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## Wholesale Electricity Market - Market Rule Change Proposal

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**Change Proposal No:** RC\_2007\_08

**Received date:** 11/06/2007

### Submitted by

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<b>Date submitted:</b>	11 June 2007
<b>Urgency:</b>	High
<b>Change Proposal title:</b>	<b>Calculation of Reserve Capacity Refund</b>
<b>Market Rule(s) affected:</b>	Clauses 4.26.1 and 4.26.3

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### Introduction

Clause 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: Dora Guzeleva, Manager Market Administration  
PO Box 7096  
Cloisters Square, Perth, WA 6850

Fax: (08) 9420 5755

Email: [dora.guzeleva@imowa.com.au](mailto:dora.guzeleva@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.

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## **Details of the proposed Market Rule Change**

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### **1. Outline the issue concerning the existing Market Rules that is to be addressed by the proposed Market Rule change:**

A rule change is proposed to clarify the wording in the Market Rules that describes the Reserve Capacity Refund Mechanism. The proposal was developed by the Reserve Capacity Refund Mechanism Working Group, established by the Market Advisory Committee (MAC). The Working Group report to MAC is provided in Attachment 1 to this Proposal.

All facilities that have been assigned Capacity Credits are, unless they are undergoing an approved outage, required to make refunds to the market in the event that they are unable to offer their full capacity through bilateral contracts or into the STEM. The development of the original refund mechanism was based on a number of objectives considered necessary for the success of the market:

- The level of refunds for each outage should be set at the appropriate level to provide the incentive for generators to meet their Reserve Capacity Obligations.
- There must be a very strong incentive on peaking plants to deliver capacity when required (because there may be no other spare generation capacity available on the system) but these plants may only be called on to run for a few hours each year.
- There must be a strong incentive to encourage capacity providers to be fully available at peak times but there must also be incentives for good performance at other times of the year when scheduled outages reduce the available system capacity.
- While refund levels should be high enough to encourage good operational performance, they should not be so high as to deter investment or force capacity providers to include an excessive risk component into their pricing.

The Working Group determined that equity between participants should also be considered in developing the mechanism. In particular, an outage of a given size, say 50 MW, should incur the same level of refund irrespective of whether this was a full outage of a 50 MW unit or a partial outage of, say, a 150 MW unit.

### **The Intent of the Existing Market Rules**

Refunds are determined in accordance with Market Rules 4.26.1 and 4.26.3. Refunds that apply comprise:

- A refund level that applies in each peak or off-peak trading interval.
- A cap that is applied per day.
- A cap that is applied to the total refund applicable in any season.
- An annual cap based on the amount of Reserve Capacity payments received by the facility.

The current Market Rules set the level of refund applicable for an outage occurring in a peak trading interval to be 8 times “Y” where “Y” is the Reserve Capacity payment for that Trading Interval (the monthly Reserve Capacity payment divided by the number of Trading Intervals in the month). The rate during off-peak trading intervals is 2 times “Y”.

The daily cap is set at 5 times “Y” which is very close to the weighted average (5.5 times “Y”) of the peak and off-peak rates that would apply to a full day outage.

The original intention was to have a refund mechanism which:

- Applied a high refund for the initial trading intervals during any forced outage to provide a strong incentive to avoid such outages.
- Reduced the level of refunds if the outage continued over a full day.
- Had a further increase in the refund rate if the outage continued over a prolonged period.
- Had the total refund level capped over any season and over a full year.
- Had higher refund levels during peak summer times.

It was intended that a facility that experienced a short outage would face a high initial refund. For longer outages, the total refund would be capped by the daily, seasonal and annual caps. However, the way in which the Market Rules were drafted results in the seasonal cap overriding the daily and trading interval refund rates under all circumstances. This results in significant reductions in refund levels and uncertainty about the interpretation of the Rules.

### **Proposed Refund Structure**

After examining a number of options the Working Group considered that the option progressed should result in the minimum change to the rules. It was considered important to maintain stable market arrangements in the initial period of the market to encourage investors.

The major issues with the original concept arise from the change in refund rate associated with the seasonal cap. A much simpler mechanism is possible if a single rate is applied to each season or part of season. The main elements of the alternative approach are:

- A single refund rate applies in all peak trading intervals of the season (or part).
- A second refund rate applies to all off-peak trading intervals in the season.
- There are no specific seasonal caps.

- An annual cap is retained and this is equal to the amount of reserve capacity payments made to a facility.

In the current Market Rules, different refund rates apply to peak and off-peak trading intervals (ie daily). This provides the opportunity to balance the refund levels over the different trading intervals. To reduce the total level of refunds, while maintaining appropriate performance incentives, this differentiation concept has been taken further in this proposal through two other changes.

The first change is that a differentiation is made between business days and non-business days, (weekends and public holidays). The maximum demand on non-business days is generally well below that on adjacent business days so the impact of any outage is likely to be less severe. For this reason, it is proposed that a different refund rate apply to peak trading intervals (8 am to 10 pm) on non-business days.

The second change is that a distinction is made between the first and second halves of the Hot Season. Because of school and public holidays, there is a significant difference in peak demands which occur in December and January and those occurring in February and March. It is proposed that this be reflected by having different refund rates apply to the first and second halves of the Hot Season.

Table 1 shows a set of refund levels that have been developed by the Working Group as the basis for discussion and form the basis of this proposed rule change. They have been developed such that:

- They recognise the inherent difference in system risk between the various portions of the year and between peak and off-peak periods.
- The maximum payment that would accrue for a full outage lasting for a full season is generally in line with the current seasonal caps.
- A facility that has a full outage from the start of the Capacity Year will not reach the annual cap until the end of the Hot Season.

**Table 1. Possible Refund Levels**

<b>Season</b>	<b>Intermediate</b>	<b>Early Summer</b>	<b>Late Summer</b>	<b>Cold</b>
<b>Dates</b>	1 Oct to 1 Dec	1 Dec to 1 Feb	1 Feb to 1 Apr	1 Apr to 1 Oct
<b>Peak trading interval rate (Business days)</b>	1.5 x Y	4 x Y	6 x Y	1.5 x Y
<b>Peak Trading Interval Rate (Non-bus days)</b>	0.75 x Y	1.5 x Y	2 x Y	0.75 x Y
<b>Off-peak trading intervals</b>	0.25 x Y	0.5 x Y	0.75 x Y	0.25 x Y

Table 2 shows the level of refunds that would be incurred by a facility that has a full outage for a full year if the refund levels in Table 1 were to be applied. (The refunds have been calculated on a monthly basis for convenience only).

**Table 2. Outworking of Revised Refund Rates (for 2007/08)**

Month	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No of days	31	30	31	31	29	31	30	31	30	31	31	30
No of Business Days	22	22	19	21	21	20	20	22	20	23	21	22
No of non-bus days	9	8	12	10	8	11	10	9	10	8	10	8
Refund rates per Trading Interval												
Business days Peak Tis	1.50	1.50	4.00	4.00	6.00	6.00	1.50	1.50	1.50	1.50	1.50	1.50
Non-Bus days Peak Tis	0.75	0.75	1.50	1.50	2.00	2.00	0.75	0.75	0.75	0.75	0.75	0.75
All days Off-peak Tis	0.25	0.25	0.50	0.50	0.75	0.75	0.25	0.25	0.25	0.25	0.25	0.25
Average refund (for continuous full outage)												
Average for business day	0.98	0.98	2.54	2.54	3.81	3.81	0.98	0.98	0.98	0.98	0.98	0.98
Average for non-bus day	0.54	0.54	1.08	1.08	1.48	1.48	0.54	0.54	0.54	0.54	0.54	0.54
Average for month	0.85	0.86	1.98	2.07	3.17	2.98	0.83	0.85	0.83	0.87	0.84	0.86
Average for part season				2.02		3.08						
Average for Season		0.86				2.55						0.85
Cummulative for year	0.07	0.14	0.31	0.48	0.74	0.99	1.06	1.13	1.20	1.28	1.34	1.42

The three lines highlighted in yellow show the refund rates that would apply in each Trading Interval. These are taken directly from Table 1. This shows the three rates that apply to:

- Business day peak Trading Intervals.
- Non-business day peak Trading Intervals.
- Non-peak Trading Intervals (for both business and non-business days).

The two lines highlighted in green show the average refund rate that would apply to a facility that has a forced outage extending for a full day. The current provisions of the Market Rules have a maximum daily refund rate which is capped at 5 times “Y”. Under the proposed arrangement, the maximum daily refund is reduced:

- On business days in the Hot Season the daily maximum refund would be 2.5 times “Y” for December and January and nearly 4 times “Y” for the February and March.
- The maximum refunds for a full outage on non-business days would be 1.1 times “Y” or 1.5 times “Y”.

The three figures highlighted in blue show the average refund level that would apply to a facility that has a forced outage which lasts for a full season:

- 0.9 times “Y” for an outage that lasts the full Intermediate Season.
- 2.5 times “Y” for an outage lasting the full Hot Season.
- 0.9 times “Y” for an outage lasting the full Cold Season.

The last line on the table shows the accumulation of refunds that would occur if a facility has a forced outage that commences at the start of the capacity year and continues through the whole year. The figure highlighted in orange shows the month in which the refund would reach

the annual cap. This shows that the annual cap would be reached sometime during April, ie into the Cold Season.

The key results of adopting these refund rates would be:

- The requirement for reliability during February and March is appropriately emphasised.
- Refunds for a facility that experiences a very long outage will still be capped at the same annual maximum.
- The issues associated with equitable treatment of partial outages will be resolved.
- The amount of refunds incurred by generators that have few, or shorter, forced outages will generally be lower than was originally intended under the Market Rules.
- The level of refunds for facilities that experience extended outages will tend to be higher and may well exceed the level of the Seasonal Caps that are in the existing Market Rules.

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## **2. Explain the reason for the degree of urgency:**

Given that the current Refund Mechanism does not provide the appropriate incentives to Market Participants and potential ambiguity in the Rules, it is essential that this be corrected as soon as possible, and before the next hot season begins in December.

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## **3. Provide any proposed specific changes to particular Rules:**

Amendments to clauses 4.26.1 and 4.26.3 are proposed as follows:

- 4.26.1. If a Market Participant holding Capacity Credits fails to comply with its Reserve Capacity Obligations then the Market Participant must pay a refund to the IMO calculated in accordance with the following provisions.

## REFUND TABLE

Season	Cold	Intermediate	Hot
Dates	1 April to 1 October	1 October to 1 December	1 December to 1 April
Off-Peak Trading Interval Rate (\$ per MW shortfall per Trading Interval)	<del>—2 × Y</del>	<del>—2 × Y</del>	<del>—2 × Y</del>
Peak Trading Interval Rate (\$ per MW shortfall per Trading Interval)	<del>—8 × Y</del>	<del>—8 × Y</del>	<del>—8 × Y</del>
Maximum Daily Rate (\$ per average MW shortfall per Trading Interval over a Trading Day)	<del>—5 × Y</del>	<del>—5 × Y</del>	<del>—5 × Y</del>
Maximum Seasonal Rate (\$ per average MW shortfall per Trading Interval over a Season)	<del>—0.6 × Y</del>	<del>—0.6 × Y</del>	<del>—1.8 × Y</del>
Maximum Refund	<del>— The total value of the Capacity Credit payments paid or to be paid under these Market Rules to the relevant Market Participant for the 12 Trading Months commencing at the start of the Trading Day of the previous 1 October assuming the IMO acquires all of the Capacity Credits held by the Market Participant and the cost of each Capacity Credit so acquired is determined in accordance with clause 4.28.2(b), (c) and (d) (as applicable).</del>		
<p>Where:</p> <p><del>For an Intermittent Facility that has been commissioned: Y equals 0</del></p> <p><del>— For all other facilities, including Intermittent Facilities that have not been commissioned: Y equals the greater of the Reserve Capacity Price and 85% of the Maximum Reserve Capacity Price for the relevant Reserve Capacity Auction expressed as a \$ per MW per Trading Interval figure.</del></p>			

Dates	1 April to 1 October	1 October to 1 December	1 December to 1 February	1 February to 1 April
Business Days Off-Peak Trading Interval Rate (\$ per MW shortfall per Trading Interval)	- 0.25 x Y	- 0.25 x Y	- 0.5 x Y	- 0.75 x Y
Business Days Peak Trading Interval Rate (\$ per MW shortfall per Trading Interval)	- 1.5 x Y	- 1.5 x Y	- 4 x Y	- 6 x Y
Non-Business Days Off-Peak Trading Interval Rate (\$ per MW shortfall per Trading Interval)	- 0.25 x Y	- 0.25 x Y	- 0.5 x Y	- 0.75 x Y
Non-Business Days Peak Trading Interval Rate (\$ per MW shortfall per Trading Interval)	- 0.75 x Y	- 0.75 x Y	- 1.5 x Y	- 2 x Y
Maximum Refund	The total value of the Capacity Credit payments paid or to be paid under these Market Rules to the relevant Market Participant for the 12 Trading Months commencing at the start of the Trading Day of the previous 1 October assuming the IMO acquires all of the Capacity Credits held by the Market Participant and the cost of each Capacity Credit so acquired is determined in accordance with clause 4.28.2(b), (c) and (d) (as applicable).			
<p>Where:</p> <p>For an Intermittent Facility that has been commissioned: Y equals 0  For all other facilities, including Intermittent Facilities that have not been commissioned: Y equals the greater of the Reserve Capacity Price and 85% of the Maximum Reserve Capacity Price for the relevant Reserve Capacity Auction, expressed as a \$ per MW per Trading Interval figure. This is determined by dividing the Monthly Reserve Capacity Price by the number of Trading Intervals in the relevant month.</p>				



### Market Rule 4.26.3

4.26.3 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 Capacity Shortfall as defined in clauses 4.26.2 during that Trading Month. The Capacity Cost Refund is the lesser of:

- (a) the Maximum 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 Maximum Seasonal Rate determined in accordance with the Refund Table, multiplied by the average Trading Interval Capacity Shortfall calculated over the Season within which Trading Month *m* falls, less the sum of the Capacity Cost Refunds applicable to the Market Participant in previous Trading Months which fall in the same Season; and~~
- (c) ~~the sum of the relevant amounts for Trading Month *m*, where a relevant amount is calculated for each Trading Day *d* in Trading Month *m* and is equal to the lesser of:~~
  - ~~i. the Maximum Daily Rate determined in accordance with the Refund Table for Trading Day *d* multiplied by the sum over all Trading Intervals *t* in Trading Day *d* of the Capacity Shortfall in Trading Interval *t*; and~~
  - ~~ii. the sum over all Trading Intervals *t* in Trading Month *m* ~~Day *d*~~ of the product of:~~
    - 4i. the Off-Peak Trading Interval Rate or Peak Trading Interval Rate determined in accordance with the Refund Table applicable to Trading Interval *t*; and
    - 2ii. the Capacity Shortfall in Trading Interval *t*.

Chapter 11 Glossary

**Non-Business Day:** A day that is a Saturday, Sunday, or a public holiday throughout Western Australia.

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

The objectives of the market as set out in clause 1.2.1 of the Market Rules 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.*

The IMO considers that it is essential that there be a strong incentive on Market Generators to deliver capacity when required, and to encourage capacity providers to be fully available at peak times. At the same time there must be incentive for good performance at other times of the year when scheduled outages reduce available system capacity.

Refund levels should be set appropriately to provide proper incentives for generators to meet their Reserve Capacity Obligations, and the proposed change better reflects the way the refund mechanism was intended to operate.

The IMO considers, therefore, that the proposed rule change would promote the reliable production and supply of electricity in the SWIS,

(b) *to encourage competition among generators and retailers in the South West interconnected system, including by facilitating efficient entry of new competitors.*

The proposed changes would remove the current uncertainty amongst investors about the interpretation of the Rules. The IMO considers that the proposed changes, therefore, are consistent with the operation of objective (b) of the Market Objectives.

(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.*

The IMO considers that the proposed changes do not impact on, and therefore are consistent with, the operation of objective (c) of the Market Objectives.

(d) *to minimise the long-term cost of electricity supplied to customers from the South West interconnected system*

The IMO considers that the proposed rule change will result in refund levels that are sufficient to encourage good operational performance but not so high as to deter investment or force capacity providers to include an excessive risk component into their pricing.

This is consistent with the operation of objective (d) of the Market Objectives.

(e) *to encourage the taking of measures to manage the amount of electricity used and when it is used.*

The IMO considers that the proposed changes do not impact on, and therefore are consistent with, the operation of objective (e) of the Market Objectives.

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

### **Costs**

The rule change will need to be implemented through changes only in the Settlement module. It is expected, therefore, that the change could be implemented at a low cost.

### **Benefits**

The IMO considers that the proposed rule change will result in a Reserve Capacity Refund Mechanism that is fairer for all Participants and that better reflects the intention of the refund mechanism.