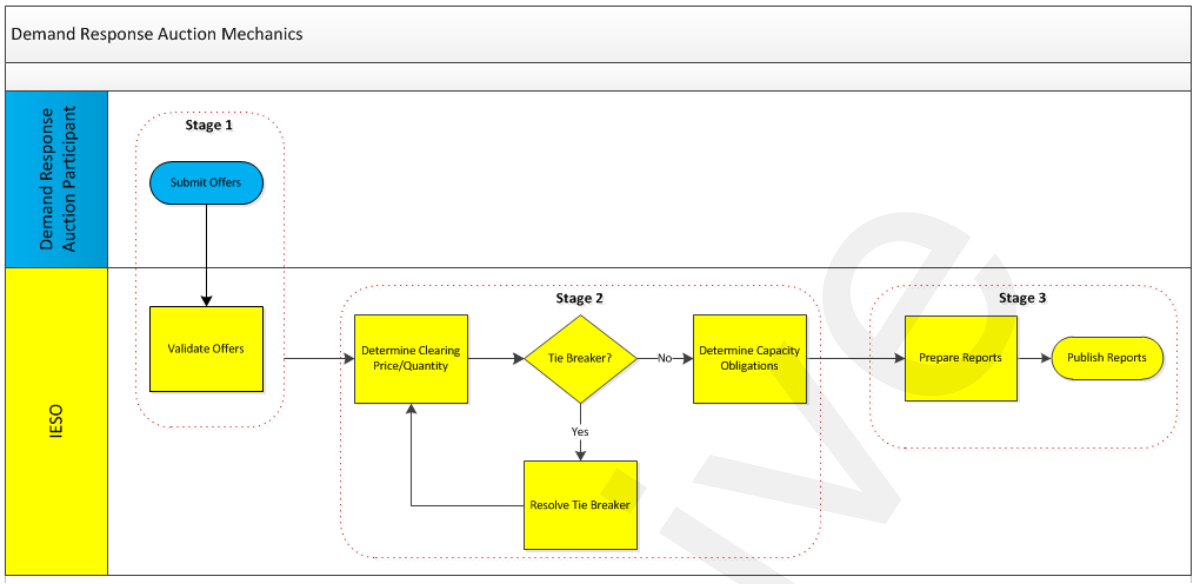


Figure 5-1: Demand Response Auction Mechanics Overview

5.1 Stage 1: Offer submission and validation

Demand response auction participants are required to submit offers to the *demand response auction* via Online IESO, following the auction timelines detailed in Section 3.2 of this manual. Each *demand response auction participant* may submit an offer for any quantity between 1 MW and the qualified *demand response capacity* in the pre-auction process, using offer laminations reflecting the price of providing the various levels of capacity.

Demand response auction offers must be submitted on a seasonal *commitment period* basis. A complete *demand response auction offer* includes a set of up to 20 monotonically increasing *price-quantity pairs* with the total offered quantity across all offers equal to or less than the qualified capacity for that zone. The *demand response auction offer* quantity must increase with every new lamination added to an offer set (Ch.7, S. 18.6.3.5 of the *market rules*).

The *demand response auction offer* specified by the *market participant* will apply for the entire *commitment period*. The prices offered represent the minimum price at which the participant is willing to provide each incremental quantity of *demand response capacity*.

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

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The participant must be ready to provide *demand response capacity* in the amount of their *demand response capacity obligation* by the first day of the *commitment period* or face non-performance charges as explained in Section 7 of this manual.

5.2 Stage 2: Auction Clearing

Once the *demand response auction offer* submission window closes, the *IESO* will review all *demand response auction offers* to determine the *demand response auction clearing prices* and quantities for each zone, as per the timelines detailed in Section 3.2 of this manual. For each *commitment period*, the *IESO* shall determine the *demand response capacity obligation* in each zone for each *demand response auction participant* (Ch. 7, S. 18.7.3 of the *market rules*), following the process stated below.

The *IESO* will take all *demand response 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 *demand response zonal constraints* and will determine the *demand response auction clearing price* for each zone. When there is a *demand response auction offer* not selected, either partially or in full, due to the *total* maximum *demand response zonal constraint*, the *demand response auction clearing price* for that zone will be set at the lesser of:

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

The Ontario-wide *demand response auction clearing price* will be equal to the price associated with the last cleared *price-quantity pair* associated with a *demand response auction offer*, and may clear at, below or above the demand curve. The total quantity cleared through a *demand response 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 5-2.

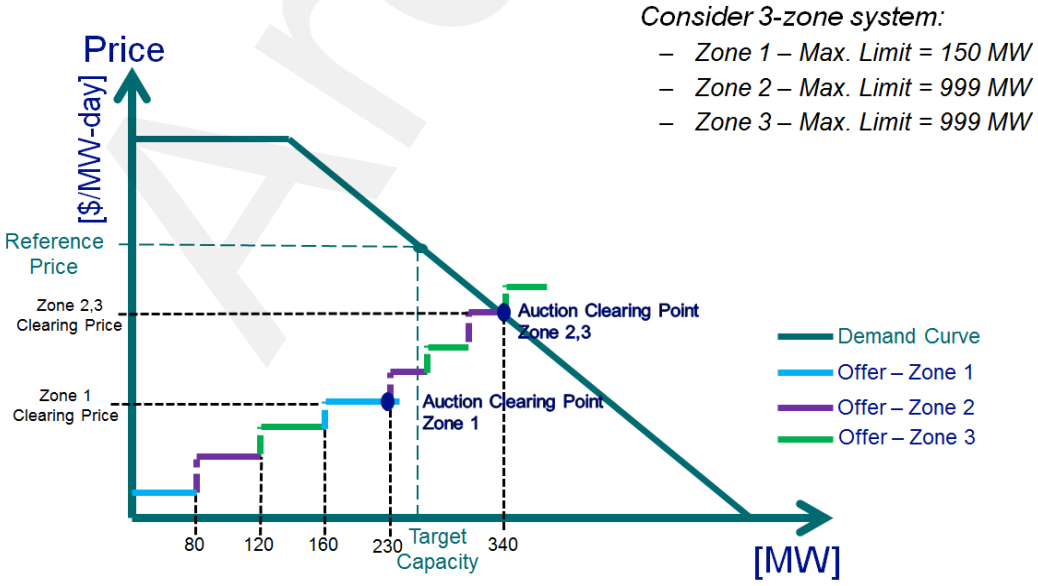


Figure 5-2: Auction Selection Process with Zonal Limits

In the example illustrated in Figure 5-2, Zone 1 has a *total* maximum *demand response zonal constraint* of 150 MW. All offers are stacked by increasing price against the demand curve for the *commitment 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 *demand response zonal constraints*. 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 *demand response zonal constraints*, a zonal *demand response auction clearing price* will be determined, in the manner described above. The overall procurement will continue and the *demand response auction offers* will clear until the intersection with the demand curve at 340 MW, which will also set the *demand response auction clearing price* for Zone 2 & 3, and is also referred to as the Ontario-wide *demand response auction clearing price*.

If two or more *demand response auction participants* submit a *demand response auction offer* at the same price for the last available quantity, the *demand response auction offer* with the earlier time stamp[2] shall be selected as the successful *demand response auction offer* (Ch.7, S. 18.7.5 of the *market rules*).

Once the *demand response auction clearing price* and quantity are set, the *IESO* shall determine for each *commitment period*, the *demand response capacity obligation* for each *demand response auction participant* and its resources (Ch. 7, S. 18.7.4 of the *market rules*).

5.3 Stage 3: Post-Auction Reporting Obligations

Once the auction has been cleared and successful *demand response 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.

The *IESO* shall *publish* public reports containing the following information for each *commitment period* (Ch.7, S. 18.8 of the *market rules*):

- The *demand response auction clearing price*;
- The amount of *demand response capacity* procured through the auction for each electrical zone; and
- The successful *demand response auction participants* that received a *demand response capacity obligation* and their respective *demand response capacity obligations.*

The *IESO* will also issue confidential post-auction reports to each *demand response auction participant* with the *demand response capacity obligations* for each electrical zone and *commitment period* (Ch.7, S. 18.8.2 of the *market rules*).

– End of Section –

[2] A time stamp refers to the time recorded by Online IESO when a *market participant* submits an offer during the 2-*business day* offer submission window.

6. Post-Auction Requirements

6.1 Participant Authorization

There are post-auction authorization and registration requirements for *demand response auction participants* who have successfully cleared and secured a *demand response capacity obligation*. Such participants are required to become authorized as a *demand response market participant* (Ch. 7, S.18.2.3 of the *market rules*).

The authorization enables them to participate in the *IESO physical market* in order to fulfill their *demand response capacity obligation.* Note that *market participants* that currently operate in the *IESO-administered markets* as a *demand response market participant* will need to complete a review of their *prudential support*. Post-auction *market participant* authorization processes are further detailed in "Market Manual 1, Part 1.1: Participant Authorization, Maintenance and Exit".

6.1.1 Prudential Support

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

Further details on demand response *prudential support* requirements are outlined in "Market Manual 5, Part 5.4: Prudential Support".

6.2 Registration Requirements

All participants that have received a *demand response capacity obligation* shall register *facilities* with the *IESO* to meet their *demand response capacity obligation* as either an *hourly demand response* resource or as a *dispatchable load* (Ch. 7, S. 19.2 and 19.3 of the *market rules*).

Market participants seeking to register their *facilities* must follow the processes outlined in "Market Manual 1, Part 1.2: Facility Registration, Maintenance, and De-registration".

6.2.1 Contributor Management

As part of the contributor management and registration process, the *demand response market participant* must submit information for each contributor to be associated to their registered demand response resource(s) through Online IESO. Each *demand response market participant* is responsible for maintaining the contributor registry throughout their commitment period, which may include a combination of virtual (LDC revenue metered) and/or physical (non-dispatchable loads) contributors. The Online IESO interface will also allow *demand response market participants* to generate contributor registry reports which will indicate their commitment period, contributor participation information (non-dispatchable load resources, virtual meter point IDs, and virtual contributors), and corresponding capacity obligations secured under each of their respective demand response resource(s).

The *demand response market participant* must submit their contributor(s) information through Online IESO, within the specified submission window, no later than the 14th *business day* prior to the start date of the effective month. Requests will be processed and responded to by the *IESO*, including notice of approval or rejection, at least 4 *business days* before the start of the effective month. Rejections and/or failure to address appropriate registration information by specified deadlines could potentially defer

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contributor changes to be applied to the next effective month – Refer to the *2016 DR Auction and DR Pilot Contributor Management Timelines* posted on the IESO public page under Market Calendars.

Demand response market participants must retain individual contributor *meter* data and supporting registration documentations including agreements with their respective contributor(s) for audit purposes. The *IESO* may request such information in order to verify the accuracy of information disclosed by the *demand response market participant*.

For virtual contributors, the information must satisfy the following applicable requirements:

a. Contributor name, and physical address (Street, City, Province, Postal Code); where physical address must be in the same electrical zone as the associated demand response resource
    - The *demand response market participant* may use the zonal map tool located at; http://www.ieso.ca/zonal.map/index.html to confirm the electrical zone for the associated contributor;

b. Local Distribution Company (LDC) Name, Premise ID (unique service point/location ID.) and LDC account number – This information is indicated on contributors' LDC billing statement;

c. Contributor load class type (Industrial, Commercial, and/or Institutional);

d. Type of demand response: Specify if the demand response will be provided via load interruption or behind-the-*meter* generation;

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

e. Identification of contributor participation in other demand response or conservation initiatives (clean energy supply, standard offer programs, other conservation programs – peaksaverPlus);

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

g. *Demand response market participant* declaration of acknowledgment that the LDC has been notified of the contributors' participation in the IESO DR Auction ;

h. Data acquisition procedure: Specify if the data is collected directly from the *meter* (via remote interrogation), or provided to the *demand response market participant* by the LDC

    - *Demand response participants* are required to retain data records obtained directly from the meter (via remote interrogation) to be made available to the IESO, upon request, for auditability and verification purposes.

i. Record of Installation (ROI) must be submitted for each LDC meter installation associated with the Premise ID. The ROI may be submitted using Measurement Canada 3122 Record Of Installation form; or compiled using an equivalent format acceptable by the IESO that must include (at a minimum) the following information:

    Installation:

    - Address
    - Premise ID (Point of delivery ID, Service Point ID or Location ID as applicable)
    - Multiplier Used for Billing

    Meter:

    - Inspection Number

- Make
- Serial Number
- Type
- Volts
- Amps
- Multiplier
- Seal Year
- Measurement Canada Notice of Approval (NOA)

Instrument Transformer:

- Inspection Number
- Make
- Serial Number
- Type
- Volts (Primary/Secondary)
- Amps (Primary/Secondary)
- Accuracy Class
- Measurement Canada Notice of Approval (NOA)

j. Submission of Single line diagram (SLD) is required when more than one LDC metering installation is associated with the Premise Id, or 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 and premise Id.
- Embedded Connection Point(s) (point of sale) to distributor (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)
- If behind-the-*meter* generation, indicate generation location and nameplate information (MVA/kVA rating, output voltage)

For physical Contributors, the following requirements must be satisfied:

a. Non-dispatchable load Resource ID (subject to confirmation from Non-dispatchable load owner)

b. *Demand response capacity* in MW.

As part of the contributor management process, all revisions to a contributor request must be submitted to the IESO for review and approval. A revision is submitted under the following circumstances:

- A new contributor is added;
- An existing contributor is removed; or

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- An existing contributor's information is modified.

In instances when a new contributor is added and/or an existing contributor is removed, subject to *IESO*'s approval, the *demand response market participant* will be provided with a new Meter point Id (MPID) to reflect these changes. In addition to the issuance of a new MPID, the *demand response market participant* will also be required to submit monthly measurement data including an additional two months of historical measurement (baseline) data, as detailed in section 6.3.2.

6.3 Energy Market Participation

To meet their *demand response capacity obligation*, *demand response market participants* will be required to submit *dispatch data* in the day-ahead commitment process as set out in "Market Manual 9, Part 9.2: Submitting Operational and Market Data for the DACP", and in the *real-time market* as set out in "Market Manual 4, Part 4.2: Submission of Dispatch Data in the Real-Time Energy and Operating Reserve Markets". *Demand response market participants* are required to follow *dispatch instructions* as set out in "Market Manual 4, Part 4.3: Real-Time Scheduling of the Physical Markets".

The ability of a *demand response market participant* to deliver their *demand response capacity obligation* will be verified by the *IESO* through scheduling of test activations in the *real-time market*, as set out in "Market Manual 7, Part 7.3: Outage Management".

6.3.1 Outage Management/ Non-Performance Events

Demand response market participants that are *dispatchable loads* are required to submit *outage* requests as set out in "Market Manual 7, Part 7.3: Outage Management".

Demand response market participants that are *hourly demand response* resources are required to submit non-performance events[3] as set out in "Market Manual 7, Part 7.3: Outage Management"..

6.3.2 Measurement Data Submissions

Prior to monthly measurement data submissions, the *demand response market participants* with *demand response capacity obligations* in either summer or winter commitment periods are required to complete the Contributor Management process for each of their respective demand response resource(s) through Online IESO.

Demand response market participants with virtual contributors are required to submit monthly five-minute interval measurement data (single one month data file per virtual meter point ID) through Online IESO in accordance with the *2016 DR Auction and DR Pilot Contributor Management Timelines* posted on the IESO public page under Market Calendars. In addition to providing measurement data on a monthly basis, the *demand response market participant* must also submit an additional two months of historical measurement data (a single three month data file per virtual meter point ID) through Online IESO for the following two conditions:

i. At the beginning of the first commitment period; or

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

ii. On completion of Contributor Management Request(s) which includes any removal or additions of virtual contributor(s), a new virtual meter point ID will be issued with an effective month to reflect changes to virtual contributor registry.

Processing of Measurement Data

Virtual contributors will have either a uni-directional meter (kWh delivered) or a bi-directional meter (kWh delivered and kWh received). The *demand response market participants* must adhere to the following methodology when aggregating contributor meter data and submitting a consolidated monthly measurement data file (as illustrated in Figure 6-1):

- Virtual 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 contributor
- Virtual contributors with a bi-directional meter type, the contributors 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 contributors by channel per interval.

File Format Requirements for Measurement Data Submissions

Monthly measurement data including historical measurement data, submitted by *demand response market participants* through Online IESO, must adhere to the following requirements:

- Must *not* include any measurement error corrections;
- Must *not* include any loss adjustments;
- Must be provided in the following format:
    - A CSV (comma separated values) file format compatible with the *IESO*'s Meter Data Acquisition System, containing two channels of 5 minute engineering unit values (without any gaps or overlaps).
    - The CSV data file shall adhere to the following format (separated by commas) corresponding to each column name, as illustrated in Figure 6-2 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

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- 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
2016/01/01,00:05,111.111,0
2016/01/01,00:10,111.112,0
…
…..
2016/01/01,23:55,111.113,0
2016/01/01,24:00,111.114,0
```

Figure 6-1: Sample CSV File Format for Measurement Data Submission

Demand response market participants must submit their monthly measurement data including historical measurement data no later than the 6th *business day* before the end of the following month – please refer to the Contributor Management and Measurement data submission timelines posted on the IESO website for details.

The *IESO* will process all measurement data submissions and respond to the *demand response market participant* with notice of any errors by the 4th *business day* prior to the start of the effective month. The *demand response market participant* will then have (at a minimum of) 2 *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 Market Rules Chapter 9: Settlements and Billing Section 4.7J Demand Response Capacity Obligations.

Demand response market participants are required to submit the missing measurement data submission for the following effective month's deadline. For example; if the *demand response market participant* fails to submit by the July measurement data submission deadlines, then the *demand response market participant* is required to submit the July measurement data submission following the August measurement data submission deadlines.

Demand response market participants must retain individual contributor measurement data and supporting registration documentation including agreements with their respective contributor(s) for audit purposes. The IESO may request such information in order to verify the accuracy of information disclosed by the *demand response market participant.*

– End of Section –

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7. Settlements

Demand response market participants with *demand response capacity obligations* will be settled, for both payments and non-performance charges, using the *physical markets settlement process* as detailed in "Market Manual 5, Part 5.5: Physical Markets Settlement Statements". Details on how the costs will be recovered are also provided in "Market Manual 5, Part 5.5: Physical Markets Settlement Statements".

Demand response market participants with *demand response capacity obligations* will be paid availability payments as detailed in "Market Manual 5, Part 5.5: Physical Markets Settlement Statements". Applicable non-performance charges will apply when *energy market* participation requirements outlined in Section 6.3 are not met.

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

- Availability requirements are not met (i.e. availability charge);
- Measurement data submission was not received by the *IESO* by the deadline (i.e. administration charge);
- *Dispatch instructions* were not followed (i.e. *dispatch* charge); and
- Failing to deliver capacity in the *energy market* (i.e. capacity charge).

Non-performance charges will be calculated and settled as detailed in "Market Manual 5, Part 5.5: Physical Markets Settlement Statements".

7.1 Non-Performance Factors

The non-performance factors referenced in "Market Manual 5, Part 5.5: Physical Markets Settlement Statements" will use the factors listed in the table below for the month that is being settled.

Table 7-1: Non-Performance Factors

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

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Month	Factor
November	1.0
December	1.5

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8. Buy-out Process

Successful *demand response auction participants* and *demand response market participants* have the option to buy-out of their *demand response capacity obligations* at any time. A full or partial buy-out may be requested anytime during the forward period or the *commitment period*. The buy-out will be valid from the effective date of the buy-out request until the end of the associated *commitment 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 "Market Manual 5, Part 5.5: Physical Markets Settlement Statements" for details on how the buy-out charge is calculated prior to initiating the buy-out process.

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

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

- *Demand response capacity obligation* ID;
- Effective date of the buy-out request[4];
- Buy-out *commitment period*: Specify the *commitment period* the buy-out is being requested for;
- Buy-out zone; and
- Buy-out capacity: Specify the capacity of the buy-out request in MW. In the case of a partial buy-out request, the remaining *demand response capacity obligation* must be greater than or equal to 1 MW. In the case of a full buy-out request, the remaining *demand response capacity obligation* must be 0 MW.

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

- Approve the buy-out request: The *IESO* will notify the participant of the applicable buy-out charge.
    - If the *demand response auction participant* has requested for a partial buy-out, the *IESO* will notify it of the revised *demand response capacity obligation*.
    - If the *demand response auction participant* has requested for a full buy-out, the *IESO* will refund its pre-auction deposit amount within ten *business days* after the *IESO* has received payment for the buy-out charge.
    - If the demand response *prudential support obligation* is revised downward due to a buy-out, the *IESO* will refund the difference after the *IESO* has received the payment for the buy-out charge. The revised *prudential support obligation* will be based on the revised *demand response capacity obligation*.

  OR

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

[4] For a *demand response market participant* that has not registered a resource for a *demand response capacity obligation*, the effective date of the buy-out request must be specified as the first day of the associated *commitment period*;

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