INDEPENDENT MARKET OPERATOR

Rule Change Notice

Clarification of the Minimum TES calculation (RC_2013_02)

This notice is given under clause 2.5.7 of the Market Rules.

Submitter: Allan Dawson, IMO

Date Submitted: 17 June 2013

The Proposal

Clauses 6.15.2(a)(i)(2) and 6.15.2(c)(i)(2) describe a component of the Minimum Theoretical Energy Schedule (TES) calculation for a Scheduled Generator Balancing Facility or the Verve Energy Balancing Portfolio, that must be included if its Start of Interval (SOI) Quantity is above the total megawatt (MW) quantity offered at less than the Balancing Price (the bottom of the marginal tranche).

Currently clause 6.15.2(a)(i)(2) refers to "...the sum of quantities in the Facility's Balancing Price-Quantity Pairs which have a Loss Factor Adjusted Price *less than or equal to* the Balancing Price..." This should be "less than" rather than "less than or equal to", to allow for situations where the SOI Quantity is within the marginal tranche. A similar error exists in clause 6.15.2(c)(i)(2) for the Verve Energy Balancing Portfolio.

The IMO proposes to amend clauses 6.15.2(a)(i)(2) and 6.15.2(c)(i)(2) to ensure that the Minimum TES is correctly calculated in situations where the SOI Quantity is within the marginal tranche.

Appendix 1 contains the Rule Change Proposal and gives complete information about:

- the proposed amendments to the Market Rules;
- relevant references to clauses of the Market Rules and any proposed specific amendments to those clauses; and
- the submitter's description of how the proposed amendments would allow the Market Rules to better address the Wholesale Market Objectives.

Decision to Progress the Rule Change

The IMO has decided to progress the Rule Change Proposal on the basis that Rule Participants should be given an opportunity to provide submissions as part of the rule change

process.

The IMO has decided to subject the Rule Change Proposal to the Fast Track Rule Change Process described in section 2.6 of the Market Rules, on the grounds that it satisfies the criterion in clause 2.5.9(b) of the Market Rules.

Clause 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

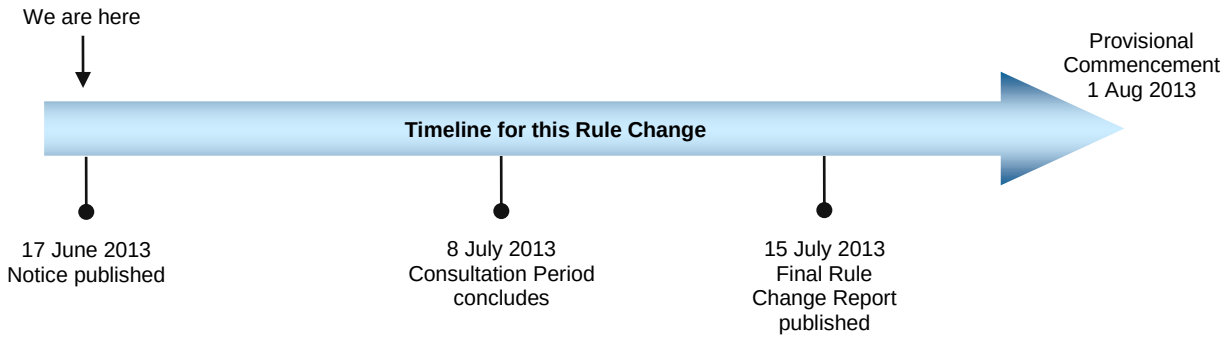
(c) is urgently required and is essential for the safe, effective and reliable operation of the market or the SWIS.

The IMO considers that this Rule Change Proposal corrects a manifest error in the Market Rules. Under the current drafting, energy from Price-Quantity Pairs "above" the deemed target level is excluded from Minimum TES if the SOI Quantity is within the marginal tranche, but included if the SOI Quantity falls above this tranche. This is an absurd outcome and inconsistent with the basic TES design, under which these quantities should always be included.

As such, the IMO considers that this Rule Change Proposal should be progressed using the Fast Track Rule Change Process, on the basis that it satisfies the criterion in clause 2.5.9(b) of the Market Rules.

Timeline

The projected timelines for processing this proposal are:



Please note that the commencement date is provisional and may be subject to change in the Final Rule Change Report.

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 **(24 June 2013)**.

The consultation period is 15 Business Days from the publication date of this Rule Change Notice. Submissions must be delivered to the IMO by **5.00pm** on **Monday, 8 July 2013**.

The IMO prefers to receive submissions by email (using the submission form available on the Market Web Site: http://www.imowa.com.au/rule-changes) to market.development@imowa.com.au.

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

Independent Market Operator
Attn: Group Manager, Development and Capacity
PO Box 7096
Cloisters Square, PERTH, WA 6850
Fax: (08) 9254 4399

INDEPENDENT MARKET OPERATOR

Wholesale Electricity Market
Rule Change Proposal

Rule Change Proposal ID: **RC_2013_02**
Date received: **17 June 2013**

Change requested by:

Name:	Allan Dawson
Phone:	9254 4333
Fax:	9254 4399
Email:	allan.dawson@imowa.com.au
Organisation:	IMO
Address:	Level 17, 197 St Georges Tce, Perth 6000
Date submitted:	17 June 2013
Urgency:	Fast Track
Change Proposal title:	Clarification of the Minimum TES calculation
Market Rule affected:	Clause 6.15.2

Introduction

Market Rule 2.5.1 of the Wholesale Electricity Market Rules provides that any person (including the IMO) may make a Rule Change Proposal by completing a Rule Change Proposal Form that must be submitted to the Independent Market Operator.

This Change Proposal can be posted, faxed or emailed to:

Independent Market Operator
Attn: Group Manager, Development and Capacity
PO Box 7096
Cloisters Square, Perth, WA 6850
Fax: (08) 9254 4339
Email: market.development@imowa.com.au

The Independent Market Operator will assess the proposal and, within 5 Business Days of receiving this Rule Change Proposal form, will notify you whether the Rule Change Proposal will be further progressed.

In order for the proposal to be progressed, all fields below must be completed and the change proposal must explain how it will enable the Market Rules to better contribute to the achievement of the wholesale electricity market objectives.

The objectives of the market 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.

Details of the Proposed Rule Change

1. Describe the concern with the existing Market Rules that is to be addressed by the proposed Market Rule change:

Background

The Rule Change Proposal: Competitive Balancing and Load Following Market (RC_2011_10[1]) introduced a new Balancing Market that enables greater participation of Independent Power Producers in the provision of Balancing. The Balancing Market commenced on 1 July 2012.

Under the Balancing Market arrangements, if a Balancing Facility is dispatched "out of merit" (i.e. not in accordance with the Balancing Merit Order), then subject to certain exceptions it is entitled to receive constrained on compensation or constrained off compensation. Constrained on compensation is paid to ensure that a Market Generator receives at least its bid price for any energy it generates, while constrained off compensation is paid to ensure that a Market Generator does not pay more for a quantity of energy purchased in the Balancing Market than the price at which it offered to generate that energy.

[1] Available on the Market Web Site: www.imowa.com.au/RC_2011_10

To determine the amount of compensation required, for each Balancing Facility (including the Verve Energy Balancing Portfolio) and Trading Interval the IMO calculates a Maximum Theoretical Energy Schedule (Maximum TES) and a Minimum Theoretical Energy Schedule (Minimum TES), which together define a MWh output range for which the Balancing Price provides appropriate compensation. Again subject to various exceptions, if a Facility's actual output falls outside this range by more than the applicable Settlement Tolerance, the Facility is paid either constrained on compensation (for output in excess of the Maximum TES) or constrained off compensation (for shortfalls in output compared with the Minimum TES) as applicable.

For a Scheduled Generator or the Verve Energy Balancing Portfolio, the Maximum TES and Minimum TES for a Trading Interval depend on[2]:

- the Price-Quantity Pairs and Ramp Rate Limit specified in the Balancing Submission for the Balancing Facility and Trading Interval;
- the Balancing Price for the Trading Interval; and
- the MW output level of the Balancing Facility at the start of the Trading Interval (SOI Quantity).

The Maximum TES is the MWh output that the Balancing Facility could have produced in the Trading Interval if it had been dispatched to the *maximum* MW output level consistent with the Balancing Price, given its Balancing Submission. This target level is equal to the sum of the MW quantities in the Facility's Balancing Submission's Price-Quantity Pairs that have a bid price *less than or equal to* the Balancing Price.

For example, assume a Scheduled Generator has the following Balancing Submission for a Trading Interval where the Balancing Price is $120/MWh.

Ramp Rate Limit:	1 MW/minute	
Price-Quantity Pairs	10 MW	-$1000/MWh
	20 MW	$10/MWh
	10 MW	$50/MWh
	20 MW	$120/MWh
	10 MW	$420/MWh

The target level would be 60 MW, the sum of the MW quantities in the four Price-Quantity Pairs with a bid price less than or equal to $120/MWh.

If the SOI Quantity is equal to the 60 MW target level, then the Facility is assumed to maintain its output at that level throughout the Trading Interval. This is presented graphically in Figure 1 (Case A). (Note that in these diagrams the red dotted line indicates the MW output of the Facility over time, while the shaded area under this line represents the Maximum TES (in MWh)).

[2] Outages are also taken into consideration for the calculation of Minimum TES, but they do not affect the issue addressed in this proposal.

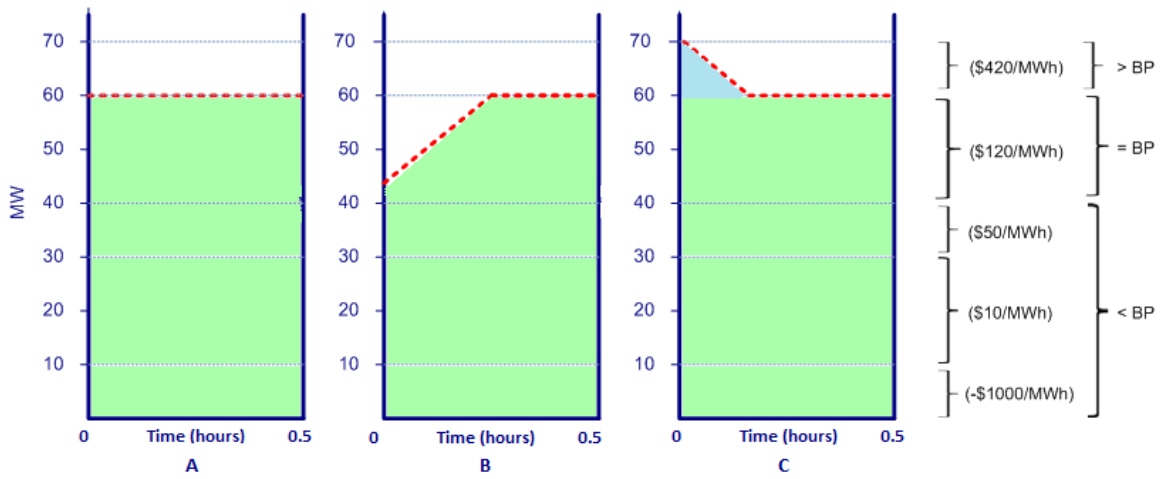


Figure 1 – Maximum TES examples for a Balancing Price (BP) of $120/MWh

If the SOI Quantity is less than the target level (Case B), then the Facility is assumed to ramp up to the target level at the ramp rate specified in its Balancing Submission and then, if it reaches the target, maintain that output level for the remainder of the Trading Interval.

It is also possible that the SOI Quantity is greater than the target level (Case C). In this case the Facility is assumed to ramp down from its SOI Quantity to its target level at the nominated ramp rate and then, if it reaches the target, maintain that output level for the remainder of the Trading Interval.

If the actual output of the Facility is greater than the Maximum TES, then the Facility may be eligible for constrained on compensation.

The Minimum TES is the MWh output that the Balancing Facility could have produced if it had been dispatched to the *minimum* MW target value consistent with the Balancing Price. Minimum TES is determined using the same assumptions as Maximum TES, except that the target level is equal to the sum of the MW quantities in the Facility's Balancing Submission's Price-Quantity Pairs that have a bid price *less than* the Balancing Price. In the example above this would be 40 MW, the sum of the MW quantities in the three Price-Quantity Pairs with a bid price less than $120/MWh.

Figure 2 shows the Minimum TES quantities (shaded areas) for SOI Quantities that are equal to, below and above the 40 MW target level.

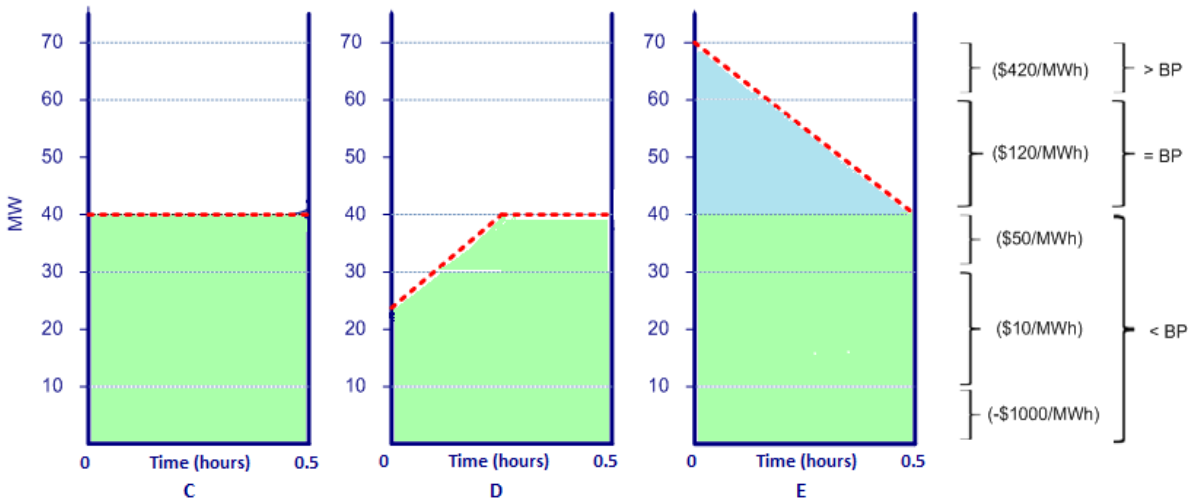


Figure 2 – Minimum TES examples for a Balancing Price (BP) of $120/MWh

If the actual output of the Facility is less than the Minimum TES, then the Facility may be eligible for constrained off compensation.

It should be noted that the Minimum TES and Maximum TES are likely to be different if there is a Price-Quantity Pair in the Facility's Balancing Submission with a bid price equal to the Balancing Price. This is because the Balancing Facility may be instructed to provide all, part or none of the output offered at that price, depending on the system demand. In other situations (apart from where an Outage has occurred) the two values will be equal.

Issue

Clause 6.15.2(a)(i) defines the Minimum TES for a Balancing Facility that is a Scheduled Generator (subject to adjustment where necessary to reflect Outages):

> *i. the sum of:*
>
> *1. the maximum amount of sent out energy, in MWh, which could have been dispatched in the Trading Interval from Balancing Price-Quantity Pairs in respect of the Balancing Facility with a Loss Factor Adjusted Price less than the Balancing Price; plus*
>
> *2. <u>if the Facility's SOI Quantity is greater than the sum of the quantities in the Facility's Balancing Price-Quantity Pairs which have a Loss Factor Adjusted Price less than or equal to the Balancing Price</u>, the minimum amount of sent out energy, in MWh, if any, which could have been dispatched in the Trading Interval from any of the Facility's Balancing Price-Quantity Pairs which have a Loss Factor Adjusted Price greater than or equal to the Balancing Price,*
>
> *taking into account the Balancing Facility's SOI Quantity and Ramp Rate Limit; and …[emphasis added]*

Clause 6.15.2(a)(i)(1) describes the energy generated from Price-Quantity Pairs below the target level, that is with a bid price less than the Balancing Price (shown as the green shaded areas in

Figures 2 and 3). If the SOI Quantity is greater than the target level, then any additional energy generated from the remaining Price-Quantity Pairs as the Facility ramps down to its target level (the blue shaded areas) is meant to be included under clause 6.15.2(a)(i)(2). However, the test specified at the start of clause 6.15.2(a)(i)(2) is incorrect, comparing the SOI Quantity with the sum of the MW quantities in the Price-Quantity Pairs with a bid price *less than or equal to* the Balancing Price.

The result is that when the SOI Quantity lies within the MW range associated with the Price-Quantity Pair bid at the Balancing Price (the "marginal tranche"), the test fails and so the additional energy required to ramp down to the target level is incorrectly excluded from the Minimum TES.

Figure 3 shows an example of the problem, based on the Balancing Submission and Balancing Price used in the previous examples. The energy represented by the blue shaded area will be excluded because the test checks whether the SOI Quantity (55 MWh) is greater than 60 MW (the sum of the MW quantities in the four Price-Quantity Pairs with a bid price less than or equal to the $120/MWh Balancing Price), rather than 40 MW (the target level for the Facility, being the sum of the MW quantities in the three Price-Quantity Pairs with a bid price less than $120/MWh). Note that if the SOI Quantity lies above the marginal tranche (as in Figure 2's Case E), then the test is passed and the energy shown in the blue shaded area is included.

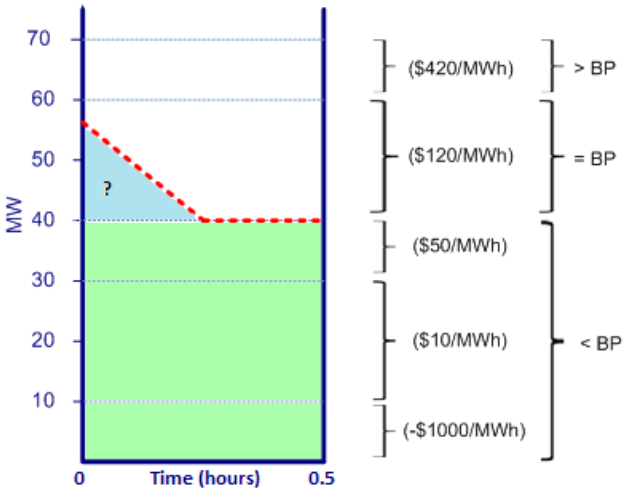


Figure 3 - Minimum TES example for a Balancing Price (BP) of $120/MWh and SOI Quantity in the marginal tranche

The same error exists in clause 6.15.2(c)(i)(2), which defines the corresponding component of the Minimum TES for the Verve Energy Balancing Portfolio.

Proposal

The IMO proposes to amend clauses 6.15.2(a)(i)(2) and 6.15.2(c)(i)(2) to ensure Minimum TES is correctly calculated in situations where the SOI Quantity is within the marginal tranche.

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2. Explain the reason for the degree of urgency:

The IMO considers that this Rule Change Proposal corrects a manifest error in the Market Rules. Under the current drafting, energy from Price-Quantity Pairs "above" the deemed target level is excluded from Minimum TES if the SOI Quantity is within the marginal tranche, but included if the

SOI Quantity falls above this tranche. This is an absurd outcome and inconsistent with the basic TES design, under which these quantities should always be included.

As such, the IMO considers that this Rule Change Proposal should be progressed using the Fast Track Rule Change Process, on the basis that it satisfies the criterion in clause 2.5.9(b) of the Market Rules.

Clause 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.

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3. Provide any proposed specific changes to particular Rules: *(for clarity, please use the current wording of the Rules and place a ~~strikethrough~~ where words are deleted and underline words added)*

6.15.2 The Minimum Theoretical Energy Schedule in a Trading Interval equals:

(a) for a Balancing Facility which is a Scheduled Generator, the amount which is the lesser of:

i. the sum of:

1. the maximum amount of sent out energy, in MWh, which could have been dispatched in the Trading Interval from Balancing Price-Quantity Pairs in respect of the Balancing Facility with a Loss Factor Adjusted Price less than the Balancing Price; plus

2. if the Facility's SOI Quantity is greater than the sum of the quantities in the Facility's Balancing Price-Quantity Pairs which have a Loss Factor Adjusted Price less than ~~or equal to~~ the Balancing Price, the minimum amount of sent out energy, in MWh, if any, which could have been dispatched in the Trading Interval from any of the Facility's Balancing Price-Quantity Pairs which have a Loss Factor Adjusted Price greater than or equal to the Balancing Price,

taking into account the Balancing Facility's SOI Quantity and Ramp Rate Limit; and

ii. where the Balancing Facility is subject to an Outage, the maximum amount of sent out energy, in MWh, which could have been dispatched given the Available Capacity for that Trading Interval;

….

(c) for the Verve Energy Balancing Portfolio, the amount which is the lesser of:

i. the sum of:

1. the maximum amount of sent out energy, in MWh, which could have been dispatched in the Trading Interval from Balancing Price-Quantity Pairs within the Balancing Portfolio Supply Curve with an associated price less than the Balancing Price; plus

2. if the Verve Energy Balancing Portfolio's SOI Quantity is greater than the sum of the quantities in the Balancing Price-Quantity Pairs within the Balancing Portfolio Supply Curve which have an associated price that is less than ~~or equal to~~ the Balancing Price, the minimum amount of sent out energy, in MWh, if any, which could have been dispatched in the Trading Interval from any of the Balancing Price-Quantity Pairs within the Balancing Portfolio Supply Curve which have an associated price greater than or equal to the Balancing Price,

taking into account the Portfolio Ramp Rate Limit and SOI Quantity; and

ii. where a Facility in the Verve Energy Balancing Portfolio is subject to an Outage, the maximum amount of sent out energy, in MWh, which could have been dispatched given the sum of the Available Capacity of Facilities in the Verve Energy Balancing Portfolio for that Trading Interval.

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4. Describe how the proposed Market Rule change would allow the Market Rules to better address the Wholesale Market Objectives:

The IMO considers that the proposed amendments will correct a manifest error in the Market Rules and are consistent with the Wholesale Market Objectives.

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5. Provide any identifiable costs and benefits of the change:

Costs:

No costs have been identified with implementing the proposed changes. In particular, the IMO has confirmed that its IT systems calculate Minimum TES in accordance with the proposed Amending Rules and so no changes to these systems are required.

Benefits:

- Corrects a manifest error in the Market Rules.
- Provides clarity to stakeholders around how Minimum TES is calculated.