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MANUAL

Market Manual 5: Settlements

Part 0.5.4: Prudential Support

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This procedure describes the activities to be undertaken by the *IESO* and *market participants* to manage the prudential support required to participate in the *day-ahead market*

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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commenced, continued or enforced, and any sanction or penalty may be imposed, as if the *legacy market rules* had not been revoked.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

This *market manual* provides administrative and procedural details to the *market rules* governing the *prudential support* process, including supplementary information relevant to understanding the rights and obligations of the *IESO* and *market participants* as they relate to the:

- review of *market participants' prudential support obligations* at the time of authorization and on an ongoing basis by the *IESO,* which may increase or decrease based on *market participants'* actual and expected market activities.[1]
- activities performed by *market participants* to post *prudential support* to satisfy their *prudential support obligations* for *physical transactions* and *virtual transactions* and actions undertaken by the *IESO*.

Market manuals must be read in conjunction with the applicable *market rules*. Where there is a conflict between a *market manual* and the *market rules*, the *market rules* shall prevail.

1.2. Scope

This *market manual* provides *market participants* with a summary of the steps and interfaces between *market participants* and the *IESO* with regards to managing their *prudential support*. The procedural workflows and steps serve as a roadmap and reflect the requirements set out in the *market rules* and *IESO* policies and standards.

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

- MR Ch.2 s.5.2: Market Participant Obligations
- MR Ch.2 s.5.3: Calculation of Participant Trading Limit, Default Protection Amount and Maximum Net Exposure for Physical Transactions
- MR Ch.2 s.5.4: Monitoring of Actual Exposure and Trading Limit for Physical Transactions
- MR Ch.2 s.5.5: Calculation of Actual Exposure for Physical Transactions

[1] Unless otherwise stated, references to a *market participant* in this procedure are deemed to also include persons who intend to become authorized as a *market participant*.

- MR Ch.2 s.5.6: Margin Call Requirements and the No Margin Call Option for Physical Transactions
- MR Ch.2 s.5.7: Obligation to Provide Prudential Support for Physical Transactions
- MR Ch.2 s.5.8: Reductions in Prudential Support Obligations for Physical Transactions
- MR Ch.2 s.5B: Capacity Prudential Requirements
- MR Ch.2 s.5C: Virtual Transactions
- MR Ch.2 s.5D: Prudential Support for Market Participants Authorized to Conduct Both Physical Transactions and Virtual Transactions
- MR Ch.2 s.8: Default Levy

1.3. Out-of-Scope

This *market manual* applies only to the *prudential support obligations* that relate to the *IESO's physical markets*. This *market manual* does not address:

- the process of posting *transmission rights* (*TR*) *market deposits*, which are a prerequisite for participating in a *TR auction*. This process is provided in **MM 4.4**;
- the process of posting *capacity auction* deposits, which are a prerequisite for participating in a *capacity auction*. This process is provided in MM 12; and
- the process of issuing a *default levy* by the *IESO*, which is provided in MM 5.9.

1.4. Prudential Support Overview

The *IESO* requires separate *prudential support* from *market participants* authorized, or seeking authorization, to:

- participate in the *day-ahead market* and *real-time market* using *physical transactions*;
- participate in the *day-ahead market* using *virtual transactions*; and
- deliver upon a *capacity obligation* required in the *capacity auction*.

The process to calculate the *market participants prudential support obligation* for *physical transactions* and for *virtual transactions* includes four steps:

1. *Market participant* provides information to the *IESO.*
2. The *IESO* calculates the *prudential support obligation*.

3. The *IESO* and the *market participant* review and agree upon the *prudential support obligation* amount, resulting in a Schedule A.
4. *Market participant* posts the required *prudential support obligation* amount in an acceptable form.

Daily monitoring and screening of *market participants' prudential support obligation* occurs once the *market participant* is authorized to participate in the *IESO-administered markets*.

The process to monitor *physical transactions* and *virtual transactions* includes two steps:

1. The *IESO* estimates the *market participant's actual exposure* and compares it to the *market participant's trading limit*.
2. The *IESO* issues a *margin call* warning or *margin call* to the *market participant*, if appropriate.

The components that are used in *market participants' actual exposure* estimate differ depending on whether *market participants* conduct only *physical transactions*, only *virtual transactions*, or a combination of *physical transactions* and *virtual transactions*.

Daily screening is limited to *market participants* conducting *virtual transactions*. The process to screen *virtual transactions* includes two tests:

1. The *IESO* screens whether a *market participant's* submitted-but-not-cleared *virtual transaction bid* and *offer* quantities exceed the *maximum daily trading limit* quantity.
2. The *IESO* screens whether the *IESO*-estimated daily cumulative submitted-but-not-cleared dollar exposure exceeds the *market participant's IESO*-determined *virtual transaction trading limit* margin.

1.5. Contact Information

Changes to this *market manual* are managed via the *IESO* Change Management process. Stakeholders are encouraged to participate in the evolution of this *market manual* via this process.

As part of the participant authorization and registration process, *market participants* are required to identify a Prudential Requirements Contact. If a *market participant* has not identified a specific contact, the *IESO* will seek to contact the Primary Contact for activities within this *market manual*, unless alternative arrangements have been established between the *IESO* and the *market participant*.

To contact the *IESO*, *market participants* can contact *IESO* Customer Relations at customer.relations@ieso.ca or *IESO* Prudentials at prudential@ieso.ca or use telephone or mail. Telephone numbers and the mailing address can be found on the [*IESO* website](). *IESO* Customer Relations staff will respond as soon as possible.

– End of Section –

2. Setting Prudential Support Obligations for Physical Transactions

(MR Ch.2 ss.5.1-5.3, 5.6, 5.7 and 5.8)

This section describes the process of setting *market participants' prudential support obligation* and the process of posting *prudential support* for *market participants* authorized to conduct *physical transactions* in the *day-ahead market* or the *real-time market.*

Overview - *Market participants* that intend to conduct *physical transactions* in the *day-ahead market* or the *real-time market* are required to initiate the process to set up their *prudential support obligations* and to post *prudential support* prior to entering the *IESO-administered market.*

Market participants with *prudential support obligations* are grouped into two categories:

- *market participants* authorized as *energy traders*[2]; and
- *market participants* not authorized as *energy traders*.

The process for setting the *prudential support obligation* consists of the following activities:

1. *Market participants* submit *prudential support* information to the *IESO* using Online IESO.
2. The *IESO* uses the information submitted by the *market participants* to calculate the *market participants' prudential support obligation* subject to any applicable reductions.
3. The *IESO* informs *market participants* of the *prudential support obligation* using Online IESO.
4. *Market participants* post their *prudential support* in a form required by the *IESO.* If no further changes are required, the *IESO* will provide the *market participants* with a Schedule A[3].

[2] For the purposes of setting a *market participant's prudential support obligation* for *physical transactions* and monitoring activities in respect of *physical transactions*, as described in sections 2 and 3 of this *market manual*, a *retailer* shall be deemed to be an *energy trader* (**MR Ch.2 s.5.2.10**).

[3] A Schedule A sets out a *market participant's prudential support obligation* and is available in the "prudential support obligation" tab of the Prudential Manager on the *IESO* portal.

2.1. Submitting Prudential Support Information for Physical Transactions

As part of the Authorization and Participation process described in **MM 1.5**, *market participants* must submit their *prudential support* information using Online IESO. To do this, each prospective *market participant* must first assign a Prudential Requirements Contact. This contact will be granted permissions in Online *IESO* to submit the information required to establish the *market participant's prudential support obligation* and will function as the point of contact for the *IESO* for matters relating to *prudential support*.

2.1.1. Information Required from Market Participants Authorized as Energy Traders

Market participants authorized (or requesting authorization) as *energy traders* provide two sets of information:

- information to calculate *maximum net exposure*. This information consists of the estimated maximum monthly *settlement* amount and the requirement to submit a *self-assessed trading limit*; and
- application for reductions.

2.1.1.1. Information to Calculate Maximum Net Exposure

(MR Ch.2 ss.5.3.1, 5.3.2, 5.3.4.2, 5.3.4.3, 5.3.5 and 5.3.8.2)

Estimated net settlement amounts - *Market participants* authorized as *energy traders* who have not conducted *physical transactions* for *energy* for at least three previous *energy market billing periods* are required to provide their estimated net *settlement amount* using Online IESO for the upcoming *energy market billing period*. After an *energy trader* has conducted *physical transactions* for *energy* for at least three previous *energy market billing periods*, *energy traders* are no longer required to provide their estimated net *settlement amounts.* The *IESO* will use an average of the actual net *settlement amounts* for the three most recent *energy market billing periods* for which the *energy trader* has conducted *physical transactions* for *energy* to calculate *maximum net exposure*.

Self-assessed trading limit - Prospective *market participants* who wish to be authorized as *energy traders* are also required to submit a *self-assessed trading limit* using Online IESO, even if that *self-assessed trading limit* is zero, in accordance with **MR Ch.2 s.5.3.2**. Once authorized as a *market participant*, *energy traders* may, on an ongoing basis, elect to submit a revised *self-assessed trading limit* in dollars or as a percentage of their estimated net *settlement amount. Energy traders* may consider using up to 100% of their estimated net *settlement amount* for the upcoming *energy market billing period* in their calculation if they want to decrease the likelihood of receiving *margin calls*. *Energy traders* who wish to post the lowest amount of *prudential support* allowable by the *IESO* should continue to keep their *self-assessed trading limit* at zero.

2.1.1.2. Application for Reductions

(MR Ch.2 s.5.8)

Market participants authorized as *energy traders* may select one of the following for reductions:

- reduction for credit rating, in accordance with **MR Ch.2 ss.5.8.1** and **5.8.6.3**; or
- reduction for good payment history in accordance with **MR Ch.2 ss.5.8.3, 5.8.4, 5.8.6.1 and 5.8.6.2**.

2.1.2. Information Required from Market Participants Not Authorized as Energy Traders

Market participants not authorized as *energy traders* provide the following information:

- participant class;
- option to select the *no margin call option*;
- application for reductions; and
- information to calculate *maximum net exposure*. This information consists of the estimated exposure, *physical bilateral contracts*, and *self-assessed trading limits*.

2.1.2.1. Participant Class

To determine the *market participant's prudential support obligation, market participants* must indicate if they are a *distributor.*

2.1.2.2. Election of the No-Margin Call Option

(MR Ch.2 ss.5.6.4, 5.6.5, 5.6.6 and 5.6.7)

Subject to the *IESO's* approval, *market participants* that are authorized to conduct *physical transactions,* but are not authorized as a *virtual trader,* may elect to request to participate in the *no margin call option* using Online IESO, in accordance with MR Ch.2 s.5.6.4*. Market participants* that are approved by the *IESO* to participate under the *no margin call option* are exempt from receiving *margin calls* (**MR Ch.2 s.5.6.4**). *Margin calls* are issued to *market participants* when their *actual exposure* reaches 100% of their *trading limit*. However, the *IESO* determines the *prudential support obligation* for *market participants* electing the *no margin call* *option* using an alternate methodology as described in **MR Ch.2 ss.5.6.5** and **5.6.6**.

2.1.2.3. Applying for Reductions

(MR Ch.2 s.5.8)

Market participants that are not *distributors* may apply for either the credit rating or good payment history reduction to their *prudential support obligations* for *physical transactions*.

Distributors may apply for either a credit rating or good payment history reduction in addition to the reduction for the *distributor* prudential credit to their *prudential support obligation* for *physical transactions*:

- reduction for credit rating or reduction for good payment history; and
- *distributor* prudential credit.

Market participants that elect the *no margin call option* may only apply for reductions to their *prudential support obligations* for *physical transactions* if they are *small distributors* that are not authorized to conduct *virtual transactions* as permitted by **MR Ch.2 ss.5.6.6** and **5.6.7**.

Reduction for Credit Rating

(MR Ch.2 ss.5.8.1, 5.8.1A, 5.8.2, and 5.8.6)

Eligible *market participants* may apply to have their *prudential support obligation* for *physical transactions* reduced by requesting a reduction to their *maximum net exposure* using their credit rating. For this application, *market participants* provide their credit rating in accordance with Standard & Poors, Moody's and DBRS Morningstar. If *market participants* share their credit rating with multiple *market participants,* they must provide all the associated *market participant* information along with the percentage share to be allocated to each.

Reduction for Good Payment History

(MR Ch.2 ss.5.8.3, 5.8.4, 5.8.5, and 5.8.6)

Eligible *market participants* may apply to have their *prudential support obligation* for *physical transactions* reduced by requesting a reduction to their *maximum net exposure* based on evidence from the *market participants'* electricity purchases in Ontario.

Distributor Prudential Credit

(MR Ch.2 s.5.8.8)

The *Ontario Energy Board's* Retail Settlement Code authorizes *distributors* to collect *prudential support* from their customers*.*

Distributors are permitted to apply a 60% reduction to their *prudential support obligation* for *physical transactions* for every dollar in *prudential support* they have collected from their customers in accordance with **MR Ch.2 s.5.8.8**. Refer to **MR Ch.2 s.5.8.8** for additional information on the process for claiming this reduction including the submission of the "Affidavit Regarding Reduction in Prudential Support Obligations" – IMO_AFF_0001 form.

For example, if a *distributor* has a *maximum net exposure* of $25 million for its *physical transactions*, but the *distributor* has collected *prudential support* in the amount of $10 million from its own customers, and can provide verifiable proof (i.e. an affidavit) of said *prudential support* to the *IESO*, then its outstanding *prudential support obligation* would be $19 million [$25M – ($10M * 0.6)]. Any outstanding *prudential support obligation* would have to be met by using one or a combination of the other instruments listed in **MR Ch.2 s.5.7**. Under this option, a *distributor* can also claim a good payment history or a credit rating reduction pursuant to **MR Ch.2 ss.5.8.5** or **5.8.1A** to meet its *prudential support obligation* for its *physical transactions*. The *distributor* prudential credit will be deducted first before other applicable reductions can be applied.

2.1.2.4. Information to Calculate Maximum Net Exposure

(MR Ch.2 ss.5.2.4 and 5.3)

Estimated Exposure

To help the *IESO* estimate *market participants' maximum net exposure* for *physical transactions*, *market participants* will submit their estimated daily maximum quantity of *energy* to be transacted in both the *day-ahead market* and the *real-time market,* and the expected estimated peak load associated with the daily maximum quantity of *energy*. *Market participants* can update these estimated values in Online IESO for an upcoming *energy market billing period,* which may impact their *prudential support obligation*.

Option for Adjustments Based on Physical Bilateral Contracts

(MR Ch.2 ss.5.3.8A and 5.3.8B)

MR Ch.2 ss.5.3.8A and **5.3.8B** authorize eligible *market participants* to elect to adjust their *prudential support obligation* based on their *physical bilateral contracts*. If *market participants* request this election, they will:

1. Submit to the *IESO* the aggregate *energy* quantities and duration associated with the *physical bilateral contracts* from all applicable *resources;* and
2. Request that the *IESO* remove these *energy* quantities when calculating their *minimum trading limit* and *default protection amount* in respect of *physical transactions*.

Market participants are required to notify the *IESO* immediately upon a change in the submitted *energy* quantities or duration of their applicable *physical bilateral contracts,* including termination of any of the contracts.

Market Participant Self-Assessed Trading Limit

(MR Ch.2 ss.5.3.2 and 5.3.3)

For the purpose of establishing *market participants' trading limit*s and *maximum net exposure* for *physical transactions*, *market participants* that conduct *physical transactions* are required to submit a self-assessed *trading limit* using Online IESO in accordance with **MR Ch.2 ss.5.3.2** and **5.3.3** by providing either:

- the number of calendar days, between 7 and 90 inclusive, in which they intend to participate in *physical transactions* in the *day-ahead market* and the *real-time market*; or
- a dollar amount for their *self-assessed trading limit* for the upcoming *billing period*.

A *market participant* might consider using a *self-assessed trading limit* of 49 calendar days of market activity to reduce the number of *margin calls* or seven calendar days of market activity to post a lower *prudential support* amount.

2.2. Calculating Prudential Support Obligation for Physical Transactions

2.2.1. Calculating Prudential Support Obligations for Market Participants Authorized as Energy Traders

(MR Ch.2 ss.5.3.1, 5.3.2, 5.3.4.2, 5.3.4.3, 5.3.5, 5.3.8.2 and 5.8)

Upon receipt of the *prudential support* information from *market participants*, the *IESO* undertakes a five-stage process to calculate the *prudential support obligation* for *physical transactions* for *market participants* authorized as *energy traders* during which the *IESO*:

- calculates the *minimum trading limit* as a dollar amount;
- calculates the *default protection amount* as a dollar amount, which is equal to the *minimum trading limit* in the previous step;

- assesses the *minimum trading limit* against the *self-assessed trading limit* submitted by *market participants*. The *IESO* then selects the greater of the two *trading limit* amounts and establishes the *maximum net exposure* for *market participants* as the sum of the selected *trading limit* and the *default protection amount*;
- applies any applicable reductions; and
- determines the *prudential support obligation* for *physical transactions*.

Figure 2-1 provides an illustration of how the *IESO* determines the *prudential support obligation* for *physical transactions* for *market participants* that are *energy traders*.

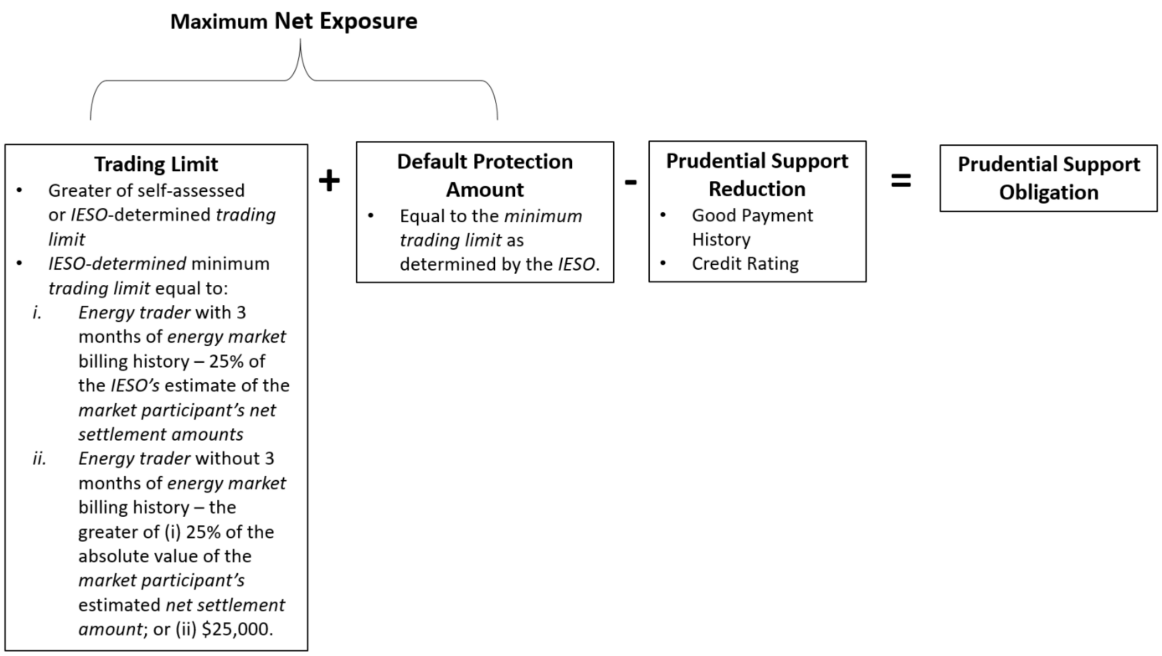

Figure 2-1: Determination of Prudential Support Obligation for a Market Participant that is an Energy Trader

For details on the process of calculating the *prudential support obligation* and *default protection amount* for a *market participant* authorized as an *energy trader* that has not conducted *physical transactions* for *energy* for at least three previous *energy market billing periods,* refer to section 2.2.1.5 below (**MR Ch.2 s.5.3.4.3**).

2.2.1.1. Determining the Minimum Trading Limit for Physical Transactions

(MR Ch.2 ss.5.3.4.2 and 5.3.4.3)

The *IESO* calculates the *minimum trading limit* by estimating the net *settlement amount* that a *market participant* would incur when conducting *physical transactions* in the *day-ahead market* and the *real-time market*.

For *market participants* that are *energy traders*, the *IESO* sets their *minimum trading limits* for their *physical transactions* to 25% of each *market participant's* estimated net *settlement amount* for the upcoming *energy market billing period*. If any *market participant* has been subject to more than one *margin call* per *billing period*, the *IESO* may use a greater percentage, up to and including 100%, of the *market participant's* estimated net *settlement amounts* (**MR Ch.2 s.5.3.4.2**).

To estimate the net *settlement amount,* the *IESO* uses the following:

- an average of the *market participant's* estimated net *settlement amounts* for *physical transactions* for the three most recent *energy market billing periods* where the *market participant* transacted *energy* within the *IESO-administered markets* (**MR Ch.2 s.5.3.4.2**); or
- an estimate of the *market participant's* future market activity as the estimated net *settlement amount* for *physical transactions* for the upcoming *energy market billing period* if the *market participant* has not conducted *physical transactions* for *energy* for at least three most recent *energy market billing periods*, calculated in accordance with **MR Ch.2 s.5.3.4.3**.

2.2.1.2. Determining the Default Protection Amount for Physical Transactions

(MR Ch.2 s.5.3.8.2)

Energy traders - The *default protection amount* estimates the debt that can be accumulated if a *market participant* were to default on a payment date until such time as the *market participant* could be removed from the *IESO-administered markets* and be prevented from incurring any further debt. For *market participants* that are *energy traders*, the *default protection amount* is equal to the *minimum trading limit* calculated by the *IESO*.

2.2.1.3. Determining the Maximum Net Exposure for Physical Transactions

(MR Ch.2 s.5.3.1)

Energy traders - The *IESO* calculates the *maximum net exposure* for *physical transactions* of an *energy trader* by adding the *trading limit* with the *default protection amount* in respect of *physical transactions*.

2.2.1.4. Application of Reductions

(MR Ch.2 s.5.8)

Energy traders - The *IESO* will reduce the *maximum net exposure* for *physical transactions* based on any approved reductions. Refer to section 2.1.2.3.

2.2.1.5. Determining the Prudential Support Obligation for Physical Transactions

Energy traders - The *IESO* determines the *prudential support obligation* for *energy traders* depending on whether they have conducted *physical transactions* for *energy* for three previous *energy market billing periods*.

Energy Traders with Transaction History for Three Previous Energy Market Billing Periods

(MR Ch.2 ss.5.3.4.2, 5.3.8.2 and 5.8)

For *energy traders* that have conducted *physical transactions* for *energy* for three previous *energy market billing periods*, their *prudential support obligation* for *physical transactions* is equal to their *maximum net exposure* for *physical transactions* minus applicable reductions.

Energy Traders Without Transaction History for Three Previous Energy Market Billing Periods

(MR Ch.2 ss.5.3.4.3, 5.3.8.2 and 5.8.6.3)

For *energy traders* that have not conducted *physical transactions* for *energy* for three previous *energy market billing periods*, their *prudential support obligation* for *physical transactions* is equal to their *maximum net exposure*.

The *IESO* requires *market participants* that are *energy traders* without any activity of conducting *physical transactions* for *energy* in the *IESO-administered markets* in three previous *energy market billing periods* to post no less than $50,000 of *prudential support* (representing the sum of $25,000 for the *trading limit* and *default protection amount*, respectively). This requirement applies to all *market participants* regardless of whether they expect to be a net creditor.

Calculating Prudential Support Obligations for Market Participants Not Authorized as Energy Traders

(MR Ch.2 ss.5.3.1, 5.3.2, 5.3.4, 5.3.4.1, 5.3.5, 5.3.6, 5.3.8, 5.3.8.1, 5.3.8A, 5.3.8B, 5.3.10A, 5.3.10B and 5.8)

2.2.1.6. Margin Call Option

Upon receipt of *market participants' prudential support* information, the *IESO* undertakes a six-stage process to calculate *market participants' prudential support obligation* for *physical transactions* under a *margin call* option, during which the *IESO*:

1. calculates the *minimum trading limit* as a dollar amount;
2. calculates the *default protection amount* as a dollar amount;

3. assesses the *minimum trading limit* against the *self-assessed trading limit* submitted by the *market participants*. The *IESO* then selects the greater of the two *trading limit* amounts and establishes the *maximum net exposure* for the *market participant* as the sum of the selected *trading limit* and the *default protection amount*;
4. adjusts the *minimum trading limit* and *default protection amount* for *physical bilateral contracts*;
5. applies any applicable reductions; and
6. determines the *market participant's prudential support obligation* for *physical transactions*.

Figure 2-2 provides an illustration of how the *IESO* determines the *physical transaction prudential support obligations* for *market participants* that are not *energy traders* under a *margin call option*.

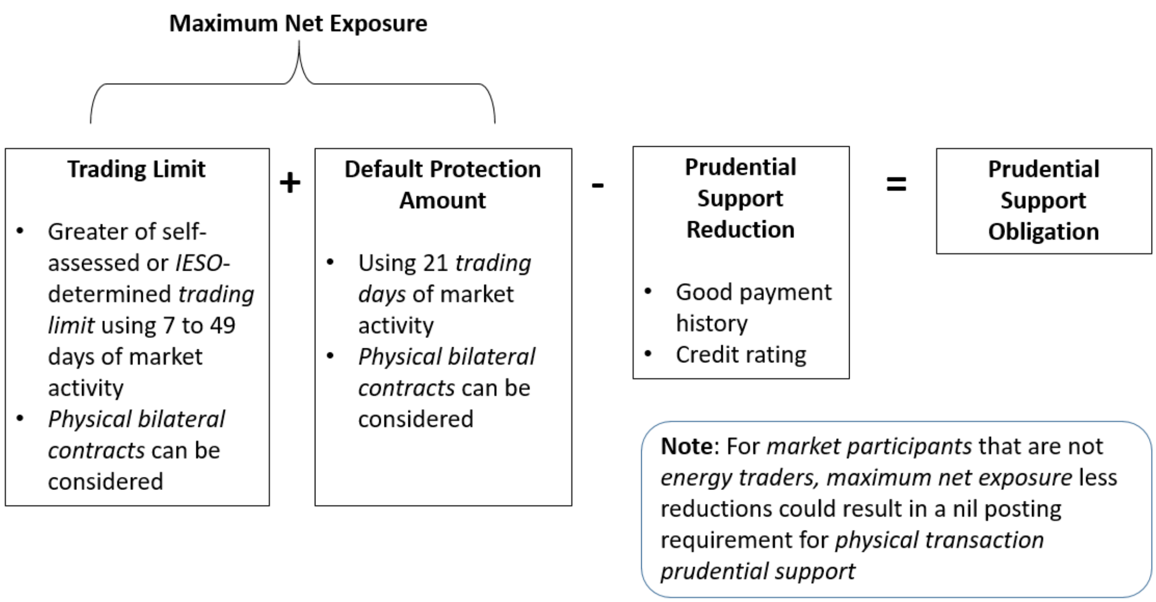

Figure 2-2: Margin Call Option for Physical Transactions for a Market Participant that is not an Energy Trader

The charges estimated as part of the *minimum trading limit* and *default protection amount* for a *market participant* that is not an *energy trader* include but are not limited to:

- *energy* exposure (including *physical bilateral contract* credit if requested by *market participant*);
- global adjustment;
- transmission exposure;

  - *line connection service* rate (as applicable);
  - *network service* rate (as applicable);
  - *transformation connection service* rate (as applicable);
- rural rate protection;
- *IESO* fee; and
- uplifts and ancillary charges.

The *IESO* applies HST to all charges listed as part of the *minimum trading limit* and *default protection amount* estimation.

Determining the Trading Limit for Physical Transactions

(MR Ch.2 ss.5.3.2, 5.3.4.1 and 5.3.5)

The *IESO* establishes the *trading limit* for *market participants* to limit the amount of debt that *market participants* may accumulate before the *IESO* issues a *margin call.* The *IESO* determines the *trading limit* for *physical transactions* based on the greater of a *market participant's* (i) *self-assessed trading limit*; and (ii) the *IESO*-calculated *minimum trading limit* for *physical transactions.*

The *IESO* calculates the *minimum trading limit* for *physical transactions* by estimating the net exposure that *market participants* would incur when they conduct *physical transactions* in the *day-ahead market* and the *real-time market*. This estimate accounts for at least seven calendar days of market activity, ignoring the impact of *physical bilateral contracts*. For additional information on the calendar days of market activity factored into the calculation of the *minimum trading limit*, refer to **MR Ch.2 s.5.3.4.1**.

In determining the relevant price basis to calculate the *minimum trading limit* in accordance with **MR Ch.2 s.5.3.10A,** the *IESO* will use up to the 97th percentile value of ranked values determined pursuant to **MR Ch.2 ss.5.3.10A.1** and **5.3.10A.2**, as applicable. For purposes of MR Ch.2 s.5.3.10A.3, shadow prices used from the day-ahead commitment process and the real-time market will be capped at +/- maximum market clearing price (i.e. +/-$2,000). The *energy* prices applicable to each *market participant* in the calculation of its *minimum trading limit* will be made available in the **Records** tab in Online IESO.

Determining the Default Protection Amount for Physical Transactions

(MR Ch.2 s.5.3.8.1)

The *IESO* determines the *default protection amount* by estimating the amount of additional debt *market participants* could experience if an *event of default* were to occur until the time *market participants* could be removed from the *day-ahead market* or the *real-time market*. The *IESO's* calculation of the *default protection* *amount* under a *margin call* option is similar to the methodology it uses to calculate the *minimum trading limit*.

For a *market participant* that is not an *energy trader,* the *IESO* determines the *default protection amount* for *physical transactions* by factoring 21 calendar days of market activity ignoring the impact of *physical bilateral contracts*, covering potentially both the *day-ahead market* activity and the *real-time market* activity following an *event of default*.

In determining the relevant price basis to calculate the *default protection amount* in accordance with **MR Ch.2 s.5.3.10A,** the *IESO* will use up to the 97th percentile value of ranked values determined pursuant to **MR Ch.2 ss.5.3.10A.1** and **5.3.10A.2,** as applicable . For purposes of MR Ch.2 s.5.3.10A.3, shadow prices used from the day-ahead commitment process and the real-time market will be capped at +/- maximum market clearing price (i.e. +/-$2,000). The *energy* prices applicable to each *market participant* in the calculation of its *default protection amount* will be made available in the **Records** tab in Online IESO.

Determining the Maximum Net Exposure for Physical Transactions

(MR Ch.2 s.5.3.1)

The *IESO* establishes *market participants' maximum net exposure* for *physical transactions* by adding the *market participants' trading limit* for *physical transactions* and *default protection amount* for *physical transactions*.

Adjustment of Minimum Trading Limit and Default Protection Amount for Physical Bilateral Contracts

(MR Ch.2 ss.5.3.8A and 5.3.8B)

If *market participants* that are not *energy traders* request an adjustment based on their *physical bilateral contracts*, as described in section 2.1.2.4, the *IESO* calculates their *minimum trading limits* and *default protection amounts* by removing the *energy* quantities associated with the *market participants' physical bilateral contracts* registered with the *IESO.*

For this calculation, the *IESO* assumes all transacted quantities are completed through the *day-ahead market* and *real-time market* net of *energy* quantities associated with those *physical bilateral contracts*. For details on *physical bilateral contracts*, refer to **MR Ch.2 ss.5.38A** and **5.3.8B** and **MR Ch.8**.

Application of Reductions

(MR Ch. 2 s.5.8)

The *IESO* will reduce the *maximum net exposure* for *physical transactions* based on any approved reductions. Refer to section 2.1.2.3.

Determination of Prudential Support Obligation

(MR Ch.2 s.5.3.9)

The *maximum net exposure* less allowable reductions that may be permitted under **MR Ch.2 s.5.8** constitutes the amount of *prudential support* for *physical transactions* that *market participants* not authorized as *energy traders* must submit*.* The *IESO* determines the *prudential support obligations* for *market participants* as follows:

- if the *maximum net exposure* calculated by the *IESO* for a *market participant* is positive, and available *prudential support* reductions do not lower the *market participant's prudential support obligation* to zero, the *market participant* must post prudential support to the *IESO*; and
- if a *market participant's maximum net exposure* for *physical transactions*, as calculated by the *IESO*, is zero or negative, the *market participant* is not required to post any *prudential support* to the *IESO* for *physical transactions*.

2.2.1.7. No Margin Call Option

(MR Ch.2 ss.5.6.4, 5.6.5, 5.6.6 and 5.6.7)

For *market participants* that elect the *no margin call option*, the *IESO* establishes the *maximum net exposure* for those *market participants' physical transactions* by factoring in 70 calendar days of market activity into the calculation. The *IESO* does not take into account *physical bilateral contracts* in determining *market participants' maximum net exposure* for *physical transactions* under a *no margin call option.* Other than *small distributors, market participants* that elect the *no margin call option* are ineligible to receive reductions to their *maximum net exposure* (refer to **MR Ch.2 s.5.6.6**).

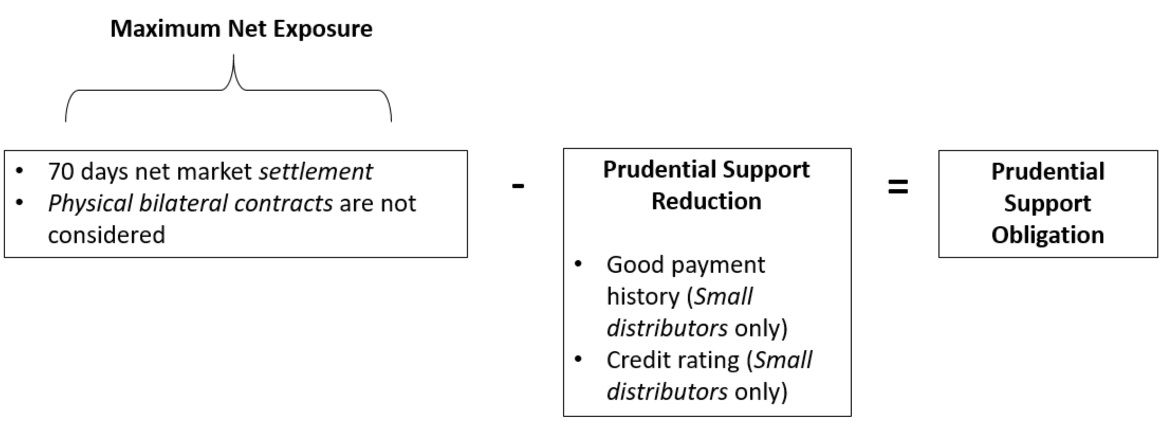

Figure 2-3: No Margin Call Option for Physical Transactions for a Market Participant that is not an Energy Trader

2.3. Informing Market Participants of their Prudential Support Obligation for Physical Transactions

After determining *prudential support obligations*, the following steps occur to inform *market participants* of their *prudential support obligations*:

1. Online IESO presents the *market participants'* proposed *prudential support obligation* for their review in the **Tasks** tab.
2. If the *market participants* are satisfied with the *IESO*-proposed *prudential support obligation*, they submit the proposed amount into Online IESO for processing.
3. Upon approval of this amount by the *IESO*, an email notification from the *IESO* will be sent to the *market participants* advising them that the *prudential support obligation,* as set out in Schedule A assessment results, is available in Online IESO. Schedule A assessment results also reflect whether any allowable reductions are applied to the calculation of the *prudential support obligation.*

2.4. Posting Prudential Support for Physical Transactions

(MR Ch.2 ss.5.7 and 5.3.9)

After *market participants* receive their Schedule A assessment results, the *market participants* must, if required by **MR Ch.2 s.5.3.9**, satisfy their *prudential support obligations* for *physical transactions* by submitting one or a combination of the formats outlined in **MR Ch.2 s.5.7.2***.* Failure to provide and maintain *prudential support* in an amount greater than or equal to the *prudential support obligation* for *physical transactions* constitutes an *event of default* under **MR Ch.3 s.6.3.1.3***.*

Once a *market participant* posts its *prudential support*, the *IESO* will review and, once accepted, will send the *market participant* a notification stating that a detailed Schedule A is available in the **Prudential Support Obligation** tab of the **Prudential Manager.**

Market participants that are authorized to conduct both *physical transactions* and *virtual transactions* must post an authorized form of *prudential support* for each of their *prudential support obligations* for *physical transactions* and for *virtual transactions*.

2.5. Updating the Prudential Support Obligation for Physical Transactions

(MR Ch.2 ss.5.3.11 and 5.3.12)

To ensure that the *prudential support* posted by *market participants* is sufficient to satisfy their *prudential support obligations*, the *IESO* regularly reviews *market* *participants' prudential support obligations* for *physical transactions*. The *IESO* conducts this review in the circumstances and applicable timelines set out in **MR Ch.2 s.5.3.11**. Changes in a *market participant's* status that may trigger a review of its *maximum net exposure* under **MR Ch.2 s.5.3.11.3** may include:

- when the *IESO* annually estimates global adjustment amounts; and
- when there are operational changes, such as increase or decrease in expected consumption.

If the *IESO* review reveals that the *market participant's maximum net exposure* for *physical transactions* has changed from the amount that was previously determined, the *IESO* will update Schedule A accordingly. Under such circumstances, the *market participant* is required to supply additional *prudential support* in accordance with **MR Ch.2 s.5.3.12**.

In the event the *prudential support* is due to expire or terminate has been reduced as result of the *market participant's* revised credit rating or payment history; or has otherwise ceased to be valid, refer to **MR Ch.2 ss.5.2.5**, **5.2.6** and **5.2.7** respectively.

– End of Section –

3. Daily Monitoring of Prudential Support for Physical Transactions

The *IESO* verifies that each *market participant* has provided sufficient levels of *prudential support* to cover their *physical transactions.* Daily monitoring applies to *market participants* that have not elected the *no margin call option.*

Daily monitoring for *physical transactions* consists of the following activities:

- the *IESO* calculates *market participants'* estimated *actual exposure* using an estimate of charges;
- the *IESO* compares the calculated *actual exposure* against the *trading limit* to determine whether to issue a *margin call* or a *margin call* warning[4] to a *market participant*; and
- *market participants* take actions to respond to *margin calls* or *margin call* warnings.

Throughout the process, *market participants* can view their own estimated *actual exposure, margin call* warnings and *margin calls* using the **Prudential Manager**.

3.1. Estimating Actual Exposure for Physical Transactions

(MR Ch.2 s.5.5.1)

The components of *actual exposure* for *physical transactions* are calculated on a daily basis in accordance with MR Ch.2 s.5.5.1, and include:

- cleared-but-not settled (for *resources* that are not *non-dispatchable loads*) or six-day activity estimate (for *non-dispatchable loads*);
- settled-but-not-invoiced;
- other *settlement amounts* estimated daily; and
- prepayments.

3.1.1. Cleared-But-Not-Settled or Six-Day Activity Estimate for Physical Transactions

Settlement amounts for a given *trading day* are first calculated by the *IESO* on the seventh calendar day following a *trading day*. Therefore, the *IESO* estimates *actual exposure* for *physical transactions* during the six-calendar day period when

[4] The *IESO issues margin call warnings* by delivering a "Notice of Margin Call Warning" via a generic email.

settlements data is unavailable using either the six-day activity estimate or the cleared-but-not-settled amounts.

3.1.1.1. Cleared-but-Not-Settled

The cleared-but-not-settled calculation is an estimate based on *bids* and *offers* of the net amount of *dispatched energy* and *operating reserve* that has not yet been settled. Cleared-but-not settled amounts are applicable to *market participants* conducting *physical transactions* using the following *resources:*

- *generation resources*;
- *dispatchable loads* and *price responsive loads*;
- *electricity storage resources*; and
- *boundary entity resources*.

At any given time, the *IESO's* rolling six calendar days cleared-but-not-settled calculation covers the previous six calendar days of market activity that has not yet been re-categorized under the settled-but-not-invoiced component.

3.1.1.2. Six-Day Activity Estimate Calculation

The six-day activity calculation is an estimate of consumption and injections for *physical transactions*, that has not yet been settled. The six-day activity estimate calculation for *physical transactions* applies to *market participants* conducting *physical transactions* using *non-dispatchable loads*. For a given *trading day*, the *IESO's* rolling six-day activity estimate uses the average Allocated Quantity of Energy Withdrawn ("AQEW") or the Allocated Quantity of Energy Injected ("AQEI") from the previous six calendar days and multiplies the quantities by the applicable average daily prices.

3.1.2. Settled-but-Not-Invoiced for Physical Transactions

The settled-but-not-invoiced component represents *settlement amounts* specific to a *market participant's physical transactions* that appear on their *settlement statements* but that have not yet appeared on the *market participant's invoice*. This includes both hourly and non-hourly *settlement amounts* from a *market participant's settlement statements*. For details on physical market *settlement statements*, refer to **MM 5.7**. *Market participants* may view all *settlement amounts* under the *actual exposure* calculation through the **Estimated Net Exposure** tab in the **Prudential Manager**.

3.1.3. Prepayments

Market participants may reduce the level of their estimated *actual exposure* at any time by making a prepayment to the *IESO*, and then logging in to send the *IESO* an electronic Notification of Prepayment using **Prudential Manager**. These prepayments are then applied to the *invoice* once the *invoice* is issued. These include *margin call* prepayments and voluntary prepayments.

3.2. Margin Call Warnings and Margin Calls for Physical Transactions

(MR Ch.2 ss.5.4 and 5.6)

Table 3-1 summarizes the actions taken by the *IESO* based on a comparison of *market participants' trading limit* for *physical transactions* and their *actual exposure* for *physical transactions.*

Table 3-1: Actions Taken as a Result of Daily Monitoring of Physical Transactions

Trading Limit – AE comparison	IESO Action	Market Participant Action
Actual exposure< 70 % *trading limit*	None	None
70% *trading limit* <= *actual exposure*< 100 % *trading limit*	The *IESO* issues a "Notice of Margin Call Warning" to *market participants* for their *physical transactions* via a generic email.	Refer to **MR Ch.2 s.5.4.1**.
Actual exposure >= 100 % *trading limit*	The *IESO* issues a *margin call* notice to *market participants* for their *physical* via a generic email.	Refer to **MR Ch.2 ss.5.6.1** and **5.6.2**.

Market participants can log on to the **Prudential Manager** located on the *IESO* portal to view *margin call* warnings and *margin call* details.

– End of Section –

4. Setting Prudential Support Obligations for Virtual Transactions

The *IESO* requires that *market participants* be authorized as *virtual traders* to conduct *virtual transactions* in the *day-ahead market* (refer to **MM 1.5**, section 2). To account for the heightened risk profile associated with *virtual transactions*, the authorization to conduct *virtual transactions* gives rise to a *prudential support obligation* specific for *virtual transactions*. Therefore, the *IESO* calculates the *prudential support obligation* for *virtual transactions* and *actual exposure* for *virtual transactions* differently than for *physical transactions*.

The following section describes the process of setting *market participants' prudential support obligations* and posting of *prudential support* for *market participants* authorized as *virtual traders.*

The process is largely consistent with the four steps outlined in section 2 in the context of *physical transactions*.

4.1. Submitting Prudential Support Information for Virtual Transactions

As part of the Authorization and Participation process described in **MM 1.5**, all *market participants* must submit their *prudential support* information using Online IESO. To do this, each *market participant* must first assign a Prudential Requirements Contact as described in section 2.1.

Market participants authorized (or requesting authorization) to conduct *virtual transactions* provide two sets of information:

- *maximum daily trading limit*; and
- application for reductions.

4.1.1. Maximum Daily Trading Limit

(MR Ch.2 ss.5C.1.2, 5C.1.3 and 5C.1.4)

Market participants may submit the *maximum daily trading limit* to adjust the amount of their *trading limits* for *virtual transactions* via Online IESO, in accordance with MR Ch.2 s.5C.1.2, and accordingly, their *prudential support obligations for virtual transactions*.

The *maximum daily trading limit* is applicable for all *energy market billing periods* until a revised *maximum daily trading limit* is submitted by *market participants* and authorized by the *IESO*. Once authorized, the revised *maximum daily trading limit* will supersede any previous *maximum daily trading limit*. If the revised *maximum daily trading limit* results in an increase in the *market participants*' *prudential support obligations* for *virtual transactions*, the *market participant* must provide the *IESO* with additional *prudential support* before the *IESO* authorizes the increase in the *maximum daily trading limit*. *Market participants* should review their *maximum daily trading limit* prior to the start of each *billing period* and submit a revised *maximum daily trading limit*, as appropriate.

4.1.2. Application for Reductions

(MR Ch.2 s.5C.6)

Market participants may be eligible for a reduction to their *maximum net exposure* for *virtual transactions* based on their credit or status with the *IESO* in accordance with **MR Ch.2 s.5C.6.1**. Reductions will be based upon the average of the most recent six consecutive *invoices* where the *market participant* conducts *physical transactions* using a *generation resource* and is eligible for market creditor status.

4.2. Calculating the Prudential Support Obligation for Virtual Transactions

(MR Ch.2 ss.5C.1, 5C.5 and 5C.6)

The *prudential support obligations* for *virtual transactions* represents an amount that is distinct from a *prudential support obligation* for *physical transactions*, and is determined using a different methodology. Notable differences between the calculation of a *prudential support obligation* for *physical transactions* and a *prudential support obligation* for *virtual transactions* include the following:

- the *no margin call option* is unavailable to *market participants* authorized to conduct *virtual transactions*; and
- *prudential support obligations* for *virtual transactions* are not eligible for the same reductions available for *prudential support obligations* for *physical transactions*.

The *IESO* undertakes the following five-step process to establish the *prudential support obligation* for *virtual transactions*:

1. establishes the price delta quantity applicable to all *market participants* authorized to conduct *virtual transactions;*
2. calculates the *minimum trading limit* as a dollar amount;
3. calculates the *default protection amount* as a dollar amount;

4. applies a market creditor status reduction to the *prudential support obligation* for *virtual transactions* based on its *physical transactions* as a *generator*, if applicable; and
5. determines the *prudential support obligation* for *virtual transactions*.

Figure 4-1 provides an illustration of how a *market participant's virtual transaction prudential support obligation* is determined.

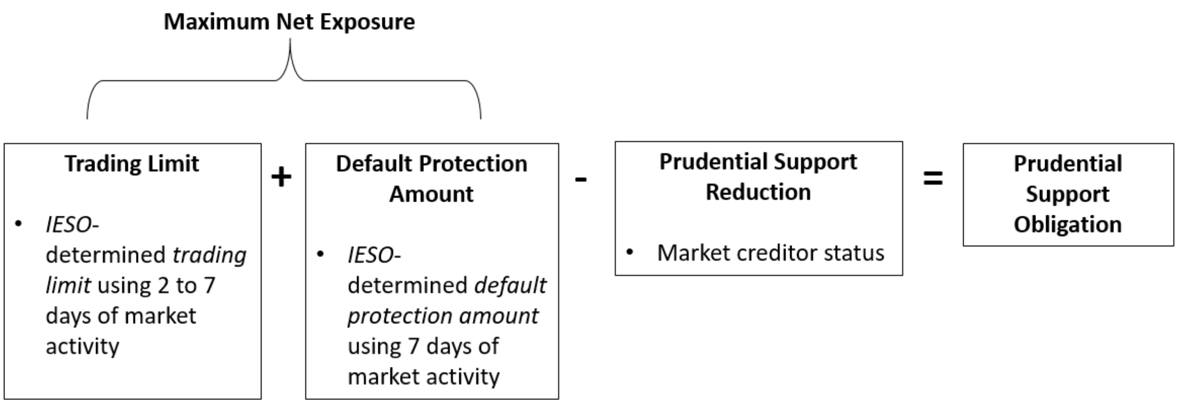

Figure 4-1: Margin Call Option for Virtual Transactions

4.2.1. Determining the Price Delta for Prudential Support Obligation for Virtual Transactions

(MR Ch.2 s.5C.1.9)

One of the inputs the *IESO* uses to determine *market participants' prudential support obligations* for *virtual transactions* is a price delta that is applicable to all *virtual traders* at a given time.

4.2.1.1. Price Delta for Prudential Support Obligation for Virtual Transactions

(MR Ch.2 ss. 5C.1.9.1, 5C.1.10 and 5C.1.11)

The price delta represents the absolute value of the difference between the *day-ahead market virtual zonal price* and the hourly average *real-time market virtual zonal price*. The *IESO* determines the price delta on an annual basis in accordance with MR Ch.2 s.5C.1.9.1 by identifying up to the 97th percentile value for this data set as the new price delta value.

The *IESO* reviews and, if required, *publishes* a revised price delta in accordance with **MR Ch.2 ss.5C.1.10** and **5C.1.11**.

4.2.1.2. Interim Price Delta for Prudential Support Obligation for Virtual Transactions

(MR Ch.2 s. 5C.1.9.2, 5C.1.10 and 5C.1.11)

For an interim period, until three years of *day-ahead market* and *real-time market* price data has been accumulated, the *IESO* will calculate an interim price delta considering information in accordance with MR Ch.2 s.5C.1.9.2. Shadow prices used from the day-ahead commitment process and the real-time market will be capped at +/- maximum market clearing price (i.e. +/-$2,000).

Similar to the enduring price delta, the *IESO* uses the 97th percentile of interim price delta data to set the interim price delta to be used for the calculation of *prudential support obligations* for *virtual transactions*.

4.2.2. Determining the Minimum Trading Limit for Virtual Transactions

(MR Ch.2 ss.5C.1.5 and 5C.1.9)

The *IESO* calculates *market participants' minimum trading limit* for *virtual transactions* based on the following inputs:

- the *maximum daily trading limit* quantity;
- the number of *trading days* of exposure, in accordance with **MR Ch.2 s.5C.1.5**;
- the price delta as described in section 4.2.1; and
- estimated virtual uplift rates, as applicable, that may be incurred by *virtual transaction offers* to provide *energy*.

The *IESO*-determined *minimum trading limit* for *virtual transactions* will be the *market participants' trading limit* for their *virtual transactions*. The *minimum trading limit* for *virtual transactions* in dollars, $\mathrm{TL_{VT\$}}$, is calculated as follows:

$$\mathrm{TL_{VT\$}} = [(\mathrm{TL_{VT}} \times \Delta\ \mathrm{DAP_{VT}}, \mathrm{ARTP_{VT}}\ \times\ \#\mathrm{Days_{TL}}) + (\mathrm{U_{VT}} \times \mathrm{TL_{VT}} \times \#\mathrm{Days_{TL}})]$$

$$\mathrm{TL_{VT\$}} = (\Delta\ \mathrm{DAP_{VT}}, \mathrm{ARTP_{VT}}\ + \mathrm{U_{VT}}) \times \mathrm{TL_{VT}} \times \#\mathrm{Days_{TL}}$$

where:

Variable	Description
$\mathrm{TL_{VT}}$	is the *market participant*-submitted absolute value of the *maximum daily trading limit* quantity (in MWh) for *virtual transactions;*
$\Delta\ \mathrm{DAP_{VT}}, \mathrm{ARTP_{VT}}$	is the *IESO*-determined price delta calculated in accordance with section 4.2.1;

Variable	Description
$\#\mathrm{Days}_{\mathrm{TL}}$	is the *minimum trading limit* assessment period for *virtual transactions* denoted as a number of calendar days; and
U_{VT}	is the *virtual transaction* uplift estimation rate in \$/MWh.

4.2.3. Determining the Default Protection Amount for Virtual Transactions

(MR Ch.2 s.5C.1.7)

The *IESO* determines the *default protection amount* for *virtual transactions* using the same formula as that for the *minimum trading limit* for *virtual transactions*, but using seven *trading days* of exposure.

The *default protection amount* for *virtual transactions* in dollars, $\mathrm{DPA}_{\mathrm{VT\$}}$, is calculated as follows:

$$\mathrm{DPA}_{\mathrm{VT\$}} = [(\mathrm{TL}_{\mathrm{VT}} \times \Delta\,\mathrm{DAP}_{\mathrm{VT}}, \mathrm{ARTP}_{\mathrm{VT}} \times \#\mathrm{Days}_{\mathrm{DPA}}) + (\mathrm{U}_{\mathrm{VT}} \times \mathrm{TL}_{\mathrm{VT}} \times \#\mathrm{Days}_{\mathrm{DPA}})]$$

where:

Variable	Description
$\mathrm{TL}_{\mathrm{VT}}$	is the *market participant* submitted absolute value of the *maximum daily trading limit* quantity (in MWh) for *virtual transactions*;
$\Delta\,\mathrm{DAP}_{\mathrm{VT}}, \mathrm{ARTP}_{\mathrm{VT}}$	is the *IESO*-determined price delta calculated in accordance with section 4.2.1 of this *market manual*;
$\#\mathrm{Days}_{\mathrm{DPA}}$	is the *default protection amount* assessment period for *virtual transactions* for seven calendar days; and
U_{VT}	is the *virtual transaction* uplift estimation rate, in \$/MWh. This is the same as the rate used for the calculation of the *minimum trading limit* for *virtual transactions*.

4.2.3.1. Application of Reductions

(MR Ch.2 s.5C.6)

The *IESO* will reduce the *maximum net exposure* for *virtual transactions* if the *IESO* approves the *market participant's* market credit or status, as described in section 4.1.2 of this *market manual.*

4.2.4. Determining the Prudential Support Obligation for Virtual Transactions

The *prudential support obligation* for *virtual transactions* in dollars, $\mathrm{PSO_{VT\$}}$, is calculated as follows:

$$\mathrm{PSO_{VT\$}} = \mathrm{TL_{VT\$}} + \mathrm{DPA_{VT\$}} - (0.75 \times \mathrm{AIS_{VT\$}})$$

where:

Variable	Description
$\mathrm{PSO_{VT\$}}$	is the *market participant's prudential support obligation* for *virtual transactions* (in dollars)
$\mathrm{TL_{VT\$}}$	is the *minimum trading limit* for *virtual transactions* (in dollars)
$\mathrm{DPA_{VT\$}}$	is the *default protection amount* for *virtual transactions* (in dollars)
$\mathrm{AIS_{VT\$}}$	is the average of its most recent six consecutive *invoices* (in dollars) where a *market participant* conducts *physical transactions* as a *generator* and is eligible for market creditor status

4.3. Informing Market Participants of their Prudential Support Obligation for Virtual Transactions

Refer to section 2.3 of this *market manual*.

4.4. Posting Prudential Support for Virtual Transactions

(MR Ch.2 s.5C.5)

After *market participants* receive their Schedule A assessment results, the *market participants* must satisfy their *prudential support obligation* for *virtual transactions* by submitting one or a combination of the formats outlined in **MR Ch.2 s.5C.5.2**. Failure to provide and maintain *prudential support* in an amount greater than or equal to the *prudential support obligation* for *virtual transactions* constitutes an *event of default* under **MR Ch.3 s.6.3.1.3**.

Once a *market participant* posts its *prudential support*, the *IESO* will review and, once accepted, will send the *market participant* a notification stating that a detailed Schedule A is available in the **Prudential Support Obligation** tab of the **Prudential Manager.**

Market participants that are authorized to conduct both *physical transactions* and *virtual transactions* must post an authorized form of *prudential support* for each of their *prudential support obligations* for *physical transactions* and for *virtual transactions*.

4.5. Updating the Prudential Support Obligation for Virtual Transactions

(MR Ch.2 ss.5C.1.12 and 5C.1.13)

To ensure that the *prudential support* posted by *market participants* is sufficient to satisfy their *prudential support obligations*, the *IESO* regularly reviews *market participants' prudential support obligations* for *virtual transactions*. The *IESO* conducts this review in the circumstances and applicable timelines set out in **MR Ch.2 s.5C.1.12**. Changes in a *market participants'* status that may trigger a review of its *maximum net exposure* under **MR Ch.2 s.5C.1.12.3** include changes to the *market participant's* net creditor status.

If the *IESO* review reveals that the *market participant's maximum net exposure* for *virtual transactions* has changed from the amount that was previously determined, the *IESO* will update Schedule A accordingly. Under such circumstances, the *market participant* is required to supply additional *prudential support* in accordance with **MR Ch.2 s.5C.1.13**.

In the event that the *prudential support* is due to expire or terminate or otherwise ceases to be valid, refer to **MR Ch.2 ss.5.2.5** and **5.2.7** respectively.

– End of Section –

5. Daily Monitoring of Prudential Support for Virtual Transactions

The *IESO* verifies that each *market participant* has provided sufficient levels of *prudential support* to cover their *virtual transactions.* The *IESO* monitors *market participants' virtual transaction* activity within the *IESO-administered markets* using two methods:

- the *IESO* performs the daily screening of *bids* and *offers* that have been submitted-but-not-cleared during the *day-ahead market* submission window with respect to *virtual transactions*; and
- the *IESO* performs the daily monitoring of *actual exposure* for *market participants' virtual transactions* against that *market participant's IESO*-determined *trading limit* for *virtual transactions*.

These methods require the *IESO* to determine and use *day-ahead market* to *real-time market* price deltas, which are described in greater detail in the sub-sections that follow.

5.1. Daily Screening of Virtual Transactions

Information submitted during the *prudential support* process for *virtual transactions* is used for the following two screenings at the stage of submitting *dispatch data* on *virtual zonal resources*:

- daily *bid* and *offer* quantity screening; and
- daily dollar exposure screening.

If *market participants* fail either of the screenings, they will receive a rejection message through the EMI and will not be able to submit *bids* or *offers* in the *day-ahead market* up until the close of the *day-ahead market submission window* for a given *trading day*. In order to avoid the rejection of the *virtual transaction bids* and *virtual transaction offers, market participants* should consider using the formulae listed in **MR Ch.2 s.5C.3.1** to calculate the potential exposure for their *virtual transaction bids* and *virtual transaction offers*.

5.1.1. Daily Bid and Offer Quantity Screening

(MR Ch.7 s.3.10.1.6)

The *IESO* screens the *market participants' bid* and *offer* quantities (in MWh) submitted on *virtual zonal resources* during the *day-ahead market submission* *window* against their *maximum daily trading limit* quantity (in MWh), as described in **MR Ch.7 s.3.10.1.6**.

5.1.2. Daily Exposure Screening

(MR Ch.7 s.3.10.1.4)

The *IESO* screens *market participants' bid* and *offer* prices (in dollars) submitted on *virtual zonal resources* during the *day-ahead market* submission window, by calculating a submitted-but-not-cleared dollar exposure and comparing it against the *market participants' IESO*-determined *virtual transaction trading limit* margins. Refer to **MR Ch.7 s.3.10.1.4**.

The submitted-but-not-cleared dollar exposure, $\mathrm{SNC_{VT\$}}$, used by the *IESO* as part of the daily dollar exposure screen is calculated as follows:

$$\mathrm{SNC_{VT\$}} = \sum_{m=1}^{M} \sum_{h=1}^{24} \left[\mathrm{SNC_{VT_{m,h}}} \times \Delta\left(\mathrm{DAP_{VTZ_{m,h}}}, \mathrm{ARTP_{VTZ_{m,h}}}\right)\right] + \left(\mathrm{U_{VT}} \times \mathrm{SNC_{VT_{m,h}}}\right)$$

Where:

Variable	Description
M	is the set of all *virtual zonal resources*
$\mathrm{SNC_{VT_{m,h}}}$	is the absolute sum of submitted quantities of *bids* and *offers* submitted in respect of *virtual transactions* (in MWh) by *market participant* for *settlement hour* h at the *virtual zonal resource* m. The quantity (in MWh) will be zero for each *trading day* at the start of the *day-ahead market submission window*;
$\mathrm{DAP_{VTZ_{m,h}}}, \mathrm{ARTP_{VTZ_{m,h}}}$	is the *IESO*-determined price delta calculated in accordance with section 5.3 of this *market manual*; and
$\mathrm{U_{VT}}$	is the *virtual transaction* uplift estimation rate, as applicable, in \$/MWh, that may be incurred by *energy offers* for *virtual zonal resources* .

The *IESO* determines the *market participants' virtual transaction trading limit* margins by deducting the *market participants' actual exposure* for *virtual transactions*, described in section 5.2 of this *market manual* from their *trading limit* for *virtual transactions* on a daily basis.

5.2. Estimating Actual Exposure for Virtual Transactions

(MR Ch.2 s.5C.3.1)

The *IESO* takes into account *market participants' virtual transaction day-ahead market* activity when determining the components of *actual exposure* for the *market participant*. The components of *actual exposure* for *virtual transactions* are calculated on a daily basis in accordance with MR Ch.2 s.5C.3.1 and include:

- cleared-but-not-settled;
- settled-but-not-invoiced; and
- prepayments.

5.2.1. Cleared-but-Not-Settled Component for Virtual Transactions

The cleared-but-not-settled component includes the sum of a *market participant's bids* and *offers* submitted for *virtual zonal resources* for the previous six consecutive calendar days that have cleared the *day-ahead market* but have not yet been settled. This amount is calculated based on the price deltas described in section 5.3 of this *market manual*.

5.2.2. Settled-but-Not-Invoiced for Virtual Transactions

The settled-but-not-invoiced component represents *settlement amounts* specific to a *market participant's virtual transactions* that appear on their *settlement statements* but that have not yet appeared on the *market participant's invoice*. This includes the *settled* value of *virtual transactions* plus any estimated virtual uplift amounts, as applicable. The settled-but-not-invoiced amount also includes all *settlement amounts* calculated from the time they are no longer cleared-but-not-settled to the time the amounts appear on a *settlement statement*. For details on the *IESO-administered market settlement amounts*, refer to **MM 5.5**. For details on the settlement process, refer to **MM 5.7**.

5.2.3. Prepayments

Refer to section 3.1.3 of this *market manual*.

5.3. Daily Price Delta

(MR Ch.2 s.5C.3.2, 5C.3.3).

The *IESO* determines a price delta on a daily basis to calculate:

- the cumulative submitted-but-not-cleared dollar exposure; and
- the cleared-but-not-settled component of *actual exposure.*

This price delta is distinct from the price delta discussed at section 4.2.1 of this *market manual.*

The enduring price delta is calculated as described in **MR Ch.2 s.5C.3.2.1**.

For an interim period, until *day-ahead market virtual zonal prices* and hourly average *real-time market virtual zonal prices* are available for the time horizons identified in **MR Ch.2 s.5C.3.2.1**, the *IESO* will calculate an interim price delta that includes shadow prices from the day-ahead commitment process.

Similar to the enduring price delta, the *IESO* uses up to the 97th percentile of interim price delta data to set the interim price delta to be used for the daily monitoring for *virtual transactions*, in accordance with **MR Ch.2 s.5C.3.2**. For purposes of the interim price delta, shadow prices used from the day-ahead commitment process and the real-time market will be capped at +/- maximum market clearing price (i.e. +/-$2,000)

The price delta for the *virtual transaction zone* is updated if the new price delta has increased or decreased by greater than or equal to 15% from the previous price delta for that *virtual transaction zone*.

5.4. Margin Call Warnings and Margin Calls for Virtual Transactions

(MR Ch.2 ss.5C.2.1, 5C.2.2 and 5C.4)

The *IESO* monitors *market participants' actual exposure* for their *virtual transactions* against the *market participants' IESO*-determined *virtual transaction trading limit* on a daily basis. The amounts of *actual exposure* and *trading limit* for *virtual transactions* used for the daily monitoring by the *IESO* are available on the **Prudential Manager**.

Table 5-1 summarizes the actions taken by the *IESO* based on a comparison of *market participants' trading limit* for *virtual transactions* and their *actual exposure* for *virtual transactions.*

Table 5-1: Actions Taken as a Result of Daily Monitoring of Virtual Transactions

Trading Limit – AE comparison	IESO Action	Market Participant Action
Actual exposure < 70% *virtual transaction trading limit*	None	None
70% *trading limit*	The *IESO* issues a "Notice of Margin Call Warning" to *market participants*	Refer to **MR Ch.2 s.5C.2.1**.

Trading Limit – AE comparison	**IESO Action**	**Market Participant Action**
<= *actual exposure*< 100% *trading limit*	for their *virtual transactions* via a generic email.	
Actual exposure >= 100% *trading limit*	The *IESO* issues a *margin call* notice to *market participants* via a generic email. The *IESO* will reject a *market participant's* subsequent *bids* and *offers* for the *market participant's virtual transactions* as described in **MR Ch.2 s.5C.2.2**.	Refer to **MR Ch.2 ss.5C.4.1** and **5C.4.2**. The *market participant's* ability to conduct *virtual transactions* will be reinstated as described in **MR Ch.2 s.5C.4**.

Market participants can log on to the **Prudential Manager** located on the *IESO* portal to view *margin call* warnings and *margin call* details.

– End of Section –

6. Consolidated Process for Monitoring Physical Transactions and Virtual Transactions

(MR Ch.2 s.5D)

Where a *market participant* is authorized to conduct both *physical transactions* and *virtual transactions*, the *IESO* monitors *market participants'* consolidated *actual exposure* against that *market participants'* consolidated *trading limit* (in dollars). Consolidated *actual exposure* and consolidated *trading limit* are calculated as described in **MR Ch.2 s.5D.2**.

Figure 6-1 summarizes the actions taken by the *IESO* based on a comparison of *market participants' trading limit* and their *actual exposure* for *market participants* that are authorized to conduct both *physical transactions* and *virtual transactions*.

Figure 6-1 Actions Taken as a Result of Daily Monitoring of Physical Transactions and Virtual Transactions

Trading Limit – AE comparison	IESO Action	Market Participant Action
Consolidated actual exposure < 70% *consolidated trading limit*	None	None
70% *consolidated trading limit* <= *consolidated actual exposure*< 100% *consolidated trading limit*	The *IESO* issues a consolidated "Notice of Margin Call Warning" to *market participants* for their *physical transactions* and *virtual transactions* via a generic email.	Refer to **MR Ch.2 s.5D.3.1**
consolidated actual exposure >= 100% *consolidated trading limit*	The *IESO* issues a consolidated *margin call* notice to *market participants* for their *physical transactions* and *virtual transactions* via a generic email. The *IESO* will reject a *market participant's* subsequent *bids* and *offers* for the *market participant's virtual transactions* as described in **MR Ch.2 s.5D.3.2**.	Refer to **MR Ch.2 ss.5D.3.2** and **5C.4.2**. The *market participant's* ability to conduct *virtual transactions* will be reinstated as described in **MR Ch.2 s.5D.4.4**.

Prepayments made to reduce *actual exposure* will be applied collectively to the consolidated *actual exposure* for *physical transactions* and *virtual transactions* as described in **MR Ch. 2 s.5D.4.3**.

– End of Section –

7. Event of Default

(MR Ch.3 s.6.3.4)

Where the *IESO* issues a *suspension order* or a *notice of intent to suspend*, it also:

- deems any *physical bilateral contract quantities* to be zero for the period from the date the *event of default* occurs until it is remedied if that *market participant* is the *selling market participant*; or
- rescinds or refuses to accept any initial or revised *physical bilateral contract data* relating to a *dispatch day* after the date of the *event of default* if that *market participant* is the *buying market participant*.

The process of default is addressed **MM 5.9**, where this relates to non-payment of an *invoice* and in **MM 2.6**, where it relates to a compliance issue.

Refer to **MM 5.3** for more information on the Physical Bilateral Contract process.

7.1. Default Levy

(MR Ch.2 s.8)

If the *IESO* is unable to remedy an *event of default* using the posted *prudential support* by a defaulting *market participant*, the *IESO* is entitled to issue a *default levy* to all *non-defaulting market participants* that were participating in the *energy markets* at the time of the failure of payment of a *defaulting market participant* irrespective of whether the *event of default* occurred in the context of *physical transactions* or *virtual transactions*.

Following an *event of default*, the *IESO* has the authority to draw upon *market participants' prudential support* for both *physical transactions* and *virtual transactions* if a *market participant* has posted *prudential support* for both.

– End of Section –

8. Capacity Prudential Requirements

(MR Ch.2 s.5B)

The *IESO* determines the *capacity prudential support obligation* for each *capacity market participant* for each *obligation period* based on a percentage of the monthly availability payment, less any allowable reductions.

The *IESO* calculates the *capacity prudential support obligation* as follows:

- [Monthly Availability Payment ($) × 50%] – Allowable Reductions

where:

- Monthly Availability Payment = Σ (*Capacity obligation(s)* for the *obligation period* × Zonal Clearing Price × 23 days).

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

The Prudential Requirements Contact has a task in Online IESO to submit the *capacity prudential support* information.

The *capacity prudential support* posted by *market participants* or *capacity market participants* to satisfy this obligation must be in the following format (**MR Ch.2 s.5B.4.2**):

- a guarantee or irrevocable commercial letter of credit, which is in a form acceptable to the *IESO* and provided by:
  - a bank named in a Schedule to the Bank Act, S.C. 1991, c.46 with a minimum Standard and Poor's long-term credit rating of "A" or equivalent from an *IESO* acceptable major bond rating agency; or
  - a credit union licensed by the Financial Services Commission of Ontario with a minimum Standard and Poor's long-term credit rating of "A" or equivalent from an *IESO* acceptable major bond rating agency.

There are two allowed reductions that may be used by *market participants* (if applicable) in order to reduce their *capacity prudential support obligation* (**MR Ch.2 s.5B.5**):

- reduction for credit rating; and

- good payment history reduction.

If *market participants* are currently utilizing reductions in the *physical market*, the *IESO* will adjust the reductions accordingly to not exceed the maximum allowable under the *market rules*.

The *capacity prudential support obligation* amount may increase depending on poor creditworthiness/ history in the *IESO* market.

In the case where a full or partial *capacity obligation transfer* is being requested pursuant to MR Ch.7 s.18.9:

- the *capacity transferee* must satisfy its *capacity prudential support obligation*, including any additional *capacity prudential support obligation* that may be required as a result of a transfer request, within five *business days* of receiving a notification from the *IESO* or within such longer period of time as may have been agreed to with the *IESO*.
- after the *capacity transferee* has satisfied the *capacity prudential support obligation* or revised *capacity prudential support obligation*, as applicable, the *IESO* will notify the *capacity transferor* of its approval or rejection of the transfer request. Upon receiving an approval notification, the *capacity transferor* may request the *IESO* to reassess its *capacity prudential support obligation*.

In the case where the *capacity prudential support* is revised downward due to a buy-out pursuant to **MM 12**, section 7 and is subject to a buy-out charge pursuant to **MR Ch.9 s.4.13.9** of the *market rules* , 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,* if any.

– End of Section –

9. Prudential Support Reports

The *IESO* will publish two reports, described in Table 9-1, for *market participants* authorized to conduct *virtual transactions*.

Table 9-1: Virtual Transaction Price Delta Reports Description

Report Name	Publication Frequency	Audience	Report Description
Annual Virtual Transaction Price Delta Report	Annual	Public	One price calculated annually up to the 97^{th} percentile based on the day-ahead and real-time price differences of all *virtual transaction zones.*
Daily Virtual Transaction Price Delta Report	Daily	Public	Nine price deltas (one for each *virtual transaction zone*) calculated daily up to the 97^{th} percentile using the differences between the corresponding day-ahead prices and real-time prices for each of the *virtual transaction zones.*

– End of Section –

Appendix A: Forms

This appendix contains a list of forms associated with the *prudential support market manual*, which are available on the *IESO's* website. The forms included are listed in table A-1 below:

Table A-1: Forms

Form Name	Form Number	Description
Prudential Guarantee	IMP_GRNT_0001	Guarantee agreement to provide prudential support for *physical transactions* by the guarantor to the *IESO*.
Affidavit Regarding Reduction in Prudential Support Obligations	IESO_AFF_0001	Affidavit provided by a *market participant* that is a *distributor*, in respect of a claim of reduction to its *prudential support obligation* for its *physical transactions*.
Pledge of Cash and Treasury Bills	IESO_AGR_0013	Pledge of Cash and Treasury Bill as a form of *prudential support* between the pledger and the *IESO* to cover a *market participant's prudential support obligation* for its *physical transactions.*

– End of Section –

Appendix B: Global Adjustment Calculation for Minimum Trading Limit and Default Protection Amount

The *IESO* estimates global adjustment for *market participants* that are not *energy traders*. The global adjustment estimate is included as part of their *physical transaction minimum trading limit* and *default protection amount* calculation for the *IESO-administered markets*.

The *IESO* calculates the global adjustment 'Class B' estimate for a *market participant* that is not an *energy trader* as follows for its *prudential support obligation*:

- Global Adjustment (Class B) Minimum Trading Limit and Default Protection Amount calculation = Global Adjustment (Class B) price per MWh provided by the OEB x *Market participant*-provided daily quantity (in MWh) x # of days for Minimum Trading Limit or Default Protection Amount

The global adjustment price for a *market participant* that is not an *energy trader* stays static until the daily quantity of MWh injected or withdrawn for that *market participant* is changed or after conducting the annual review for global adjustment.

The *IESO* calculates the global adjustment 'Class A' estimate for a *market participant* that is not an *energy trader* as follows for its *prudential support obligation*:

- Global Adjustment (Class A) Minimum Trading Limit and Default Protection Amount calculation = (PDF[5] x Total Global Adjustment Dollars Forecasted by the OEB)/(*Market participant* provided Annual Class A withdrawals in MWh)

The Global Adjustment estimate for *market participants* is determined as the sum of the Class A and Class B Global Adjustment calculations.

– End of Section –

[5] PDF is the Peak Demand Factor assigned to each 'Class A' market participant based on their five coincident peak demands during a predetermined base period.

List of Acronyms

Acronym	Term
AQEI	Allocated Quantity of Energy Injected
AQEW	Allocated Quantity of Energy Withdrawn
EMI	Energy Market Interface
EPT	Eastern Prevailing Time

– End of Section –

References

Document ID	Document Title
N/A	The Bank Act, S.C. 1991

– End of Document –