Rules Development Implementation Working Group (RDIWG)

Meeting No. 7: Agenda

Location: Level 3, Governor Stirling Tower, 197 St Georges Terrace, Perth

Date: Tuesday, 14 December 2010

Time: 9.30am – 1.00pm

1. Previous meeting's minutes
2. Reserve Capacity Refunds
3. Update on Balancing proposal
4. General Business
5. Outstanding Action items
6. Next meeting date and time: Tuesday, 18 January 2011 (9.30am – 2.00pm)

Independent Market Operator

Rules Development Implementation Working Group

Minutes

Meeting No.	6
Location:	IMO Board Room Level 3, Governor Stirling Building, 197 St Georges Terrace, Perth
Date:	Tuesday 23 November 2010
Time:	Commencing at 9.09am to 12.38pm

Attendees	
Allan Dawson	IMO (Chair)
Stephen MacLean	Market Customer (proxy for John Rhodes)
Corey Dykstra	Market Customer
Steve Gould	Market Customer
Geoff Gaston	Market Customer (proxy for Patrick Peake)
Andrew Everett	Market Generator
Shane Cremin	Market Generator
Andrew Sutherland	Market Generator
Phil Kelloway	System Management
Paul Hynch	Office of Energy
Chris Brown	ERA
Jenny Laidlaw	Minutes
Jim Truesdale	Presenter
Peter Ryan	Observer
Troy Forward	Observer
Douglas Birnie	Observer
Greg Thorpe	Observer
Ben Williams	Observer
Winston Cheng	Observer
Jacinda Papps	Observer
Will Street	Observer
Apologies	
Patrick Peake	Market Customer
John Rhodes	Market Customer

Item	Subject	Action
1.	**WELCOME AND APOLOGIES / ATTENDANCE** The Chair opened the 6th meeting of the Rules Development Implementation Working Group (RDIWG) at 9.09am. The Chair welcomed Mr Peter Ryan as an observer to the meeting. Apologies were received from: • John Rhodes – Market Customer; and • Patrick Peake – Market Customer.	
2.	**PREVIOUS MEETING'S MINUTES** The minutes of RDIWG Meeting No. 5, held on 2 November 2010, were circulated prior to the meeting. The following amendments were agreed: *Page 2: Section 3: Balancing Provision Options* • "The following points were discussed. o ~~It was suggested that given the expected increases in Balancing and Ancillary Services costs a decision needs to be made on whether to break the relationship between System Management and Verve Energy and introduce competitive Balancing, or else remove the 3000 MW cap on Verve Energy generation capacity. It was noted that the latter option did not fall within the scope of the Market Evolution Program (MEP).~~ o Some members questioned …" *Page 3: Section 3: Balancing Provision Options* o "Concerns were raised that ~~the proposal would~~ some proposals could adversely affect the dispatch process by reducing the flexibility available to System Management. There was some discussion …" Subject to the agreed amendments, the RDIWG endorsed the minutes as a true and accurate record of that meeting. *Action Point: The IMO to amend the minutes of Meeting No. 5 to reflect the points raised by the RDIWG and publish on the website as final.* A question was raised about whether the IMO would be able to capitalise all of its expenditure on the Market Evolution Program. *Action Point: The IMO to confirm the accounting advice it has received previously that its expenditure on the Market Evolution Program can all be capitalised.*	**IMO** **IMO**
3	**BALANCING PROVISION OPTIONS** Mr Jim Truesdale gave a presentation highlighting key aspects of the	

Item	Subject	Action
	"Balancing Support" paper distributed to RDIWG members in the papers for this meeting. The presentation is attached as Appendix 1. Individually, RDIWG members agreed that the approach outlined in the Balancing Support paper provided a viable and relatively simple option for the implementation of competitive balancing within the constraints of the hybrid model. RDIWG members agreed to pursue the proposed approach further in order to elicit its operational details and assess its technical viability. The following points were discussed. • Some RDIWG members noted that the approach had limitations and would not deliver equal treatment of Verve Energy and Independent Power Producers (IPPs) with regard to balancing arrangements. However, members acknowledged the recommendation of the Market Advisory Committee (MAC) that initial development work should assume the retention of the current hybrid market design (with retention of the relationship between System Management and Verve Energy), evolving this design as far as practicable, prior to considering exploration of further market design options. • It was noted that the approach would provide Verve Energy with the opportunity over time to use the half hourly offer/bid submission system established for IPPs for some or all of its Facilities, enabling an eventual transition to a full Facility based regime. • There was some discussion about the inefficiencies of a simple price-quantity bidding structure without renominations. • There was some discussion about the benefits and risks of increasing the amount and the timeliness of the market information provided to Market Participants. • It was noted that a cost/benefit analysis would be required prior to a final decision. The RDIWG agreed that the proposal had merit and asked that the proposal be workshopped with operational staff, to identify and address any technical issues affecting the viability of the option and to have its benefits and costs assessed – at a high/summary level. Mr Andrew Everett gave a brief presentation about how the actual dispatch of Verve Energy Facilities can vary from the Dispatch Plans generated by System Management. Mr Everett presented a set of graphs comparing forecast versus actual dispatch over a one week period. The presentation is attached as Appendix 2. Mr Everett noted four particular differences highlighted in the presentation: • Point 1: an unexpected de-commitment; • Point 2: a planned de-commitment that did not eventuate; • Point 3: a de-commitment brought forward by several hours; and	

Item	Subject	Action
	• Point 4: a combination of multiple changes. RDIWG members discussed the cost impacts of these changes and the options available to Verve Energy to avoid any inefficient dispatch of its plant. It was stressed that the purpose of the presentation was to demonstrate the extent to which circumstances can change following the STEM auction and the need to support renominations. *Action Point: The IMO to further develop the operational details of the proposed Balancing provision solution and consult with industry operational staff on these details in a workshop to be conducted before the end of December 2010.* *Action Point: The IMO to undertake a high level cost/benefit analysis for the proposed Balancing provision solution.*	**IMO** **IMO**
4	**ANCILLARY SERVICES PROCUREMENT** Mr Phil Kelloway gave a presentation on System Management's proposal for the partial competitive procurement of Load Following Ancillary Services (LFAS). A copy of the presentation slides was circulated with the papers for this meeting. The following points were discussed. • RDIWG members noted the close relationship between Balancing and LFAS. • Some members suggested that the participation level may be greater if Market Participants could offer to provide a smaller quantity block of LFAS, e.g. 5 MW, and/or make asymmetric offers, e.g. -5 MW rather than +/- 5 MW. The benefits and issues around allowing asymmetric offers were discussed. • Some members considered that it could be difficult for some Market Participants to offer LFAS for the time blocks required under the proposal, and that Peak/Off-Peak offers did not provide enough granularity. • It was clarified that more than two IPPs could have Facilities accredited to provide LFAS. • It was clarified that under the proposed framework competitive LFAS offers would be assessed on the basis of the availability prices bid, i.e. there would be no co-optimisation with energy /balancing costs. • It was clarified that payments would be reduced only where a LFAS provider failed to fully respond to a request to move up or down. • It was noted that the timelines, processes and procedures for competitive LFAS procurement and the proposed competitive Balancing market will need to be carefully aligned to avoid timing conflicts and inefficiencies. • There was some discussion about the extent of the pricing risk for LFAS providers due to MCAP variability under the	

Item	Subject	Action
	proposed framework. • It was noted that issues raised by members had been raised previously in responses to System Management's request for Expressions of Interest for Load Following in December 2009 and that these issues had not been taken into account in the proposal. • There was some discussion around the reasons for the restrictions on LFAS offers contained in the proposal, and whether these restrictions would prevent Market Participants from making offers to provide LFAS. • The urgency of the proposal from a system security viewpoint was questioned. There was some discussion about the implementation timetable for the Collgar wind farm, its impact on the Load Following requirement and Verve Energy's ability to meet this requirement. Verve Energy advised that it was able to supply 100MW of Load Following if required. • There was some discussion about the economic drivers for implementation of competitive procurement of LFAS. • It was agreed that the proposals for competitive Balancing and LFAS provision should be developed together as a package, given their interdependencies and the potential IT cost implications. There was general agreement that a holistic solution was preferable to a quick solution for LFAS that may not align with the Balancing solution proposed by the RDIWG. *Action Point: Verve Energy and System Management to confirm that there are no Power System Security issues with Verve Energy supplying up to 100MW of Load Following service.* *Action Point: The IMO to work with System Management and potential providers of Load Following Ancillary Services (LFAS) to develop a set of principles for the provision of competitive LFAS that addresses the issues raised by RDIWG members, for presentation to the RDIWG at the 14 December 2010 meeting with the view to delivering solutions at a later meeting.*	**IMO** **IMO**
5	**RESERVE CAPACITY REFUNDS** Mr Troy Forward noted that work on a solution paper for the implementation of a more dynamic Capacity Cost Refund mechanism was underway, and that the paper would be distributed to RDIWG members prior to its discussion at the 14 December 2010 meeting. It was agreed that the paper should be circulated before the meeting to allow members adequate time for its consideration. *Action Point: The IMO to distribute a solution paper for the implementation of a more dynamic Capacity Cost Refund mechanism to RDIWG members, in time to allow consideration prior to discussion of the paper at the 14 December 2010 RDIWG meeting.*	**IMO**
6	**STEM TIMING AND RELATED ISSUES**	

Item	Subject	Action
	The RDIWG discussed the findings of the IMO's investigation into the potential of moving the Scheduling Day timeline, summarised in the "STEM Timelines" paper distributed to RDIWG members prior to this meeting. The following points were discussed. • The difficulties in compressing the timeframes for Scheduling Day events were acknowledged by RDIWG members. • There was some discussion of the IMO's analysis of the extent to which System Management's load forecasts are improved by the use of the 12.15pm Bureau of Meteorology (BoM) forecast instead of the 7.00am BoM forecast. It was agreed that the results were not inconsistent with analyses undertaken by Synergy and System Management. • Some members noted other issues that could be addressed by moving the Scheduling Day timelines, for example Market Participants requiring a better knowledge of their gas imbalances and Facility maintenance positions when making their STEM submissions. There was some discussion about the extent to which the proposed changes to Balancing might also address these issues, reducing the value to Market Participants of a timeline shift. • There was some discussion about the possible impact of manual intervention on the quality of forecasts. RDIWG members agreed that there would appear to be insufficient benefits to warrant a move in the Scheduling Day timeline and that further work on moving the Scheduling Day timelines should be put on hold, pending a review of the outcomes of current work on the provision of competitive Balancing.	
7	**GENERAL BUSINESS** RDIWG members agreed to change the start time for RDIWG meetings from 9.00am to 9.30am. The meetings will still be scheduled to end at 2.00pm. *Action Point: The IMO to change the start time for RDIWG meetings from 9.00am to 9.30am.* Mr Forward provided an update on RDIWG Action Point 8, advising that the IMO had held an initial meeting with Grant Elliott from the BoM. There was some discussion about a recent meeting of representatives from the BoM, System Management, Synergy and Griffin Energy, and the benefits of coordinating discussions between the BoM and RDIWG members. *Action Point: The IMO to arrange a workshop in early 2011 with the Bureau of Meteorology (BoM) and RDIWG members, to discuss options for the enhancement of BoM forecasts and the wider usage of forecasts by Market Participants.* Mr Kelloway gave a presentation on the current process for the dispatch of Verve Energy facilities by System Management (Action Point 35). An updated version of the presentation is attached as	**IMO** **IMO**

Item	Subject	Action
	Appendix 3. It was questioned whether the new system tools proposed for System Management would help support an eventual move by Verve Energy towards facility based bidding for some of its facilities. *Action Point: The IMO and System Management to discuss System Management's dispatch system and whether it is able to accommodate future enhancements.*	**IMO/SM**
9	**NEXT MEETING** Meeting No. 7 will be held on Tuesday 14 December 2010 (9.30am-1.00pm).	
10	**CLOSED:** The Chair declared the meeting closed at 12.38pm.	

Independent Market Operator

Market Rules Design: Review of Capacity Cost Refunds

Date: 8 December 2010

Contents

DOCUMENT DETAILS

Report Title:	Market Rules Design: Review of Capacity Cost Refunds
Release Status:	Public
Confidentiality Status:	Public domain

Independent Market Operator

Level 3, Governor Stirling Tower
197 St George's Terrace, Perth WA 6000
PO Box 7096, Cloisters Square, Perth WA 6850
Tel. (08) 9254 4300
Fax. (08) 9254 4399
Email: imo@imowa.com.au
Website: www.imowa.com.au

1. PURPOSE

The Rules Development Implementation Working Group's (RDIWG) terms of reference[1] includes the consideration, assessment, development and post-implementation evaluation of a number of design issues. One of the design issues identified for consideration by the RDIWG relates to capacity refunds in the Wholesale Electricity Market (WEM):

> **Issue 4:** At different times the capacity refund arrangements under and over price the value of capacity leading inefficient decisions by participants about the timing of maintenance and presentation of capacity.

The roles of refunds and how they fit within, and affect, the broader set of market incentives have been presented in a number of previous presentations and papers[2]. The purpose of this paper is to present the outcomes of the IMO's review of the current Reserve Capacity refund arrangements within the wider context of the RDIWG's scope of work. The impact of capacity refunds on the incentives for timely commissioning and reliability performance of facilities are specifically considered.

2. BACKGROUND

2.1 The Reserve Capacity Mechanism

The Reserve Capacity Mechanism (RCM) is a central feature of the design of the WEM. Relevant key characteristics of the design and operation of the RCM and its interaction with arrangements for energy trading are:

- A price ($/MW) for capacity is determined and reviewed annually;
- The IMO determines the minimum Reserve Capacity requirement three years in advance;
- Asset owners seek accreditation for capacity to meet the IMO's requirement;
- The IMO employs a safety net auction process if insufficient capacity seeks accreditation;
- IMO makes flat monthly payments for accredited capacity at rates referenced to the annual capacity price (or offsets retailer obligations where a retailer has an approved contract with an accredited reserve provider);
- Accredited capacity must be presented to market unless exempted for a defined maintenance outage approved by System Management;
- Under the Market Rules the IMO settlement processes deduct capacity refunds in the event accredited capacity is not presented and has not received prior approval for a maintenance outage;

[1] See: http://www.imowa.com.au/f139,788900/RDIWG_Terms_of_Reference_20100901.pdf
[2] For example, refer "Market Rules Design: Problem Statement" available: www.imowa.com.au/RDIWG

- The current design of the capacity refund mechanism is focused on the time of commissioning of new plant and reliability at times of expected peak demand and is shaped accordingly[3];
- The capacity refund mechanism incorporates a cumulative cap that minimises the exposure of individual participants to a level equal to the amount the generator paying refunds could earn in a Capacity Year;
- The RCM operates in conjunction with energy and Ancillary Service arrangements;
- Energy provided by accredited capacity is traded under:
    - bilateral contracts and a day ahead short term market that provides a mechanism for participants to increase or decrease level of contracts, and
    - on-the-day balancing of variations in supply or demand from day ahead net contract positions.

In reviewing arrangements for capacity refunds it is important to consider their role within the design of RCM and more broadly within the WEM. As this paper is limited to consideration of the refund regime it will consider other aspects of the design to the extent needed to ensure internal consistency across the design of the market as a whole. This will allow more focussed consideration of the performance of the refunds and expeditious consideration of any potential changes that may be identified.

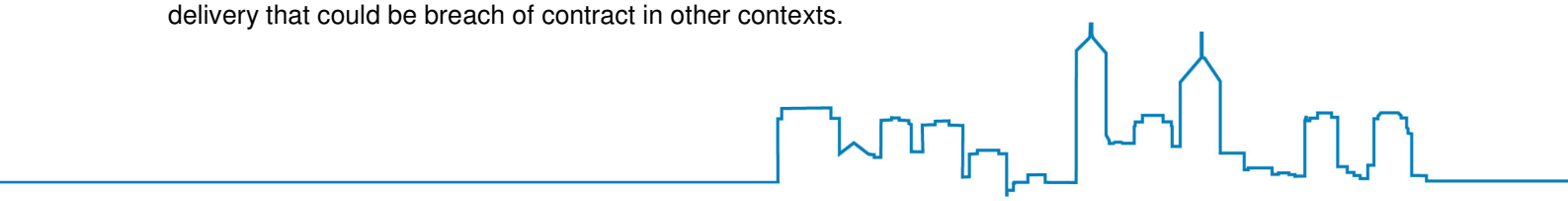
2.2 The RCM and Reserve Capacity Refunds

The RCM is a key part of the WEM design and provides a framework for relatively tight management of reliability. A useful way to view the RCM is to consider it as a contract with the IMO on behalf of customers. Like any contract the RCM has terms and conditions such as the flat monthly payment, refunds, the obligation to present capacity and to participate in coordinated maintenance planning. Also, like many contracts the terms and conditions are designed to elicit delivery of a product or service to a defined quality and it therefore includes incentives designed to make this happen. The refunds are a key part of the incentive mechanism within the "contract". They are commercial in nature and provide price signals to incentivise performance.[4]

The current capacity refund mechanism requires Market Participants who have been paid for capacity (through Capacity Credits) to pay refunds if that capacity is not made reliably available to the market. The current capacity refund mechanism requires capacity refunds to be made if accredited capacity presented to market is less than (temperature adjusted) accredited capacity:

- as a result of (unplanned) Forced Outages; or
- operation below the level stated in a Resource Plan (RP).

[3] See clause 4.26 of the Market Rules.
[4] To extend the contract analogy further, the refunds are a commercial mechanism rather strict terms of delivery that could be breach of contract in other contexts.



Specifically the capacity refund mechanism requires a Capacity Credit holder to make repayments to the IMO if the capacity is not presented[5]. The refund is currently set on a time based schedule within the Market Rules and weighted to peak demand times when reserves may be low and the potential risk to reliability highest. The weighting is achieved by setting the refund to a multiple of the payment that the capacity provider will receive over the period of reduced capacity. The refund creates a financial incentive for capacity providers, without an approved outage, to ensure capacity is made reliably available during times when the potential threat the system reliability is highest.

The refund regime provides for Market Participants to perform controllable maintenance at "acceptable" times, as a Market Participant may apply to System Management to undertake a Planned Outage. Planned Outages can include on the day Opportunistic Maintenance (clause 3.19.11 of the Market Rules). During a Planned Outage the capacity provider is exempt from exposure to capacity refunds. A number of criteria must be met prior to System Management's approval of the Planned Outage or Opportunistic Maintenance (outlined in clause 3.19.6 of the Market Rules). Additionally, System Management may reject a Planned Outage at any time where they consider there will be a risk to system security or system reliability (clause 3.19.5).

A consequence of exempting participants with in service Facilities from exposure to refunds, in the case where they have not received outage approval, the behaviour that the refund is most likely to influence is:

- the reliability of plant in service and expecting to generate to its resource plan; and
- the cost and effort exerted to return plant to service from a forced outage.

This is an important feature of the design, as it means refunds are (implicitly) directed at influencing plant reliability and maintenance performance, not capacity per se.

3. ISSUES AND POTENTIAL FOR IMPROVEMENT

3.1 Introduction

The intent of an effective capacity refund mechanism is to:

- incentivise **long term maintenance activity** which will minimise future risk to system security and system reliability; and
- Incentivise **short term behaviours** to ensure day to day operation and maintenance activities are directed to maximising reliability at time of greatest value, generally when actual reserves are lowest

To be of any value the parties exposed to a price signal such as a capacity refund should be capable of responding to it. In addition if a signal is to be economically efficient it needs to be

[5] The current structure of the Market Rules requires the IMO to pay this refund amount to Market Customers proportional to their IRCR

capable of being used by participants to weigh up their internal (private) costs and benefits and to make decisions that have a net benefit to the market as a whole (public benefit).[6]

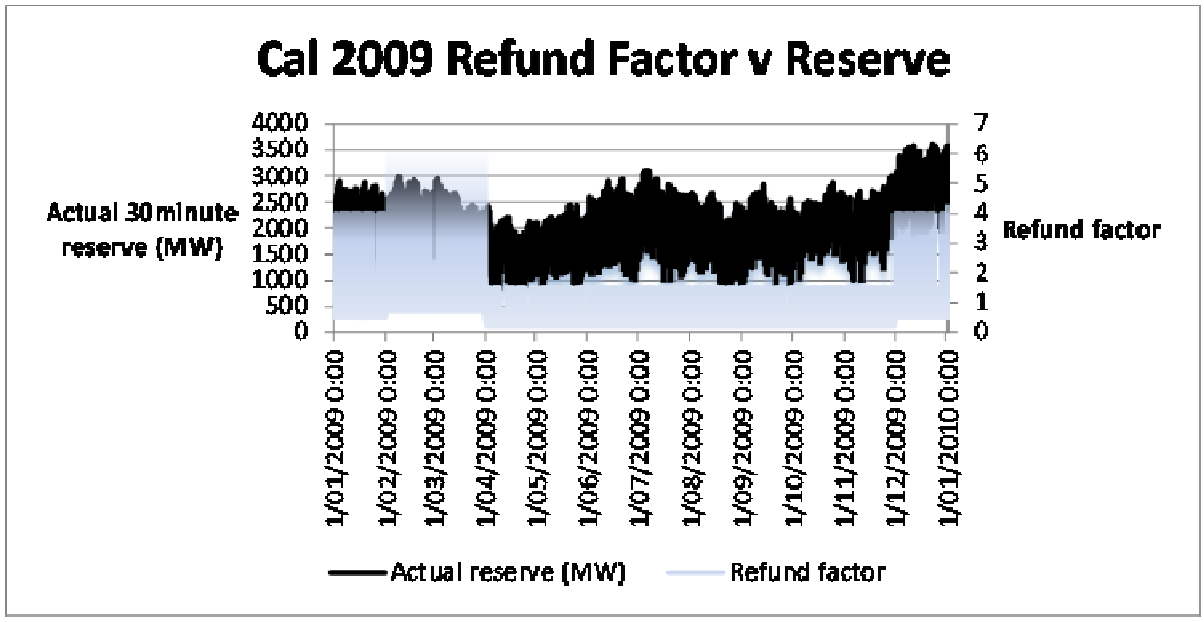
The current capacity refund mechanism creates incentives for capacity providers to manage their long term decision making processes around appropriate maintenance schedules by clearly defining the periods where the greatest potential system need for capacity at peak times occurs (during the Hot Season) . However, as will be discussed in further detail below, not all hours or days within periods of greatest *potential risk* to system security and reliability will have the same level of risk. Furthermore the times of (relatively) lower risk in peak periods (e.g. mild summer days) offer opportunity for short term maintenance to reinforce reliability for peak conditions.

Additionally, due to the exposure of participants to refunds through Resource Plan shortfalls the current refund regime may create an imbalance in the exposure to refunds for participants with generators with differing utilisation rates. For instance a base load generator will be exposed to refunds in practically every interval of the year while a peaking generator will only be exposed to refunds when dispatched.

3.2 Refund Rate v Reserve under the status quo

As the current regime includes different levels of incentive for different times, it is useful to review how well the refunds aligned with actual conditions: in particular to assess if the incentive created by the refund was strongest when reserve was low and weakest when it was high. The next two plots provide different views of the actual reserve and refund factor over the 2009 calendar year.

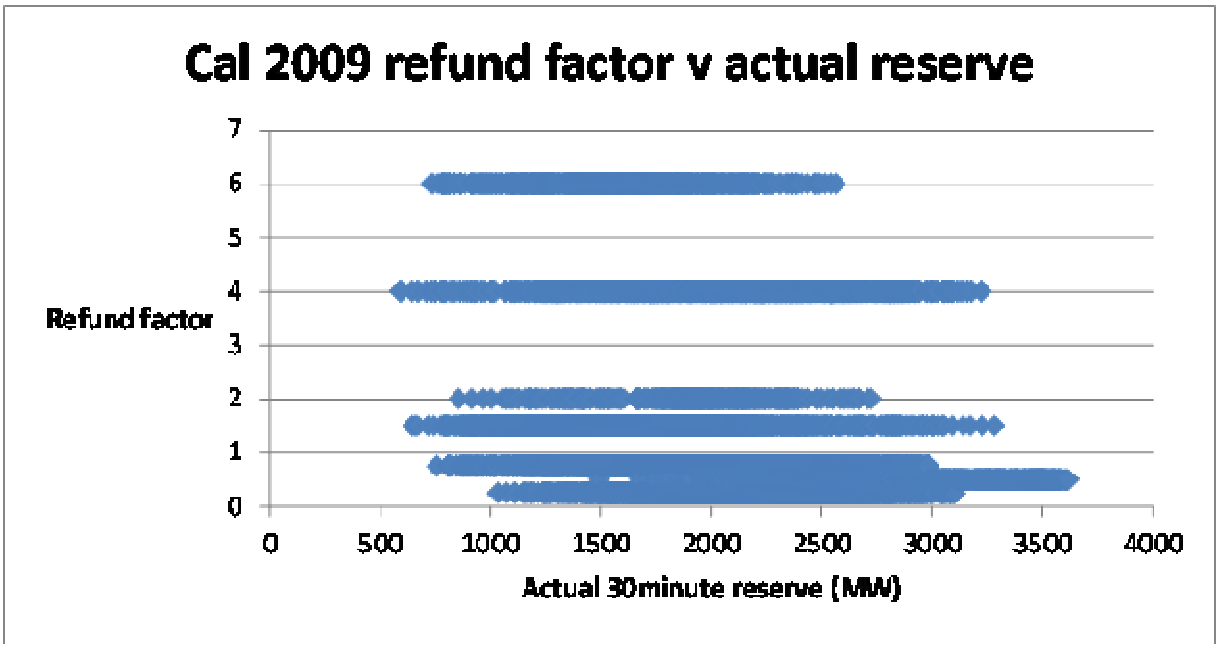
Figure 1 Cal 2009 Refund Factor v Reserve



[6] Where a price is simply recovering a cost it should be applied in a way that does not create unintended distortions

Figure 1 shows actual reserve in solid base plot (as the data covers the entire year only the envelope of maximum and minimum values is readily seen). Figure 2 shows the range of refunds for different reserves across the year. The highest refund rate of 6 applied some of the times of low reserve (as is intended), but factors of 4 and 1.5 also applied for instances of low reserve observed during the year (seen by reading the different levels at the left hand end of the range of reserves). At the low refund end, the highest reserve (3600MW) occurred when the second lowest refund level applied (0.5). The highest reserve occurred when the lowest refund factor (0.25) applied was 3100MW, 1.6 times the largest generating contingency less reserve than the maximum reserve.

Figure 2 Cal 2009 Refund Factor v Actual Reserve



Overall, the current profile and exposure to refunds creates clear long term signals that align with the possible extreme conditions – for example the refund is highest in day light hours in summer and weakest when high reserve is most likely. This can be seen from the broad shape of Figure 2 showing lower refund for higher reserve in general (slight negative correlation evident). However, there are many exceptions that suggest there may be scope for amendment.

4. POTENTIAL SOLUTIONS

Short term risk to reliability of supply can be measured by the Loss of Load Probability (LoLP). However, if refunds were based only on LoLP refunds would be likely to fall to *very low levels* for reserve that was more than a relatively low margin above the largest unit, but would also lead to very high refunds *well in excess* of the current maximum level that applies in peak periods of summer. This would change the risk exposure and prudential risks in the market and should only be contemplated if it is clearly a net benefit – this not expected. It would also mean long term incentives relating to maintenance programs was entirely reliant on short term risk.

Two broad forms of amended arrangement designed to address both short and long term objectives are discussed below. These are:

1. A dynamic refund rate based on the reserve available in any particular interval; and/or
2. A refund rate based on a dynamic reserve calculation overlaid with longer term factors.

Ultimately it is assumed that a regime based on a dynamic calculation of the refund rate and actual reserve with a cap on the maximum refund (potentially set at the same level as the current regime) is a pragmatic translation of the current regime. In conjunction with changes to the exposure to refunds described below this will provide a refinement that creates incentives for both short and long term scheduling of maintenance effort and more equitable treatment of different forms of capacity.

4.1 Basic reserve related refund

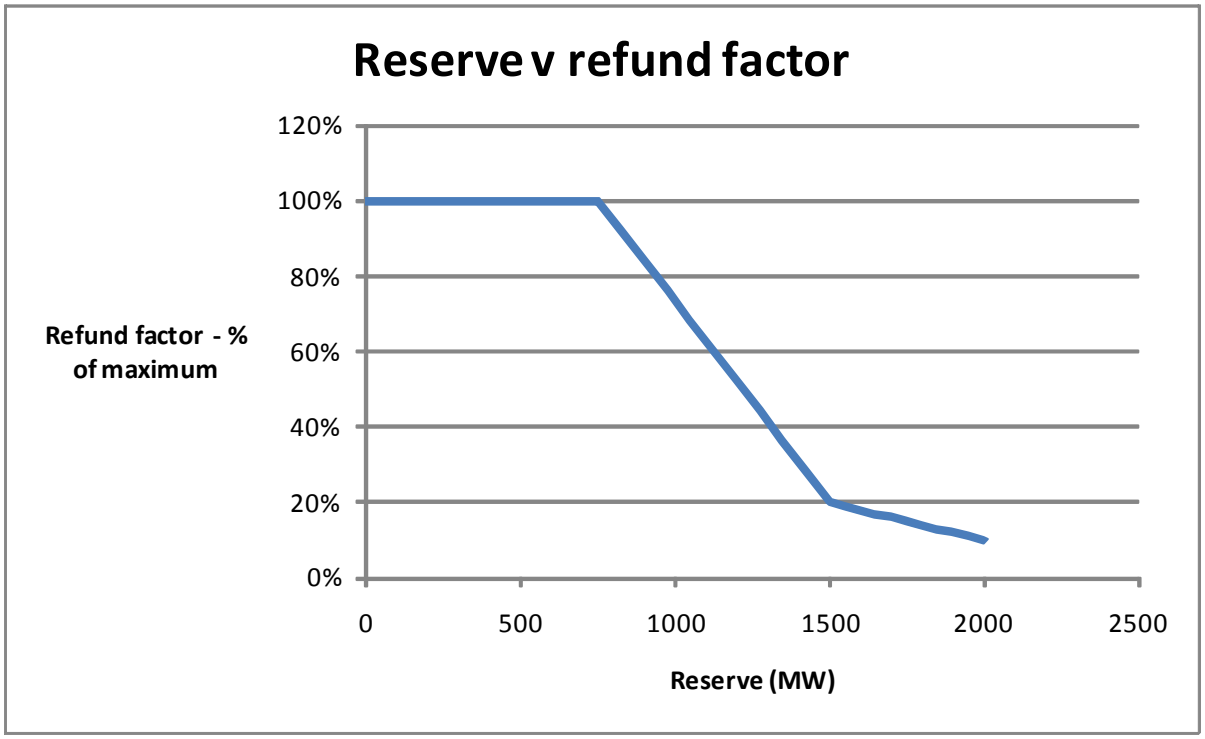
The first alternative is a simple regime that is responsive to prevailing conditions and would:

- Involve a refund rate determined from a series of breakpoints on a reserve versus refund factor relationship;
- The refund factor would be capped – the cap will limit prudential and commercial risks to participants;
- Include a lower minimum floor level to apply once reserve rises to more than a nominated factor above the minimum capacity requirement; and
- A further breakpoint at a higher level of reserve with a very low level of refund (possibly 0).

Compared to a purely short term LoLP based approach the resulting refunds will be far flatter and show a lower refund under lower reserve but higher under moderate to low reserves (for example n the range of 750MW -1500MW at peak times on hot days).

Figure 3 illustrates the relationship using potential breakpoints broadly based on the minimum reserve requirement. Further work is needed to define the maximum factor, however if the current factor were carried over the maximum factor (100%) would be six.

Figure 3 Reserve v Refund Factor



4.2 Combination actual and annual forecast reserve

Another approach to the balance between long and short term activity would see an annual factor based on a measure of annual reserve level applied to the simple dynamically calculated interval factor such that in years with lower reserve the annual factor would lift all refund rates reflecting the higher value of capacity.

This is a more sophisticated approach designed to be more responsive to both long and short term conditions. There are two broad approaches that the annual factor could be based on:

1. historical outages/availability; or
2. forecasted outages/availability

Of the two approaches to setting the annual factor under such a scheme an assessment of likely actual reserve (forecast method) appears more robust as the reason for poor performance in a previous year may have been because of intensive maintenance (planned or forced) that will see good performance in the year in question. However, it is also notable that reduced performance in any year will see lower system wide reserve on more occasions under all conditions.

The basic reserve refund concept is backward sloping and thus longer time with lower reserve automatically will result in a higher refund rate in any event. On this basis the combination alternative has not been pursued.

4.3 Combination forecast and actual reserve related refund

More complex versions which sit between the two methods outlined in sections 4.1 and 4.2 of this paper could see the refund set on the basis of combination of forecast reserve and actual on a more granular level. For example it would be possible to set an "importance" factor for each month where this factor would be a reflection of the relative risks shortage of capacity in that month poses to system security and reliability. The maximum reserve capacity multiplier would then be scaled in each month depending on the "importance" of the month.

Clearly there would be opportunities to adjust the factors to change the percentage of ex ante and ex post and the relationship with forecast and actual reserve and also to change the cap and floor levels. While such an arrangement would provide a more sophisticated approach it would also be more complex. On balance that complexity does not seem warranted at present in light of the improvements that can be achieved from a simpler option.

5. PRELIMINARY IMO PROPOSED SOLUTION

The IMO considers that, on balance, the basic reserve related refund method outlined in section 4.1 of this paper will provide the appropriate mix of long and short term incentives. This method is responsive to prevailing conditions and creates incentives for appropriately timed maintenance. The profile can be structured so the probability of the peak refund not applying at anytime during the year is low and as a result delivers an incentive to undertake maintenance for all peak periods and reduces the risk that a participant may choose to risk avoiding exposure and not pursue an adequate maintenance regime. In years with surplus capacity the hours of exposure to the higher rate will be less and conversely will be higher in years with low reserve.

However, it should be noted that in any realistic scenario there will always be significant exposure to the capped factor.

To assist participants to assess the risk of exposure to refunds the IMO would publish forecasts of the likely reserve over a long horizon and the potential refund rate that a market generator would be exposed to in those situations. The forecasts would likely use the MT PASA for long term projections, the ST PASA for a more granular short term indication of likely refund rates, and finally, the day ahead forecasts to help participants make real time maintenance decisions.

5.1 Defining the magnitude and profile of the dynamic regime

This section considers the design of a basic dynamic refund v reserve arrangement in more detail. Design of a refund arrangement can be divided into consideration of three issues:

- The profile of refund or how well the relative refund under different conditions aligns with the incentive that the design is attempting to create. This is about the relativity of net payment for capacity under different conditions;
- The magnitude of refunds within the profile; and
- Exposure of participants to refund.

This next section deals with how the first two of these dot points could be defined under the proposed methodology while section 6 of this paper deals with exposure.

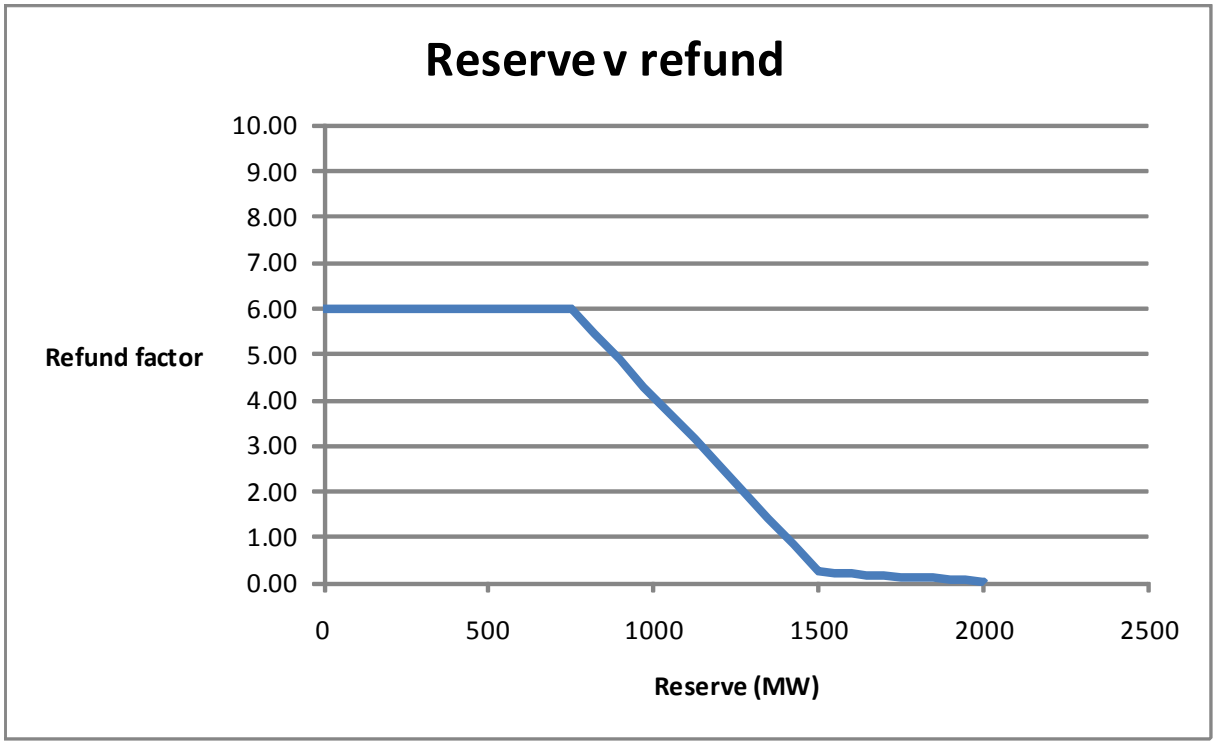
As a starting point analysis has considered a maximum refund factor equal to current maximum value of 6. Analysis of previous calendar 2008 and 2009 shows that when the profile of the proposed methodology is set as detailed below, the cumulative total of refunds is the same as that using the Market Rules (this is further detailed in the next section). However it should be noted that setting this value will require further analysis and direction following a discussion on the appropriate level of refund exposure.

The IMO tentatively proposes to set the profile of the refund regime so that:

- The capped refund factor that would apply whenever reserve was below a nominated percentage of the minimum capacity reserve is to linked the required minimum reserve used by System Management in outage planning, say 2*min reserve ~ 750MW;
- the lower minimum floor level to apply once reserve rises to more than a nominated factor above the minimum capacity requirement be set equal to 4* min reserve ~ 1500 MW; and
- the final break point be set such that the refund factor is set to zero when the reserve is greater than 6 * min reserve ~ 2000MW.

Figure 4 illustrates the relationship using the breakpoints noted above.

Figure 4 Reserve v Refund



The breakpoints in the refund profile can be adjusted to put more emphasis on either the short or long term factors, for example, by increasing the band of reserve at which participants are exposed to the maximum factor or increasing the magnitude of the maximum factor respectively.

5.2 Cumulative Refund Cap

The IMO considers that there would be no need to change the current cap on cumulative refunds that can be imposed in a period under the Market Rules, for example when commissioning of a new unit runs late.

However, if the cumulative refund limit were to be retained at its current level then the financial consequence of a delay in commissioning of a new unit may be less. This is because the actual reserve during the delay period would most likely not be at the maximum foreshadowed in the current regime at all times and the refund would be lower at those times. This would depend on how severe the resultant loss of aggregate capacity was and for the reasons outlined earlier mean that the refund factor would be higher more often than if the plant did commission on time counteracting the lower refund factor to some extent.

5.3 Analysis: Status Quo Compared to Dynamic Mechanism

Analysis of refunds under the existing design and also under an illustrative setting for the "Basic Reserve Related Refund" is presented below. The analysis has been conducted for the 2008 and 2009 calendar years.

The results show that while there were marked differences between the results for the two years it is notable that taken over the longer term the cumulative refunds across the market were similar under the two approaches (with the profile set as described in section 5.1). These effects are shown in
Figure 5 through to 10. In Figure 7 the effect of different monthly refund base capacity payments is evident and results in some spread of refund rates for the same reserve.

Figure 5 Comparison of cumulative total refund: calendar 2008

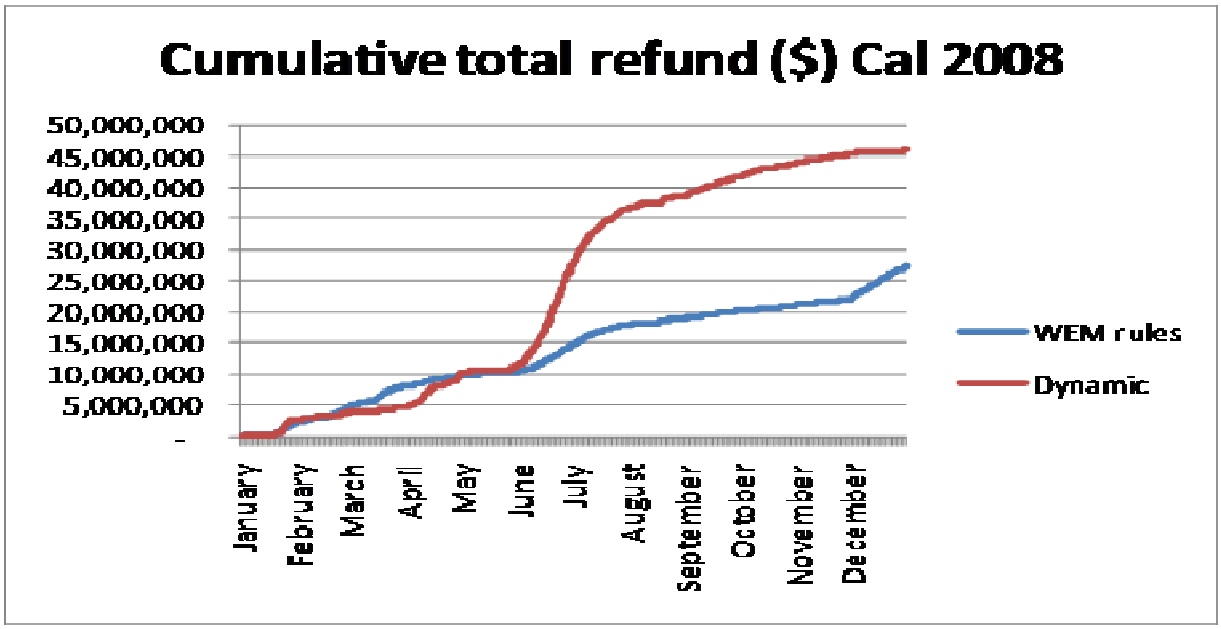


Figure 6 Refund rate versus reserve in calendar 2008: WEM rules

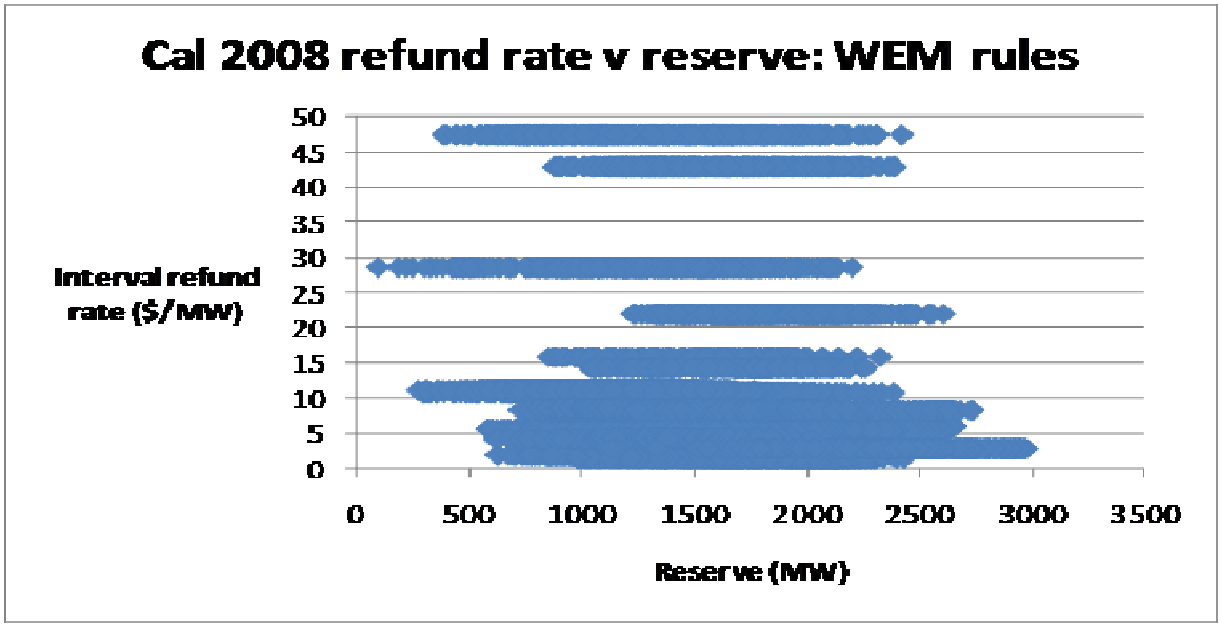


Figure 7 Refund rate versus reserve in calendar 2008: Dynamic settings

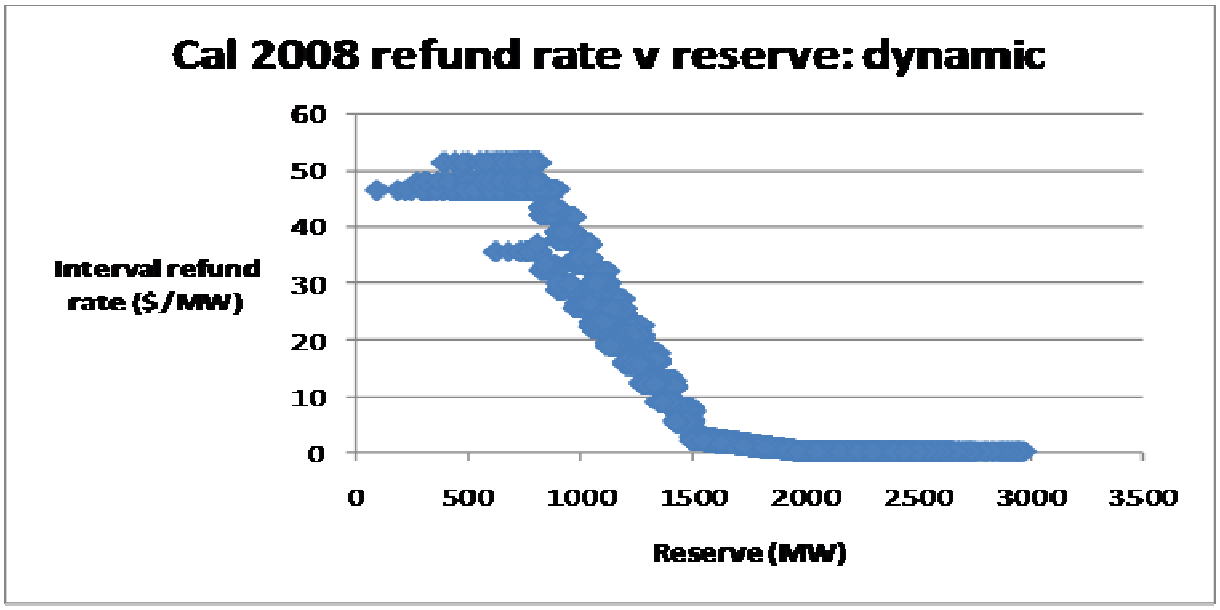


Figure 8 Comparison of cumulative refunds: calendar 2009

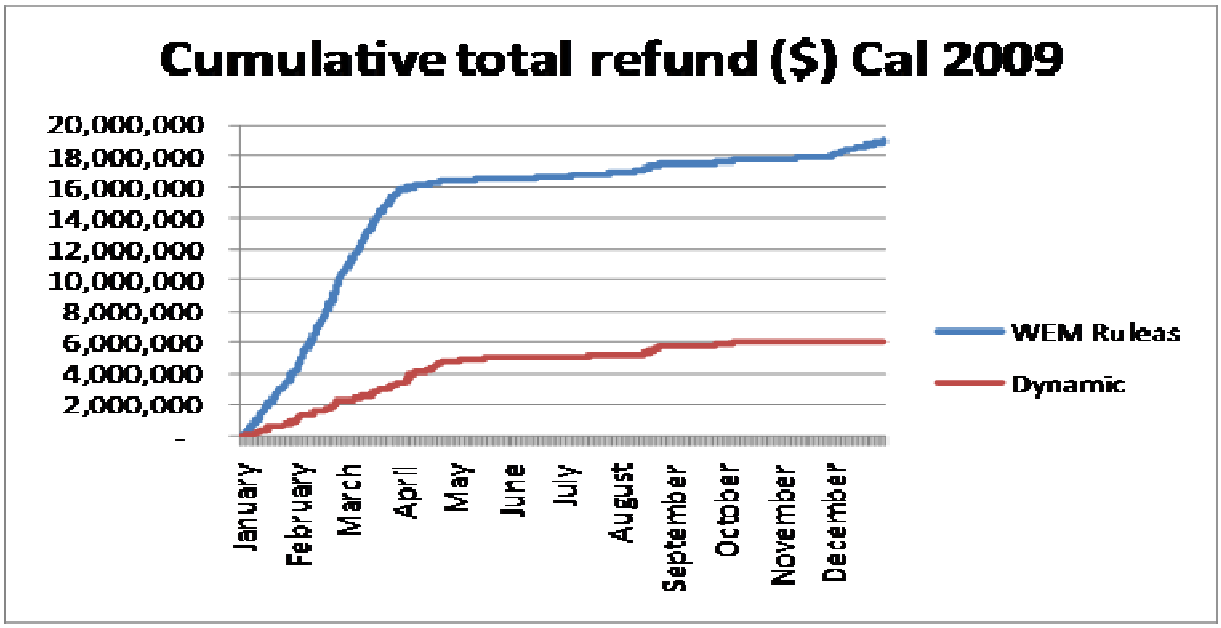


Figure 9 Refund rate versus reserve in calendar 2009: WEM rules

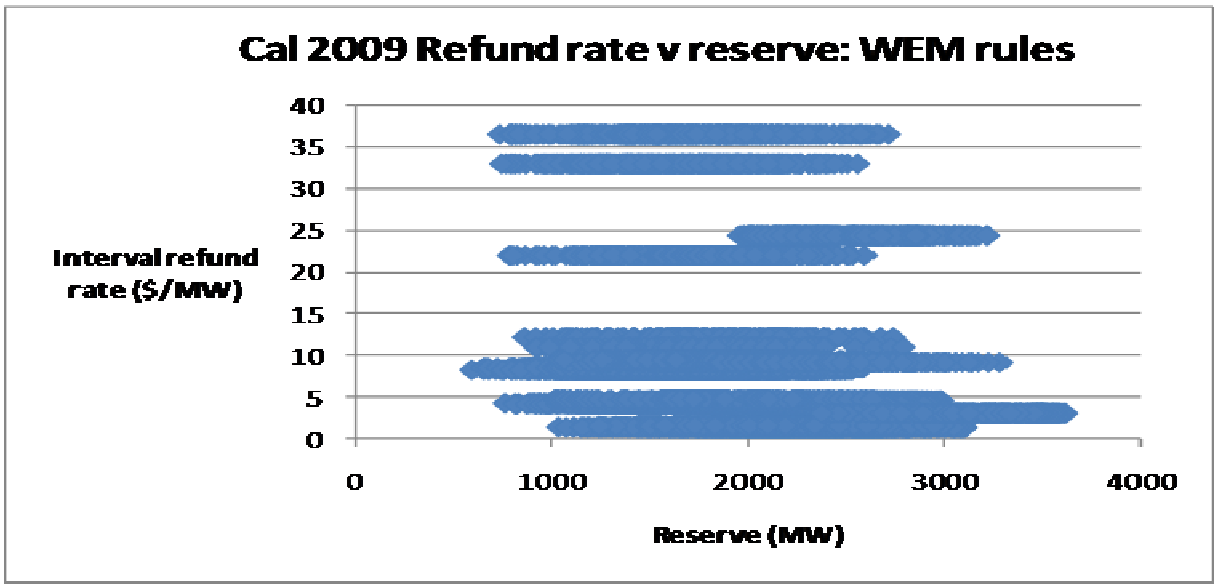
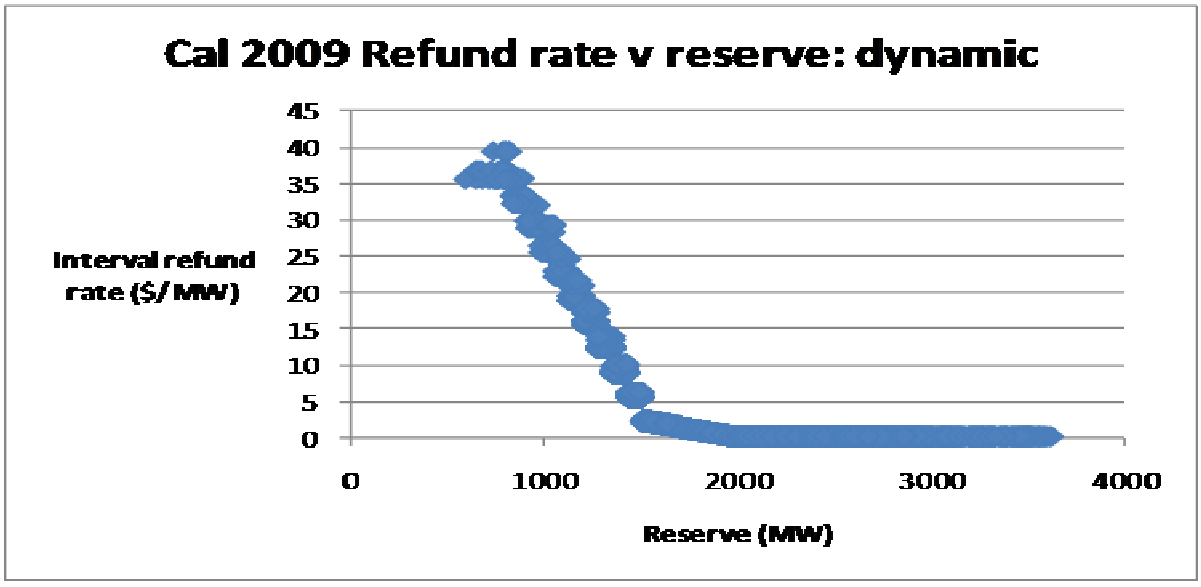


Figure 10 Refund rate versus reserve in calendar 2009: dynamic settings



A comparison of

Figure 5 and **Figure 8** shows that across the year refunds can be higher or lower under the dynamic regime compared to the current WEM rules. Interestingly, since the time the current refund rules were introduced the total refund is approximately the same.

The key point is that under the "Basic Reserve Related Refund" regime the refund rate ($/MW) is a function of reserve and thus value at the time.

6. EXPOSURE TO REFUNDS

The sections above have considered amendment to the refund rate. This section considers the exposure to the refunds. As noted earlier there is an imbalance in the exposure to refunds that depends on the utilisation of the facility in question – the lower the utilisation the lower the risk of exposure. Exposure is a matter of policy rather than analysis and the following principles and mechanisms are proposed:

- As far as practicable all capacity providers should be treated equally;
- All holders of accredited capacity should be required to declare the level of capacity being presented to market each day.
    - The declared amount should only be less than the accredited capacity if System Management has approved a planned outage (see below) plus any amount declared as a forced outage.
    - Approval should be reviewed/confirmed on a daily basis prior to the declaration.
    - The declaration can be part of the STEM submission process but should be a separate and formal declaration on behalf of the business.
- Refunds should only be imposed as a result of a declared Forced Outage or a failure to pass an "Operational Test".
    - The "Operational Test" is designed to confirm available capacity when there is a reason to believe it may not be available and is a consequence of moving from an automatic exposure regime to a compliance and surveillance regime
    - To that end failure to follow a resource plan for a short period should not automatically result in exposure to a refund. The reason for this is that it is within good industry practice for generating units to exhibit some variability in output in the short term. Generation businesses should be expected to seek to operate each unit in the most efficient manner to meet a target output – in the WEM the resource plan. Variation for minor operational fluctuations is not a definitive indication that the unit would not pass a test of the same sort that a unit that is available but not operating at the time would.
    - Clearly failure to reach or maintain full resource plan level of operation is an indication the unit MAY not pass such a test.
    - The Operational Test would be conducted either
        - in real time by System Management; or
        - Ex-post by the IMO.
    - Each of the above options has differing pros and cons, however a threshold for testing would need to be established
    - Further work will be needed on the interaction between calling for a test and emerging changes to arrangements for balancing and ancillary services and the resultant implications for SM control room activities.
    - More surveillance resources will be required for this to work:

- this may be in the form of an automated system for system management and the requirement for system management to call such tests in specific situations; or
- more staff and/or IT systems for the IMO to monitor the resource plan deviations of market participants and co-ordinate the testing with SM.

Further work may also be required in respect of provisions for opportunistic maintenance and the notice period for approval of maintenance outages ex post

7. RECOMMENDATION

That the RDIWG:

- **Endorse** amendment of the capacity refund regime to a dynamically calculated refund factor based on actual reserve and a series of breakpoints as described above in section 5.1
- **Note** that further work on the Maximum refund factor is required. For example, if as a matter of policy the total market exposure should be neutral, other than potentially removing refunds associated with RP shortfalls;
- **Endorse** the "in principle" solution to refunds exposure by changing the exposure to refunds to the effect those refunds will only be applied in the event of failure to pass an operational test; and
- **Note** that further work on the detail of the threshold for calling an operational test and interactions with emerging changes to balancing and ancillary services will be required.

Agenda Item 3: Updates on Balancing Proposal

1. BACKGROUND

At the 23 November 2010 meeting the RDIWG discussed the key aspects of the "Balancing Support" paper. It was agreed that:

- the approach outlined in the paper has the potential to provide a viable and relatively simple option for the implementation of competitive balancing within the constraints of the hybrid model;
- the IMO would pursue the proposed approach further in order to elicit its operational details and assess its technical viability; and
- the IMO would workshop the proposal with operational staff.

The attached paper provides a high level overview of key processes relating to the operation of the proposed balancing market. The aim of this is to start fleshing out process requirements and to identify critical timing issues. It is likely that this will be presented at the operational workshop on 14 December 2010.

2. RECOMMENDATIONS

The IMO recommends that the RDIWG:

- **Discuss** the high level overview of key processes relating to the operation of the proposed balancing market.

1. Market processes

The following table provides a high level overview of key processes relating to the operation of the proposed balancing market. By way of explanation:

- The timing of new or altered processes is indicative only.
- Greyed out blocks indicate whether a task relates to Verve, IPPs or both.
- ~~Strikethrough~~ activities are no longer required (or would occur at a different time).
- <u>Underlined</u> activities are new (or have been shifted to a different time).
- The blue arrows indicate information flows.

The aim is to start fleshing out process requirements and to identify critical timing issues.

Timing		Participants			IMO	System Management	Comment
		VE	IPP				
By 8:50 am	Sched Day			Submit net bilateral positions	→		As now
9 am – 9:50 am	Sched Day			Submit STEM portfolio supply and demand curves	→		As now
10 am – 10:30 am	Sched Day				Run STEM auction		As now
By 10:30 am	Sched Day			←	Provide STEM prices, quantities and NCPs		As now
By 12:30 pm	Sched Day				←	~~Provide initial dispatch plan to Verve~~	Shift until after resource plans available
11 am – 12:50 am	Sched Day			Submit facility resource plans	→		As now
				~~Submit balancing data prices~~			Different/ later
By 1:30 pm	Sched Day				~~Prepare dispatch merit order~~		Different/ later
					Provide facility resource plans to SM	→	As now (can they go straight to SM?)
					←	Provide operational load and wind forecasts & resource plans to IMO	i.e. or initial forecast of net demand that Verve will need to meet
By 2:30 pm	Sched Day			←	Publish initial balancing price forecast		From above & initial Verve portfolio curve (STEM submission) [
By 4 pm	Sched Day				←	Provide detailed dispatch plan to Verve	Taking resource plans into account

Timing	Participants			IMO	System Management	Comment
	VE	IPP				
By 5 pm Sched Day			Submit updated gross portfolio supply curve	→		New
			Submit inc offers/ dec bids	→		
By 6 pm Sched Day				Prepare balancing/ dispatch merit order	→	i.e. from updated Verve portfolio supply curve and IPP inc/dec bids
Rest of Sched Day			Commit facilities as instructed by SM	←	Review Verve dispatch plan/ commit Verve facilities	As now
			Schedule/ commit facilities as per resource plans subject to SM security requirements	↔		As now
	+++		Update balancing incs/decs (subject to gate closure period)	→		Need to determine gate closure timing/ conditions +++ Verve could elect to offer some facilities on a standalone basis
				Update balancing/ dispatch merit order	→	If any changes
				←	Provide operational load and wind forecasts to IMO and any updates/ changes to resource plans	To enable balancing price forecast to be updated taking account of incs/decs
			←	Publish updated balancing price forecast		Required whether bids/offers change or not
Trading Day			Follow SM commit/ dispatch instructions	←	Gross dispatch Verve facilities with net dispatch of IPPs using	Major change

Timing	Participants			IMO	System Management	Comment
	VE	IPP				
			Commit/ dispatch facilities to meet resource plans move off plans as instructed by SM for balancing		balancing/ dispatch merit order	
					Provide operational load and wind forecasts to IMO and any updates/ changes to resource plans	To enable balancing price forecast to be updated taking account of incs/decs
				Publish updated balancing price forecast		Need to decide how often/ gate closure etc
			Update balancing incs/decs (subject to gate closure period)			
				Update balancing/ dispatch merit order		
By 3pm 1st BD after Trad Day				~~Calculate MCAP~~		
				~~Calculate DDAP, UDAP~~		
				Calculate clean/ marginal balancing price		Major change
Settlement				~~Settle Verve balancing at MCAP~~		
				~~Settle authorised IPP balancing at pay as bid~~ ~~Settle unauthorised IPP deviations at DDAP/UDAP~~		
				Settle all balancing quantities at balancing price		No DDAP/UDAP penalties

Timing	Participants			IMO	System Management	Comment
	VE	IPP				
Compliance			Report/ explain failure to follow dispatch instructions or any unauthorised deviations outside dispatch tolerance 	Investigate deviations outside dispatch tolerance  	Report any deviations outside dispatch tolerance 	Deviations which cannot be justified on bona fide physical grounds subject to sancture under compliance regime

RDIWG Action Points

Legend:

Shaded	Shaded action points are actions that have been completed since the last RDIWG meeting (contained in table 2).
Unshaded	Unshaded action points are still being progressed (contained in table 1).
Missing	Action items missing in sequence have been completed from previous meetings and subsequently removed from log.

Table 1: Outstanding

#	Action	Responsibility	Meeting arising	Status/Progress
11	The IMO to discuss with System Management its requirements for actual wind speed data and progress a Rule Change Proposal to ensure the provision of this data (if appropriate).	IMO/SM	2	Underway. Discussed with System Management 11 November 2010. System Management is summarizing the potential requirements for this. Once complete, an assessment will be made as to whether a Rule Change Proposal is necessary.
13	The IMO to investigate whether there are any impediments to calculating a forecast MCAP (closer to real time).	IMO	2	
19	The IMO to investigate with System Management whether wind generation forecasts could be provided to participants at the same time as load forecasts.	IMO	3	

#	Action	Responsibility	Meeting arising	Status/Progress
24	The IMO to investigate the impacts of gentailers providing gross bilateral submissions, including the possibility of automatically generating Resource Plans for Market Participants with a single Facility.	IMO	3	
30	The IMO to investigate with Verve Energy its ability to provide Facility based submissions and Facility based increment and decrement bids (relative to Net Contract Position) for balancing.	IMO	4	
32	The IMO to investigate the original rationale behind the current weightings used for Capacity Cost Refunds, and present its findings to the RDIWG.	IMO	4	
37	The IMO to consider whether in the short term it should request Market Participants that do not make STEM supply curve submissions to not submit Resource Plan/Shortfalls and provide the information to System Management separately.	IMO	5	
42	The IMO to offer site presentations to Working Group members and invite Working Group members to participate in the presentations.	IMO	5	Underway.
43	The IMO to confirm the accounting advice it has received previously that its expenditure on the Market Evolution Program can all be capitalised.	IMO	6	
46	The IMO to undertake a high level cost/benefit analysis for the proposed Balancing provision solution.	IMO	6	
47	Verve Energy and System Management to confirm that there are no Power System Security issues with Verve Energy supplying up to 100MW of Load Following service.	Verve Energy and SM	6	
48	The IMO to work with System Management and potential providers of Load Following Ancillary Services (LFAS) to develop a set of principles for the provision of competitive LFAS that addresses the issues raised by RDIWG members, for presentation to the RDIWG at the 14 December 2010 meeting with the view to delivering solutions at a later meeting.	IMO with SM and potential LFAS providers	6	

#	Action	Responsibility	Meeting arising	Status/Progress
51	The IMO to arrange a workshop in early 2011 with the Bureau of Meteorology (BoM) and RDIWG members, to discuss options for the enhancement of BoM forecasts and the wider usage of forecasts by Market Participants.	IMO	6	
52	The IMO and System Management to discuss System Management's dispatch system and whether it is able to accommodate future enhancements.	IMO and SM	6	

Table 2: Completed since last meeting

#	Action	Responsibility	Meeting arising	Status/Progress
8	The IMO to investigate options for provision of BOM forecasts (including wind forecasts) prior to 12:15 pm.	IMO	2	As agreed at the 23 November 2010 meeting, there will be no further work on the STEM timing work stream at this stage.
15	The IMO to investigate the impact on efficient operational practices of the weightings applied to Reserve Capacity refunds and the issue of large refunds being incurred for small downwards deviations, and prepare a discussion paper for presentation to the Working Group.	IMO	2	Paper on today's agenda.
17	The IMO to undertake analysis to assess the extent to which load forecasts are improved by using the 12.15 pm BOM forecast instead of the 7.00 am BOM forecast.	IMO	3	As agreed at the 23 November 2010 meeting, there will be no further work on the STEM timing work stream at this stage.
21	The IMO to discuss nomination timelines with the Goldfields and Parmelia gas pipeline operators and investigate options to vary these timelines.	IMO	3	As agreed at the 23 November 2010 meeting, there will be no further work on the STEM timing work stream at this stage.
22	The IMO to discuss nomination timelines with the major gas suppliers to gain an overview of the current arrangements and	IMO	3	As agreed at the 23 November 2010 meeting, there will be no further work

#	Action	Responsibility	Meeting arising	Status/Progress
	investigate options to vary the nomination timelines.			on the STEM timing work stream at this stage.
23	Working group members representing gentailers to consider the impact of providing gross bilateral submissions and provide their feedback to the IMO.	Gentailer representatives	3	Complete. Alinta has advised that it has started including its own demand in its Bilateral Submissions.
29	RDIWG members to email the IMO details of their suggested options to support increased participation in balancing.	All	4	Peter Ryan's suggestion presented at 2 November 2010 meeting.
31	The IMO to investigate options for a more dynamic Capacity Cost Refund mechanism and present its findings to the RDIWG.	IMO	4	Complete. Paper on today's agenda.
35	System Management to provide a presentation to RDIWG members at the 23 November 2010 meeting, on the current process for the dispatch of Verve Energy facilities by System Management.	SM	5	Complete. System Management presented at 23 November 2010 meeting.
39	RDIWG members to email their comments on the draft Market Evolution Program Summary to the IMO by 5.00pm on Wednesday 10 November 2010.	IMO	5	Complete.
40	The IMO to incorporate the feedback received on the Market Evolution Program Summary and then use as a public reference document for the Program subject to the approval of the IMO Board.	IMO	5	Complete.
41	The IMO to provide RDIWG members with further details on the IMO IT Roadmap, the estimated OPEX impacts of the Market Evolution Program and the estimated impact of the Program on Market Fees.	IMO	5	Complete - included in the latest edition of MEP Watch.
44	The IMO to amend the minutes of Meeting No. 5 to reflect the points raised by the RDIWG and publish on the website as final.	IMO	6	Complete. Published 8 December 2010.
45	The IMO to further develop the operational details of the proposed Balancing provision solution and consult with industry operational staff on these details in a workshop to be conducted before the end of December 2010.	IMO	6	Completed. Operational workshop 14 December 2010.

#	Action	Responsibility	Meeting arising	Status/Progress
49	The IMO to distribute a solution paper for the implementation of a more dynamic Capacity Cost Refund mechanism to RDIWG members, in time to allow consideration prior to discussion of the paper at the 14 December 2010 RDIWG meeting.	IMO	6	Completed. Paper distributed 8 December 2010.
50	The IMO to change the start time for RDIWG meeting from 9.00am to 9.30am.	IMO	6	Completed.