

The background of the lower half of the page is a photograph of a wind farm and power lines, overlaid with a semi-transparent blue filter. On the left, several white wind turbines are visible, with their blades extending outwards. On the right, a tall metal lattice tower for power lines stands prominently. The overall scene is set against a clear sky.

**Independent Market Operator**

**Rule Change Notice**  
**Title: Calculation of Net STEM Shortfall**

**Ref: RC\_2010\_03**

**Fast Track Rule Change Process**

**Date: 2 March 2010**

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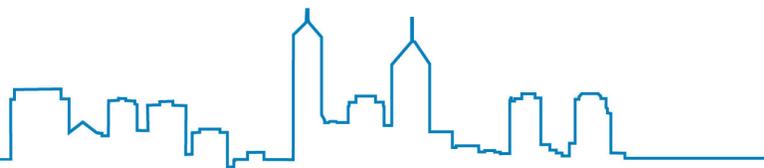
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## 1. THE RULE CHANGE PROPOSAL

### 1.1. The Submission

On 2 March 2010 the Independent Market Operator (IMO) submitted a Rule Change Proposal regarding amendments to clauses 4.26.2, 4.26.2E, 4.26.3 and new clause 4.26.2F of the Wholesale Electricity Market Rules (Market Rules).

This Rule Change Notice is published according to clause 2.5.7 of the Market Rules, which requires the IMO to publish a notice when it has developed a Rule Change Proposal.

#### 1.1.1 Submission details

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|-------------------------------|--|
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| <b>Organisation:</b>          | Independent Market Operator  |
| <b>Address:</b>               |  |
| <b>Date submitted:</b>        | 2 March 2010   |
| <b>Urgency:</b>               | High   |
| <b>Change Proposal title:</b> | Calculation of Net STEM Shortfall  |
| <b>Market Rule affected:</b>  | 4.26.2, 4.26.2E, 4.26.3 and new clause 4.26.2F                           |

### 1.2. Details of the Proposal

#### Background

A Net STEM Shortfall is the amount by which the Reserve Capacity actually supplied by a Market Participant falls short of that Market Participant's Reserve Capacity Obligation. It is used to calculate the Capacity Cost Refund payable by a Market Participant. There have been a number of amendments to the shortfall calculation since market start as presented in Appendix 1 of this Rule Change Proposal.

The formula for the Net STEM Shortfall, as calculated under clause 4.26.2 of the Wholesale Electricity Market Rules (Market Rules), is summarised as follows:

$$SF = \text{Max} (RTFO, RCOQ-A) + \text{Max} (0, B-C) - RTFO$$

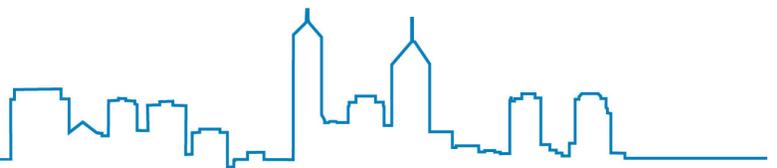
Where A = Min (RCOQ, CAPA)

$$B = \text{Min} (RCOQ - RTFO, DSQ)$$

$$C = \text{Min} (DSQ, MSQ)$$

CAPA is the capacity that was made available before the Trading Day.

RTFO is the MW quantity of Forced Outage in real-time.



RCOQ is the total Reserve Capacity Obligation Quantity.

DSQ is the sum of the Dispatch Schedule Quantities.

MSQ is the sum of the Metered Schedule Quantities.

In particular, the calculation has the following two components:

- Pre-STEM [ $\text{Max}(\text{RTFO}, \text{RCOQ}-A)$ ]: this compares the capacity made available in the day-ahead STEM processes to the Market Participant's obligations. That is it quantifies the amount of capacity that should have been made available but was not. This first check is looking at whether the Market Participant made the capacity available (CAPA) and taking the minimum of this and RCOQ so that more capacity than is available in the Market Participant's RCOQ is not made available. The calculation  $\text{RCOQ}-A$  then determines if there is a shortfall pre-STEM. It then compares this with RTFO to see if the Market Participant submits a RTFO after the Trading Day, if the RTFO is greater than  $\text{RCOQ}-A$  then this number will bind as the RTFO attracts Facility Forced Outage Refunds; and
- Post-STEM (real-time) [ $\text{Max}(0, B-C)$ ]: this compares the amount of capacity the Market Participant was supposed to supply to what was actually supplied in real time. That is, it quantifies the amount by which the metered schedules fall short of the dispatch schedules<sup>1</sup>.

Note that the Net STEM Shortfall calculation is net of the effects of real-time forced outages. That is if a Facility suffers a Forced Outage, the Market Participant will incur a Facility Forced Outage Refund in accordance with clause 4.26.1A. To avoid a Market Participant being impacted on twice for the same Forced Outage, the real-time component of the Net STEM Shortfall formula reduces the amount of energy the Market Participant is required to supply by the amount of the outage.

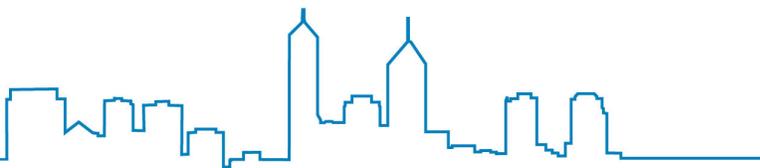
## Issue

There are two key issues with the current formulation of the Net STEM Shortfall calculation:

- Issue 1: Where a Market Participant has multiple generators in its portfolio and one (or more) suffers a real-time Forced Outage then the expected energy supplied in real-time from the portfolio is reduced to reflect just the Forced Outage. This adjustment however is applied relative to the portfolio's total Reserve Capacity Obligation Quantity, including Scheduled Generators, Curtailable Loads and Interruptible Loads that were not

---

<sup>1</sup> Part B represents what the Market Participant was dispatched to do but is capped by the capacity the Market Participant is obliged to make available, less any Forced Outages notified to System Management. Part C accounts for the difference between what a Market Participant was dispatched to do and what it actually did. It addresses the possibility that a Market Participant either does not follow instructions or is incapable of following them because it is on forced outage which it has not declared



dispatched. As a result the Market Participant is exposed to a Net STEM shortfall purely because some of its facilities were not asked to supply energy or loads requested to reduce consumption; and

- Issue 2: Portfolios which include generators with additional capacity available beyond their Reserve Capacity Obligations (such as Intermittent Generators (IG's)) can use the output of these generators to potentially offset any Net STEM shortfall caused by under supply of other facilities in the same portfolio.

**Issue 1: Portfolios with Multiple Generators**

The Net STEM Shortfall formulation specifies that all the variables that form part of the calculation are to be summed over all of a Market Participant's Facilities and Loads before being used in the calculation. The effect of this approach is that, if a Market Participant has one Scheduled Generator that is undergoing a partial Forced Outage, and another Scheduled Generator that has unused capacity, as it was not required to supply energy (RCOQ > DSQ) then its Net STEM Shortfall will be inflated by the amount of that unused capacity. This is because all Facilities are required to contribute to RCOQ and RTFO (as they are set at the portfolio level) but Facilities MSQ and DSQ are at a facility level. A portfolio which has a Curtailable Load and/or Interruptible Load with Reserve Capacity Obligations which it has not been requested to meet will also have an inflated Net STEM Shortfall as a consequence of this interaction.

For example, suppose that a Market Participant has a portfolio comprising of two Scheduled Generators (SG) as follows:

|                     | <b>SG 1</b> | <b>SG 2</b> | <b>Portfolio</b> |
|---------------------|-------------|-------------|------------------|
| RCOQ                | 100         | 20          | 120              |
| RTFO                | 40          | 0           | 40               |
| DSQ                 | 100         | 0           | 100              |
| MSQ                 | 60          | 0           | 60               |
| Real-time Shortfall | 0           | 0           | <b>20</b>        |

SG 1 has suffered a partial Forced Outage of 40MW. It was expected to deliver 100MW, but only delivered 60MW. Facility 2 was available but was not dispatched. SG 2 adds 20MW to the total RCOQ of the portfolio, making it 120MW. This is greater than the amount the two facilities can produce because of the 40 MW Forced Outage of SG 1.

As a result the effective capacity for the portfolio is lowered to 80MW (RCOQ-RTFO). The market anticipated that this portfolio will provide 80 MW when it is dispatched to 100MW, however the portfolio only delivered 60MW and so a 20MW shortfall results, even though the shortfall would be zero if calculated for each Facility separately. For further details please refer to Table 2 of Appendix 2 of this Rule Change Proposal. An example of a portfolio which includes Curtailable Loads and Interruptible Loads is also presented in Table 3 of Appendix 2.

The problem is that Facility 2 has contributed to the portfolio's RCOQ even though it was not asked to supply that energy. There has been an interaction between the Reserve Capacity of Facility 2 (which was available but not called) and the allowance for real-time Forced Outage for



Facility 1 (which was effectively reduced because the portfolio had more capacity available through Facility 2). A Market Participant has recently raised this issue with the IMO, where the impact is currently manifesting itself through the inclusion of a Curtailable Load within its portfolio.

*Related changes to the Market Rules:*

The Rule Change Proposal: Demand Side Management Operational Issues (RC\_2008\_20) proposed amendments to the determination of a Demand Side Management (DSM) programme's Reserve Capacity Refunds. In particular, RC\_2008\_20 amended the Market Rules to include new clauses 4.26.2D and 4.26.2E, where:

- New clause 4.26.2D determines the level of refund to apply in any Trading Interval based on the amount of shortfall, measured in terms of MWh, as a proportion of the total MWh reduction that the Curtailable Load should deliver if called to the maximum level for the maximum allowable time; and
- New clause 4.26.2E determined the total refund applicable for each Market Participant by summing the shortfall determined for any Curtailable Loads (clause 4.26.2D) and other generation systems (clause 4.26.2).

RC\_2008\_20 did not however amend clause 4.26.2 to remove the reference to Curtailable Loads from the calculation of the Net STEM Shortfall for the generation system.

***Issue 2: Facilities with outputs which exceed their Reserve Capacity Obligations***

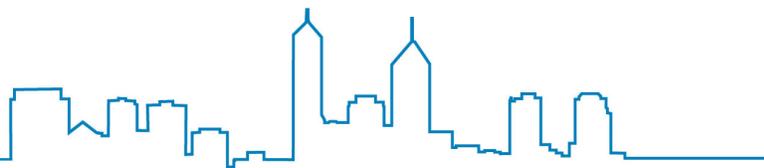
The second identified issue with the current formulation of the Net STEM Shortfall relates to a participant with a portfolio containing facilities with outputs which exceed the portfolio's Reserve Capacity Obligations.

Consider the case where a Market Participant with a portfolio of generators does not offer enough capacity in the day-ahead market, CAPA would be less than the value of its RCOQ. Assuming no Forced Outages occur, the shortfall should reflect the difference between the portfolios's RCOQ and the amount of capacity offered into the market. However, in the case where the portfolio contains either:

- A Scheduled Generator with a maximum generation capacity greater than its Capacity Credits;
- Facilities that do not hold Capacity Credits; and/or
- Intermittent Generators (such as wind farms).

These can add to the CAPA value without also increasing the portfolio's RCOQ, thereby reducing the calculated Net STEM shortfall.

This issue can also manifest through the post-STEM aspect of the calculation by increasing the DSQ and MSQ quantities. In particular, if an Intermittent Generator with a metered output of X MW is added to the portfolio then this term will change by:



$$B = \text{Min} (\text{RCOQ} - \text{RTFO}, \text{DSQ} + X)$$

$$C = \text{Min} (\text{DSQ} + X, \text{MSQ} + X)$$

If X is large enough to raise the DSQ + X above RCOQ –RTFO then  $[\text{Max} (0, B-C)] = 0$ . Despite the Facility having a real-time Forced Outage, the portfolio has satisfied its post-STEM obligations by adding energy from the Intermittent Generator. This potentially gives an unanticipated advantage to Market Participants in these circumstances.

For further details of the calculation when the portfolio includes an Intermittent Generator please refer to Table 4 of Appendix 2.

The two issues show that clause 4.26.2 as currently drafted will, in certain circumstances, lead to different outcomes for Market Participants with:

- Multi-Facility portfolios (including Curtailable Loads and Interruptible Loads); and/or
- Facilities with outputs great than their Reserve Capacity Obligations (such as Intermittent Loads).

### **Proposal**

As the specific issue impacting on the Market Participant currently relates directly to issue 1, the following potential interim solution has been identified to correct this:

- Remove Curtailable Loads from the calculation in clause 4.26.2 (Net STEM Shortfall calculation) and treat separately under clause 4.26.2D (Capacity Shortfall calculation).

The IMO considers that this solution would ensure consistency with the changes which resulted from RC\_2008\_20. In adopting this interim solution the further issues around portfolios with multiple generators and outputs greater than their Reserve Capacity Obligations would not be solved. A further long term solution will still be required, and will be progressed by the IMO at a later stage.

The IMO also proposes a typographical change to clarify that the Capacity Cost Refund determined in clause 4.26.2E relates to the Net STEM Shortfall calculated under clause 4.26.2 and the Capacity Shortfall calculated under clause 4.26.2D.

The IMO also proposes some further minor changes to improve the overall integrity of this section of the Market Rules.

### **1.3. The Proposal and the Wholesale Market Objectives**

The IMO submits that the proposed Amending Rules are required to



- a) *to promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West interconnected system;*

The IMO considers that the proposed amendments will better achieve market objective (a) through restoring market price signals to their correct levels for portfolios with Curtailable Loads. In particular, the purpose of Capacity Cost Refunds is to ensure that Market Participants who hold Capacity Credits face an appropriate incentive to ensure that they deliver the capacity that they have been contracted to deliver. Currently, Market Participants with portfolios containing Curtailable Loads are faced with arbitrarily inflated refunds despite having made the capacity of their Curtailable Load available to the market. This is a perverse outcome which may potentially impact on Market Participant's decisions to make available the capacity of Curtailable Loads, thereby potentially restricting the availability of capacity in the SWIS.

The IMO considers that the proposed changes are consistent with the other market objectives.

## **2. WHETHER THE PROPOSAL WILL BE PROGRESSED FURTHER**

The IMO has decided to process this Rule Change Proposal using the Fast Track Rule Change Process, described in section 2.6 of the Market Rules, on the basis that it satisfies the criteria in section 2.5.9(a) and 2.5.9 (b) of the Market Rules.

In particular, the IMO considers that the proposed amendments are required to correct a manifest error which maintains the reference to Curtailable Loads in the Net STEM Shortfall calculation despite the separate treatment of Curtailable Loads which was introduced under RC\_2008\_20. The IMO considers that this was an oversight which requires correcting to ensure consistency with the original intent of RC\_2008\_20 and remove a potential anomaly in determining the Net STEM Shortfall.

The proposal also consists of a minor correction to amend a current inaccuracy in the drafting of clause 4.26.2E which refers to the shortfall determined under clause 4.26.2 (the Net STEM Shortfall) as a Capacity Shortfall. It does not seek to amend the operation of the Market Rules.

As such the IMO considers that the proposal fulfils sub-clause 2.5.9(a) and 2.5.9(b) and therefore maybe be fast-tracked.

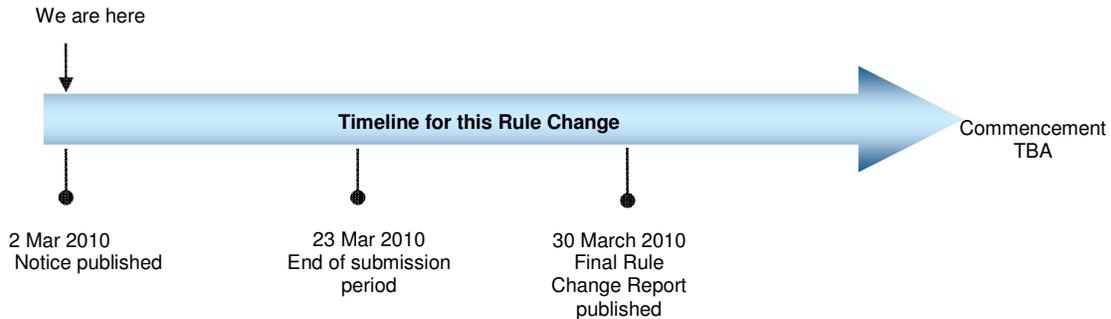
Section 2.5.9 states:

*The IMO may subject a Rule Change Proposal to the Fast Track Rule Change Process if, in its opinion, the Rule Change Proposal:*

- (a) is of a minor or procedural nature; or*
- (b) is required to correct a manifest error; or*

*(c) is urgently required and is essential for the safe, effective and reliable operation of the market or the SWIS.*

The projected timeline for processing this proposal is:



The IMO notes that the issues identified in this Rule Change Proposal were presented to the Market Advisory Committee (MAC) at the 10 February 2010 meeting. Following this meeting, the IMO circulated a concept paper providing further details of the issues and seeking comments from MAC members. Comments provided by MAC members generally supported the removal of Curtailable Loads from the calculation of the Net STEM Shortfall (as an interim solution). The wider issues associated with the calculation of the Net STEM Shortfall (outlined as issue 2 in section 1.2 of this paper) will not be the subject of this Rule Change Proposal and will be reconsidered by the IMO at a later date.

### 3. CALL FOR SUBMISSIONS

Any Rule Participant wishing to be consulted regarding this Rule Change Proposal is invited to notify the IMO within 5 Business Days of this notice being published (**9 March 2010**).

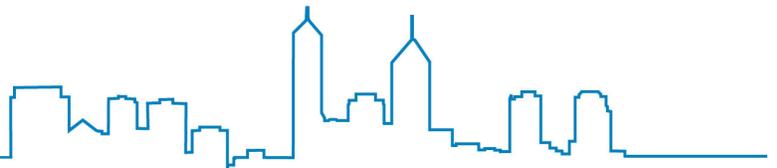
The consultation period is 15 Business Days from the publication date of this Rule Change Notice. Submissions must be delivered to the IMO by the close of business on **Tuesday 23 March 2010**.

The IMO prefers to receive submissions by email to [market.development@imowa.com.au](mailto:market.development@imowa.com.au) using the submission form available on the IMO website: <http://www.imowa.com.au/rule-changes>

Submissions may also be sent to the IMO by fax or post, addressed to:

Independent Market Operator  
Attn: Manager Market Development and System Capacity  
PO Box 7096  
Cloisters Square, Perth, WA 6850

Fax: (08) 9254 4399



#### 4. PROPOSED AMENDING RULES

The IMO proposes the following amendments to the Market Rules (~~deleted text~~, added text):

The proposed amendment to clause 4.26.2 will remove Curtailable Loads from the RCOQ and CAPA components for the calculation of each Market Participant's Net STEM Shortfall. Any shortfall associated with Curtailable Loads will be calculated in clause 4.26.2D.

For unregistered facilities this means excluding Loads that can be interrupted on request (the term Curtailable Load cannot be used as the definition implies that they are registered) and may potentially be registered in the future as a Curtailable Load in accordance with clause 2.29.5(b). For Registered Facilities this means excluding Curtailable Loads from the calculation.

4.26.2. The IMO must determine the net STEM shortfall ("**Net STEM Shortfall**") in Reserve Capacity supplied by each Market Participant  $p$  holding Capacity Credits associated with a generation system in each Trading Interval  $t$  of Trading Day  $d$  and Trading Month  $m$  as:

$$SF(p,m,d,t) = \text{Max}(RTFO(p,d,t), RCOQ(p,d,t) - A(p,d,t)) + \text{Max}(0, B(p,d,t) - C(p,d,t)) - RTFO(p,d,t)$$

Where

$$A(p,d,t) = \text{Min}(RCOQ(p,d,t), CAPA(p,d,t));$$

$$B(p,d,t) = \text{Min}(RCOQ(p,d,t) - RTFO(p,d,t), DSQ(p,d,t));$$

$$C(p,d,t) = \text{Min}(DSQ(p,d,t), MSQ(p,d,t));$$

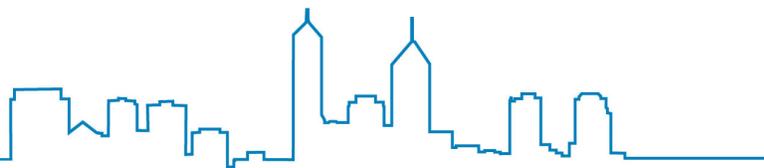
RCOQ(p,d,t) is for Market Participant  $p$  and Trading Interval  $t$  of Trading Day  $d$  is equal to:

(a) the total Reserve Capacity Obligation Quantity of Market Participant  $p$ 's unregistered facilities that have Reserve Capacity Obligations, excluding Loads that can be interrupted on request, plus

(b) the sum over all of the Registered Facilities registered to Market Participant  $p$  of the product of:

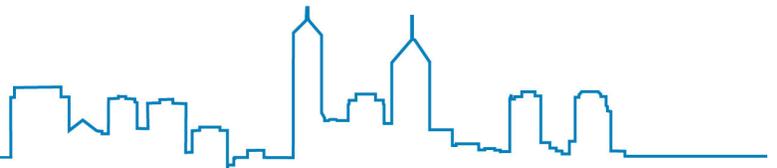
- i. the factor described in clause 4.26.2B as it applies to Market Participant  $p$ 's the Registered Facilityies; and
- ii. the Facility's Reserve Capacity Obligation Quantity for each Facility

for all Market Participant  $p$ 's Registered Facilities, excluding Curtailable Loads; in Trading Interval  $t$  of Trading Day  $d$ ;



CAPA(p,d,t) is for Market Participant p and Trading Interval t of Trading Day d:

- (a) equal to RCOQ(p,d,t) for a Trading Interval where the STEM auction has been suspended by the IMO in accordance with clause 6.10;
- (b) subject to paragraph (a), for the case where Market Participant p is not the Electricity Generation Corporation, the sum of:
- i. the sum of the Reserve Capacity Obligation Quantities in Trading Interval t of that Market Participant's Interruptible Loads ~~and Curtailable Loads~~; plus
  - ii. the MW quantity calculated by doubling the net MWh quantity of energy sent out by Facilities registered by that Market Participant during that Trading Interval calculated as the Net Contract Position less the shortfall as indicated by the applicable Resource Plan; plus
  - iiA if a STEM submission does not exist for that Trading Interval, the MW quantity calculated by doubling the total MWh quantity of energy to be consumed by that Market Participant including demand associated with any Curtailable Load or ~~Interruptible~~ Interruptible Load, but excluding demand associated with any Dispatchable Load during that Trading Interval as indicated by the applicable Resource Plan; plus
  - iii. the MW quantity calculated by doubling the total MWh quantity covered by the STEM Offers which were not scheduled and the STEM Bids which were scheduled in the relevant STEM Auction, determined by the IMO for that Market Participant under clause 6.9 for Trading Interval t, corrected for Loss Factor adjustments so as to be a sent out quantity in accordance with clause 4.26.2A; plus
  - iv. double the total MWh quantity to be provided as Ancillary Services as specified by the IMO in accordance with clause 6.3A.2(e)(i) for that Market Participant corrected for Loss Factor adjustments so as to be a sent out quantity in accordance with clause 4.26.2A; plus
  - v. the greater of zero and  $(BSFO(p,d,t) - RTFO(p,d,t))$ ; and
- (c) subject to paragraph (a), for the case where Market Participant p is the Electricity Generation Corporation, the sum of:

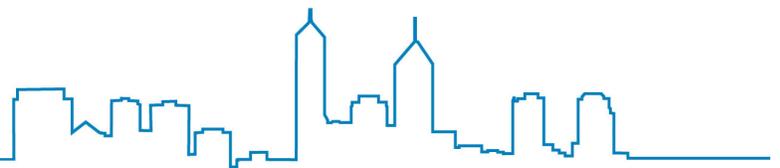


- i the sum of the Reserve Capacity Obligation Quantities in Trading Interval t of that Market Participant's Interruptible Loads ~~and Curtailable Loads~~; plus
- ii the MW quantity calculated by doubling the total MWh quantity of the Net Contract Position quantity of that Market Participant for Trading Interval t, corrected for Loss Factor adjustments so as to be a sent out quantity in accordance with clause 4.26.2A; plus
- iii the MW quantity calculated by doubling the total MWh quantity of the STEM Offers which were not scheduled and the STEM Bids which were scheduled in the relevant STEM Auction, determined by the IMO for that Market Participant under clause 6.9 for Trading Interval t, corrected for Loss Factor adjustments so as to be a sent out quantity in accordance with clause 4.26.2A; plus
- iv. double the total MWh quantity to be provided as Ancillary Services as specified by the IMO in accordance with clause 6.3A.2(e)(i) for the Electricity Generation Corporation corrected for Loss Factor adjustments so as to be a sent out quantity in accordance with clause 4.26.2A; plus
- v. the greater of zero and  $(BSFO(p,d,t) - RTFO(p,d,t))$ .

BSFO(p,d,t) is the total MW quantity of Forced Outage associated with Market Participant p before the STEM Auction for Trading Interval t of Trading Day d, where this is the sum over all the Market Participant's Registered Facilities of the lesser of the Reserve Capacity Obligation Quantity of the Facility for Trading Interval t and the MW Forced Outage of the Facility for Trading Interval t as provided to the IMO by System Management in accordance with clause 7.3;

RTFO(p,d,t) is the total MW quantity of Forced Outage associated with Market Participant p in real-time for Trading Interval t of Trading Day d, where this is the sum over all the Market Participant's Registered Facilities of the lesser of the Reserve Capacity Obligation Quantity of the Facility for Trading Interval t and the MW Forced Outage of the Facility for Trading Interval t as provided to the IMO by System Management in accordance with clause 7.13.1A (b);

DSQ(p,d,t) is a MW quantity calculated by doubling the MWh value of the sum over all of the Facilities registered by Market Participant p of each Facility's Dispatch Schedule for Trading Interval t of Trading Day d;



MSQ(p,d,t) is a MW quantity calculated by doubling the MWh value of the sum over all of the Facilities registered by Market Participant p of the greater of zero and each Facility's Metered Schedule for Trading Interval t of Trading Day d corrected for Loss Factor adjustments applicable to that Facility so as to be a sent out quantity.

The proposed amendment to clause 4.26.2E is a typographical change to clarify that the Capacity Cost Refund is made up of the **Net STEM Shortfall** calculated under clause 4.26.2 (the original drafting mistakenly referred to Capacity Shortfall calculated under 4.26.2) and the Capacity Shortfall calculated under clause 4.26.2D. The changes also clarify that the overall Capacity Cost Refund is the summation of these two variables as opposed to either the Net STEM Shortfall or the Capacity Shortfall. This ensures that Market Participants with both generating facilities and Curtailable Loads will have the correct Capacity Cost Refund calculated for its portfolio.

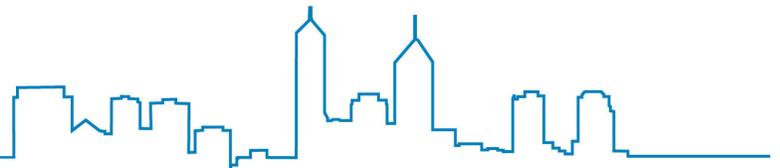
4.26.2E. For each Market Participant holding Capacity Credits, the IMO must determine the amount of the refund ("Capacity Cost Refund") to be applied for Trading Month m in respect of a Net STEM Shortfall as determined under clause 4.26.2 and a Capacity Shortfall as determined under clauses 4.26.2 or 4.26.2D during that Trading Month.

The proposed addition of clause 4.26.2F and amendment to 4.26.3 is a minor change to improve the integrity of the Market Rules. This change standardises the drafting for 4.26.3 and 4.26.3A. The new clause 4.26.2F defines that a Capacity Cost Refund must be determined for each Market Participant (this was previously defined in clause 4.26.3 and did not link to the Capacity Cost refund calculated for Curtailable Loads (4.26.3A)).

4.26.2F For each Market Participant holding Capacity Credits, the IMO must determine the amount of the refund ("**Capacity Cost Refund**") to be applied for Trading Month m.

~~4.26.3 For each Market Participant holding Capacity Credits, the IMO must determine the amount of the refund ("**Capacity Cost Refund**") associated with a generation system to be applied for Trading Month m.~~ The Capacity Cost Refund associated with a generation system is the lesser of:

- (a) the Maximum Participant Refund determined in accordance with the Refund Table, less all Capacity Cost Refunds applicable to the Market Participant in previous Trading Months falling in the same Capacity Year as Trading Month m; and
- (b) the Participant Forced Outage Refund plus the sum over all Trading Intervals t in Trading Month m of the Net STEM Refund,



where the Net STEM Refund is the product of:

- i. the Off-Peak Trading Interval Rate or Peak Trading Interval Rate determined in accordance with the Refund Table applicable to Trading Interval t; and
- ii. the Net STEM Shortfall in Trading Interval t.

Note that the IMO has not proposed any amendments to clause 4.26.3A (this clause has been reproduced here to provide context when reviewing the proposed Amending Rules); the IMO has however proposed the new clause 4.26.2F which will define that a Capacity Cost Refund must be determined for each Market Participant (this was previously defined in clause 4.26.3). The proposed Amending Rules will provide the calculations for the Capacity Cost Refund for both a generating system (clause 4.26.3) and a Curtailable Load (4.23.3A).

4.26.3A. The Capacity Cost Refund associated with a Curtailable Load is equal to the lesser of:

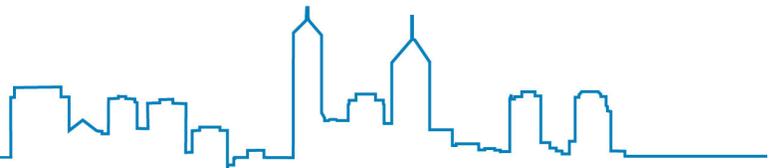
- (a) twelve times the Monthly Reserve Capacity Price multiplied by the number of Capacity Credits associated with the Facility, less all Capacity Cost Refunds applicable to the Market Participant in previous Trading Months falling in the same Capacity Year as Trading Month m; and
- (b) the sum over all Trading Intervals t in Trading Month m of:

$$12 * \text{Monthly Reserve Capacity Price} * S / (2 * H)$$

Where:

S is the Capacity Shortfall in MW determined in accordance with clause 4.26.2D in any Trading Interval; and

H is the maximum number of hours that the Facility was certified to be available in accordance with clause 4.10.1(f)(ii).



## 5. ABOUT RULE CHANGE PROPOSALS

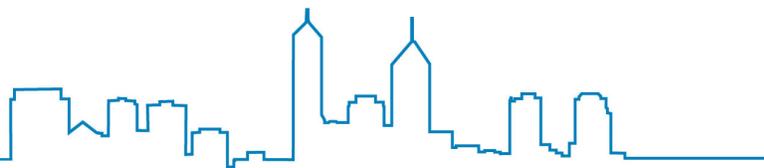
Market Rule 2.5.1 of the Market Rules provides that any person (including the IMO) may make a Rule Change Proposal by completing a Rule Change Proposal Form and submit this to the IMO.

The IMO will assess the proposal and, within 5 Business Days of receiving the proposal form, will notify the proponent whether the proposal will be progressed further.

In order for the proposal to be progressed the change proposal must explain how it will enable the Market Rules to better contribute to the achievement of the Wholesale Market Objectives. The market objectives are:

- (a) to promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West interconnected system;
- (b) to encourage competition among generators and retailers in the South West interconnected system, including by facilitating efficient entry of new competitors;
- (c) to avoid discrimination in that market against particular energy options and technologies, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions;
- (d) to minimise the long-term cost of electricity supplied to customers from the South West interconnected system; and
- (e) to encourage the taking of measures to manage the amount of electricity used and when it is used.

A Rule Change Proposal can be processed using a Standard Rule Change Process or a Fast Track Rule Change Process. The standard process involves a combined 10 weeks public submission period, while the fast track process involves the IMO consulting with Rule Participants who either advise the IMO that they wish to be consulted or the IMO considers have an interest in the change.



## APPENDIX 1: HISTORY OF AMENDMENTS TO CLAUSE 4.26.2

### RC 2007 05 Reserve Capacity Refund Shortfall Calculation

In December 2006 clause 4.26.2 (b) was amended to address a potential anomaly in the Reserve Capacity Shortfall calculations, which lead to an overstatement of a Market Participant's fulfilment of its Reserve Capacity obligation. It was found that this change may have had an unintended adverse impact on participant refund calculations. In practice, the formula at the time could result in an understatement of the capacity made available to the market when a STEM submission is not provided.

To correct this, the IMO proposed to amend the rules to add back in the determination of the Reserve Capacity Shortfall participant's own demand, in cases when the participant does not have a valid STEM submission in any Trading Interval.

### RC 2007 36: Maximum Refund

At the time of the Rule Change Proposal, the definition of the Maximum Refund was drafted to cap the maximum refunds at the Participant level. This, therefore, applied refunds to the entire facility portfolio of a Participant, instead of limiting the refunds to individual facilities as was intended. The Rule Change Proposal sought to rectify this issue.

In particular the Rule Change Proposal:

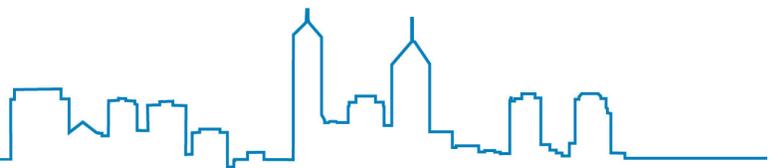
- amended the term "Maximum Refund" to "Maximum Participant Refund" (Clause 4.26.1);
- Added the new clause calculating the "Facility Forced Outage Refund" (clause 4.26.1A);
- Added the new term and rule for "Participant Forced Outage Refund" (Clause 4.26.1B);
- Amended clause 4.26.2 from a "Capacity Shortfall" to a "Net STEM Shortfall"; and
- Amended clause 4.26.3 (the calculation of the Capacity Cost Refund clause), also adding the new term "Net STEM Refund".

### RC 2009 19: Correction of minor references and drafting errors

The Rule Change Proposal corrected of a cross reference at the end of the RTFO(p,d,t) definition in clause 4.26.2.

### RC 2008 20: Demand Side management Operational Issues

The Rule Change Proposal:



- added the words: “associated with a generation system” to clauses 4.26.1 and 4.26.2;
- added an obligation into the rules to ensure that MP’s with CCs associated with CLs who fail to meet its RCOs then they must pay refunds (clause 4.26.1C);
- added the concept of Relevant Demand (clause 4.26.2C);
- added the new term and process for “Capacity Shortfall”, which is associated with MPs holding CC associated with Curtailable loads (clause 4.26.2D);
- added clause 4.26.2E regarding the calculations of refunds
- amended clause 4.26.3 to the formula for calculating the Capacity Cost Refund associated with a generation system;
- added clause 4.26.3A which is the formula for the Capacity Cost Refund associated with a Curtailable Load.