Discussion Paper:

Annual Wholesale Electricity Market Report to the Minister for Energy

25 October 2011

Economic Regulation Authority
WESTERN AUSTRALIA

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1 Introduction

The purpose of this Discussion Paper is to assist interested parties in making submissions on any strategic, policy or otherwise high-level issues, including those raised in this Discussion Paper, that are impacting on the effectiveness of Western Australia's Wholesale Electricity Market (**WEM**)[1] in meeting the Wholesale Market Objectives (**Market Objectives**).

Submissions on this Discussion Paper close at 4:00pm (WST) on Wednesday, 23 November 2011. See Section 1.5 for further information on how to make a submission.

The *Wholesale Electricity Market Rules* (**Market Rules**)[2] require that the Economic Regulation Authority (**Authority**) report to the Western Australian Minister for Energy (**Minister**), at least annually,[3] on the effectiveness of the WEM in meeting the Market Objectives. The Authority provided its last Report (2010) to the Minister in May 2011 and released a public version of that Report in August 2011.[4] A summary of the findings and recommendation of the 2010 Minister's Report is provided in Section 1.3.

Submissions from interested parties on issues impacting the effectiveness of the WEM will assist the Authority in preparing its 2011 Minister's Report.

After considering submissions received in response to this Discussion Paper, and analysis of available WEM data, the Authority will provide its 2011 Minister's Report to the Minister. A public version of the report will be published on the Authority's website after consultation with the Minister.

1.1 The Wholesale Market Objectives

The Market Rules require that the Authority provide a report to the Minister for Energy on the effectiveness of the WEM in meeting the Market Objectives. The Market Objectives are:

- to promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West Interconnected System (**SWIS**);[5]
- to encourage competition among generators and retailers in the SWIS, including by facilitating efficient entry of new competitors;

[1] The WEM operates in the South West Interconnected System (SWIS).

[2] See State Law Publisher website, Electricity Industry Act 2004, Electricity Industry (Wholesale Electricity Market) Regulations, Wholesale Electricity Market Amending Rules (September 2006).

[3] Pursuant to Clause 2.16.11 of the Market Rules, the report must be produced at least annually, or more frequently where the Authority considers that the WEM is not effectively meeting its Objectives.

[4] Pursuant to Clause 2.16.15 of the Market Rules, the Authority must, after consultation with the Minister, publish a version of the report that has confidential and sensitive data aggregated or removed.

[5] The SWIS is defined in the *Electricity Industry Act 2004* and refers to the interconnected transmission and distribution systems located in the South West of the State, extending between Kalbarri, Albany and Kalgoorlie. See State Law Publisher website, Electricity Industry Act 2004.

- 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;
- to minimise the long-term cost of electricity supplied to customers from the SWIS; and
- to encourage the taking of measures to manage the amount of electricity used and when it is used.

1.2 Reporting requirements

Clause 2.16.12 of the Market Rules specifically requires that a Minister's Report includes the following information:

- a summary of the information and data compiled by the Independent Market Operator (**IMO**) and the Authority under clause 2.16.1;[6]
- the Authority's assessment of the effectiveness of the market, including the effectiveness of the IMO and System Management in carrying out their functions, with discussion of each of:
  - the Reserve Capacity market;
  - the market for bilateral contracts for capacity and energy;
  - the Short Term Energy Market (**STEM**);
  - Balancing;
  - the dispatch process;
  - planning processes; and
  - the administration of the market, including the Market Rule change process;
- an assessment of any specific events, behaviour or matters that impacted on the effectiveness of the market; and
- any recommended measures to increase the effectiveness of the market in meeting the Market Objectives to be considered by the Minister.

1.3 Summary of the 2010 Minister's Report

In the 2010 Minister's Report, the Authority concluded that the electricity market in the South West of Western Australia is at a cross-road.

The Authority concluded that the market had been adequate for its purpose and relatively successful. Over the previous five years, a number of new entrants became established in the market, and the Authority observed increased trade volumes in the STEM and greater bilateral contracting activities between Market Participants other than Verve Energy and Synergy.

However, the Authority noted there remained issues that are limiting the progression to a more competitive electricity market. The market remained dominated by Verve Energy

[6] Clause 2.16.1 of the Market Rules requires the IMO to collect and analyse the data identified in the Market Data Surveillance Catalogue (**MSDC**). More detail on the MSDC is set out in Section 5 of the 2010 Minister's Report.

and Synergy, with Verve Energy's market share at around 60 per cent and Synergy's market share (in terms of energy sold) remaining steady at around 80 per cent. The Authority commented on a number of specific factors limiting the progression to a more competitive electricity market.

- The Replacement Vesting Contract between Synergy and Verve Energy. The Authority concluded that this contract lacks the pro-competitive features included in the original Vesting Contract, in particular the Displacement Mechanism and the associated information provision by Synergy to the market.
- Structural barriers to effective retail competition. In particular, the Authority concluded that the absence of a clear framework for increasing retail competition, which includes cost-reflective retail tariffs and the introduction of full retail contestability, limits the prospect of entry and expansion of new retailers.
- A lack of clarity about the State Government's policy intentions and timeframe for increasing competition, particularly in the electricity retail sector. The Authority concluded that the State Government needs to signal to the market its commitment to promoting competition in the market. Otherwise, market confidence could be undermined, which will put timely private sector investment at risk.

The Authority highlighted some significant cost pressures affecting the market, including the following matters.

- Incentives for renewable energy. The Authority noted that there are significant incentives for investment in renewable energy in Western Australia, including the Large-Scale Renewable Energy Target, the feed-in tariff introduced by the State Government and the treatment of wind generation in the WEM.
- The unconstrained network access framework. The Authority noted this approach allows connected generators to have full access to the network, but in doing so is likely to require significant augmentation to the network.

The Authority concluded that the resulting costs may be inefficient. Reflecting this, the Authority recommended that renewable generators be provided with additional information regarding the methodology for determining their allocation of Capacity Credits and recommended a full review of the costs, benefits and possible implementation issues relating to a move to a constrained network access framework.

Finally, the Authority noted that the market is undergoing accelerated development, led by the IMO. The Authority noted that it supports the work-streams underway, including:

- the design framework for introducing competitors to Verve Energy in the provision of Balancing and Ancillary Services, as long as it can be demonstrated that the benefits will exceed the costs;
- the proposed capacity valuation method for assigning Capacity Credits to wind generation that better reflects its contribution at times of peak demand; and
- the review of the Reserve Capacity Mechanism (**RCM**) of the market, including consideration of whether the mechanism is efficient in delivering the optimal mix of generation and Demand Side Management (**DSM**) capacity.

The Authority noted that it supports the IMO, on the advice of the Market Advisory Committee (**MAC**), taking the lead on specific projects that will improve the efficiency of the market. However, the Authority concluded that the challenges facing the market (i.e. the lack of policy direction, the cost pressures arising from renewable energy incentives

and the move to a constrained network) are too substantive to be left to the IMO alone, and that the Office of Energy should be funded to take the lead on this work.

1.4 Focus for the 2011 Minister's Report

There has been a shorter period than usual between the release of the previous Minister's Report and the commencement of public consultation for this Minister's Report. The Authority provided the 2010 Minister's Report to the Minister in May 2011 and the public version of the Report was published in August 2011.

As a result of the short timeframe between the release of 2010 Minister's Report and the release of this Discussion Paper for the 2011 Minister's Report, stakeholders have had less time than usual to consider the analysis and the recommendations set out in the 2010 Minister's Report and to consider the extent to which emerging issues in the market have been addressed in the previous 2010 Minister's Report. For this reason, the Authority considers that it is worthwhile in this Discussion Paper to highlight specific issues that have been subject to ongoing development since the Authority undertook consultation for, and prepared, the previous Minister's Report. The Authority is particularly interested in stakeholders' views on the following issues:

- the possible re-merger of Verve Energy and Synergy;
- the impact of climate change policies;
- the impact of DSM;
- the effectiveness of the outage planning process;
- the effectiveness of the Rule Change process; and
- the market for bilateral contracts and their influences on market outcomes.

Beyond these specific issues, the Authority also invites comments on any other strategic, policy or high-level issues that are impacting on the effectiveness of the WEM in meeting the Market Objectives.

1.5 How to make a submission

Submissions on matters raised in this Discussion Paper or on issues that are impacting on the effectiveness of the WEM in meeting the Market Objectives should be marked to the attention of Assistant Director Markets.

Postal address: PO Box 8469, PERTH BC WA 6849
Office address: Level 6, 197 St Georges Terrace, PERTH WA 6000
Email address: publicsubmissions@erawa.com.au

Submissions must be received by **4:00 pm (WST)** on **Wednesday, 25 November 2011**.

Confidentiality

Submissions made to the Authority will be treated as in the public domain and placed on the Authority's website unless confidentiality is claimed. The submission or parts of the submission in relation to which confidentiality is claimed should be clearly marked. Any claim of confidentiality will be dealt with in the same way as is provided for in section 55 of the *Economic Regulation Authority Act 2003*.

The receipt and publication of a submission shall not be taken as indicating that the Authority has knowledge either actual or constructive of the contents of a particular submission and, in particular, where the submission in whole or part contains information of a confidential nature and no duty of confidence will arise for the Authority in these circumstances.

Further information regarding this Discussion Paper can be obtained from:

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2 Outcomes in the Wholesale Electricity Market

The WEM consists of two key components: a capacity market in which providers of capacity are paid for the capacity that they make available, and a wholesale energy market in which electricity market generators and market customers interact to supply and purchase electricity.

This section provides a brief overview of outcomes in the WEM from market commencement in September 2006 to the end of July 2011, including a review of outcomes in both the capacity market and the energy market.

2.1 The capacity market

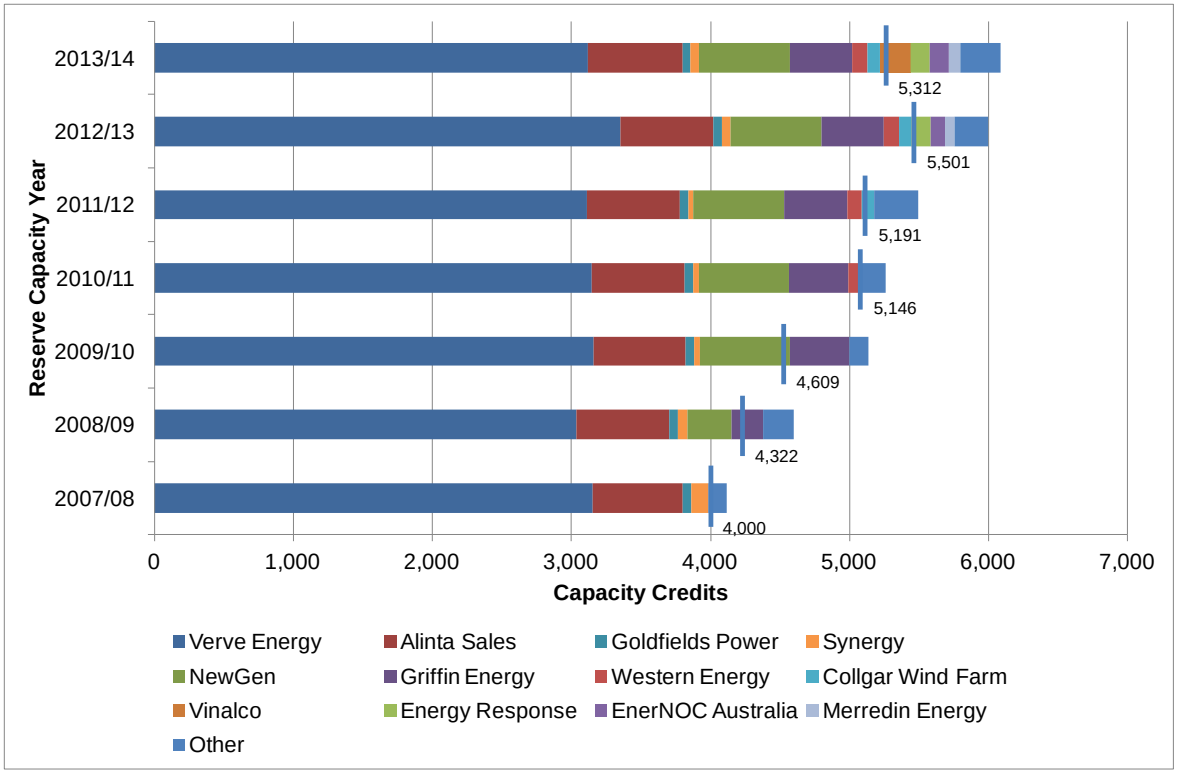
The RCM has so far successfully secured sufficient capacity for each Capacity Year[7] up to 2013/14. Indeed, each year since the commencement of the RCM there has been an excess of Capacity Credits assigned to participants.

Figure 1 provides a summary of the Capacity Credits assigned to participants in each Capacity Year, as well as the Reserve Capacity Requirement (**RCR**) for that year (shown as the vertical blue line for each Capacity Year). It is clear from Figure 1 that in each Capacity Year the number of Capacity Credits assigned to participants (in aggregate) has exceeded the RCR. The excess of Capacity Credits assigned to participants has ranged from a low of 2.2 per cent (in the 2010/11 Capacity Year) to a high of 14.6 per cent (in the 2013/14 Capacity Year), with an average in the seven years since the RCM commenced of 7.5 per cent.

Figure 1 also shows that the Capacity Credits assigned to new entrants continue to increase. By 2013/14, Verve Energy is expected to provide approximately 51 per cent of the total SWIS certified capacity, compared to approximately 90 per cent when the WEM commenced.

[7] A Capacity Year is a period of 12 months commencing at the start of the Trading Day on 1 October and ending on the end of the Trading Day ending on 1 October of the following calendar year.

Figure 1: Reserve Capacity Credits assigned



Note: In the figure above, the vertical blue lines with the corresponding value represent the RCR in each Reserve Capacity Year.

The Reserve Capacity Prices over the period to the 2013/14 Capacity Year are set out in Table 1. Table 1 shows that there has been a significant increase in both the Maximum Reserve Capacity Price and the Reserve Capacity Price over the last two years.

Based on the Reserve Capacity Prices set out in Table 1, and the total Capacity Credits in each Capacity Year set out in Figure 1, the implied value of Capacity Credits each Capacity Year is also set out in Table 1, noting that the actual value of Capacity Credits settled under bilateral contracts is determined by the prices agreed under the terms and conditions in bilateral contracts.

Table 1: Reserve Capacity Prices

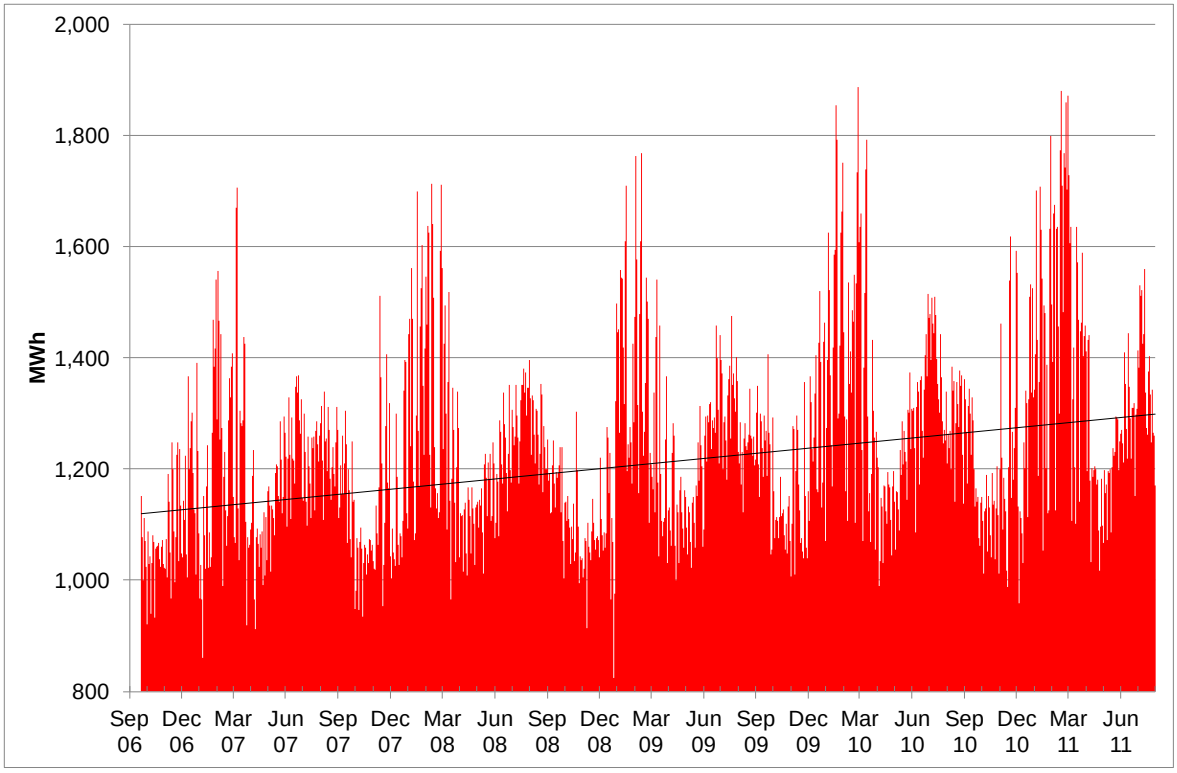
Period	Reserve Capacity Price (per MW per year)	Maximum Reserve Capacity Price (per MW per year)	Implied value* of Capacity Credits (per year)
21/09/06 to 01/10/06	$127,500	$150,000	
01/10/06 to 01/10/07	$127,500	$150,000	$477m
01/10/07 to 01/10/08	$127,500	$150,000	$525m
01/10/08 to 01/10/09	$97,835	$122,500	$450m
01/10/09 to 01/10/10	$108,459	$142,200	$557m
01/10/10 to 01/10/11	$144,235	$173,400	$758m
01/10/11 to 01/10/12	$131,805	$164,100	$724m
01/10/12 to 01/10/13	$186,001	$238,500	$1,115m
01/10/13 to 01/10/14	$178,477	$240,600	$1,086m

** Note: The actual value of Capacity Credits settled under bilateral contracts is determined by the prices set in bilateral contracts.*

2.2 The energy market

Figure 2 illustrates daily maximum SWIS demand (measured in MWh per Trading Interval) from market commencement (on 21 September 2006) to 31 July 2011, and a linear trend over that period. Peak demand days regularly occur in January, February and March. As shown in Figure 2, there has been a consistent trend towards higher daily SWIS maximum demand since market commencement.

Figure 2: Daily maximum demand



2.2.1 The Short Term Energy Market

Figure 3 and Figure 4 illustrate, respectively, the daily average peak and off peak STEM Clearing Prices from market commencement to 31 July 2011, as well as 30-day, 90-day and annual moving averages of these prices.

Following a period of high prices immediately after market commencement, STEM Clearing Prices were relatively stable in 2007 and in 2008, prior to the Varanus Island incident in June 2008.[8] Following the incident and the subsequent curtailment of gas supplies, prices increased significantly, peaking at a daily average in excess of $400/MWh during Peak Trading Intervals and a daily average of close to $200/MWh during Off-Peak Trading Intervals. Prices have trended down since that time, with average prices since the commencement of the 2008/09 Capacity Year (in October 2008) of approximately $50/MWh during Peak Trading Intervals and approximately $27/MWh during Off-Peak Trading Intervals.

However, significantly higher average daily prices were observed during a number of days in late February and early March 2011, and again in late June and early July 2011. The higher average daily prices in late February and early March 2011 coincided with the shut-down of production at Varanus Island due to the effects of Cyclone Carlos. This gas supply disruption affected generation in the SWIS and led to the declaration of a High Risk Operating State from 23 February 2011 until 1 March 2011. System Management issued a number of Dispatch Instructions and dispatched Curtailable Load during this period.

[8] The incident was caused by the rupture of a corroded pipeline and subsequent explosion at a processing plant on Varanus Island on 3 June 2008. The plant, operated by Apache Energy, which normally supplied a third of the State's gas, was shut down for almost two months while a detailed engineering investigation and major repairs were carried out. Gas supply from the plant partially resumed in late August. By mid-October, gas production was running at two-thirds of normal capacity, with 85 per cent of full output restored by December 2008.

The Authority understands that the higher average daily prices in late June and early July 2011 coincided with a large amount of generation capacity being given approval to take planned outages.

Figure 3: Daily average STEM Clearing Price (Peak Trading Intervals)

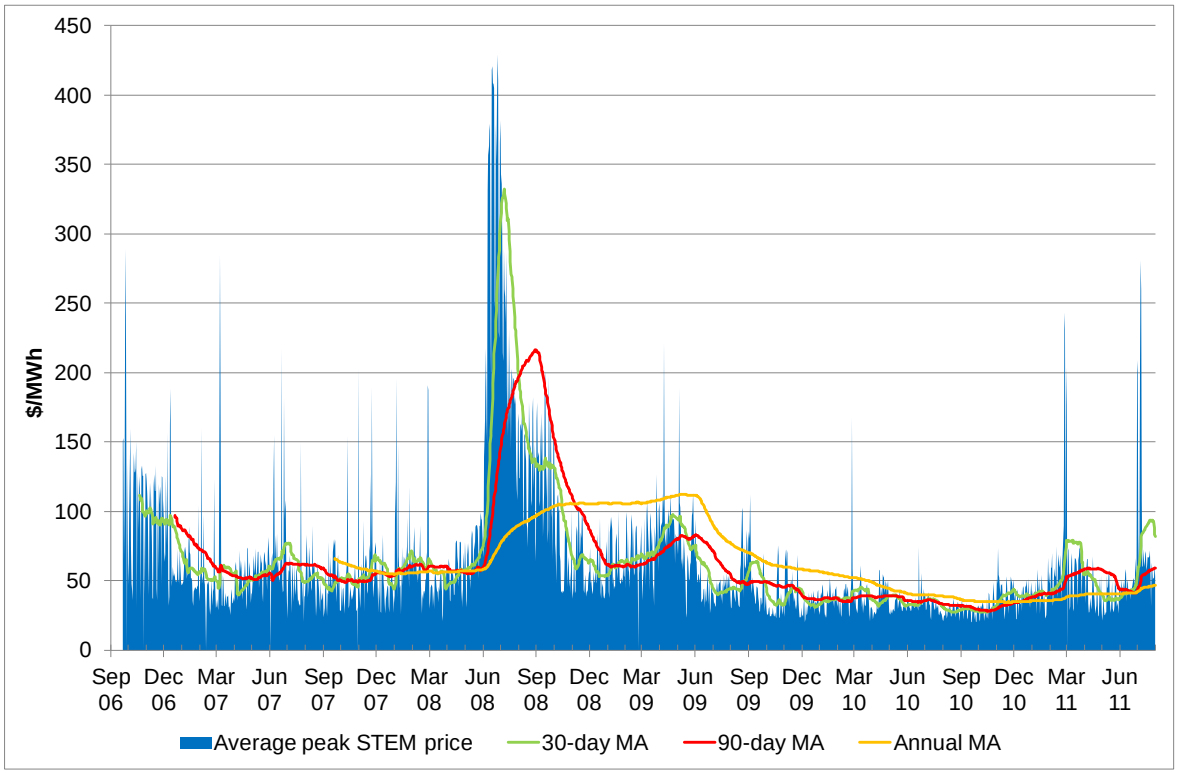


Figure 4: Daily average STEM Clearing Price (Off-Peak Trading Intervals)

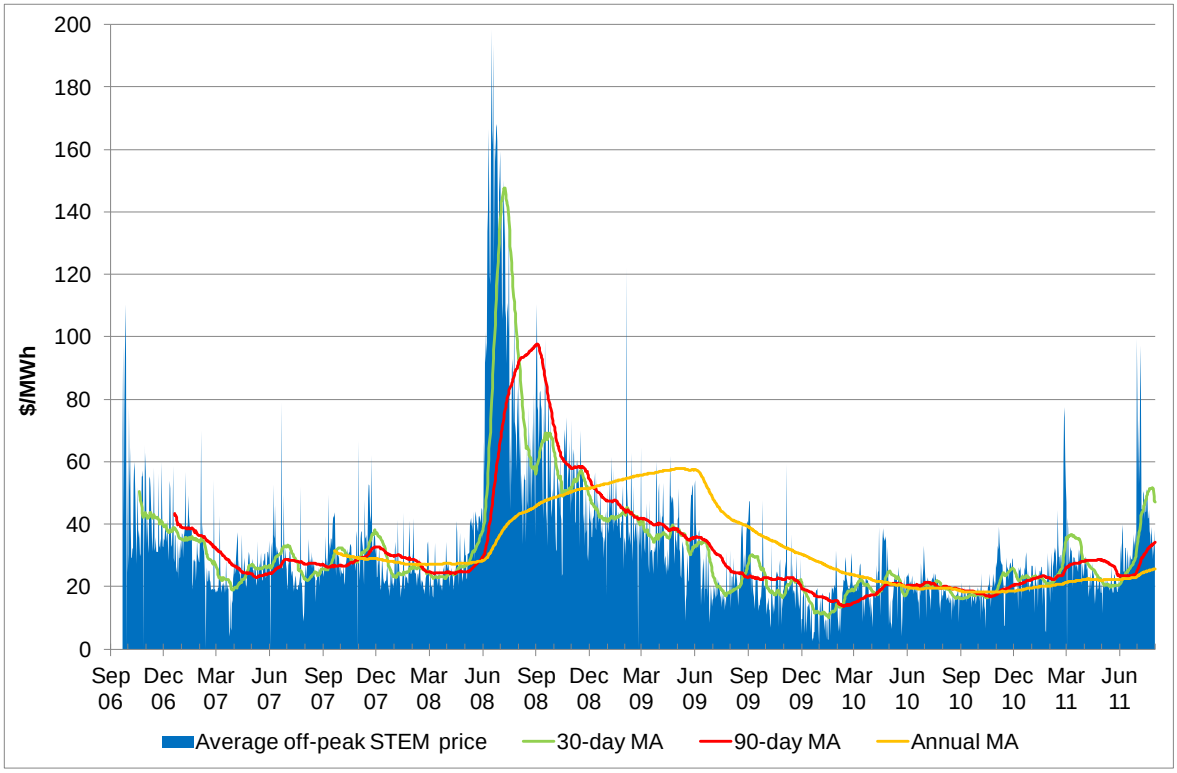
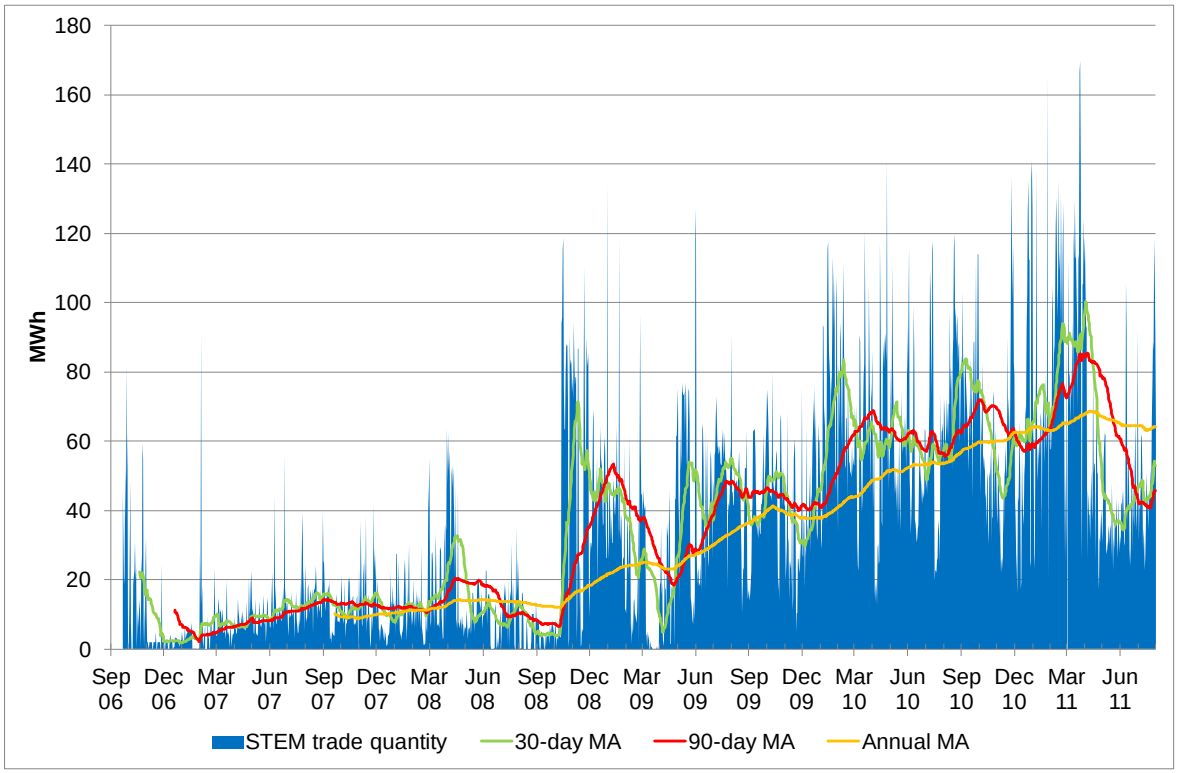


Figure 5 illustrates daily average quantities traded in the STEM from market commencement until 31 July 2011. The historical volume traded in the STEM remained relatively low until the commencement of the 2008/09 Capacity Year (in October 2008). The Authority understands the step change at the commencement of the 2008/09 Capacity Year was largely attributable to the entry of NewGen Kwinana and Griffin Power Bluewaters first unit in that year. Increased STEM trade volume carried on into the 2009/10 and 2010/11 Capacity Years. The average quantity traded in the STEM since October 2008 is approximately 53 MWh per Trading Interval.

Figure 5: Daily average quantities traded in the STEM



2.2.2 Balancing

Figure 6 and Figure 7 illustrate, respectively, the daily average peak and off-peak balancing prices from market commencement to 31 July 2011. The balancing price shown in these figures is the Marginal Cost Administered Price (**MCAP**).

Balancing prices have followed the same general pattern as STEM prices. Following a period of high prices immediately after market commencement, both peak and off-peak balancing prices were relatively stable in 2007 and the start of 2008, before increasing in the period following the Varanus Island incident in June 2008. Following the 2008 Varanus Island incident and the subsequent curtailment of gas supplies, balancing prices increased significantly in June 2008 and remained at elevated levels for a number of months. Balancing prices returned to lower levels since that time, with average prices at or below those experienced before the 2008 Varanus Island incident.

Figure 6: Daily average Balancing prices (Peak Trading Intervals)

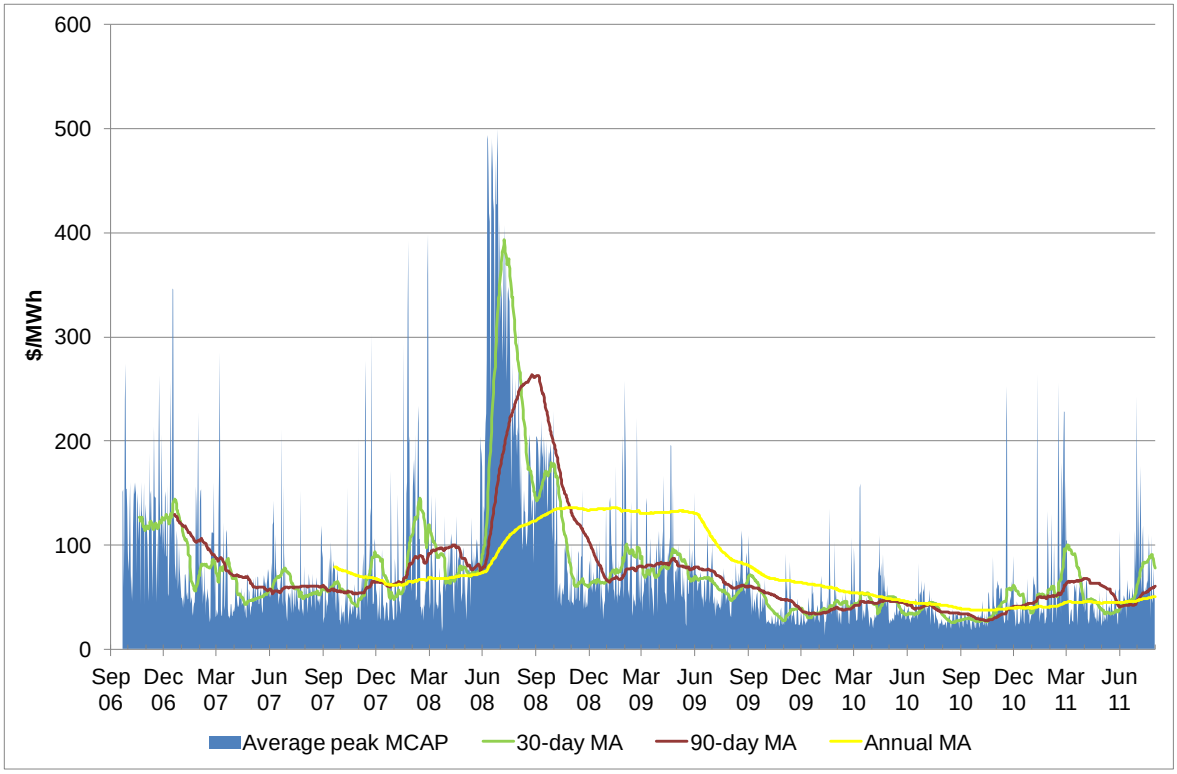


Figure 7: Daily average Balancing prices (Off-Peak Trading Intervals)

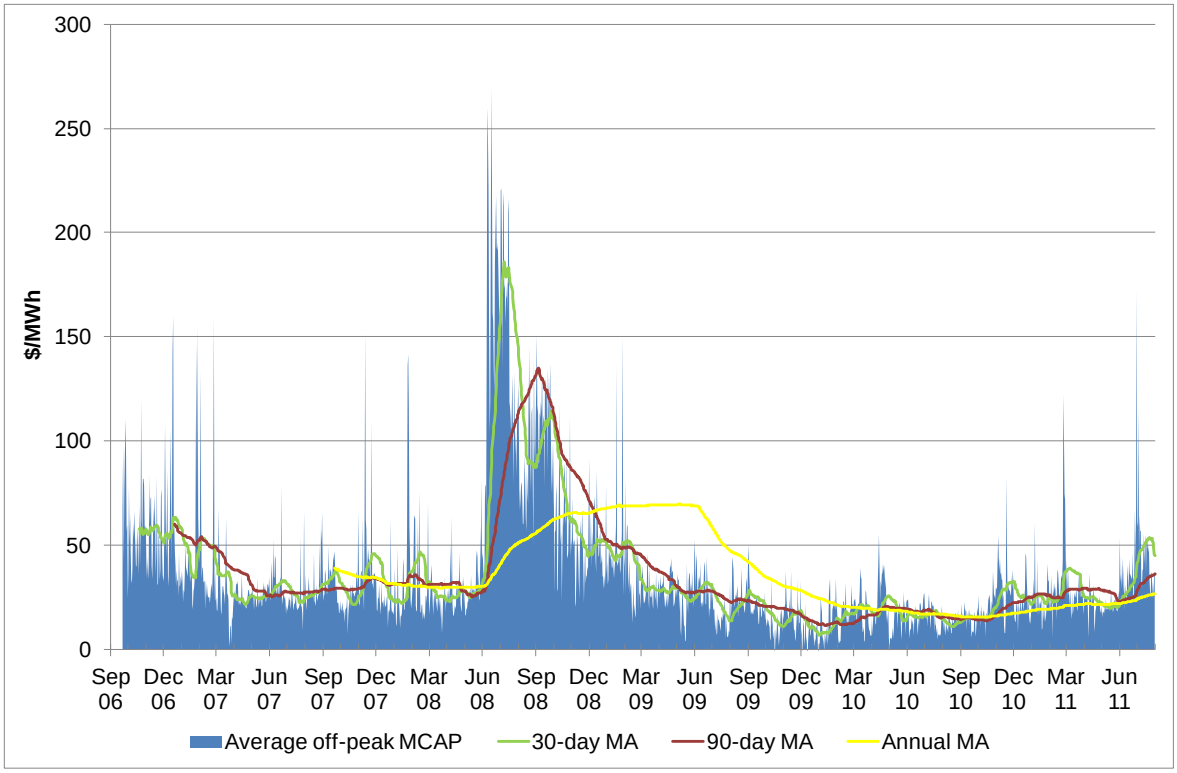
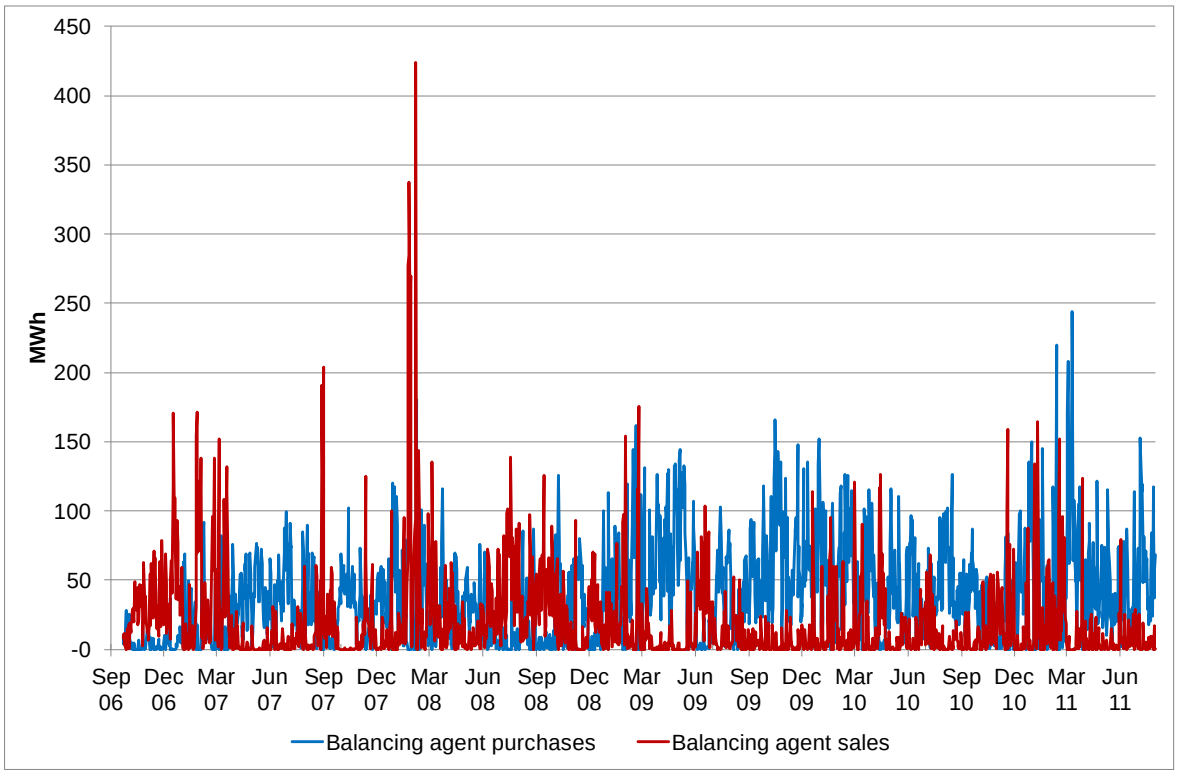


Figure 8 illustrates daily average quantities bought and sold in the Balancing market from market commencement until 31 July 2011. Purchases in the Balancing market have tended to outweigh sales. The average Balancing purchase quantity per Trading Interval is approximately 38 MWh, whilst the average Balancing sales quantity per Trading Interval is approximately 19 MWh. Purchases in the Balancing market have tended to increase between October and April, which likely indicates that Market Customers tend to over-nominate in the energy market relative to demand levels during high demand periods and therefore spill excess energy into the Balancing market (i.e. to be purchased by the Balancing agent).

Figure 8: Daily average quantities traded in Balancing[9]



2.3 The retail market

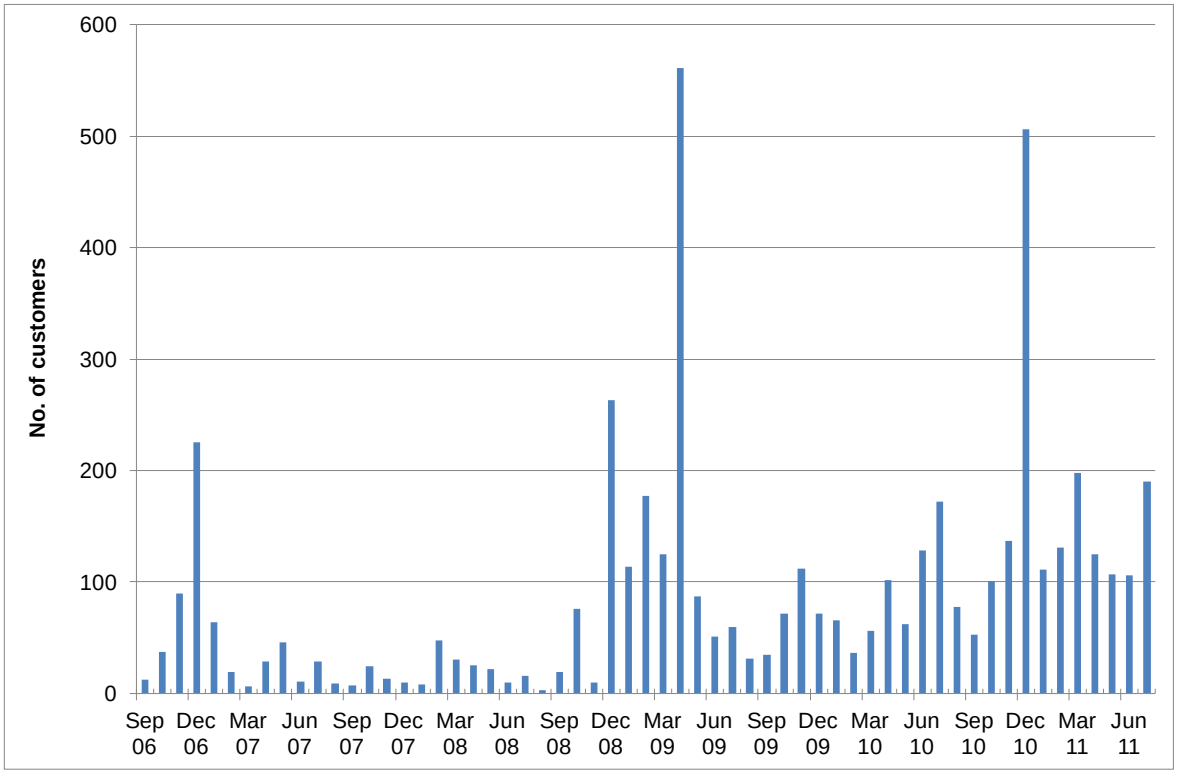
Figure 9 illustrates levels of customer churn[10] in the SWIS since market commencement, and a linear trend over that period. Levels of customer churn spiked in the first few months following market commencement, with 225 customers churning in December 2006. Churn rates then moderated and remained relatively low throughout 2007 and the majority of 2008. Average monthly churn rates have steadily increased since December 2008, which likely reflects the Government's decision to increase tariffs since 2009. Churn rates spiked in April 2009 (561 customers) and again in December 2010 (506 customers). The number of customers changing retailers each month (which has typically been between 100 and 200 customers over recent months)

[9] Data sourced from the IMO website: 'Balancing Quantity (MWh)' for the period 21 September 2006 – 30 March 2011 from the *Balancing Information - 6 Month Summary* webpage http://imowa.com.au/n4841.html; and 'Balancing Trade Estimate' for the period 31 March 2011 – 31 July 2011 from the *Weekly Market Report* webpage http://imowa.com.au/market-data-weekly-market-report

[10] Customer churn is measured by the number of National Meter Identifiers (NMIs) transferred between retailers.

remains relatively small compared to the total number of contestable electricity customers, which was approximately 52,000 as of 30 June 2010.[11]

Figure 9: Number of customers changing retailer (customers per month)



[11] See the ERA website, *2009/10 Annual Performance Report, Electricity Retailers, January 2011*, http://www.erawa.com.au/cproot/9257/2/20110114 2009-10 Annual Performance Report - Electricity Retailers.pdf

3 Key Wholesale Electricity Market matters

3.1 Possible re-merger of Verve Energy and Synergy

3.1.1 Background

The Authority has noted comments made by the State Government recently regarding consideration of a possible re-merger of Verve Energy and Synergy. The Authority, due to its role in monitoring the WEM and reporting annually on the effectiveness of the WEM, is interested in a number of the issues that have been raised in comments made on the possible re-merger of Verve Energy and Synergy. In particular, the Authority considers that a re-merger of Verve Energy and Synergy is likely to have consequences for outcomes in the WEM, and is interested in stakeholder's views on these issues.

3.1.2 Issues

The Premier has recently commented that the Government may consider the reintegration of Verve Energy and Synergy. Following this, the possible re-merger of Verve Energy and Synergy has received further media attention, and a number of issues have been raised.

- It has been pointed out that retail electricity prices have risen since the break-up of Western Power, and commentary implies that a re-merger of Verve Energy and Synergy may reduce upward pressure on prices.
- Comments have been made that the implementation of the Replacement Vesting Contract has resulted in a $1 billion benefit to the State.
- Comments have been made that Verve Energy and Synergy have missed opportunities because they have effectively been in competition with each other.
- Comments have been made that privately-owned generators in the market are being subsidised and that this is occurring while Verve Energy's generators are not operating.

The Authority has commented in a previous Minister's Report that a re-merger of Verve Energy and Synergy would undermine competition by deterring the entry of new generator and retailer participants in the WEM as well as undermining private investment in new generation facilities. Ultimately, Western Australian electricity customers and taxpayers would bear the risks and costs of a shift back to a vertically integrated electricity monopoly.

Given the importance of this issue to the WEM, the Authority is interested in stakeholders' views on the effects of a re-merger of Verve Energy and Synergy on the market. In particular, the Authority is interested in stakeholders' views on whether developments in the market since this issue was last considered by the Authority (in its 2009 Minister's Report)[12] suggest that the Authority should reconsider its conclusion that a re-merger of Verve Energy and Synergy would undermine competition and impose costs and risks on customers.

[12] See ERA website, *2009 Annual Wholesale Electricity Market Report for the Minister for Energy*, p.113, http://www.erawa.com.au/cproot/8481/2/20100420 2009 Annual WEM Report to the Minister for Energy - Public Version.pdf

What is the likely impact of a possible re-merger of Verve Energy and Synergy on the Wholesale Electricity Market?

3.2 Impact of climate change policies

3.2.1 Background

In the 2010 Minister's Report the Authority reviewed the existing Commonwealth and State Government climate change policies and concluded that renewable energy incentive schemes will be a major driver of higher electricity prices in Western Australia and impose significant additional costs on consumers. The Authority also concluded that the renewable energy incentive schemes are an expensive and economically inefficient means to achieve the policy objective of greenhouse gas abatement.

Since the release of the 2010 Minister's Report, the Authority notes that one of these renewable energy incentive schemes – the State Government feed-in tariff – has been suspended. The residential net feed-in tariff scheme was suspended on 1 August 2011, after exceeding the scheme's capacity cap of 150 MW.

Also since the release of the 2010 Minister's Report, the Authority has been asked by the Treasurer to undertake an inquiry into the efficiency of Synergy's costs and electricity tariffs. The Terms of Reference require the Authority to consider and develop findings on, among other things, the efficiency of Synergy's procurement of renewable energy certificates.

3.2.2 Issue

As discussed in Section 3.1, there is ongoing commentary on the trend towards higher retail electricity tariffs since the disaggregation of Western Power and the commencement of the WEM. The Authority's view is that a significant factor causing an increase in the cost of supplying electricity to retail customers is the impact of climate change policies. The Authority will undertake a detailed investigation of the impact of climate change policies on retail electricity prices as part of its inquiry into the efficiency of Synergy's costs and electricity tariffs.

More generally, the Authority is interested in whether the design of the WEM provides the most efficient outcomes with meeting the climate change policies. While the Authority has previously concluded that the WEM has been adequate for its purpose and relatively successful, the Authority is mindful that climate change policies are likely to result in substantial changes to electricity markets throughout Australia. For the purpose of the 2011 Minister's Report, the Authority is interested in whether the WEM will remain effective as these changes occur. In particular, the Authority is interested in stakeholder views on whether the current design of the WEM is consistent with meeting climate change policies in an efficient manner.

Does the design of the Wholesale Electricity Market provide the most efficient outcomes with meeting climate change policies?

3.3 Impact of Demand Side Management capacity

3.3.1 Background

The RCM was designed to promote investment in sufficient capacity to meet demand in the SWIS. The RCM operates on a two-year-ahead cycle, providing an opportunity for those who provide capacity to the market (including generators and DSM providers) to certify capacity, and creating a market for the resulting Capacity Credits. In effect, this allows generators and DSM providers to receive a payment for providing capacity to the market. In return for receiving capacity payments, generators must offer their capacity into the WEM at all times (unless withdrawing capacity from the market is approved).

The overall capacity required for each Capacity Year, the Reserve Capacity Target, is set by the IMO so as to be sufficient to meet the forecast annual peak demand.[13] Currently there is no limit on the amount of capacity that the IMO can certify for each Capacity Year. As discussed in Section 2.1, in each Capacity Year since the commencement of the RCM, there has been an excess of Capacity Credits provided to the market, with the excess averaging 7.47 per cent.

A DSM provider typically provides certified capacity by signing up a number of Curtailable Loads (industrial and commercial customers) and presenting these Curtailable Loads for capacity certification under the RCM. Since the commencement of the RCM, there has been a rapid increase in Capacity Credits provided by DSM providers. Table 2 shows the total Capacity Credits provided by DSM providers in each Capacity Year since the commencement of the RCM. Table 2 also shows the proportion of total Capacity Credits in the market accounted for by DSM providers, and the implied value of the Capacity Credits provided by DSM providers (based on Reserve Capacity Price (**RCP**)).[14]

[13] The IMO is required to set the Reserve Capacity Target at a level that ensures that the Planning Criterion is met. The Planning Criterion include an element related to peak demand (the Reserve Capacity Target must be sufficient to meet peak demand plus a reserve margin equal to the greater of 8.2 per cent and the capacity of the largest generating unit) and an element related to annual energy (the Reserve Capacity Target must be sufficient to limit expected energy shortfalls to 0.002 per cent of annual energy consumption).

[14] Note that the actual value of Capacity Credits is determined by the prices paid for Capacity Credits under bilateral contracts.

Table 2: Capacity Credits from Demand Side Management providers

Period	Capacity Credits provided by DSM	Proportion of total Capacity Credits provided by DSM	Implied value* of Capacity Credits provided by DSM (per year)
21/09/06 to 01/10/06	111	3.14%	
01/10/06 to 01/10/07	111	2.96%	$14m
01/10/07 to 01/10/08	131	3.18%	$17m
01/10/08 to 01/10/09	128	2.78%	$13m
01/10/09 to 01/10/10	99	1.92%	$11m
01/10/10 to 01/10/11	154	2.92%	$22m
01/10/11 to 01/10/12	260	4.73%	$34m
01/10/12 to 01/10/13	454	7.58%	$85m
01/10/13 to 01/10/14	500	8.21%	$89m

** Note: The actual value of Capacity Credits is determined by the prices paid for Capacity Credits under bilateral contracts.*

3.3.2 Issue

Given the significant increase in Capacity Credits provided by DSM providers, and the ongoing excess of Capacity Credits in the market, the Authority is interested in stakeholder views on the extent to which the treatment of DSM under the Market Rules is consistent with the Market Objectives.

In considering the extent to which the treatment of DSM under the Market Rules is consistent with the Market Objectives, the Authority is particularly interested in two related issues:

- the payments received by DSM providers under the RCM and how these payments relate to payments to generation plant; and
- the implications for power system reliability as DSM accounts for a larger proportion of total capacity in the market.

The Maximum Reserve Capacity Price (**MRCP**) is determined based on the expected cost of new entrant peaking plant. The MRCP sets the price ceiling for the RCP which is the price paid by the IMO for Capacity Credits not traded bilaterally between participants and is applicable to both generators and DSM providers. Where generators or DSM providers do not meet their obligation to make capacity available to the market, they may be subject to making refund payments. For scheduled generators, capacity must be available for every hour of the year, except for planned outages. In contrast, DSM is only required to be available for short periods over the year, with all DSM in the WEM currently nominating into the 24 hour availability class.[15]

[15] The Market Rules includes the concept of Availability Classes. This approach recognises the value of DSM, but ensures that the time limitations of DSM are properly considered when assessing system reliability. There are three Availability Classes applicable to DSM: 24-48 hours every year, 48-72 hours every year and 72-96 hours every year.

There has been a recent rule change affecting refund payments by DSM providers. Rule Change RC_2010_29, to take effect from 1 October 2011, has resulted in changes to the Market Rules so that DSM providers are liable to pay refunds (for the amount by which the DSM provider falls short of its capacity requirements) if at any time the required DSM is not provided, including times where a facility is on a Forced Outage. In its Final Rule Change Report, the IMO concluded that for the RCM to operate effectively, it is essential that there are correct incentives to DSM providers to be fully available during contract times, and that the requirement for a DSM provider to make refunds at any time when it would not be able to deliver its certified level of capacity reductions will better reflect the incentive structure the RCM was intended to provide.

Regarding implications for reliability, the Authority has previously noted that while DSM is typically a less 'firm' or reliable resource than generation plant, if reliability can be satisfactorily demonstrated on an ongoing basis, then DSM providers should be entitled to the equivalent capacity payments (per MW) as generators. However, the Authority notes that historically a large amount of DSM capacity has only been dispatched on limited occasions. This has typically occurred when there have been 'extreme' events, such as the High Risk Operating State during the temporary closure of the Varanus Island gas plant in February 2011. While DSM can be an efficient solution for managing peak demand, the lack of past experience in dispatching many of the new DSM sites means that it is not yet possible to assess their effectiveness.

There are potential risk implications for the reliability of a power system when the penetration of DSM increases. System Management has noted that, because of the restricted nature of DSM, the penetration of DSM in the SWIS leads to a heightened risk to system security, other things being equal.[16] In particular, System Management noted that the reserve margin needs to be maintained throughout the year while generation plant are on outages; because DSM is only available for a short period each year, DSM is not suitable for covering the reserve margin on a regular basis.[17] This highlights the importance of specifying the minimum generation capacity required in the system. System Management also highlighted that no other power system would permit a level of DSM penetration of greater than 10 per cent. For example, in the PJM Interconnection,[18] there is an allowed maximum DSM penetration of 7 per cent.[19]

The Authority also notes that the treatment of DSM is being considered in the IMO's current review of the RCM.[20] The IMO has engaged consultants – The Lantau Group – to work on this review of the RCM, and they reported to the IMO in September 2011. In regard to DSM, the Lantau Group recommended that the treatment of demand-side and supply-side resources in the RCM should be harmonised. According to the Lantau Group, this refinement could take a number of forms, including requiring all DSM to be available all hours of the year (like generators) or eliminating the 24 and 48 hour availability classes so that DSM would need to join a higher availability class. The Lantau Group also recommended that operational impediments to the dispatch of DSM (such as notice periods and limitations on consecutive hours of DSM) should be eliminated to the extent possible.

[16] http://www.imowa.com.au/f4134,1266353/Combined_MAC_Papers_Meeting_39.pdf

[17] http://www.imowa.com.au/f4134,1266353/Combined_MAC_Papers_Meeting_39.pdf

[18] PJM Interconnection is a regional transmission organisation that coordinates the movement of wholesale electricity in all or parts of 13 US states and the District of Columbia.

[19] http://www.imowa.com.au/f4134,1266353/Combined_MAC_Papers_Meeting_39.pdf

[20] Chairman IMO, http://www.imowa.com.au/f4134,1266353/Combined_MAC_Papers_Meeting_39.pdf. Note that the IMO has engaged an economic consultant to assist in reviewing the RCM. The consultant's report was presented to the IMO in September 2011.

The Authority seeks to assess whether the increase in Capacity Credits provided by DSM providers (and the costs associated with these Capacity Credits) represents an efficient outcome for the market, including an efficient level and mix of generation/DSM capacity. To assist the Authority in its assessment, the Authority seeks stakeholder views on the treatment of DSM under the Market Rules, the increase in DSM capacity provided under the RCM and the impact of this on the market and system operations.

What impact does Demand Side Management have on the achievement of the efficiency, reliability and security objectives of the Wholesale Electricity Market?

3.4 The effectiveness of the current outage planning process and practices by System Management

3.4.1 Background

Under the RCM, system reliability and security is premised on all generators and DSM providers that have provided Capacity Credits to the market being able to deliver their capacity during peak periods. Market Generators are required to offer their capacity into the market at all times, unless undergoing scheduled maintenance on a Planned Outage. Given this, the outage approval process, and the extent and timing of Planned Outages, play a major role in setting the level of available capacity in the system and, ultimately, in determining outcomes in the market.

3.4.2 Issues

The Authority considers that there are a number of important issues relating to the current outage planning process.

First, the Authority considers that the transparency and dissemination of information around outages and the overall outage planning process has a role to play in promoting the Market Objectives. While applications for Scheduled Outages are often accepted months in advance by System Management, approval is more often granted close to the commencement date.[21] System Management is obliged to maintain an outage schedule,[22] containing information on all Scheduled Outages (outages that are accepted by System Management but not yet approved). However, this information is not available to all Rule Participants.[23]

The issue of transparency around the outage planning process was raised in the 2010 Minister's Report. In that report the Authority noted that the IMO is required to undertake a 5 Year Outage Planning Review (as required under Clause 3.18.18 of the

[21] http://www.imowa.com.au/f247,37203/RC_2009_05_Rule_Change_Proposal.pdf

[22] Clause 3.18.4 of the Market Rules.

[23] The information on Scheduled Outages is provided to Western Power so they can better coordinate network maintenance with Planned Outages.

Market Rules), and concluded that the Authority will comment on the outcome of this review in the 2011 Minister's Report. The IMO engaged an independent consultant – PA Consulting – to review the outage planning process. PA Consulting's final report was released by the IMO in October 2011.[24] PA Consulting's final report concluded that the outage planning process is generally functioning well and that no wholesale changes are required. However, PA Consulting did recommend some fine-tuning of the process, including that:

- System Management make clear how fuel composition is taken into account in its considerations in the outage approval process;
- improvements be made to the management of the interface between generation and network outages;
- amendments be made to the timelines for outage approvals so that there is greater certainty for longer term outages and improved coordination with the market timelines; and
- a greater emphasis be placed on the disclosure of information on planned outages.

In regard to information on planned outages, PA Consulting recommended that the IMO should develop changes to the Market Rules to establish System Management's obligations with respect to the disclosure of information on Planned Outages and that System Management should develop protocols that set out how these obligations would be discharged.

Second, the Authority has observed that Market Generators are making greater use of the scheduled maintenance mechanism. Over the 2007/08 to 2009/10 Capacity Years, there has been a significant decrease in the average Forced Outage rate across the entire generation fleet (from 3.3 per cent to 1 per cent), and an increase in the average Planned Outage rate across the entire generation fleet (from 8.5 per cent to 12.5 per cent).[25] Planned Outages can have an effect on reliability of the system as well as STEM and balancing prices. The Authority has observed that a number of price spikes have coincided with some Planned Outages. The Secretariat's analysis of these events has raised concerns about the number of outage hours granted to certain generation facilities, particularly during high demand periods.

The Authority seeks to assess whether the current outage planning process is resulting in outcomes that are consistent with the Market Objectives. To assist the Authority in its assessment, the Authority seeks stakeholder views on the current outage planning process, particularly the transparency of the process and whether the capacity refund regime creates incentives for generators to schedule more Planned Outages.

[24] See IMO website, Five Year Outage Planning Review – Final Report, http://www.imowa.com.au/f4540,1608498/Outage_Planning_Review_Final_Report_v4.0.pdf

[25] See ERA website, 2010 Annual Wholesale Electricity Market Report for the Minister for Energy, p.52, http://www.erawa.com.au/cproot/9783/2/20110810 Public Version - 2010 Annual Wholesale Electricity Market Report for the Minister for Energy.pdf

What impact does the outage planning process have on the achievement of the efficiency, reliability and security objectives of the Wholesale Electricity Market?

3.5 Effectiveness of the Rule Change process

3.5.1 Background

Currently, the IMO has a significant role to play in the Rule Change process in the WEM.

Any person, including the IMO, may submit a Rule Change Proposal to the IMO. Once a Rule Change Proposal is received by the IMO, the IMO decides whether to accept the Rule Change Proposal. If accepted, the IMO must publish a notice of the Rule Change Proposal on the Market Web Site and notify members and observers of the MAC as to whether a meeting of the MAC needs to be convened to provide advice on the Rule Change Proposal. The MAC is convened and chaired by the IMO and consists of members that are all Market Participants. Indeed, the MAC constitution does not allow for independent members. The MAC is a non-voting committee that is constituted to advise and make recommendations to the IMO. The IMO can decide to proceed with a Rule Change Proposal without unanimous support by the MAC. After going through the relevant rule change process provided in the Market Rules, the IMO will decide whether to make amending rules arising from the Rule Change Proposal and submit this to the IMO Board for approval. [26] If approved by the IMO Board, the IMO will be responsible for the implementation and administration of the Rule Change.

3.5.2 Issue

The effectiveness of the Rule Change process and its governance structure has been considered by the Authority in previous Minister's Reports. In particular, the Authority has considered the appropriateness of the IMO having a dual role in managing the Rule Change process (including deciding whether to accept Rule Change Proposals) and administering the Market Rules. A number of stakeholders have commented on this issue through previous consultation processes.[27]

In previous Minister's Reports, the Authority's view was that the Rule Change process was working as intended and that given the relatively small size of the WEM and at this stage of market development, it is more practicable for the IMO to have the dual role.

[26] Amendments to Protected Provisions in the Market Rules require approval from the Minister for Energy.

[27] For example, in their submission to the Authority's Discussion Paper for the 2010 Minister's Report, Alinta considered that emerging evidence may indicate that the IMO's multiple roles are now leading to practices in the administration and operation of the WEM that may not be consistent with the Market Objectives. Alinta cited two examples of Rule Change Proposals as indicative of this: one Rule Change Proposal relating to the method for establishing the level of Capacity Credits assigned to intermittent generation and another relating to IMO practices in relation to the registration of Curtailable Loads. In their submission to the Discussion Paper for the 2010 Minister's Report, System Management noted that in many jurisdictions the rule change process is not governed by the same body that is responsible for market operation and administration. System Management noted that this regime evidently provides some benefits, and submitted that consideration should be given to investigation of this model.

More recently, the Authority considers that there are a number of emerging issues that warrant reconsideration of the effectiveness of the Rule Change process.

- As noted in the 2010 Minister's Report, considerable effort has been directed towards considering the next stage in the development of the market, particularly on the part of the IMO and many Rule Participants. This may have implications for the operation of the Rule Change process. In particular, the Authority understands that there are cases in which Rule Change Proposals have been deferred when the issues raised are being addressed by broader market review processes.[28]
- The Authority noted in the 2010 Minister's Report that the workload of the IMO has increased over the past year. In particular, in response to the Verve Energy Review and the Market Rules Evolution Plan, the IMO has established the Market Rules Design Review to evaluate changes to the Market Rules relating to day-ahead planning and real time dispatch in the operation of the STEM, the Balancing market and Ancillary Services. In addition, IMO resources are taken up on a number of MAC working groups. The Authority understands that this workload presents a challenge for the IMO. This may have implications for the operation of the Rule Change process, given that there are a large number of potential Rule Change Proposals which may be submitted over the next 18 months.[29]
- Resourcing issues may be exacerbated by the increasing complexity (including technical complexity) of proposed Rule Changes.
- To the extent that proposed Rule Changes can and do have implications for the IMO, there may be difficulties under the present arrangements for such matters to be transparently and objectively addressed.

Given these issues, the Authority considers that it is timely to consider the IMO's dual role in the Rule Change process, and the Authority seeks to better understand the views of stakeholders on these matters.

How effective is the Rule Change process, and its governance structure, in promoting the efficiency, reliability and security objectives of the Wholesale Electricity Market?

[28] An IMO draft decision on a Market Participant's Rule Change Proposal 2010_09 'Removal of DDAP Uplift when less than Facility minimum generation' was deferred until the Rules Development Implementation Working Group (RDIWG) had arrived at an in principle decision regarding changes to the application of UDAP and DDAP. Ultimately, the work of the RDIWG should result in Rule Change Proposals in relation to this matter.

[29] As at September 2011, there were 17 Rule Change proposals in progress and 80 potential proposals (logged but not formally submitted to the IMO). See IMO web site, MAC Meeting No. 43 Papers, http://www.imowa.com.au/f4873,1594262/Combined_papers_meeting_43.pdf

3.6 The market for Bilateral Contracts and their influences on market outcomes

3.6.1 Background

The majority of electricity sales in the SWIS are undertaken through Bilateral Contracts between Market Participants. Bilateral Contracts cover both energy requirements and capacity requirements.

In the capacity market, the IMO assigns retailers an obligation to surrender a defined number of Capacity Credits, known as the Individual Reserve Capacity Requirement (**IRCR**), based on the retailers' loads associated with peak usage. Retailers can procure Capacity Credits to settle their IRCR through Bilateral Contracts with generators (which may or may not be bundled with energy) or DSM providers. The terms of these Bilateral Contracts, including the price, will almost always remain confidential to the contract counterparties. Retailers can also obtain uncontracted Capacity Credits that are traded via the IMO at an administered price, based on the MRCP for the current year. In this case, the price of Capacity Credits is publicly available (and set by the IMO).

In the energy market, retailers can acquire energy to meet their contract load through Bilateral Contracts with generators (which may or may not be bundled with capacity). The terms of these Bilateral Contracts, including the price, will almost always remain confidential to the contract counterparties. Retailers can also acquire energy through the STEM. The STEM provides Market Participants with the ability to trade energy on a day-ahead basis, including in order to adjust their bilateral positions. The STEM clearing price for each Trading Interval is published by the IMO.

3.6.2 Issues

The Authority considers that there are a number of important issues relating to Bilateral Contracts.

First, in the capacity market, there has been a significant increase in the percentage of Capacity Credits being traded through the IMO.[30] The Lantau Group's report to the IMO on the RCM indicates that the percentage of Capacity Credits being traded through the IMO has continually increased since market commencement, but that the increase has been particularly apparent in the period since October 2010.[31] The Lantau Group's report to the IMO suggests that this increase since October 2010 indicates that the IMO's RCP is higher than the market value of Capacity Credits.

The Authority also notes that, regardless of whether Capacity Credits are traded bilaterally or traded through the IMO, there is little transparency about the market price of capacity. While the RCP is determined transparently by the IMO, the RCP is ultimately based on forecasts of the cost of building a particular type of generation capacity. The market price of Capacity Credits, as determined through bilateral contracting, cannot be transparently observed.

[30] The Lantau Group, *Review of RCM: Issues and Recommendation*, September 2011.

[31] Over the period from market commencement to October 2010 the percentage of capacity credits being traded through the IMO steadily increased from around 10 per cent to around 35 per cent. Since October 2010, the percentage has increased to over 50 per cent. Note that October 2010 was the beginning of the 2010/11 Capacity Year.

A similar issue arises in the energy market. While there is price transparency for energy traded through the STEM (and the Balancing market), the quantities of energy traded in this way are relatively small compared to the quantities traded bilaterally.

While the Authority would be concerned about anything that deterred Market Participants from negotiating Bilateral Contracts, the Authority is interested in the extent to which the existing structure of the WEM, with its focus on bilateral contracting, provides sufficiently transparent price signals. The Authority seeks to better understand the views of stakeholders regarding Bilateral Contracts and their influence on market outcomes.

Does the recent increase in capacity traded through the Independent Market Operator have implications for the effectiveness of the Wholesale Electricity Market? In particular, does the recent increase in capacity traded through the Independent Market Operator imply that the level of the Reserve Capacity Price is too high?

Do the existing arrangements regarding Bilateral Contracts provide sufficient transparency to achieve efficient market outcomes?

3.7 Other Issues

This Discussion Paper has highlighted a number of issues that the Authority proposes to review as part of the 2011 Minister's Report. In addition to these specific issues, the Authority remains interested more broadly in the effective operation of the WEM, including the effectiveness of the IMO, System Management and the Authority.

The Authority is aware that the market is currently undergoing accelerated development, led by the IMO. While the Authority supports projects that will improve the efficiency of the market, and supports the IMO, on the advice of the MAC, taking the lead on specific projects, it is important that this development work does not impair the effective day-to-day operation of the market. The Authority is interested in stakeholder views on whether the day-to-day operations of the market, including those of the IMO and System Management, remain effective.

Are there any other strategic, policy or high-level issues, including those raised in this Discussion Paper, that are impacting on the effectiveness of the Wholesale Electricity Market in meeting the Wholesale Market Objectives?

Are the Independent Market Operator, System Management and the Economic Regulation Authority effective in performing their roles?

APPENDICES

Appendix 1 Acronyms

DSM	Demand Side Management
IMO	Independent Market Operator
IPP	Independent Power Producer
IRCR	Individual Reserve Capacity Requirement
LRET	Large-Scale Renewable Energy Target
MAC	Market Advisory Committee
MCAP	Marginal Cost Administrative Price
MRCP	Maximum Reserve Capacity Price
MSDC	Market Surveillance Data Catalogue
MW	Megawatt
RCM	Reserve Capacity Mechanism
RCP	Reserve Capacity Price
RCR	Reserve Capacity Requirement
RVC	Replacement Vesting Contract
STEM	Short Term Energy Market
SWIS	South West Interconnected System
WEM	Wholesale Electricity Market