

Independent Market Operator
Renewable Energy Generation Working Group

Minutes

Meeting No.	13	
Location:	Meeting Room 8, Perth Convention Exhibition Centre 21 Mounts Bay Road, Perth	
Date:	Thursday, 24 June 2010	
Time:	1:00 pm – 4:00 pm	
Attendees		
Troy Forward	Independent Market Operator (IMO)	Chair
Greg Ruthven	IMO	Minutes
Michael Carr	Tenet Consulting	
Kyle Jackson	Mid West Energy	
Dr. Steve Gould	Landfill Gas & Power	
Matthew Rosser	Pacific Hydro	
Matthew Martin	Office of Energy (OoE)	
Brooke Eddington	OoE	
Ian McCullough	OoE	
Patrick Tan	Collgar	
Pablo Campillos	DMT Energy	
Tom Pearcy	Western Power	
Andrew Everett	Verve Energy	
John Rhodes	Synergy	
Chris Brown	ERA	
Corey Dykstra	Alinta	
Matthew Fairclough	System Management	
Brendan Clarke	System Management	

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Andrew Woodroffe	Skyfarming	
Rob Rohrlach	Energy Response	
Geoff Glazier	Sinclair Knight Merz	
Apologies		
Phil Kelloway	Systems Management	
John Vendel	Pacific Hydro	
Alistair Craib	Collgar Wind Farm	
Heidi Spitzer	Collgar Wind Farm	
Stephen Hurley	Department of the Premier and Cabinet (DPC)	
Anwar Mohammed	SunPower	

Item	Subject	Action
1.	WELCOME The Chair opened the meeting at 1:10 pm and welcomed all attendees to the Renewable Energy Generation Working Group (REGWG) meeting.	
2.	MEETING APOLOGIES / ATTENDANCE Apologies were noted as listed above. Additional attendees were: <ul style="list-style-type: none">• Patrick Tan (Collgar)• Brendan Clarke (System Management)• Geoff Glazier (Sinclair Knight Merz), arriving late to answer questions on Work Package 4.	
3.	MINUTES OF PREVIOUS MEETING The minutes of the 27 May 2010 REGWG meeting were circulated to members for review and comment. Page 1 / 2: Kyle Jackson's name missing from minutes, to be added. <i>Action: The IMO to make the changes above and publish the minutes of the 27 May 2010 Meeting as final.</i>	IMO
4.	ACTIONS ARISING All action items were complete other than:	

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	<ul style="list-style-type: none"> • Action Item 9: No data received yet from Collgar. • Action Item 23: ROAM presentation to Oates team pending resolution of costing. • Action Item 24: Wind forecasting effects on load following not yet discussed with ROAM. To be reviewed whether this is required. • Action Item 34: Data sample rates for the various work packages explored with Office of Energy. The Chair expected this to be closed through discussions today in relation to further assessment of valuation methods, flowing from Work Package 2. • Action Item 35: Discrepancy in NIEIR/ROAM growth forecasts. Work ongoing. • Action Item 36: Review of REGWG scope and deliverables with MAC and seek endorsement. Raised with the MAC that a review was underway, Chair suggested that group discuss when appropriate and prepare submission to MAC. 	
5.	<p>WORK PACKAGE 2: DRAFT REPORT</p> <p>The Chair confirmed that further comments and questions had been received from several members in relation to the draft Work Package 2 report. A “page turn” was performed to confirm that the compiled comments accurately reflected the group’s feedback. All attendees were satisfied that the compilation was an accurate reflection of the feedback.</p> <p>Mr Jackson enquired as to the forward plan for this work stream. The Chair explained that the Working Group had commissioned an independent consultant’s report which has provided some findings, and that participants have provided two other proposals in the meantime. One was a suggestion from Ian McCullough from the Office of Energy – it should be noted that this is not the official view of the Office of Energy, but Ian has provided valuable assistance in detailing his ideas. The other proposal was provided by Matthew Fairclough from System Management.</p> <p>The Chair voiced concern that continuing to elaborate on the MMA work may not enhance its value. Now that this paper has been provided the Working Group can step back from the fine detail and compare the benefits and disadvantages of the three proposals. He noted that Mr Carr and Mr McCullough had compiled the key elements of the proposals in a presentation to enable comparison and that Mr Carr would present this today.</p> <p>Mr Rhodes asked whether this presentation should have been made available to the Working Group earlier. The Chair agreed that there would have been value in this, but that there was insufficient time to distribute this prior to the meeting.</p>	

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	<p>The Chair noted that the MMA's findings were interpreted with their involvement, and that MMA seem comfortable that the summary captures what they are trying to achieve. A similar approach was performed with Mr McCullough's proposal. There had been insufficient time to consult with System Management in detail on the interpretation of their proposal, so System Management may reserve the right to correct the detail presented here.</p> <p>Mr Jackson indicated that MMA had gone to a huge level of detailed analysis, but that there may not be the same level of analysis in the others. The Chair agreed and noted that the presentation also suggests that the group may require further comparative analysis of the proposals, as noted by Mr McCullough previously.</p> <p>Mr Rhodes asked how the various methods should be compared. The Chair agreed that this would need to be considered and welcomed input from the group.</p> <p>Mr Carr presented the summary of the methods. He explained that he & Mr McCullough prepared three "hybrid" proposals based on information from MMA, Mr McCullough and System Management. The intent of the presentation is to stimulate discussion without making any clear recommendations at this stage.</p> <p>In the discussion of Option 1, Mr Jackson questioned the use of only 12 intervals in the assessment. Mr McCullough explained that Options 1 and 3 assess the performance of the intermittent generation fleet as a whole for a small number of intervals, but then consider many more intervals when assessing the performance and value of individual plants.</p> <p>Mr Jackson expressed concern that funding for an individual facility could be affected by the fleet performance, indicating that this may create difficulties from a bankability point of view. He also indicated that there may be issues with the use of historical data in the assessment, particularly for new plant under construction.</p> <p>The Chair noted that Mr McCullough was asked by the IMO, as a favour, to assist with this work based on his intellectual contribution to date. The Chair reminded members that Mr McCullough's views may not represent the views of the Office of Energy.</p> <p>In the discussion of Option 2, the group recognised the limitation in the scaling of data to the 10%, 30% and 50% PoE years as proposed plant may not have data for those years. It was suggested that it may be more relevant to use data from the most recent years.</p> <p>The Chair explained that MMA's recommendation is to use the</p>	<p style="text-align: right;">Deleted: ,</p>

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	<p>750 trading interval method as a proxy for the reliability equalisation and loss of load probability methods as it yields similar results but is simpler to implement and has lower volatility.</p> <p>The Chair thanked System Management for providing their proposal to members (distributed to members by email after the previous meeting) and invited comment on System Management's proposal. The Chair noted that Option 3 presented here is different to the original System Management proposal and thought it fair to allow comment on the original paper.</p> <p>Mr Fairclough explained that the proposal was based on the National Electricity Market (NEM). This method picks the top 1% of intervals, determines the intermittent generation fleet output for those intervals, ranks the intervals by output and values the fleet output at the 95th percentile level. This valuation is performed on a state-by-state basis. No apportionment to individual facilities is performed as there is no capacity market in the NEM.</p> <p>The Chair explained that the System Management proposal discusses the probability of losing load when the wind doesn't blow, although describes a second contingency event. He said that the proposal suggests the loss of the full reserve margin on a 1-in-10-year peak day, plus zero output from all wind farms.</p> <p>Mr Fairclough suggested that the events are not necessarily rare, with zero or near-zero wind possible during peak intervals. He also indicated that the loss of a large generator is likely during peak demand intervals. The Chair asked how often the largest unit had been lost at peak demand times. Mr Fairclough indicated that combinations of plant equivalent to the capacity value of the largest unit had been commonly lost in peak demand times.</p> <p>The Chair noted <u>that the current reliability criterion should be revised if it is deemed to be insufficient</u>.</p> <p>Mr Fairclough advised that System Management had previously performed their assessment on 1-minute data, but had reassessed based on interval data upon finding out about this presentation. The reassessment yielded similar results but suggested that the valuation should shift to the 90th percentile level. Fluctuation in 1-minute data is more of a load following/spinning reserve issue than a capacity issue.</p> <p>Mr Jackson noted that the System Management paper is primarily focused on wind generators but does not explicitly consider other intermittent generators.</p> <p>It was noted that the references in the presentation to a "cap" on overall intermittent capacity value was misleading, and that this should be updated in the presentation before the presentation is</p>	

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	<p>distributed to Working Group members.</p> <p>It was noted that the LSG (Load for Scheduled Generation) method for the selection of trading intervals had been added to the original System Management proposal as it encourages location and technology diversity. System Management indicated that they were satisfied with LSG being used.</p> <p>Mr McCullough indicated that 1% of trading intervals is a large number and may include some off-peak periods. Mr Fairclough confirmed that System Management's intent was to consider 1% of intervals in each year.</p> <p>Dr Gould asked how LSG interacts with ancillary services and balancing and asked why the 12 intervals would not be the same intervals as used for Individual Reserve Capacity Requirement (IRCR) determinations. The Chair explained that LSG comprises the total load minus intermittent generation in that interval. The Chair offered further discussion of this, which Dr Gould welcomed this offer as he felt that the LSG concept is somewhat counterintuitive. The Chair indicated that he is <u>interested</u>, from a market design perspective, for constant themes across the market. Mr McCullough indicated that he had chosen to use 12 intervals in order to get a small number of representative intervals.</p> <p>The Chair offered to revisit the LSG concept to explain the merit of the concept.</p> <p>Action:</p> <ul style="list-style-type: none"> IMO to provide summary of merits and impacts of LSG method to the Working Group. 	
	<p>Mr Brown observed that the three methods essentially comprised 2 assessment methods, fleet-based and individual facility-based, and questioned whether the presentation should be reworked to present only two options.</p> <p>The Chair returned to the System Management proposal, which suggested a flat apportionment to all plant. He asked if System Management were <u>committed</u> to that concept. Mr Fairclough indicated that System Management is <u>somewhat flexible in relation to</u> the number proposed, but that the approach was consistent with that concept.</p> <p>The Chair asked if LSG was only a fleet-based method. It was agreed that it was simply an interval selection method.</p> <p>In relation to the use of a fleet-based method, the Chair suggested that financiers/investors may <u>perceive greater risk if the valuation for a facility is affected by the performance of other facilities</u>. Mr McCullough indicated that LSG was based on an observation from MMA and reflected the capacity of the scheduled generation fleet to deal with the intermittent generation variability. He suggested that from a reliability</p>	IMO
		<div style="border: 1px solid green; padding: 2px;">Deleted: keen</div> <div style="border: 1px solid green; padding: 2px;">Deleted: prepare presentation explaining the LSG concept for the next REGWG meeting</div> <div style="border: 1px solid green; padding: 2px;">Deleted: wedded</div> <div style="border: 1px solid green; padding: 2px;">Deleted: not wedded to</div> <div style="border: 1px solid green; padding: 2px;">Deleted: baulk</div> <div style="border: 1px solid green; padding: 2px;">Deleted: at</div> <div style="border: 1px solid green; padding: 2px;">Deleted: being</div>

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	<p>perspective it is the performance of the fleet that matters most.</p> <p>Mr Rhodes indicated that if a particular plant failed to perform, this could affect the whole fleet. Mr McCullough indicated that the total intermittent generation allocation would drop in this case, but the allocation to that particular plant would drop significantly more.</p> <p>The Chair indicated that a fleet approach is evident in other elements of the market, such as ancillary service cost allocation.</p> <p>Mr McCullough indicated that simulated data for new plant could be used with Option 3 to estimate the valuation, as part of the fleet assessment. However, this is reliant on reliable historical predicted output for the proposed plant.</p> <p>Mr Jackson asked whether a transparent tool could be developed for potential investors to estimate capacity credit valuation.</p> <p>Dr Gould indicated support for using a fleet approach when using a small number of intervals for reliability purposes, but a large number of intervals for allocation purposes within the fleet.</p> <p>Mr Rhodes asked why <u>it had been decided to use</u> 12 intervals for the fleet assessment when the IRCR determination is based on <u>a different set of</u> 12 intervals. Mr McCullough explained that no link was intended to the IRCR process, <u>and</u> that 12 was a conveniently low number <u>that</u> could be altered.</p> <p>The Chair offered to assess the methods with and without fleet-based contribution determinations. Mr McCullough indicated that Options 1 & 3 necessarily require fleet assessments.</p> <p>Mr Rohrlach asked how the results of any numerical analysis would be assessed. The Chair said this would be a judgment-based decision based on the merits of the method. The Chair asked whether anyone could propose an objective method to assess these. Mr McCullough indicated that the reliability and volatility of the methods could be compared. The Chair indicated that the market objectives are the ultimate test.</p> <p>Action:</p> <ul style="list-style-type: none"> • <i>IMO to perform numerical assessment for comparison of the methods for presentation to the Working Group.</i> <p>It was suggested that MMA have the data already and have the best understanding of one of the proposed methods. It was also suggested that MMA could ensure consistency of input data.</p> <p>The Chair reiterated the request to Collgar Wind Farm to provide data to assist with this numerical assessment.</p>	<p>IMO</p> <p>Deleted: were selected</p> <p>Deleted: but</p>

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7.	<p>WORK PACKAGE 4: PROGRESS UPDATE</p> <p>The Chair noted that the draft Work Package 4 report was distributed to members prior to the meeting. The Chair welcomed Geoff Glazier from Sinclair Knight Merz (SKM) who had made himself available to answer questions from members.</p> <p>Mr Glazier gave a summary of the purpose of the Work Package. He highlighted that SKM had consulted with Market Participants to help with identifying issues prior to performing modelling to evaluate impacts. They identified areas for change in the Technical Rules, including voltage ride-thru requirements, ramp rate requirements and temporary voltage excursions. Communication requirements were deemed to be closely linked to what happens with the Market Design team process and these will need to be specified dependent upon which pathway is selected.</p> <p>Mr McCullough reminded members that this work focuses on the Technical Rules. The Chair noted that this had been included in the initial REGWG work scope for completeness. However, there has been an acknowledgment that the Technical Rules are outside the mandate of the REGWG.</p> <p>The Chair recommended that the REGWG turn this report over to Western Power. Mr Pearcy indicated that Western Power should be given the opportunity to review the paper. Given that this draft report is published on the REGWG website, he indicated that it is right to allow members the opportunity to respond and refine the work as appropriate in this forum.</p> <p>The Chair invited comment from Working Group members as for other work packages. Mr Pearcy indicated that several issues are resolved already through the ongoing review of the Technical Rules and some interpretation issues have already been clarified.</p> <p>The Chair asked whether Western Power should present to the group on the significance of current changes to the Technical Rules and any other developments. Mr Pearcy indicated a willingness to present this.</p> <p><i>Action:</i></p> <ul style="list-style-type: none"> • <i>Western Power to prepare presentation on Technical Rules changes for the next REGWG meeting.</i> <p>Mr Rosser asked whether any of the review items have any impact on the other modelling work being done. Mr Glazier indicated that there are a few points of interface with Work Package 3, but that the Work Package 3 outputs were inputs for Work Package 4 with no feedback of the results.</p> <p><i>Action:</i></p> <ul style="list-style-type: none"> • <i>Members to pass comments on Work Package 4 draft</i> 	<p>Western Power</p> <div style="border: 1px solid green; padding: 5px; margin-top: 10px;"> <p>Deleted: It was noted that SKM should point out that the current Market Rules related to this Work Package are adequate at this time.</p> </div> <div style="border: 1px dashed green; padding: 5px; margin-top: 10px;"> <p>Formatted: Space Before: 0 pt</p> </div>

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	<p><i>report to IMO by 1 July.</i></p> <ul style="list-style-type: none"> <i>IMO to compile questions and comments provided by members in time for distribution prior to the next REGWG meeting</i> 	Members IMO
6.	<p>WORK PACKAGE 3: DRAFT REPORT</p> <p>The Chair explained that the IMO requested further explanation from ROAM in relation to the cost differences between the dispatch-modelled method and the current market-based method. ROAM provided their explanation in a discussion paper which was distributed to members. The Chair invited questions or comments in relation to this discussion paper.</p> <p>Mr Dykstra indicated that the paper was difficult to understand. The Chair explained that there are issues in the cost allocation calculations in the existing Market Rules which contaminate the results of the MCAP-based modelling, and that the existing Market Rules <u>do not work</u>. The other point of difference is the disparity that occurs in the assumptions, but in ROAM's view the gas/carbon price differences are secondary.</p> <p>In response to the suggestion that dispatch modelling should be performed for all four planting scenarios, ROAM have indicated that the results for the other scenarios will not vary significantly from the Scenario 2 results, particularly when compared to the variation between the market-based and dispatch-based results, and thus will not provide <u>much</u> additional information. ROAM have indicated that they are able to do the modelling but there will quite a deal of work in setting up these simulations, for potential very little added value.</p> <p>Mr Dykstra asked whether the dispatch modelling result was an indicative cost for the high wind penetration, Verve-only scenario. This was agreed.</p> <p>Mr Fairclough indicated that the <u>current</u> rules do not cause any problems or the market for approximately 5 years, at which time the Load Following requirement overtakes the Spinning Reserve requirement. He asked how the broken rules were the primary factor if not relevant for 5 years.</p> <p>The Chair explained that there is the issue with the Load Following requirement overtaking the Spinning Reserve requirement, but also that there is a problematic negative term in the equations.</p> <p>Mr Dykstra indicated that the existing methodology is an artificial construct and may not be accurate. Method 2 indicates the true economic cost, irrespective of what the existing Market Rules allow Verve to recover. Given that Method 2 is the true</p>	Deleted: are broken Deleted: broken

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	<p>economic cost, the Working Group should discount Method 1 and compare Method 2 for the various scenarios.</p> <p>The Chair stated that the Working Group wanted to see ROAM propose an efficient cost allocation methodology, indicating that this would be a valuable outcome from this group. The purpose of Work Package 3 was to evaluate the technical Load Following/Spinning Reserve requirements in relation to growing intermittent generation. The <u>determined</u> requirements calculated by ROAM appear to be relatively robust for the various <u>scenarios</u>. The second part of the Work Package is to determine the <u>cost</u> allocation technique. If the Working Group accepts the technical outcome, it can now ask ROAM to develop rules around the efficient allocation of costs.</p> <p>The Chair indicated that, with a little more work from ROAM, the Group could soon close this work out.</p> <p>Mr Rhodes enquired about the possible curtailment of intermittent generators in times of low system demand, stating that this has not been explored to date. He highlighted that one of the scenarios in the ROAM report showed that curtailment would be required if all wind farms were providing 100% of name plate capacity, particularly given that all base load generation is considered to be off in that scenario. While it's an extreme scenario, he indicated that it needs to be explored. He pointed out that some base load would need to be kept running overnight and that there must be some implications for curtailment of wind farms, but that the Market Rules currently do not allow for this.</p> <p>The Chair indicated that this is outside of the REGWG scope. He said that it would inaccurate to assume that the current Market Rules apply for the next 20 years.</p> <p>Mr Fairclough said that the fact that the Work Package was necessarily based on policy assumptions outside the scope of Market Participants, none of which are real, created difficulty. He also pointed out that the curtailment issue could be addressed in a more informed manner as changes to the balancing market progress.</p> <p>Mr Jackson indicated <u>that he is interested</u> to see estimates of the costs that would be allocated to wind generators under one or more scenarios.</p> <p>Mr Dykstra indicated that there would be value in seeing how the cost allocation would work to assess the impact on the financial viability of intermittent generators.</p> <p>Mr Carr indicated that Scenario 2 was the worst-case cost.</p> <p>Mr Dykstra asked if it is reasonable to linearly scale the method 1 values to compare the other scenarios in method 2. The Chair agreed to ask ROAM this question.</p>	<p>Deleted: Working Group feels that the</p> <p>Deleted: his keenness</p>

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	<p><i>Action:</i></p> <ul style="list-style-type: none"> IMO to ask ROAM whether the costs for the other scenarios under the dispatch-modelling method could reasonably be estimated by scaling the Scenario 2 costs according to the results from the market-based method. <p>The Chair indicated that Scenario 2 is not only the worst case penetration, but also includes provision of Load Following by <u>only Verve plant, which may be a less efficient mix overall</u>. Thus this doesn't account for efficient market cost. <u>It would be a substantial volume of work to conduct this analysis.</u></p> <p>Mr Dykstra indicated that this analysis may be of value to Market Rules Design Team.</p> <p>The Chair explained that ROAM has already suggested a basic allocation principle and that the Working Group could ask ROAM to develop rule changes and explanations, plus evaluate these for robustness. The Group is not tasked to quantify the cost savings from a more efficient market mechanism result, but instead needs to take this back to MAC and offer to continue the work to that point or hand it over to another group.</p> <p>Mr Fairclough believes ROAM's methodology suggested changes to way that the Load Following requirement was determined. The Chair said that this would be a question for ROAM and asked whether System Management could follow this up, which Mr Fairclough agreed.</p> <p><i>Action:</i></p> <ul style="list-style-type: none"> System Management to ask ROAM for further advice on determining the Load Following requirement. 	<p>IMO</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> Deleted: Mr McCullough </div> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> Deleted: less SRMC-efficient Verve plant </div> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> Deleted: , </div> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> Deleted: but is </div>
8.	GENERAL BUSINESS None	
9.	NEXT MEETING The next meetings are scheduled for: <ul style="list-style-type: none"> Thursday 22 July 2010 Thursday 26 August 2010 Thursday 23 September 2010 These will all be in the Perth Convention and Exhibition Centre.	
CLOSED The Chair declared the meeting closed at 4.06 pm.		