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## Market Rule Amendment Proposal

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### PART 1 – MARKET RULE INFORMATION

Identification No.:	MR-00414		
Subject:	Congestion Management Settlement Credits		
Title:	Limiting Congestion Management Settlement Credits (CMSC) During Ramp-Down		
Nature of Proposal:	<input checked="" type="checkbox"/> Alteration	<input type="checkbox"/> Deletion	<input checked="" type="checkbox"/> Addition
Chapter:	9	Appendix:	
Sections:	1.1.2.18 (new), 3.5.1G (new), 3.5.2, 3.5.6B, 3.5.6C, 3.5.6D, 3.5.6E, 3.5.9, 3.5A (new), 3.9.1		
Sub-sections proposed for amending:			

### PART 2 – PROPOSAL HISTORY

Version	Reason for Issuing	Version Date
1.0	Draft for Technical Panel Review	March 24, 2015
2.0	Publish for Stakeholder Review and Comment	March 26, 2015
3.0	Submitted for Technical Panel Vote	April 21, 2015
4.0	Recommended by Technical Panel; Submitted for IESO Board Approval	April 28, 2015
5.0	Approved by IESO Board	June 24, 2015
Approved Amendment Publication Date:	June 25, 2015	
Approved Amendment Effective Date:	Currently anticipated to be in the fourth quarter of 2015, upon implementation of the required IT system changes.	

### PART 3 – EXPLANATION FOR PROPOSED AMENDMENT

Provide a brief description of the following:

- The reason for the proposed amendment and the impact on the *IESO-administered markets* if the amendment is not made.
- Alternative solutions considered.
- The proposed amendment, how the amendment addresses the above reason and impact of the proposed amendment on the *IESO-administered markets*.

#### Summary

The IESO proposes to amend the market rules to limit self-induced congestion management settlement credit (CMSC) payments to generators ramping down to come off-line.

This proposal is based on stakeholder consultations as part of SE-111: Review of Generation Guarantee Programs – Limiting CMSC During Ramp-Down. During this stakeholder engagement initiative, the IESO has considered and responded to stakeholder issues raised related to settlement details, compensation methods, materiality, gaming potential, reference prices and implementation. The IESO proposes these rules changes in consideration of all stakeholder feedback and to fulfill the objective of this initiative which is to mitigate self-induced, ramp-down congestion management settlement credits (CMSC) while providing flexibility for generators to effectively signal their desire to ramp-down, and providing incentives for generators to operate efficiently.

Further information on SE-111 can be found on the IESO's website at:

<http://www.ieso.ca/Pages/Participate/Stakeholder-Engagement/SE-111.aspx>

#### Background

In the Ontario market, in order to signal their desire to come off-line, generators must submit offer prices that exceed the shadow price at its connection node. Slow ramping generators cannot shut down immediately and ramping limitations are reflected in the unit's ramp rate, submitted hourly along with its offer. When a generator decides to shut down a unit, they may strategically offer above their incremental cost, up to the maximum market clearing price, to signal an intention to go off-line. If the generator has completed its minimum generation block run-time, they may offer at the price at which they are willing to continue operating. In either case, the offer price could be significantly higher than the market price, resulting on constrained-on CMSC payments.

On August 19, 2011 the Market Surveillance Panel (MSP) posted a monitoring document<sup>1</sup> to provide guidance to generators regarding offer prices for signaling an intention to come off-line, which has resulted in a substantial reduction in CMSC payments to generators. However, the potential for significant self-induced CMSC payments beyond what is required to recover ramp-down costs still exists.

<sup>1</sup> Link to "Monitoring Document: Generator Offer Prices Used to Signal an Intention to Come Offline":  
[http://www.ontarioenergyboard.ca/OEB/Documents/MSP/MonitoringDocument\\_GeneratorOfferPrices\\_20110819.pdf](http://www.ontarioenergyboard.ca/OEB/Documents/MSP/MonitoringDocument_GeneratorOfferPrices_20110819.pdf)

### PART 3 – EXPLANATION FOR PROPOSED AMENDMENT

The MSP has recommended<sup>2</sup> that the IESO implement a permanent, market rule based solution to eliminate self-induced CMSC payments to ramping down generators, and the IESO has worked with members of the generator community to find a solution to mitigate self-induced , ramp-down CMSC which:

- Provides flexibility for generators to effectively signal their desire to ramp-down; and
- Provides incentives for generators to operate efficiently.

#### Discussion

In order to limit self-induced CMSC payments to generators ramping down to come off-line, the solution must define the ramp-down period, withhold/recover (i.e. clawback) all CMSC, and create a methodology for determining compensation during the ramp-down intervals. The new compensation is called ramp-down settlement amount (RDSA).

The following changes to the market rules are required:

**Section 1.1.2.17 (new)** – This section will add RDSA to the list of charges billable through the IESO-administered markets.

#### Conditions for CMSC Clawback:

**Section 3.5.1G (new)** – This section will allow the withholding/recovery (i.e. clawback) of CMSC from dispatchable generators that are not quick-start facilities during ramp-down intervals where the unit is constrained-on (i.e. market quantity is less than dispatch quantity for the same dispatch interval). Information produced by the IESO’s dispatch scheduling and optimization engine will be used to identify consecutive ramp-down dispatch intervals leading to unit shut down (with further details specified in the applicable market manual). Generators will receive RDSA under section 3.5A for the intervals where CMSC is withheld or recovered.

As a consequence of new section 3.5.1G, existing section 3.5.2 will be revised to add section 3.5.1G to the list of sections that the CMSC calculation is subject to.

#### Ramp-Down Settlement Amount:

**Section 3.5A.1 (new)** – This section identifies the calculation of RDSA for each ramp-down interval, subject to section 3.5A.2, equal to the lesser of:

- the actual CMSC calculated under section 3.5.2 (clawed back under section 3.5.1G); and
- the amount determined using the ramp-down compensation (RDC) equation, minimum \$0.

The intent of the solution is to limit self-induced ramp-down CMSC. The ‘lesser of’ calculation ensures that the generator is paid no more than they would have received in CMSC compensation

<sup>2</sup> MSP Report May 2012-Oct 2012 - Recommendation 3-1 (refer to pages 61-67)  
[http://www.ontarioenergyboard.ca/oeb/Documents/MSP/MSP\\_Report\\_May2012-Oct2012\\_20130621.pdf](http://www.ontarioenergyboard.ca/oeb/Documents/MSP/MSP_Report_May2012-Oct2012_20130621.pdf)

**PART 3 – EXPLANATION FOR PROPOSED AMENDMENT**

during the ramp-down intervals, limited by their offer before ramp-down started (which is a proxy for their steady state cost of operating).

The solution will only impact net settlement amounts for those non-quick-start dispatchable generators that have earned self-induced CMSC **by raising their offer price** when the unit is constrained-on due to technical limitations on ramp-down as indicated by offered ramp-down rates.

The ramp-down compensation equation uses a generator-specific offer price taken from the hour before the hour ramp-down begins, applying a standard fixed factor determined according to the dispatch instruction for the ramp-down interval (specified in the applicable market manual).

This compensation methodology mitigates self-induced ramp-down CMSC and is based on a principled approach that encourages generators to manage their ramp downs efficiently while providing an opportunity to manage their cost recovery risk. The methodology uses a cost recovery factor that was derived for a typical combined cycle facility. All generators have the opportunity to recover any additional ramp down costs through their energy offer prices. However, since the more efficient generators will require little or no additional cost recovery through offer prices, the solution incentivizes efficient operation.

**Section 3.5A.2 (new)** – This new section references the recovery of RDSA under existing sections 3.5.6B to 3.5.6E (explanation below).

**Sections 3.5.6B to 3.5.6E** – These existing sections are revised to include recovery of RDSA. This will address potential gaming (offer changes in the hour before ramp-down when the unit is constrained-on that result in inappropriate RDSA). Competitive, generator-specific offer prices are used to calculate ramp-down compensation because these offers are a proxy for actual cost. However, these additional changes to the market rules will address gaming opportunities that could result as the RDSA is an offer-based compensation mechanism.

For further background on the amendment proposal which added sections 3.5.6B to 3.5.6E to the market rules (2011), please refer to [MR-00252-R00: Recovery of CMSC Payments for Generation Facilities](#).

**Section 3.5.9** – This existing section is revised to allow the IESO to recover the RDSAs that result from the acceptance by the IESO of replacement energy due to a forced outage.

**Section 3.9.1** – This existing section is revised to allow the IESO to recover the RDSA from market participants through an hourly uplift charge.

## PART 4 – PROPOSED AMENDMENT

## Chapter 9

## 1. Introductory Rules

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1.1.2 This chapter sets out the respective rights and obligations of the *IESO* and of *market participants* in determining, billing for and effecting payment in respect of financial obligations arising from the *IESO-administered markets*, other provisions of the *market rules*, the *Electricity Act, 1998* and the *Ontario Energy Board Act, 1998*, including the following:

- 1.1.2.1 [Intentionally left blank – section deleted]
- 1.1.2.2 the *energy market*;
- 1.1.2.3 the operating reserve market;
- 1.1.2.4 congestion management;
- 1.1.2.5 transmission rights (TRs);
- 1.1.2.6 [Intentionally left blank – section deleted]
- 1.1.2.7 operating deviations;
- 1.1.2.8 ancillary services and reliability must-run contracts;
- 1.1.2.9 transmission service charges and connection charges collected by the IESO;
- 1.1.2.10 rural rate protection;
- 1.1.2.11 the IESO administration charge;
- 1.1.2.12 penalties and fines;
- 1.1.2.13 any debt retirement charge;
- 1.1.2.14 rebates and other payments arising from market power mitigation measures;
- 1.1.2.15 the day-ahead commitment process;
- 1.1.2.16 forecasting services relating to *variable generation*; ~~and~~

1.1.2.17 the *capacity based demand response program* and *demand response pilot program*; and

1.1.2.18 ramp-down settlement amount.

### 3.5 Hourly Settlement Amounts for Congestion Management

3.5.1G A registered market participant for a registered facility that is a dispatchable generation facility shall not be entitled to a congestion management settlement credit determined in accordance with section 3.5.2 for any dispatch interval 't' within settlement hour 'h' where:

3.5.1G.1 the registered facility is not a quick-start facility;

3.5.1G.2 the IESO has identified the dispatch interval as part of consecutive ramp-down dispatch intervals resulting in the shutdown of the registered facility, including those where the registered facility does not fully or accurately respond to its dispatch instructions, in accordance with the applicable market manual; and

3.5.1G.3 the registered facility's  $MQSI_{k,h}^{m,t}$  is less than the corresponding  $DQSI_{k,h}^{m,t}$  for the same dispatch interval.

A registered facility subject to the withholding or recovery of a congestion management settlement credit for a dispatch interval under this section shall receive a ramp-down settlement amount for the applicable dispatch interval in accordance with section 3.5A.

3.5.2 Subject to sections 3.5.1A, 3.5.1D, 3.5.1E, 3.5.1F, 3.5.1G, 3.5.6, 3.5.6A, 3.5.6B, 3.5.6C, 3.5.6D, 3.5.6F, 3.5.9 and 3.5.10 and subject to Appendix 7.6 of Chapter 7, the hourly congestion management settlement credit for market participant 'k' for settlement hour 'h' (" $CMSC_{k,h}$ ") shall be determined by the following equation:

3.5.6B A registered market participant for a registered facility that is a dispatchable generation facility, who:

- increases the offer price associated with the generation facility minimum loading point for its minimum generation block run-time so that under

Chapter 7 section 5.7.1.4 the *registered market participant* for the *generation facility* is no longer eligible for the applicable guarantee; and

- has received a manual constraint from the *IESO* for the *generation facility* under Chapter 7 section 6.3A.2 or 6.3A.4;

subject to section 3.5.6E, is not entitled to any inappropriate congestion management *settlement credit* or ramp-down settlement amount, determined in accordance with section 3.5.2 or 3.5A respectively, associated with that *offer price increase* for *settlement hour 'h'*, where *settlement hour 'h'* falls within the *generation facility minimum generation block run-time*. The *IESO* may recover such congestion management *settlement credit* or ramp-down settlement amount in accordance with section 3.5.6E.

3.5.6C A *registered market participant* for a *registered facility* that is a *dispatchable generation facility*, who, for settlement hour 'h':

- is unable to comply with a *dispatch instruction* under section 7.5.3 of Chapter 7, to prevent endangering the safety of any person, equipment damage, or violation of any *applicable law*; and/or
- requests that the *IESO* apply a constraint to the *dispatchable generation facility* to prevent endangering the safety of any person, equipment damage, or violation or any *applicable law*, excluding constraints applied under Chapter 7 sections 6.3A.2 or 6.3A.4;

subject to section 3.5.6E, is not entitled to any inappropriate congestion management *settlement credit* or ramp-down settlement amount, determined in accordance with section 3.5.2 or 3.5A respectively, resulting from the above actions for *settlement hour 'h'*. The *IESO* may recover such congestion management *settlement credit* or ramp-down settlement amount in accordance with section 3.5.6E.

3.5.6D A *registered market participant* for a *registered facility* that is a *dispatchable generation facility* and is fuelled by a related *generation facility*, who, for settlement hour 'h':

- has received a constraint from the *IESO* for the *dispatchable generation facility* as per the applicable *market manual*; and
- submits or has submitted an *offer price* for that *dispatchable generation facility* for *settlement hour 'h'* greater than a specified limit defined in the applicable *market manual*;

subject to section 3.5.6E, is not entitled to any inappropriate congestion management *settlement credit* or ramp-down settlement amount, determined in accordance with section 3.5.2 or 3.5A respectively, associated with that offer

price for *settlement hour* 'h'. The *IESO* may recover such congestion management *settlement credit* or ramp-down settlement amount in accordance with section 3.5.6E.

3.5.6E The *IESO* may recover congestion management *settlement credits* or ramp-down settlement amounts in accordance with sections 3.5.6B, 3.5.6C and 3.5.6D. In this situation, the *IESO* shall:

- notify the *market participant* of its intent to recover that congestion management *settlement credit* or ramp-down settlement amount; and
- notify the *market participant* of the time, which shall not be less than five *business days* from the date of receipt of the notice, within which the *market participant* may make written representations in response to the *IESO's* intent.

On receiving a response from the *market participant* within the specified time period, or upon expiry of the specified time period within which no response is received from the *market participant*, the *IESO* shall either:

- determine the amount of the congestion management *settlement credit* or ramp-down settlement amount to recover and notify the *market participant* accordingly; or
- gather further information as the *IESO* determines appropriate to determine the amount of the congestion management *settlement credit* or ramp-down settlement amount to recover and notify the *market participant* accordingly of the determination.

The *IESO* shall redistribute any payments that are recovered in accordance with section 4.8.2.

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3.5.9 The *IESO* may limit, withhold or recover any congestion management *settlement credits* or ramp-down settlement amounts that result from the acceptance by the *IESO* of the replacement *energy* referred to in section 3.3.4C of Chapter 7 and shall redistribute any recovered payments in accordance with section 4.8.2. Any applicable congestion management *settlement credits* or ramp-down settlement amounts for replacement *energy* accepted by the *IESO* shall be limited as set out in the applicable *market manual* to an *IESO* estimate of what would have been received by the original *facility* had it not experienced the *forced outage*.

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### 3.5A Hourly Settlement Amounts for Ramp-Down

3.5A.1 Subject to section 3.5A.2, the ramp-down *settlement* amount for any *dispatch interval* 't' identified in section 3.5.1G for market *participant* 'k' within *settlement hour* 'h' ("RDSA<sub>k,h</sub>") shall be the lesser of:

- the congestion management *settlement credit* for *dispatch interval* 't' which was withheld or recovered under section 3.5.1G; and
- the ramp-down compensation ("RDC<sub>k,h</sub><sup>m,t</sup>") as determined by the following equation:

Let 'BE' be a matrix of n *price-quantity pairs* offered by market *participant* 'k' to supply *energy* during the *settlement hour* immediately before the hour in which ramp-down begins, adjusted by a factor as specified in the applicable *market manual*.

Let OP(P,Q,B) be a function of Price (P), Quantity (Q) and an n x 2 matrix (B) of offered *price-quantity pairs*:

$$OP(P,Q,B) = P \cdot Q - \sum_{i=1}^{s^*} P_i \cdot (Q_i - Q_{i-1}) - (Q - Q_{s^*}) \cdot P_{s^*+1}$$

Where:

s\* is the highest indexed row of BE such that  $Q_{s^*} \leq Q \leq Q_n$  and where,  $Q_0=0$

Using the terms below, let RDC<sub>k,h</sub><sup>m,t</sup> be expressed as follows:

$$RDC_{k,h}^{m,t} = \text{MAX} \left[ 0, \left[ \begin{array}{l} OP(\text{EMP}_h^{m,t}, \text{MQSI}_{k,h}^{m,t}, \text{BE}) - \\ \text{MAX} \left( OP(\text{EMP}_h^{m,t}, \text{DQSI}_{k,h}^{m,t}, \text{BE}), OP(\text{EMP}_h^{m,t}, \text{AQEI}_{k,h}^{m,t}, \text{BE}) \right) \end{array} \right] \right]$$

3.5A.2 The IESO may recover the hourly ramp-down *settlement* amount determined in accordance with section 3.5A.1 pursuant to sections 3.5.6B, 3.5.6C, 3.5.6D and 3.5.6E, as applicable.

## 3.9 Hourly Uplift Settlement Amounts

3.9.1 The hourly *settlement amounts* defined by the preceding provisions of this section 3 will result in an hourly *settlement* deficit that shall be recovered from

market participants as a whole through the *hourly uplift*. The total *hourly uplift settlement amount* for settlement hour ‘h’ (“HUSA<sub>h</sub>”) shall be determined according to the following equation:

$$\text{HUSA}_h = \sum_K (\text{NEMSC}_{k,h} + \text{ORSC}_{k,h} + \text{CMSC}_{k,h} + \text{RDSA}_{k,h} + \text{TRSC}_{k,h} + \text{IOG}_{k,h}) + \text{TCRF}_h - \sum_R (\sum_R \text{ORSSD}_{k,r,h} + \text{DA\_IFC}_{k,h} + \text{RT\_IFC}_{k,h} + \text{DA\_EFC}_{k,h} + \text{RT\_EFC}_{k,h} + \text{DA\_LWFC}_{k,h})$$

over all ‘k’ market participants

NEMSC<sub>k,h</sub> = net energy market settlement credit for market participant ‘k’ in settlement hour ‘h’

ORSC<sub>k,h</sub> = operating reserve market settlement credit for market participant ‘k’ in settlement hour ‘h’

CMSC<sub>k,h</sub> = congestion management settlement credit for market participant ‘k’ in settlement hour ‘h’

RDSA<sub>k,h</sub> = ramp-down settlement amount for market participant ‘k’ in settlement hour ‘h’

TRSC<sub>k,h</sub> = transmission rights settlement credit for market participant ‘k’ in settlement hour ‘h’

IOG<sub>k,h</sub> = intertie offer guarantee settlement credit for the market participant ‘k’ in settlement hour ‘h’

DA\_IFC<sub>k,h</sub> = day-ahead import failure charge for the market participant ‘k’ in settlement hour ‘h’

RT\_IFC<sub>k,h</sub> = real-time import failure charge for the market participant ‘k’ in settlement hour ‘h’

DA\_EFC<sub>k,h</sub> = day-ahead export failure charge for the market participant ‘k’ in settlement hour ‘h’

RT\_EFC<sub>k,h</sub> = real-time export failure charge for the market participant ‘k’ in settlement hour ‘h’

DA\_LWFC<sub>k,h</sub> = day-ahead linked wheel failure charge for the market participant ‘k’ in settlement hour ‘h’

TCRF<sub>h</sub> = transmission charge reduction fund contribution in settlement hour ‘h’

ORSSD<sub>k,r,h</sub> = operating reserve settlement debit for operating deviations for class r reserve for market participant ‘k’ in settlement hour ‘h’

Where:

'K' is the set of all *market participants* 'k'

'R' is the set of each class r of *operating reserve*

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**PART 5 – IESO BOARD DECISION RATIONALE**

This amendment identifies means to better enable the market to satisfy the market design principle of efficiency. There is the potential for generators to earn significant self-induced CMSC payments during ramp-down, resulting in unwarranted costs being charged to Ontario consumers.