
Market Manual 5: Settlements

Part 5.4: Prudential Support

**Issue 30.5-MRP
December 20, 2022**

This *market manual* is provided for stakeholder engagement purposes. Please note that additional changes to this document may be incorporated as part of future engagement in MRP or other *IESO* activities prior to this *market manual* taking effect.

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*

Document Change History

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|--|--|-------------------|
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Related Documents

| Document ID | Document Title |
|-------------|----------------|
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| Throughout | <ul style="list-style-type: none">• “Batch 1” changes for Market Renewal Program. This version incorporates minor conforming changes reflecting design elements in the following detailed design documents:<ul style="list-style-type: none">• Authorization and Participation• Prudential Security• Facility Registration |
| Throughout | <ul style="list-style-type: none">• Interim Alignment Batch for Market Renewal Program. This version contains conforming changes to align terminology and reduce redundancy between MRP governing documents. |

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* describes the activities performed by the *IESO* and *market participants*, as they relate to *prudential support*. *Market participants' prudential support obligations* are reviewed at the time of authorization and on an ongoing basis by the *IESO* and may increase or decrease based on *market participants' actual and expected market activities*.¹ This *market manual* also describes the activities performed by *market participants* to post *prudential support* to satisfy their *prudential support obligations* for *physical transactions* and *virtual transactions* and the actions undertaken by the *IESO*.

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* 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 [Market Manual 4.4: Transmission Rights Auction](#);
- the process of posting *capacity auction deposits*, which are a prerequisite for participating in a *capacity auction*. This process is provided in Market Manual 12: Capacity Auctions; and
- the process of issuing a *default levy* by the *IESO*, which is provided in [Market Manual 5.9: Settlement Payment Methods and Schedule](#).

This *market manual* covers the following:

- Setting Prudential Support Obligations for Physical Transactions – this section describes the calculation and the *IESO* review of a *market participant's prudential support obligation* for *physical transactions* and the forms of *prudential support* 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*.

- Daily Monitoring of Prudential Support for Physical Transactions – this section describes the *IESO's* daily monitoring of *actual exposure* and *trading limit*, as well as *margin call warnings* and *margin calls* for *physical transactions*;
- Set Prudential Support Obligations for Virtual Transactions – this section describes the calculation and *IESO* review of a *market participant's prudential support obligation* for *virtual transactions*, the forms of *prudential support* for *virtual transactions* and monitoring of *actual exposure* and *trading limit*. It also describes *margin call warnings* and *margin calls* for *virtual transactions*;
- Daily Monitoring of Prudential Support for Virtual Transactions – this section describes the *IESO's* daily monitoring of *actual exposure* and *trading limit* and *margin call warnings* and *margin calls* for *virtual transactions*;
- Consolidated Process for Physical Transactions and Virtual Transactions – this section describes the *IESO's* daily monitoring of *market participants' consolidated trading limit* for their *physical transactions* and *virtual transactions* against their consolidated *actual exposure* for their *physical transactions* and *virtual transactions*;
- Event of Default – this section discusses the impact of an event of default on physical bilateral contract quantities for market participants and default levy issuance to market participants conducting physical transactions and virtual transactions;
- Capacity Prudential Requirements – this section describes the calculation of *prudential support obligations* for *capacity auction participants*;
- Prudential Support Reports – this section describes the *virtual transaction price delta* reports; and
- appendices – the appendices include information such as forms, credit rating reduction tables and good payment history reduction tables.

1.3. 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* begins submitting *bids* or *offers* into the *day-ahead market*.

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.

1.4. Roles and Responsibilities

Responsibility for *prudential support* is shared among:

- *market participants*, who are responsible for functions and responsibilities such as:
 - submitting the required *prudential support* information via Online IESO for *physical transactions* and *virtual transactions*;

- notifying the *IESO* that they wish to adjust their *self-assessed trading limits* for *physical transactions* as necessary to reflect their expected trading activity during that *billing period*. This excludes *market participants* authorized to conduct *physical transactions* under the *no margin call option*;
- notifying the *IESO* that they wish to adjust their *maximum daily trading limit* quantity (in MWh) for *virtual transactions* as necessary to reflect their expected trading activity during that *billing period*;
- posting an appropriate form of *prudential support* that satisfies their *prudential support obligations* for *physical transactions* and/or *virtual transactions*;
- submitting to the *IESO* the quantity and duration of the applicable *physical bilateral contracts* and notifying the *IESO* immediately upon a change in the quantity or duration of the *physical bilateral contract*. This includes the termination of the contracts for a *market participant* that is not an *energy trader* with a credit rating of BBB– or higher and that has requested its *physical bilateral contract* quantities be taken into consideration when calculating its *minimum trading limit* and *default protection amount* for its *physical transactions*;
- ensuring valid prudential contacts are registered with the *IESO* to receive *margin call* warnings and *margin call* notices and taking appropriate action;
- ensuring valid prudential contacts are registered with the *IESO* to receive a default notice, or a *notice of intent to suspend*, and taking appropriate action to remedy the *event of default*; and
- maintaining appropriate levels of *prudential support* as required under the *market rules*.
- The *IESO*, which is responsible for functions and responsibilities such as:
 - continuously assessing the *minimum trading limit*, *trading limit*, and *default protection amount* of each prospective market participation authorization (or *market participant*) as applicable;
 - assessing (and reassessing) the *maximum net exposure* and *prudential support obligation* of each applicant seeking authorization (or each *market participant*);
 - determining whether adequate *prudential support* has been provided by the *market participant*, according to the *market rules*;
 - checking for credit rating watch warnings against *market participants* conducting *physical transactions*;

- determining if the *estimated actual exposure* amount is below the *trading limit* and warning *market participants* of potential *margin calls* or issuing *margin calls*, as appropriate (with the exception of *market participants* under the *no margin call option*);
- providing information to the Energy Market Interface (“EMI”) regarding the maximum quantity (in MWh) and *trading limit* (in dollars) that a *market participant* can transact through *virtual transactions* on a given *trading day*;
- taking appropriate action in response to an *event of default*; and
- drawing on a *market participant’s prudential support*, as necessary, and verifying that *prudential support* is re-established within a specified timeframe.

1.5. Contact Information

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*. If *market participants* wish to contact the *IESO*, they can contact *IESO* Customer Relations via email at IESOCustomerRelations@ieso.ca, *IESO* Prudentials via email at prudential@ieso.ca, or by using the phone number provided on the *IESO*'s website (www.ieso.ca), on the [Contact](#) page.

– End of Section –

2. Setting Prudential Support Obligations for Physical Transactions

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* and the *real-time market*. *Market participants* that intend to conduct *physical transactions* in the *day-ahead market* and the *real-time market* are required to initiate this process 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 A³.

2.1. Submitting Prudential Support Information for Physical Transactions

As part of the Authorization and Participation process described in [MM 1.5: Market Registration Procedures](#), *market participants* must submit their *prudential support*

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 ss.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.

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 option 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)

Market participants authorized as *energy traders* who have not conducted *physical transactions* for *energy* for at least three previous *billing periods* are required to provide their estimated net *settlement amount* for the upcoming *energy market billing period*. After an *energy trader* has conducted *physical transactions* for *energy* for at least three previous *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*.

Prospective *market participants* who wish to be authorized as *energy traders* are also required to submit a *self-assessed trading limit*, even if that *self-assessed trading limit* is zero. 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 ss.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.5.8.4**.

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 participate in the *no margin call option*. *Market participants* that elect the *no margin call option* are exempt from receiving *margin calls* (**MR Ch.2 ss.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 ss.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 and 5.8.2)

Eligible *market* 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 (refer to [Appendix B: Credit Ratings](#)). 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 and 5.8.5)

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 (refer to [Appendix C: Good Payment History](#)).

Distributor Prudential Credit

(MR Ch.2 ss.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 if in any of the forms. Refer to **MR Ch.2 ss.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 [$\$25\text{M} - (\$10\text{M} * 0.6)$]. 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 ss.5.7**. Under this option, a *distributor* can also claim good payment history or 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 *billing period* that 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* make 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 limits* and *maximum net exposure* for *physical transactions*, *market participants* that conduct *physical*

transactions are eligible to submit a self-assessed *trading limit* in accordance with **MR Ch.2 ss.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 estimate of their *trading limits* 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.

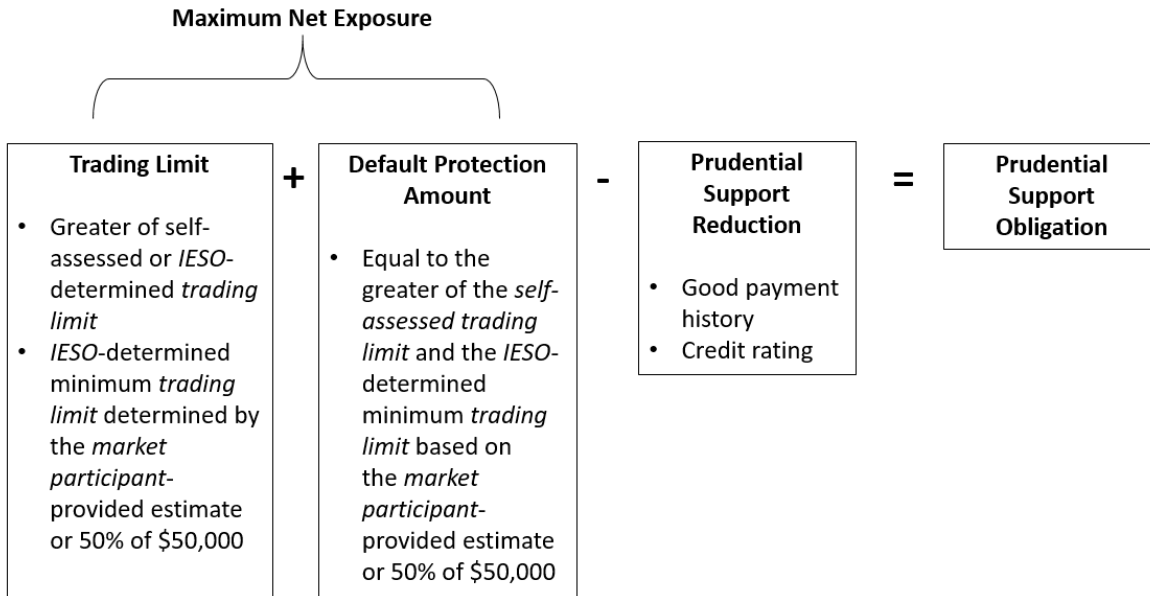


Figure 2-1 provides an illustration of how the *IESO* determines the *prudential support obligation* for *physical transactions* for *market participants* that are *energy traders*.

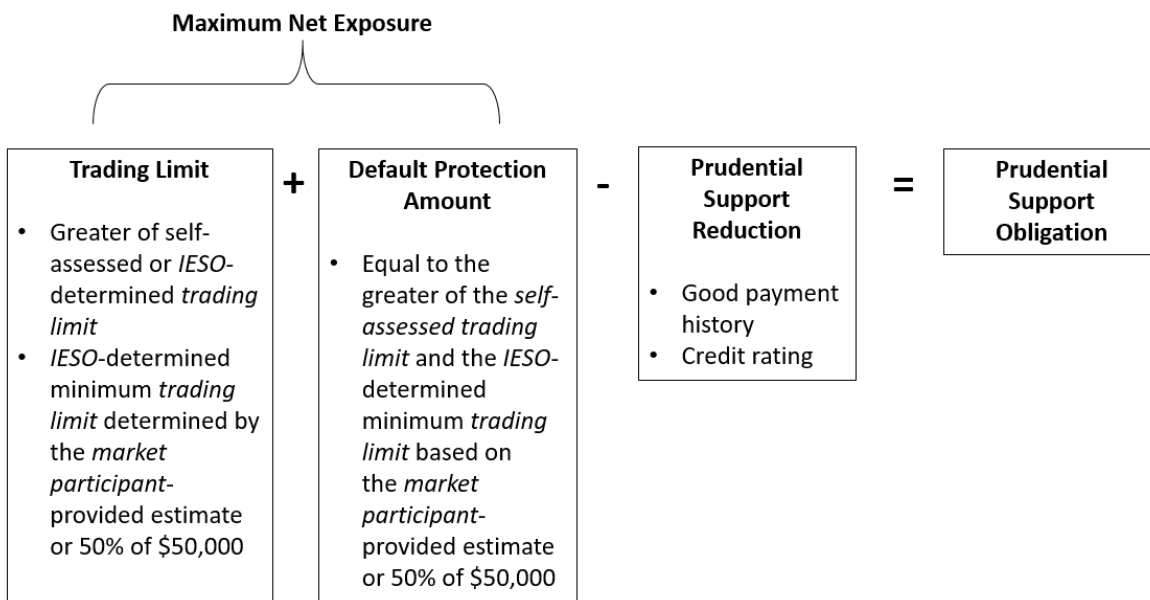


Figure 2-1: Determination of Prudential Support Obligation for a Market Participant that is an Energy Trader

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 ss.5.3.4.3**).

2.2.1.1. Determining the Minimum Trading Limit for Physical Transactions

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

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 ss.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; or
- an estimate of the *market participant's* future market activity as the estimated net *settlement amount* for *physical transactions* for the upcoming *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 ss.5.3.4.3**.

2.2.1.2. Determining the Default Protection Amount for Physical Transactions

(MR Ch.2 ss.5.3.8.2)

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 ss.5.3.1)

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 ss.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 of this *market manual*.

2.2.1.5. Determining the Prudential Support Obligation for Physical Transactions

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.

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

2.2.2.1. 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*.

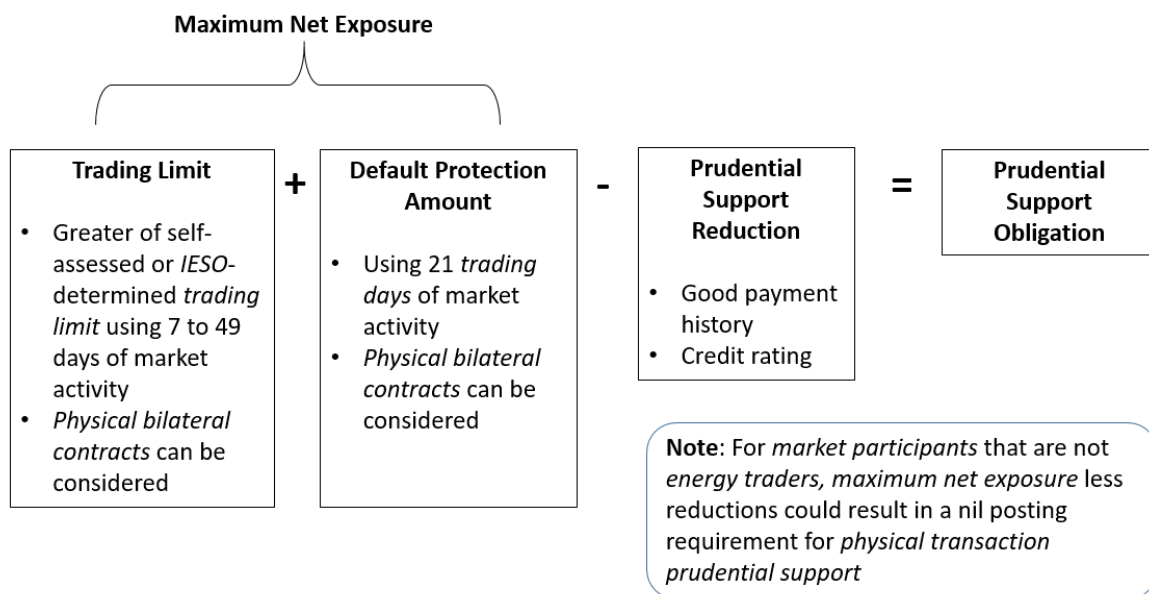


Figure 2-2: Margin Call Option for Physical Transactions for a Market Participant that is not an Energy Trader

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 ss.5.3.4.1**. The *IESO* will use the applicable *energy price* for a *market participant's resources* to calculate that *market participant's minimum trading limit*. 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 ss.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*.

The *IESO* will use the applicable estimated *energy* price for each *resource* of a *market participant* to calculate that *market participant's default protection amount*. 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 ss.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 ss.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 of this *market manual*.

Determination of Prudential Support Obligation

(MR Ch.2 ss.5.3.9)

The *maximum net exposure* less allowable reductions that may be permitted under **MR Ch.2 ss.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*.

2.2.2.2. No Margin Call Option

(MR Ch.2 ss.5.6.4 and 5.6.5)

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 ss.5.6.6**).

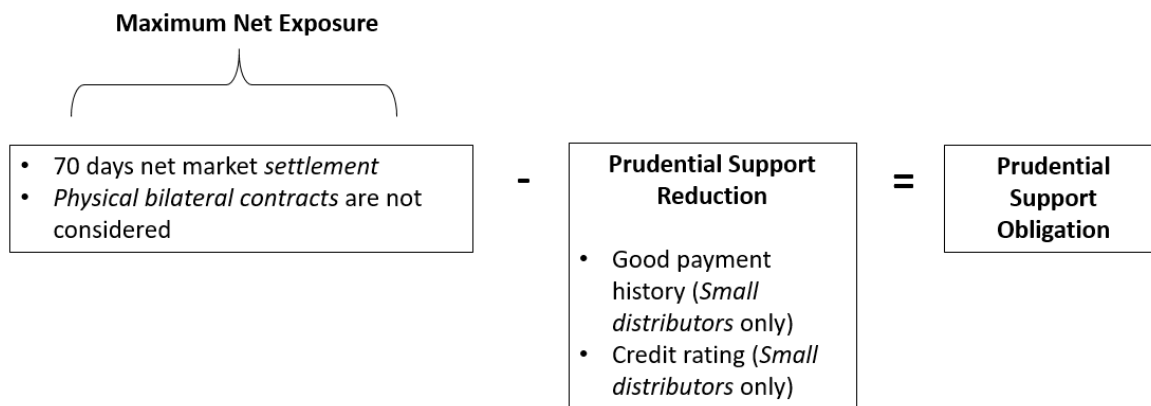


Figure 2-3: No Margin Call Option for Physical Transactions for a Market Participant that is not an Energy Trader

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 ss.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 ss.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 ss.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 ss.5.3.11**. Changes in a *market participant's* status that may trigger a review of its *maximum net exposure* under **MR Ch.2 ss.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 ss.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 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 days 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 *preliminary settlement statements* or *final 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 preliminary settlement statements* and *final settlement statements*. For details on physical market *settlement statements*, refer to [Market Manual 5.5: Physical Markets Settlement Statements](#).

3.1.3. Other Settlement Amounts Estimated Daily

On a daily basis, the *IESO* estimates other *settlement amounts*. The other *settlement amounts* do not fall under the category of cleared-but-not-settled nor

six-day estimate, and are non-hourly. The majority of these *settlement amounts* are charges provided by *applicable law*. *Market participants* may view all *settlement amounts* under the *actual exposure* calculation through the **Estimated Net Exposure** tab in the **Prudential Manager**.

3.1.4. 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 |
|---|--|--|
| <i>Actual exposure</i> < 70 % <i>trading limit</i> | None | None |
| 70% <i>trading limit</i> <= <i>actual exposure</i> < 100 % <i>trading limit</i> | The <i>IESO</i> issues a "Notice of Margin Call Warning" to <i>market participants</i> for their <i>physical transactions</i> via a generic email. | Refer to MR Ch.2 ss.5.4.1. |
| <i>Actual exposure</i> >= 100 % <i>trading limit</i> | The <i>IESO</i> issues a <i>margin call</i> notice to <i>market participants</i> for their <i>physical</i> 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 [Market Manual 1.5: Market Registration Procedures](#), 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 of this *market manual* 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 [Market Manual 1.5: Market Registration Procedures](#), 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 of this *market manual*.

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.1.3)

Market participants may submit the *maximum daily trading limit* to adjust the amount of their *trading limits* for *virtual transactions*, 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 with the *IESO* in accordance with **MR Ch.2, ss.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* or injects *energy* using an *electricity storage resource* and is eligible for market creditor status.

4.2. Calculating the Prudential Support Obligation for Virtual Transactions

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

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.

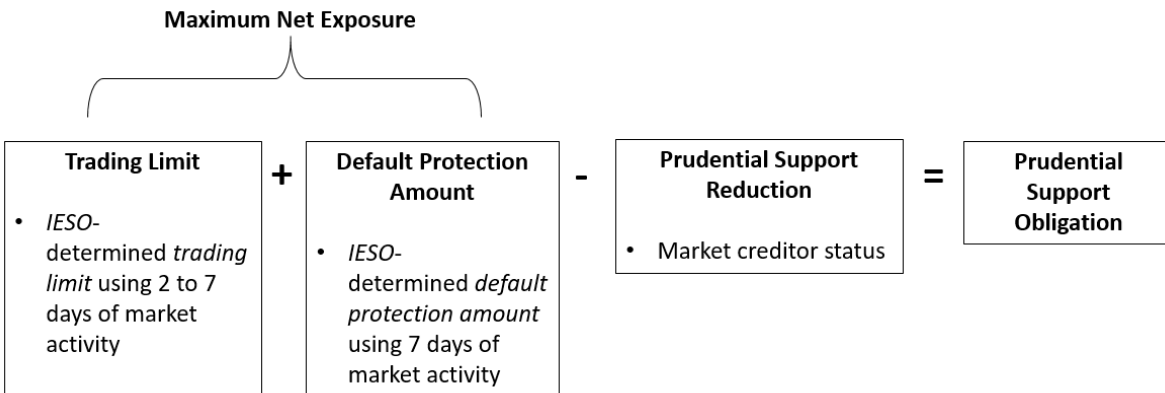


Figure 4-1: Margin Call Option for Virtual Transactions

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

(MR Ch.2 ss.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 virtual zonal *energy* price and the hourly average real-time virtual zonal *energy* prices. The *IESO* determines the price delta on an annual basis by:

- calculating the difference between the day-ahead virtual zonal *energy* price and the applicable hourly average real-time virtual zonal *energy* price for each hour and *virtual transaction zonal trading entity* for the previous three years; and
- identifying 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)

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 that includes shadow prices from the day-ahead commitment process.

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](#) of this *market manual*; and
- the estimated virtual uplift rate, which represents the *IESO's* estimation of *day-ahead market* reliability unit commitment uplift amounts that may be incurred by *virtual transaction offers* to provide *energy*. This rate may be updated on an annual basis if it increases or decreases by 15% or more.

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, $TL_{VT\$}$, is calculated as follows:

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

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

where:

| Variable | Description |
|------------------------------|--|
| TL_{VT} | is the <i>market participant</i> -submitted absolute value of the <i>maximum daily trading limit</i> quantity (in MWh) for <i>virtual transactions</i> ; |
| $\Delta DAP_{VT}, ARTP_{VT}$ | is the <i>IESO</i> -determined price delta calculated in accordance with section 4.2.1 of this <i>market manual</i> ; |
| $\#Days_{TL}$ | is the <i>minimum trading limit</i> assessment period for <i>virtual transactions</i> denoted as a number of calendar days ; and |
| U_{VT} | is the <i>virtual transaction</i> uplift estimation rate in \$/MWh. |

4.2.3. Determining the Default Protection Amount for Virtual Transactions

(MR Ch.2 ss.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, $DPA_{VT\$}$, is calculated as follows:

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

where:

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

4.2.3.1. Application of Reductions

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

The *IESO* will reduce the *maximum net exposure for virtual transactions* if the *IESO's* approves the *market participant's* market credit 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, $PSO_{VT\$}$, is calculated as follows:

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

where:

| Variable | Description |
|--------------|---|
| $PSO_{VT\$}$ | is the <i>market participant's prudential support obligation for virtual transactions</i> (in dollars) |
| $TL_{VT\$}$ | is the <i>minimum trading limit for virtual transactions</i> (in dollars) |
| $DPA_{VT\$}$ | is the <i>default protection amount for virtual transactions</i> (in dollars) |
| $AIS_{VT\$}$ | is the average of its most recent six consecutive <i>invoices</i> (in dollars) where a <i>market participant</i> conducts <i>physical transactions</i> using a <i>generation unit</i> or injects <i>energy</i> using and <i>electricity storage resource</i> 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 ss.5C.5)

After *market participants* receive their Schedule A assessment results, the *market participants* must satisfy their *prudential support obligations for virtual transactions* by submitting one or a combination of the formats outlined in **MR Ch.2 ss.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 ss.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 ss.5C.1.12**. Changes in a *market participants'* status that may trigger a review of its *maximum net exposure* under **MR Ch.2 ss.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 ss.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 offers*, *market participants* should consider using the formulae listed in **MR Ch.2 ss.5C.2.1** to calculate the potential exposure for their *virtual transaction bids and offers*.

5.1.1. Daily Bid and Offer Quantity Screening

(MR Ch. 7, s.3.8B.3)

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 ss.3.8B.3**.

5.1.2. Daily Exposure Screening

(MR Ch.7 ss.3.8B.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 ss.3.8B.1.4**.

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

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

Where:

| Variable | Description |
|-------------------------------|--|
| M | is the set of all <i>virtual zonal resources</i> |
| $SNC_{VTm,h}$ | is the absolute sum of submitted quantities of <i>bids</i> and <i>offers</i> submitted in respect of <i>virtual transactions</i> (in MWh) by <i>market participant</i> for <i>settlement hour</i> h at the <i>virtual zonal resource</i> m. The quantity (in MWh) will be zero for each trade date at the start of the <i>day-ahead market submission window</i> ; |
| $DAP_{VTZm,h}, ARTP_{VTZm,h}$ | is the <i>IESO-determined price delta</i> calculated in accordance with section 5.3 of this <i>market manual</i> ; and |
| U_{VT} | is the <i>virtual transaction uplift estimation rate</i> , in \$/MWh. This is the <i>IESO's</i> estimation of <i>day-ahead market</i> reliability unit commitment uplift amounts that may be incurred by <i>energy offers</i> for <i>virtual zonal resources</i> . |

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 ss.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 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 *preliminary settlement statements* or *final settlement statements* but that have not yet appeared on the *market participant's invoice*. This includes the *settled* value of *virtual transactions* plus any associated *day-ahead market* reliability unit commitment uplift. 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 *preliminary settlement statement*. For details on physical market *settlement statements*, refer to [Market Manual 5.5: Physical Markets Settlement Statements](#).

5.2.3. Prepayments

Refer to section 3.1.4 of this *market manual*.

5.3. Daily Price Delta

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

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.7 ss.5C.3.2**.

For an interim period, until 25 months of hourly day-ahead virtual zonal *energy* prices and hourly average real-time virtual zonal *energy* prices are available, 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 the 97th percentile of interim price delta data to set the interim price delta to be used for the daily monitoring for *virtual transactions*.

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 |
|--|---|-------------------------------------|
| <i>Actual exposure</i> < 70% <i>virtual transaction trading limit</i> | None | None |
| 70% <i>trading limit</i> <= <i>actual exposure</i> < 100% <i>trading limit</i> | The <i>IESO</i> issues a "Notice of Margin Call Warning" to <i>market participants</i> for their <i>virtual transactions</i> via a generic email. | Refer to MR Ch.2 ss.5C.2.1 . |

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

Figure 6- 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 |
|---|---|---|
| <i>Consolidated actual exposure</i> < 70% <i>consolidated trading limit</i> | None | None |
| 70% <i>consolidated trading limit</i> <= <i>consolidated actual exposure</i> < 100% <i>consolidated trading limit</i> | The <i>IESO</i> issues a consolidated "Notice of Margin Call Warning" to <i>market participants</i> for their <i>physical transactions</i> and <i>virtual transactions</i> via a generic email. | Refer to MR Ch.2 ss.5D.3.1 |
| <i>consolidated actual exposure</i> >= 100% <i>consolidated trading limit</i> | The <i>IESO</i> issues a consolidated <i>margin call</i> notice to <i>market participants</i> for their <i>physical transactions</i> and <i>virtual transactions</i> via a generic email. The <i>IESO</i> will reject a <i>market participant's</i> subsequent <i>bids</i> and <i>offers</i> for the <i>market participant's virtual transactions</i> as described in MR Ch.2 ss.5D.3.2 . | Refer to MR Ch.2 ss.5D.3.1 and 5C.4.2 . The <i>market participant's</i> ability to conduct <i>virtual transactions</i> will be reinstated as described in MR Ch.2 ss.5D.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 ss.5D.3.2.**

– End of Section –

7. Event of Default

(MR Ch.2 s.8)

Where the *IESO* issues a default notice 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 in [Market Manual 5: Settlements Part 5.9: Payment Methods and Schedule](#), where this relates to non-payment of an *invoice* and in [Market Manual 2: Market Administration Part 2.6: Treatment of Compliance Issues](#), where it relates to a compliance issue.

Refer to [Market Manual 5: Settlements Part 5.3: Submission of Physical Bilateral Contract Data](#) for more information on the Physical Bilateral Contract process.

7.1. Default Levy

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

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 ss.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 *prudential support obligation* (**MR Ch.2 ss.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:

- 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*.

– 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 to the 97 th percentile based on the day-ahead and real-time price differences of all the nine virtual zonal trading entities. |
| Daily Virtual Transaction Price Delta Report | Daily | Public | Nine price deltas (one for each virtual zonal trading entity) calculated daily to the 97 th percentile using the differences between the corresponding day-ahead prices and real-time prices for each of the nine virtual zonal trading entities |

– 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* Web site (<http://www.ieso.ca/>). 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 <i>physical transactions</i> by the guarantor to the <i>IESO</i> . |
| Affidavit Regarding Reduction in Prudential Support Obligations | IESO_AFF_0001 | Affidavit provided by a <i>market participant</i> that is a <i>distributor</i> , in respect of a claim of reduction to its <i>prudential support obligation</i> for its <i>physical transactions</i> . |
| Pledge of Cash and Treasury Bills | IESO_AGR_0013 | Pledge of Cash and Treasury Bill as a form of <i>prudential support</i> between the pledger and the <i>IESO</i> to cover a <i>market participant's prudential support obligation</i> for its <i>physical transactions</i> . |

– End of Section –

Appendix B: Credit Ratings

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

The reduction in the level of *prudential support obligation* relative to the *market participant's maximum net exposure* that can be applied by the *IESO* based on a *market participant's* credit rating is set out in the following tables of the *market rules*):

Table B-1: Credit Rating Reductions for Non-Distributors

| Credit Rating with Standard and Poor's Rating Terminology | Maximum allowable reduction in Prudential Support (\$) |
|--|---|
| AA- and above or equivalent | 100% of <i>maximum net exposure</i> |
| A-, A, A+ or equivalent | Greater of 90% of <i>maximum net exposure</i> or \$37,500,000 |
| BBB-, BBB, BBB+ or equivalent | Greater of 65% of <i>maximum net exposure</i> or \$15,000,000 |
| BB-, BB, BB+ or equivalent | Greater of 30% of <i>maximum net exposure</i> or \$4,500,000 |
| Below BB- or equivalent | 0 |

Table B-2: Credit Rating Reductions for Distributors

| Credit Rating with Standard and Poor's Rating Terminology | Maximum allowable reduction in Prudential Support (\$) |
|--|---|
| AA- and above or equivalent | 100% of <i>maximum net exposure</i> |
| A-, A, A+ or equivalent | Greater of 95% of <i>maximum net exposure</i> or \$45,000,000 |
| BBB-, BBB, BBB+ or equivalent | Greater of 80% of <i>maximum net exposure</i> or \$22,500,000 |
| BB-, BB, BB+ or equivalent | Greater of 55% of <i>maximum net exposure</i> or \$7,500,000 |
| Below BB- or equivalent | 0 |

– End of Section –

Appendix C: Good Payment History

(MR Ch. 2, ss.5.8.1 and 5.8.4 and 5.85)

Table C-1: Good Payment History Reductions for Non-Distributors

| Good Payment History | Allowable Reduction in Prudential Support Obligation (for non-distributors) |
|--|--|
| Six years or more | The lesser of \$12,000,000 or 50% of <i>maximum net exposure</i> |
| Five or more years but less than six years | The lesser of \$7,500,000 or 30% of <i>maximum net exposure</i> |
| Four or more years but less than five years | The lesser of \$6,000,000 or 25% of <i>maximum net exposure</i> |
| Three or more years but less than four years | The lesser of \$4,500,000 or 20% of <i>maximum net exposure</i> |
| Two or more years but less than three years | The lesser of \$3,000,000 or 15 % of <i>maximum net exposure</i> |
| Less than two years | \$0 |

Table C-2: Good Payment History Reductions for Distributors

| Good Payment History | Allowable Reduction in Prudential Support Obligation (for distributors) |
|--|--|
| Six or more years | The lesser of \$14,000,000 or 80% of <i>maximum net exposure</i> |
| Five or more years but less than six years | The lesser of \$9,000,000 or 65% of <i>maximum net exposure</i> |
| Four or more years but less than five years | The lesser of \$7,500,000 or 45% of <i>maximum net exposure</i> |
| Three or more years but less than four years | The lesser of \$6,000,000 or 35% of <i>maximum net exposure</i> |
| Two or more years but less than three years | The lesser of \$4,500,000 or 25% of <i>maximum net exposure</i> |
| Less than two years | \$0 |

– End of Section –

Appendix D: 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 = $(PDF^5 \times \text{Total Global Adjustment Dollars Forecasted by the OEB}) / (\text{Market participant provided Annual Class A withdrawals in MWh})$

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.

References

| Document ID | Document Title |
|--------------|---|
| IMO_LST_0001 | List of Financial Institutions Eligible to Provide Prudential Support |
| N/A | The Bank Act, S.C. 1991 |

– End of Document –