Independent Market Operator

STATEMENT OF OPPORTUNITIES REPORT

THE SOUTH WEST INTERCONNECTED SYSTEM

JULY 2006

DISCLAIMER

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PREFACE

Electricity trading within the south west of Western Australia is about to be transformed. Over the past four years, industry and Government have worked together to develop a new Wholesale Electricity Market covering the South West Interconnected System (SWIS). Testing of the information technology systems that will support this market is well advanced and trading of wholesale energy is scheduled to commence on 21 September 2006.

Several other major changes have been introduced within the energy industry, one of the most significant being the disaggregation of the Government owned incumbent utility, Western Power, into four new entities. Three of these new Government trading corporations have specific responsibility for generation, retail sales and network operation within the SWIS. The fourth has responsibility for electricity supply outside of the SWIS.

One feature of the wholesale market in Western Australia is the Reserve Capacity Mechanism (RCM) through which the Independent Market Operator (IMO) operates a capacity market that complements energy trading. The RCM is a series of processes through which the IMO determines the future requirement for generation and demand side management (DSM) capacity and takes steps to facilitate its provision.

This Statement of Opportunities Report is a major part of the RCM process. It provides forecasts of both peak demand and sent-out energy covering the forthcoming 10 years. It also provides information on existing and planned generation capacity and the IMO's expectations of possible new facilities. In publishing this information, the IMO is seeking to provide assistance to market participants, and other developers, considering new generation and demand side management options.

This Report fulfils both a short-term and a longer-term function. The forecasts for the next few years are used by the IMO to estimate the immediate generation requirements and to determine the number of Capacity Credits that should be assigned. The longer-term perspective is provided to assist developers who are analysing the opportunities to enter, or increase their commitment within the market, where a project may take some years to reach service.

In 2005, the IMO completed the first stages in securing new generation and DSM capacity for the period through to October 2008. Following a well supported Expression of Interest process, the IMO assigned Capacity Credits to 4,115.4 MW of existing and new generation and DSM facilities. The Expression of Interest process for new capacity for 2008/09 has just closed with proposals covering 712.6 MW of new capacity. This, combined with construction of new facilities currently underway, suggests that the capacity requirements for 2008/09 should be covered.

However, the maximum demand within the SWIS is forecast to continue growing at around 120 MW each year. In addition, a number of major resource developments are proposed which, if they proceed, would substantially increase demand. The IMO therefore continues to encourage developers to put forward proposals for further generation or DSM facilities, particularly given many proposals take some time to be brought on line.

I trust that you will find this report informative and of assistance.

Anne Nolan
Chief Executive Officer
July 2006

EXECUTIVE SUMMARY

This Statement of Opportunities Report (SOO) is published as part of the process of securing new generation and demand side management (DSM) capacity. The immediate focus for the IMO is the capacity required to ensure that system reliability criteria are maintained during the period from October 2008 through to October 2009.

This report is also intended to assist others, particularly potential developers of facilities. Given the lead times required for such developments, longer term forecasts are also provided. This report:

- Provides forecasts of electricity demand for the period through to 2015/16.
- Identifies the generation and DSM facilities that the IMO anticipates will be available to the system through 2008/09.
- Reviews the balance between forecast demand and projected supply.
- Indicates the potential opportunities for new capacity to be introduced to the South West Interconnected System.

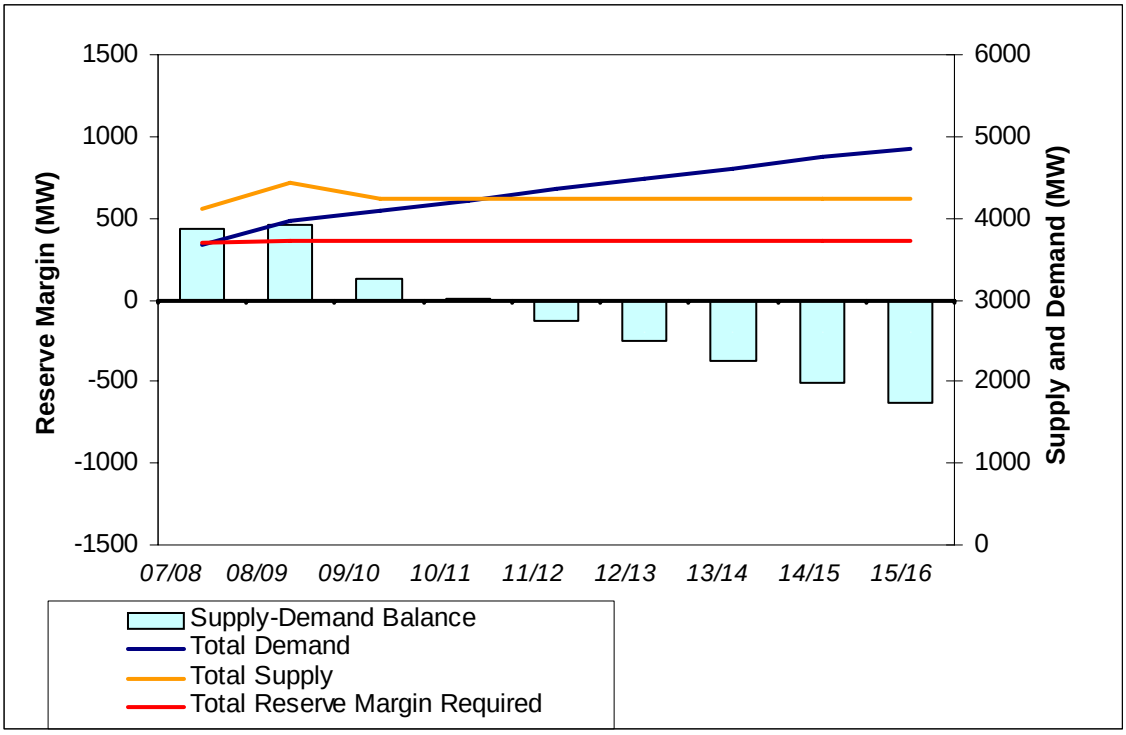
This is the second SOO to be issued by the IMO. It indicates continuing strong growth in electricity demand, which in the short term, is well matched by construction of new generation facilities and the provision of DSM. In the longer term, increasing demand, and the scheduled closure of older generating units, provides significant opportunity for new investment. The key points are set out below:

- Underlying electricity consumption is expected to increase at an annual rate of 2.2% over the period 2006/07 to 2015/16. Maximum demand is expected to increase at a higher rate, 3.2% per year, (around 120 MW) reflecting the increasing penetration of air-conditioning. These forecast growth rates are slightly higher than those forecast in the 2005 SOO under the 2005 “expected” case.
- The proposed Boddington Gold Mine project will provide a major additional boost to electricity demand. When fully operational, the mine is expected to increase the system maximum demand by around 4% and increase total system energy consumption by around 6%.
- To meet the reliability criteria set out in the Market Rules, the system capacity will need to be increased from 4,115.4 MW in 2007/08 to 4,322 MW in 2008/09 and to 4,463 MW in 2009/10.
- As at 30 June 2006, the SWIS has approximately 3,600 MW of generation and 130 MW of DSM in place. A further 1100 MW of committed plant is scheduled to be completed by October 2008 while around 400 MW of plant closures are scheduled over the next two years (Muja AB in 2007 and Kwinana B in 2008).

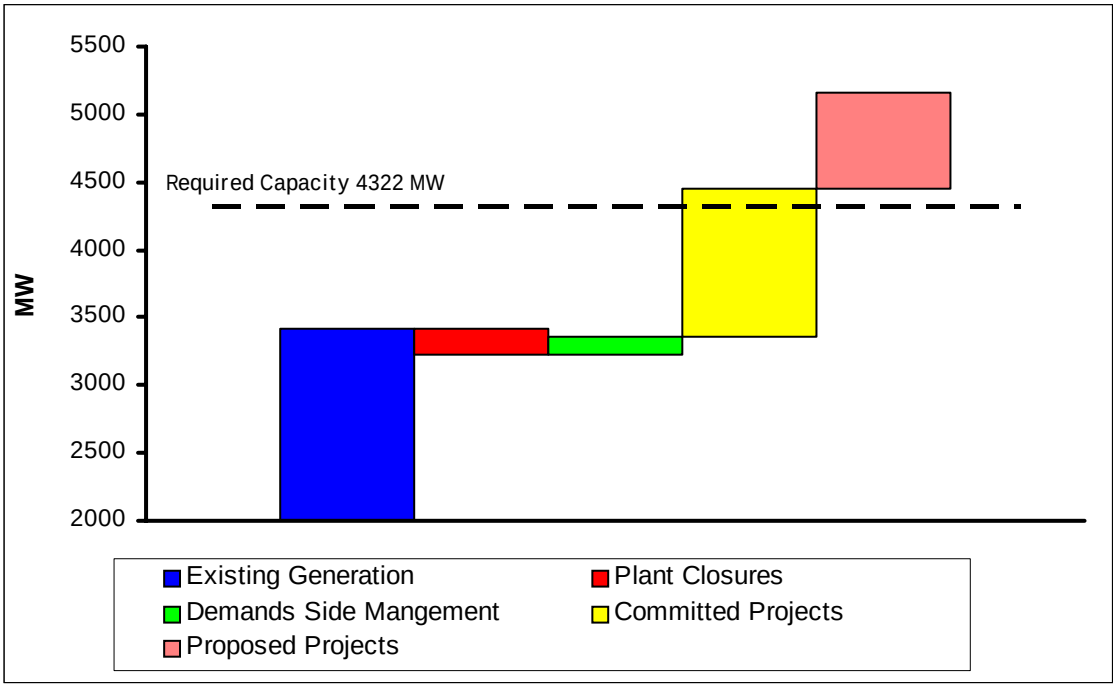
- The IMO anticipates that 4,445.9 MW of currently existing and committed capacity will be available for service in 2008/09. This would provide a margin of 123.9 MW above the capacity requirement, which provides some cover in the event that demand grows faster than expected. This is similar to the level of margin that the IMO anticipates will exist in 2007/08 where 4115.4 MW of capacity has been secured to cover the forecast requirement of 4,024 MW (based on the 2006 forecast).

- The key results can be seen in the diagram below. During 2007/08 and 2008/09 the supply demand balance (shown as pale blue blocks) is higher than the reserve margin requirement (shown by the red line). Over time, the reserve margin is reduced by a combination of increased demand and reduction in supply due to plant closures. The diagram clearly illustrates the opportunity for new investment from 2008/09 onward.

OPPORTUNITIES FOR INVESTMENT



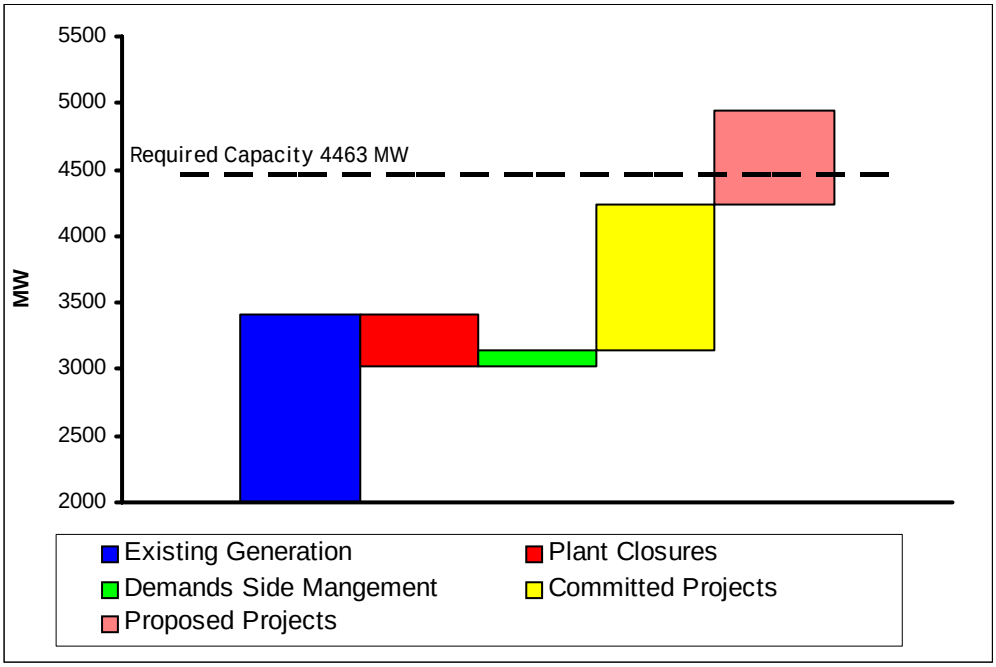
KEY RESULTS FOR 2008/09



The above diagram illustrates the following:

- Forecast Maximum Demand in 2008/09 is 3,961 MW.
- The capacity required to meet forecast demand plus the reserve margin in 2008/09 is 4,322 MW.
- Existing and committed capacity expected to be available for service in 2008/09 is 4,445.9 MW. That is, plant in place or committed exceeds the capacity requirement by around 120 MW in 2008/09. This figure will be finalised following certification of reserve capacity and assignment of Capacity Credits in August or September 2006.
- Potential new capacity indicated by the 2006 Expressions of Interest process is 712.6 MW.

KEY RESULTS FOR 2009/10



The outlook for 2009/10 as illustrated by the above diagram is:

- Forecast Maximum Demand in 2009/10 is 4,102 MW.
- The capacity required to meet forecast demand plus the reserve margin in 2009/10 is 4,463 MW.
- Existing and committed capacity expected to be available for service in 2009/10 is 4,228.9 MW. This figure will be finalised following certification of reserve capacity and assignment of Capacity Credits in August or September 2007.
- The opportunity available for new capacity to meet forecast requirement is 234 MW.
- Potential new capacity indicated by the 2006 Expressions of Interest process is 712.6 MW.
- In addition, the opportunity exists for proponents who did not respond to the Expression of Interest to provide this required capacity.

The next steps within the Reserve Capacity Mechanism for the current Reserve Capacity Cycle are:

- Applications for certification of generation and DSM capacity for the 2008/09 capacity year are now open.
- Applications for certification of capacity must be provided to the IMO by 5pm on 20 July 2006.
- Market Participants whose facilities are granted Certified Reserve Capacity must then apply for Capacity Credits indicating whether they intend to trade their capacity bilaterally or whether they wish to offer this into a Reserve Capacity Auction (if this is required). This process must be completed by 5pm on 10 August 2006.
- On 11 August 2006, the IMO will advise how many capacity credits have been assigned to facilities owned by Participants who have indicated their intention to trade their capacity bilaterally.
- By 5pm on 18 August 2006, the IMO will advise whether sufficient capacity has been secured through bilateral trades. If so, no Reserve Capacity Auction will be held. If sufficient capacity has not been secured through bilateral trades, the IMO will run a Reserve Capacity Auction to secure the outstanding quantity.
- If a Reserve Capacity Auction is required, Market Participants must provide their offers between 20 and 29 August 2006 and the IMO will run the auction on 1 September 2006.

Although the IMO does not have responsibility for ensuring that sufficient capacity is available to meet the maximum demand during the summer of 2006/07, it has sought to determine the potential impact of the change between the forecasts in the 2005 and 2006 SOOs. The analysis undertaken last year indicated that there would be sufficient capacity to meet the 2006/07 summer demand as a result of the:

- Second Alinta cogeneration unit at Pinjarra.
- Griffin/Stanwell Emu Downs Wind Farm.
- Capacity upgrade at Verve's Muja Stage D power station.

The forecasts prepared for the 2006 SOO indicate that the maximum demand in 2006/07 will be 22 MW higher than had been forecast in 2005. The IMO understands that sufficient capacity should be in place to meet the 2006/07 summer peak demand.

FURTHER INFORMATION CAN BE OBTAINED FROM:

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1. INTRODUCTION

The Government of Western Australia, with the support of industry, is undertaking a major reform program within the electricity industry. A significant part of this is the introduction of the Wholesale Electricity Market (WEM) within the south west of the State. This will facilitate the trading of wholesale electricity between a range of private and government-owned generation and retail companies. All customers with an annual electricity consumption in excess of 50 MWh will be able to buy power from this market though it is expect that most will buy through a retailer. Energy trading is scheduled to commence on 21 September 2006.

Part of the WEM is the Reserve Capacity Mechanism (RCM). This is a set of processes through which sufficient generation and demand side management (DSM) capacity is provided to the market to meet set reliability criteria. The Independent Market Operator (IMO) is charged with the operation of the RCM and publication of this Statement of Opportunities Report (SOO) is a key part of this process. More information about the RCM is included within Chapter 3 of this Report.

Because of the lead time required to construct new facilities, the RCM applies to the period two years ahead. As such, the emphasis in this SOO is on the capacity years that run from 1 October 2008 through to 1 October 2009 and from then through to 1 October 2010.

During 2004 and 2005, the IMO undertook the RCM processes for the First Reserve Capacity Cycle, which will provide capacity from 1 October 2007 through to 1 October 2008. This included:

- Calling for Expressions of Interest for new capacity (this task was undertaken by the Office of Energy as the IMO had not been established at that time).
- Certification of new and existing generation and DSM capacity.
- Assignment of Capacity Credits.

The process was very successful. A total of 14 developers provided expressions of interest covering 2,742 MW of new generation and DSM facilities. These covered projects fuelled by gas, coal, diesel and coal seam methane as well as wind turbines. From these proposals, 772 MW of undeveloped capacity was granted Certified Reserve Capacity along with 3,764 MW of existing facilities. Capacity Credits were ultimately assigned to 351 MW of new capacity, for this First Reserve Capacity Cycle, while a number of projects included within Expressions of Interest are expected to apply for Capacity Credits for the current (second) cycle.

The Expression of Interest process for the second Reserve Capacity Cycle was completed in May 2006. This was also successful with seven responses covering over 700 MW of potential generation and DSM capacity.

The SOO is published pursuant to the IMO's obligations within Chapter 4 of the Wholesale Electricity Market Rules. It provides information for market participants and other potential developers in respect to:

- Forecasts of maximum electricity demand over the coming 10 years.
- Forecasts of electricity consumption.
- Existing, planned and possible new sources of generation and DSM.
- The balance between the forecast demand and expected generation and DSM capacity.
- An indication of potential opportunities for investment in new facilities.

The major purpose of this report is to provide a guide to market participants and others who may be considering investment in new generation and DSM capacity. Individual users of this SOO will have quite different interests and information requirements. For those that have only a limited understanding of the electricity market in the south west of Western Australia a general outline of this, and the Reserve Capacity Mechanism, is provided within Chapters 2 and 3. Chapter 4 then describes the forecasting process and provides forecasts of maximum demand and electricity consumption from 2008/09 through to 2015/16.

The IMO uses the forecast data to determine the amount of generation and DSM capacity that must be provided to meet the system reliability criteria. It assesses the balance between demand and supply and sets the level of Capacity Credits to be assigned in 2008/09. This data is likely to be of particular relevance to developers who have projects that are now ready to proceed.

The SOO also provides information on the opportunities for investment in 2009/10 and later years. Because of the lead time, it is the data for these later years that is likely to be of most use for most potential developers.

2. OVERVIEW OF THE ELECTRICITY MARKET STRUCTURE

2.1 Reform of the electricity market in Western Australia

In October 2001, the Government established the Electricity Reform Task Force to investigate options for competitive electricity reform. The Task Force presented its final report in October 2002. The Office of Energy (OOE) was charged with the implementation of the reform agenda and the Electricity Reform Implementation Unit was formed within the OOE to facilitate this. One major aspect of the reform agenda has been to establish a market for trading wholesale electricity within the South West Interconnected System (SWIS). This is the electricity network covering the south west of Western Australia that supplies power to the majority of the State's two million residents. This region is shown on the map below.

Figure 1: Map of the South West Interconnected System

The structure and processes that constitute the market are established through the Wholesale Electricity Market Rules (Market Rules). These were developed by the OOE with substantial support from a number of expert teams comprising representatives from industry and Government. The Market Rules are being implemented in stages through to the scheduled full market start-up. A full set of the Market Rules can be downloaded at the OOE website at www.energy.wa.gov.au.

The market design that has been developed comprises a wholesale electricity trading component and a capacity component which are described in more detail below. Because of the lead time required to develop and build new generation capacity, some of the capacity processes have already commenced. The electricity trading component is scheduled to commence in September 2006.

2.2 Disaggregation of the incumbent utility

One of the major reforms undertaken in the energy market has been the disaggregation of the incumbent State-owned utility, Western Power. This entity had previously been vertically integrated with responsibility for electricity supply from generator to customers. In April 2006, three new Government owned trading corporations were established with each having responsibility for various parts of the operation within the SWIS:

- Verve Energy has responsibility for generation and operates a fleet of coal, gas and liquid fuelled power stations.
- Synergy Energy has responsibility for retail operations including the provision of interruptible and curtailable DSM services.
- Western Power has responsibility for the transmission and distribution networks and is the system operator.

A fourth entity, Horizon Power, has responsibility for all operations outside of the SWIS.

2.3 Institutional Arrangements

The Wholesale Electricity Market is being established to provide an efficient and convenient forum for buyers and sellers to trade wholesale electricity. It needs to be flexible to ensure that participants can establish trades that meet their individual objectives in respect to their preferred contract arrangements and risk profile. The market must also provide certainty of supply while being able to accommodate every-day variations arising from factors such as changing weather conditions, customer demand and plant break-downs. This section describes the main market participants.

Independent Market Operator (IMO)

The IMO fulfils a number of distinct roles within the market. As the market administrator it:

- Registers participants and their capacity.
- Develops and maintains market rules and procedures.
- Publishes market information.

In its role as market operator, the IMO:

- Receives information from participants in respect to their bilateral contracts and the planned output from their generating capacity.
- Operates a day-ahead Short Term Energy Market (described in more detail below).
- Conducts market settlement.
- Operates the Reserve Capacity Mechanism (described in more detail below).

The IMO also has responsibility for monitoring and surveillance of the market to identify any rule breaches by participants.

More information on the IMO is available at its website at www.imowa.com.au.

System Management

System Management is a ring-fenced entity within the new Western Power network corporation. It is responsible for the physical operation of the power system, ensuring that system security, safety and reliability are maintained in both the short and longer term. Historically, as part of the Network Business Unit of Western Power, its real-time function focused on instructing generating plant to increase or decrease output so as to meet demand on a moment-by-moment basis at minimum cost. With the commencement of the wholesale market, its functions have expanded:

- It facilitates transactions scheduled by Independent Power Producers (IPPs) in accordance with their bilateral contracts and STEM trades.
- It schedules Verve's generation capacity to meet their contractual requirements.
- It continues to balance system supply and demand by dispatching Verve's generators and, if necessary, IPP generators.

System Management conducts short and medium term system planning, including the co-ordination of scheduled outages of generators and other major items of plant that are critical to the maintenance of system capacity.

Economic Regulation Authority (ERA)

The ERA has a substantial involvement within the electricity sector through its licensing and network access responsibilities. In respect to the market, its key role is market surveillance and the monitoring and reporting to Government on the efficiency and effectiveness of the market.

The ERA also has several other approval functions within the market including:

- Approving the maximum prices for the reserve capacity mechanism.
- Approving the maximum and minimum energy prices.
- Approving the efficient costs for the operation of both the IMO and System Management.

More information about the ERA can be found at its website at www.era.wa.gov.au.

Network Operator

A network operator is an entity that operates or intends to operate a registered transmission or distribution system within the SWIS. As well as Western Power, it is anticipated that a number of private transmission systems may also register as network operators.

Network operators also have responsibility for metering of electricity usage by end-use customers. This responsibility includes:

- The provision of customer meters.
- Gathering and processing data from these meters.
- Providing metering data to market participants and the IMO for billing and settlement for energy traded in the wholesale market.

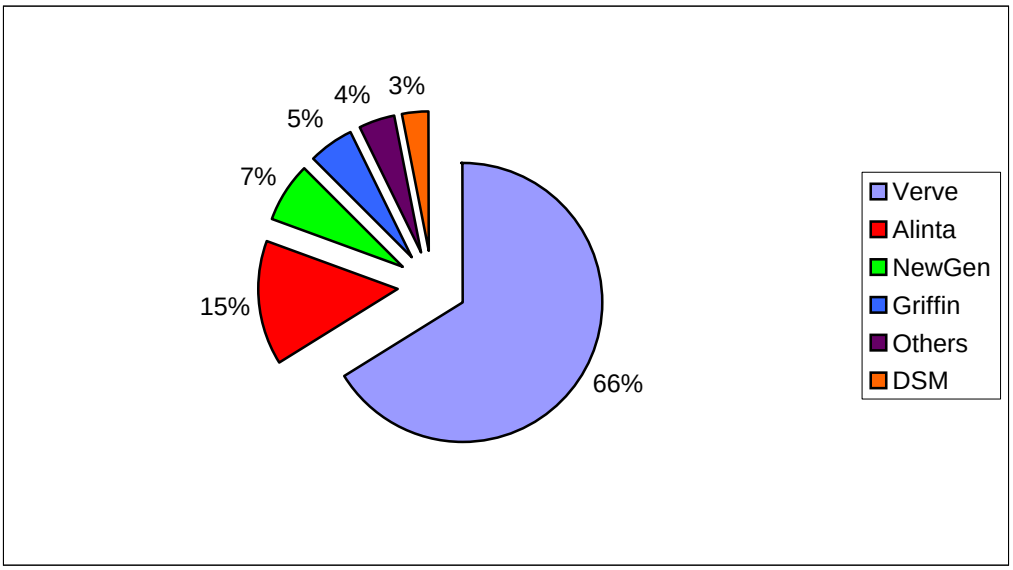
Independent network operators have the option of ceding their metering responsibilities to Western Power if they do not wish to carry these.

Market Generator

A market generator is an entity that operates a generating facility to provide energy to the market. Subject to some exemptions in the rules, all generating capacity with a capacity in excess of 10 MW will be required to register.

The largest generation entity at present is Verve Energy which owns or controls around 3,400 MW of capacity. Other significant participants are Alinta Sales Pty, NewGen Power and Griffin Power which, between them, have committed to around 1,200 MW of new capacity. Several smaller IPPs have also registered and been assigned Capacity Credits. Figure 2, below, provides an indication of the generation mix based on the assignment of Capacity Credits for the period 1 October 2007 through to 1 October 2008. It is anticipated that the market share of both Verve and Alinta may be reduced when new generating plant is brought on line by Griffin Power and NewGen Power in 2008/09.

Figure 2: Anticipated Capacity of Major Generators – 2008/09



A number of measures have been incorporated into the design of the market to minimise the opportunity for Verve to misuse any market power that it may derive from its size. These include:

- A cap on its level of installed capacity.
- Vesting contracts with Synergy.
- Limits on the amount of capacity it can offer into a Reserve Capacity Auction.

Market Customer

A market customer is an entity that purchases power from the market either for its own consumption or for retail sale. End use customers, such as domestic customers, who purchase electricity from a retailer, are not a part of the wholesale market. The experience in other markets is that very few, if any, end-use customers will buy wholesale power from the market.

The largest registered market customer is Synergy which supplies both contestable and non-contestable (franchise) customers. Several other retailers have registered as market customers but the IMO does not currently have data as to their respective market shares.

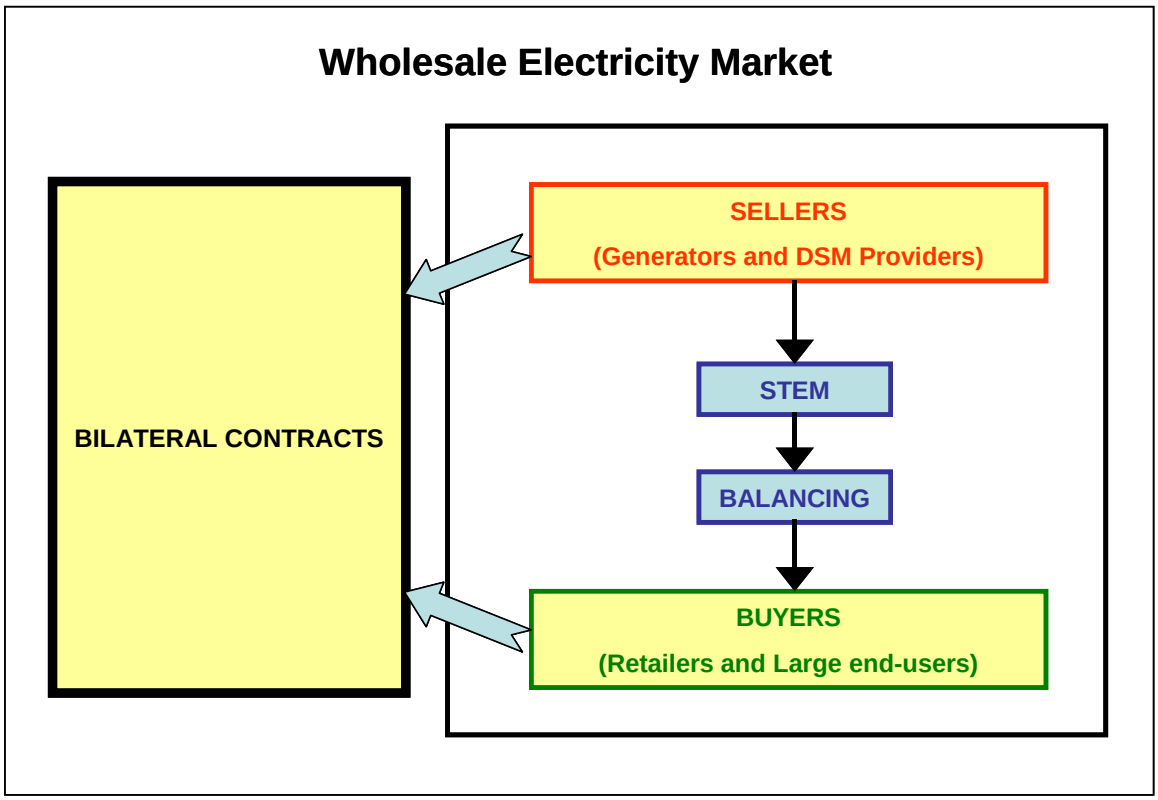
Appendix 6 provides a list of Market participants who have registered with the IMO at the time of publication of the SOO.

2.4 Electricity Trading

The main mechanism for trading within the market is expected to be bilateral contracts between Market Generators and Market Customers who, at the wholesale level, will mostly be retailers on-selling electricity to end use customers. It is expected that most electricity will be traded through contracts. By locking in a substantial amount of their purchases or sales through contracts participants can minimise their exposure to potential price changes. The IMO has no role in the structure, duration or pricing of these contracts though market participants must advise the IMO of their trading levels on a day-ahead basis.

The role of the market participants is shown in Figure 3.

Figure 3: Energy Trading within the Wholesale Electricity Market



In all electricity markets demand and costs vary across time. An electricity retailer will generally have access to supplies from a variety of different generating plants, each of which will have different operating costs depending on their efficiency and the fuel they use. The supplier will seek to maximise output from the lowest cost plant but, as demand increases, it will be necessary to put more expensive plant into service. This means that the overall production cost increases as the total demand increases.

Production costs will also change as a result of changes in fuel prices or reductions in output from generators due to higher ambient temperatures. To be effective, a market must accommodate prices that vary from day-to-day and within each day. In the Western Australian wholesale market, this is achieved by dividing each day into

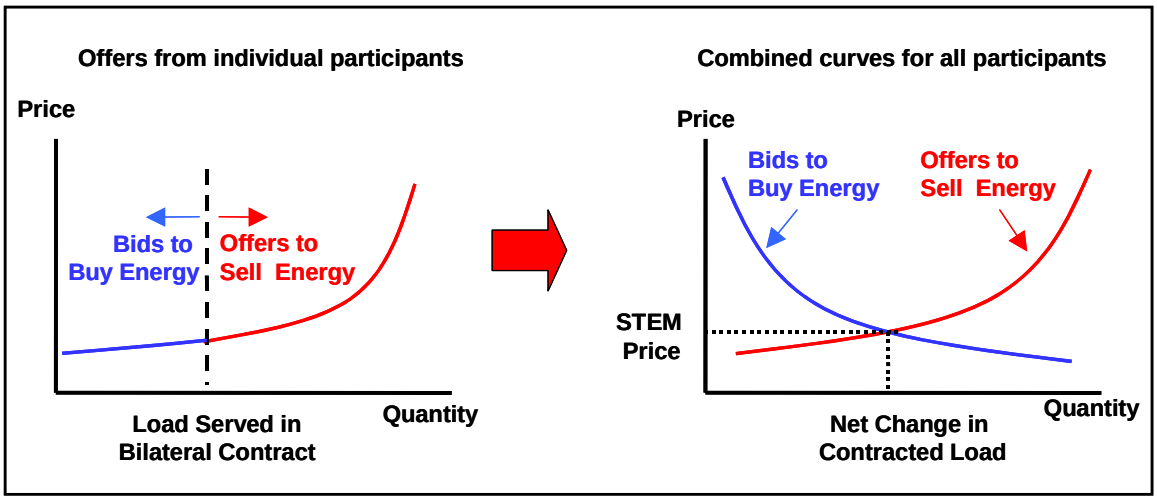
half-hour trading intervals and a single price is struck for each interval depending on participants' offers to buy or sell.

Participants will not necessarily only trade through bilateral contracts. They will also need some flexibility to be able to respond to fluctuations in demand resulting from less predictable factors such as the weather. This is provided through a day-ahead short-term energy market (STEM).

Each day, participants will advise the IMO of their bilateral contract position and make bids to buy and offers to sell various quantities of electricity in each trading interval on the following day. The IMO will use this information to prepare a price curve for each participant relative to its bilateral position. A generator, for example, may offer to supply increasing quantities into the market, beyond its contractual position, as the price rises. It may also bid to purchase energy where the price is less than its own production cost. Similarly, a retailer may offer to purchase increasing quantities as the price moves lower or less if the price increases.

The IMO will combine all of the bids and offers for all participants to determine the STEM price for each half hour. This is illustrated in Figure 4.

Figure 4. Setting Prices within the STEM



The bi-lateral contract and STEM processes determine the quantity of electricity that will be provided by Independent Power Producers (IPPs) in each trading interval. The Government-owned generator, Verve, has responsibility to supply all remaining demand from its portfolio of generating plant. Verve will also be required to balance the inevitable real-time variations in IPP generation and customer demand. In the event that Verve owned plant is unable to fully cover any system imbalance, IPPs can be called upon to either increase or reduce generation from their plants.

A more detailed description of the market is available in the document, entitled "Wholesale Electricity Market Design Summary" which is available on the IMO website at www.imowa.com.au.

3. THE RESERVE CAPACITY MECHANISM

3.1 Introduction

A key feature of the market in Western Australia, and one that distinguishes it from the National Electricity Market (NEM) operating in the Eastern States, is the provision of a separate capacity mechanism. In many markets, including the NEM, economic forces determine when new generators enter the market encouraged by high energy prices. A more conservative approach has been adopted in the SWIS due to the small system size and, in particular, the inability to draw supplies from neighbouring power systems.

The Reserve Capacity Mechanism, which is the set of capacity related processes adopted in the SWIS, requires the IMO to centrally determine the capacity requirement and facilitate this onto the system. Specifically, the IMO's role includes:

- Preparation of peak demand and consumption forecasts for the full SWIS.
- Identifying the requirements for additional capacity.
- Running the processes designed to secure the required capacity.
- Monitoring the performance of generation capacity once in service.

At the heart of this process is the concept of recognising that generators and DSM providers must be rewarded for the provision of reliable capacity. It is expected that most new generation will be brought into the market through bilateral contract arrangements between generators and retailers or large customers. The level of capacity payments is set such that it is sufficient to fund a typical peaking gas turbine plant in the event that insufficient capacity is brought on line through bilateral contracts.

Because generators can receive a separate payment for providing capacity, they need only recover a portion of their fixed costs through energy sales. Peaking plant may meet its full fixed costs through the capacity payments. This removes the need for high and volatile energy prices that are common in energy-only markets such as the NEM. Consequently, energy prices within the market can be capped at a much lower level and will also be less volatile.

The Market Rules set an energy cap at $150 per megawatt-hour (MWh) for non-liquid fuelled plant and $385 per MWh for liquid fuelled plant at a base date of July 2004. This latter figure is linked to oil prices and, given the rise in oil prices, it is anticipated that it will be adjusted to a substantially higher figure prior to the commencement of energy trading.

This SOO report is a key component of the reserve capacity mechanism as it provides a projection of the electricity demand within the SWIS and the opportunity for investment in new capacity, both generation and DSM capacity.

3.2 Capacity Obligations and Credits

To ensure that sufficient capacity is installed in the SWIS, the market rules include the concept of Capacity Credits. A Capacity Credit is a notional unit of capacity that can be traded between market participants. Generators, and providers of DSM, can earn Capacity Credits by providing capacity into the SWIS. Market customers are assigned Capacity Credit obligations based on their expected maximum demand, measured during periods of system peak demand, plus a contribution to the system wide reserve margin.

For example, a participant that commits to build a new power station that will provide 100 MW of generation onto the system throughout 2008/09 can be assigned 100 Capacity Credits for that year. A customer that draws power at a maximum rate of 50 MW during 2008/09 will incur a Capacity Credit obligation of around 55 MW based on their demand plus a reserve margin.

The IMO prepares forecasts of the quantity of electricity that it expects consumers within the SWIS will use on an annual basis over the next 10 years. Based on these figures, the IMO will determine how much generation capacity is required to meet this demand and provide an adequate reserve margin to cover plant outages or other contingencies (in accordance with criteria specified in the Market Rules).

The reserve margin comprises three components:

- The largest portion is required to cover the potential failure of the largest generating unit on the system. Currently this is 304 MW, which is the capacity of the Collie Power Station, but this will increase to 320 MW when the NewGen Power facility is commissioned in October 2008.

- The second component, currently set at 30 MW, is provided to ensure that the power system frequency can be adequately controlled at times of system peak.

- The third component, currently 11 MW, provides stand-by coverage for embedded generators associated with intermittent loads (these are loads that are served by generators located at the same site).

For example, for 2008/09, the maximum demand on a hot day is forecast to be 3,961 MW. When the reserve margin is added to this, a total of 4,322 MW of capacity needs to be provided. The IMO therefore needs to ensure that this amount of capacity is available on the SWIS for 2008/09. To do this, the IMO needs to ensure that 4,322 Capacity Credits are provided by existing and new generators and DSM providers that commit to be available for service during that time.

The IMO must also ensure that this capacity is funded by customers, so, in 2008/09, 4,322 MW of Capacity Credit obligations will be placed on customers. Customers can estimate the level of obligations that they are likely to incur based on their forecasts of their demand during periods of system peak demand plus a contribution to the reserve margin. Their actual obligations will be determined before the start of the Reserve Capacity Year and then adjusted at the end of each month of operation.

The IMO assigns Capacity Credits to facilities through a series of processes.

- Capacity Credits are first assigned to facilities that already exists, or are under construction, and where the Market Participant indicates its intention to trade its capacity bilaterally.

- If sufficient Capacity Credits have been assigned to cover the requirement, the process is deemed to be complete and Capacity Credits are not assigned to any other facilities. If not, Capacity Credits are assigned to facilities that are not yet under construction but the Market Participant has indicated its intention to trade its capacity bilaterally. (The IMO follows a prioritisation process in assigning Capacity Credits and not all yet-to-be-built facilities may be assigned credits).

- If sufficient Capacity Credits have now been assigned to cover the requirement, the process is deemed to be complete and Capacity Credits are not assigned to any other facilities. If there is still a shortfall, the IMO holds a Reserve Capacity Auction in which Market Participants offer further facilities. (These are certified facilities where the Market Participant does not intend to trade the capacity bilaterally.)

- If a Reserve Capacity Auction is required, the IMO accepts facilities, taking the lowest priced offers first, until sufficient capacity is secured to meet the requirements. The price that the IMO pays for Capacity Credits, the Reserve Capacity Price, is set to be equal to the price of the last capacity offer accepted in the auction.

- If a Reserve Capacity Auction is not required, the Reserve Capacity Price is set to equal 85% of the Maximum Reserve Capacity Price. (This is the maximum price that can be offered if the IMO needs to secure capacity through a Reserve Capacity Auction).

In the first Reserve Capacity Cycle, no auction was required and the Reserve Capacity Price was set at $127,500 per MW of capacity per year. The price for Capacity Credits bilaterally will be set by contractual arrangements between the market Participants and may not be at the prevailing Reserve Capacity Price.

For the current, second Reserve Capacity Cycle the Maximum Reserve Capacity Prices has been set at $122,500 per MW per year. If Market Participants offer capacity that they intend to trade bilaterally which is sufficient to meet the system

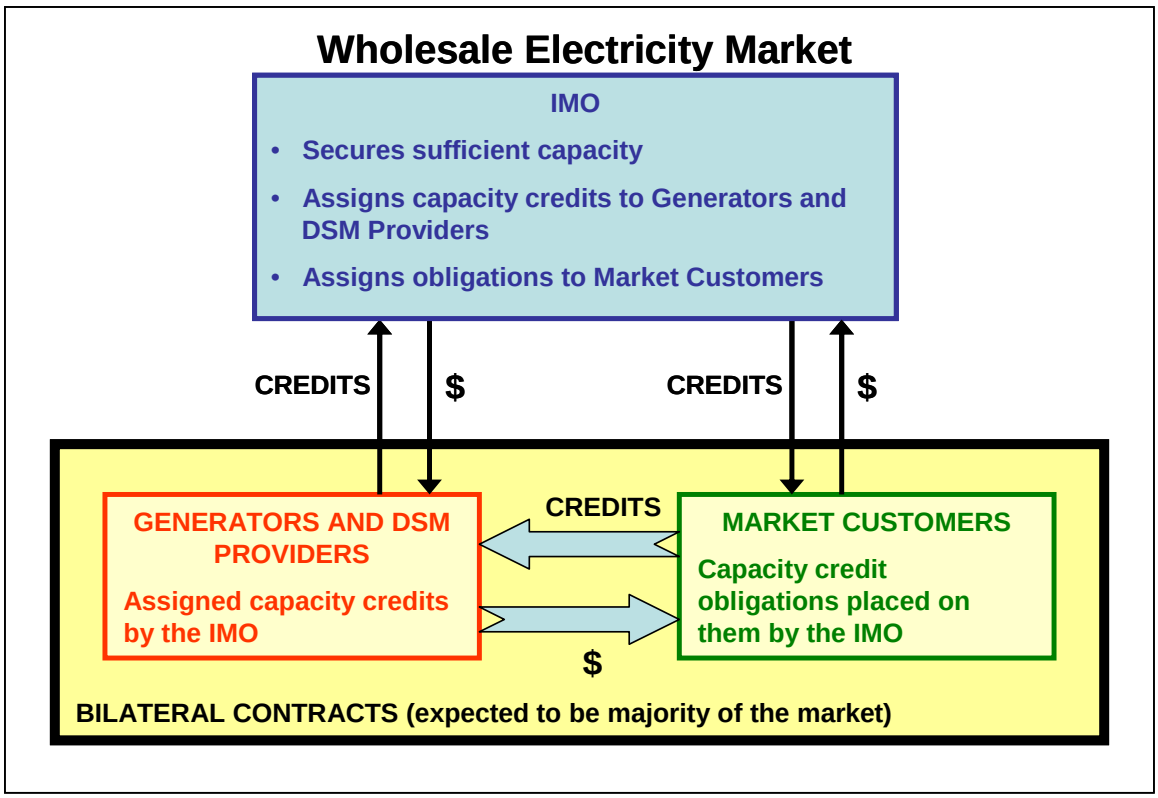
requirements, no Reserve Capacity Auction will be required. In this event, the Reserve Capacity Price for 2008/09 would be set at $104,125 per MW.

Generators can follow one of two processes to be assigned Capacity Credits. The first option is for the generator to advise the IMO that it is trading its Capacity Credits bi-laterally with a customer or customers. This allows the customer to cover its obligations, possibly for a number of years, at an assured price (ie not the prevailing Reserve Capacity Price). The alternative is for the generator to offer its capacity into the Reserve Capacity Auction. However, the IMO will only call an auction if insufficient Capacity Credits have been assigned through bi-lateral trades. In the auction, the IMO will commit to purchase the outstanding number of Capacity Credits it requires.

Once capacity credit obligations commence, that is from 1 October 2008 for the second Reserve Capacity Cycle, generators and customers are free to trade Capacity Credits irrespective of whether these were assigned through the bilateral trade process or a Reserve Capacity Auction. All Capacity Credits that are not bilaterally traded will be traded through the IMO.

Figure 5, below, illustrates the trading of Capacity Credits.

Figure 5: Trading of Capacity Credits



As shown above, it is expected that most of this trade will be through bilateral trades with a lesser proportion being traded through the IMO. This will only occur where there are some Capacity Credits in the market which are not bilaterally contracted.

Capacity Credits are valid for a particular Reserve Capacity Year and are allocated to a specific generating plant or DSM facility. This means that the amount of Capacity Credits that the IMO purchases from generators exactly matches the quantity that customers need to purchase each year.

Generating plant does not need to have Capacity Credits to be able to sell electricity within the market. However, the income from Capacity Credits is significant so a generator operating without Capacity Credits could be placed at a commercial disadvantage.

3.3 Timeframes

The dates for each of the steps within the Reserve Capacity Mechanism are set out in chapter 4 of the Market Rules. The key steps going forward are:

- In July 2006 the IMO issues the SOO report forecasting the requirements for new generating capacity over the next 10 years.
- On 17 July 2006 the IMO will publish the Reserve Capacity Information Pack.
- On 20 July 2006 applications for Certification of Reserve Capacity close.
- On 4 August 2006 the IMO advises all applicants of the quantity of Certified Reserve Capacity that has been assigned.
- On 10 August 2006 participants must notify the IMO of how much Certified Reserve Capacity will be traded bi-laterally and how much offered into a Reserve Capacity Auction.
- On 18 August 2006 the IMO will advise whether a Reserve Capacity Auction is to be held.
- Over the period 21 to 29 August 2006, the IMO will hold a Reserve Capacity Auction if this is required.
- On 1 September 2006, the IMO will announce the results of the Reserve Capacity Auction if this is held.

Generation and DSM capacity providers who participate within this Reserve Capacity Cycle will be providing capacity into the SWIS for the period from 1 October 2008 through to 1 October 2009.

3.4 Reliability Criteria

There must be enough generation and DSM capacity available to meet the system demand at all times. In the SWIS, the highest demands occur in summer and, although very high demands may only occur infrequently, it is essential that there be sufficient capacity available to meet them. However, even though demand is less at other times, there can still be high demands placed on the system when major generating plants are taken out of service for maintenance. For this reason, the Market Rules define two criteria to be used in planning the quantity of generation that should be provide in the SWIS.

In determining the level of peak demand that is used as the reliability target, it is necessary to consider the cost of meeting the target and the likely frequency of that level of demand occurring. If a high target level is chosen it will be necessary to provide extra generation capacity and this will impose additional costs on customers. On the other hand, if too low a target level is selected, too little plant will be installed and there will be an unacceptable number of power shortages. The forecast peak demand stipulated in the Market Rules is one that has a probability of occurring in no more than one year out of ten. This is a commonly used industry standard.

The first criterion considers the peak summer demand to determine whether there is sufficient capacity to meet this demand with some margin. There must be sufficient capacity installed in the SWIS to meet the forecast peak demand plus provide a margin to cover possible plant breakdowns and to provide a reserve to cover operational requirements. This is currently set at 345 MW (see section 3.2).

The second criterion addresses the need to have sufficient capacity to meet demand throughout all of the year. Generating plant needs to be taken off-line for scheduled maintenance or unscheduled outages and it is not economically practical to install enough plant to entirely eliminate supply shortfalls. Instead, planning on the SWIS seeks to ensure that sufficient capacity is available to limit expected energy shortfalls to 0.002% of annual energy consumption. This is estimated through computer simulation of the power system that takes into account the estimated half-hourly demand, generator performance (including scheduled and forced outages) and demand management.

These two criteria give very similar results in terms of generation requirements. At present the first criterion, based on meeting the demand plus a reserve margin, is slightly more demanding and this is therefore used to set the capacity requirement.

4 FORECASTS

4.1 Background to the Forecasts

To determine how much capacity is required within the SWIS, it is necessary to have forecasts of two measures of electricity usage:

- The amount of electricity expected to be produced or consumed each year ("sent-out energy").
- The maximum electricity demand in any one half-hour over the entire year. ("maximum demand")

The amount of electricity produced or consumed, which is usually referred to as "energy" or "sent-out", has increased steadily over past years and is closely related to the level of economic activity both generally within Australia and more particularly within the state. The term "sent-out" refers to the amount of electricity sent out from the various power stations on the system. It includes energy that is sold to customers as well as energy losses within the transmission and distribution systems.

Energy growth is driven by factors such as new industries, increases in population and construction of new housing. It is also influenced by consumer confidence as this translates through to the purchase and usage of different electrical appliances. Growth rates are also influenced by changes in the intensity of energy usage. More efficient appliances, better home insulation and substitution between different fuel sources also affect the amount of electricity used.

In general, these factors change slowly so energy usage forecasts are relatively stable. There is a measure of uncertainty in the forecasts of future economic activity so forecasts are prepared for low and high growth cases as well as for the expected case. The level of capacity to be acquired by the IMO is based on the expected forecast but the high and low cases provide an indication of the possible risk of under- or over-provision.

The second measure of electricity usage is the maximum demand, which is the amount of electricity that is being consumed at any given time. This demand, which in the SWIS is measured over each half hour, is strongly influenced by shorter-term drivers, in particular, the weather and the use of space cooling equipment in summer.

Forecasts of maximum demand are prepared on the basis of defined probability standards. In theory, the maximum demand in any year could be influenced by a broad range of factors including:

- Daily temperature.
- Humidity.
- Weather conditions on the previous day or two.

- Overall summer temperature.
- General economic conditions and spending patterns.

In practice, however, the single most important determinant of demand is the daily temperature and the probability standards are based on these.

Analysis of daily average temperatures since the 1950's has been used to determine the relationships between maximum demand and temperatures on the hottest summer day and coldest winter day. The peak electricity demand forecasts reflect expected demand on a non-holiday period business day under these temperature conditions.

Forecasts are prepared on the basis of three defined probability standards:

- A 10% probability of exceedence (PoE) forecast which is one that is not expected to be exceeded more than once in every ten years.
- A 50% PoE forecast which is not expected to be exceeded more than once in every two years.
- A 90% PoE forecast which is not expected to be exceeded more than nine in every ten years.

A 10% PoE peak would occur on a day where the average of the maximum and minimum temperatures over the day is around 34.5°C. By comparison, a day where the average of the maximum and minimum temperatures is around 31.5°C would have a peak demand closer to the 50% PoE.

In general, 10% PoE peak demand events are infrequent and typically have a very short duration. They can be expected to occur during one year in every ten and have a duration of only a few hours per year. Even if a 10% PoE event occurs during a year, typical demand levels will be much lower, and generation reserve levels correspondingly higher, throughout most of the summer.

The 10%, 50% and 90% PoE forecasts are predominantly driven by temperature but maximum demand is also correlated, to a lesser extent, with the underlying rate of economic growth. The IMO therefore must consider the possible combinations of economic growth rates and peak demand.

As noted above, the Market Rules require three forecasts to be prepared in respect to sent-out energy namely low, expected and high. Nine forecasts of peak demand could be prepared covering all combinations of low, expected and high energy growth combined with the 10%, 50% and 90% PoE temperatures. However, if sufficient capacity is installed to meet the 10% or 50% PoE situations, it will be always cover a 90% PoE situation. For this reason, the 90% PoE figures, which represent demand during very mild weather conditions, are not shown diagrammatically but the data is included within Appendix 2.

Since the mid-1980's, electricity demand has generally been highest during summer due to the increased usage of air-conditioning in summer and increased use of gas for domestic heating during winter. Over recent years, the winter demand has started to increase more rapidly, though it is still well below the summer demand. It is not clear yet what is driving this increase but it may be influenced by such factors as:

- Use of reverse cycle air-conditioners for heating.
- Reductions in the use of wood for domestic heating.
- Restrictions on un-flued gas heaters.

The IMO is monitoring this increase in winter maximum demand.

4.2 Preparation of Forecasts

Electricity Sent-out

The IMO has retained the National Institute for Economic and Industry Research (NIEIR) to prepare the forecasts for this report. NIEIR has prepared forecasts for a range of utilities over many years and has provided forecasts for the SWIS for some years.

NIEIR has a national macroeconomic model for the whole Australian economy and this is used to develop three growth scenarios. A state economic model is then used to forecast the Gross State Product and other indicators and a regional model allocates this growth to the various regions within the SWIS.

Forecasts of SWIS electricity sales are developed on an industry basis using regression models that relate consumption to the change in output for that industry and the change in real electricity prices for that industry. The output and price elasticities used in the models are adjusted at the regional level to reflect differences in the electrical intensity between industries and regions.

Residential electricity sales forecasts are determined from a regression model based on average electricity sales. Average sales per customer are determined from a regression model incorporating real household disposable income per capita, real residential electricity prices and a weather adjustment variable. The relevant income and price elasticities of demand for the regional sector are taken from NIEIR's Western Australian electricity model.

Residential customer number forecasts are linked to NIEIR's forecast of the dwelling stock. NIEIR's regional economic models include projections of population, household formation, dwelling construction activity and the dwelling stock for each sub-region.

Summer Maximum Demand

Forecasts of summer maximum demands are developed using an approach that takes account of four major factors:

Non-temperature sensitive load – this is residential, industrial and commercial load that does not change as a result of differences in the daily temperature. The growth in demand from these loads will be closely related to the level of economic activity within the SWIS. The number of new homes, and sales by retail businesses, will be strong drivers.

Much of the economic activity in Western Australia is occurring outside of the SWIS, particularly in the Pilbara and the Goldfields. While this does not directly affect SWIS demand there is still a significant flow through via the increased demand for Perth-based support industries and population growth in the Metropolitan area.

Temperature sensitive load – for the summer maximum demand, this comprises mainly space cooling appliances such as refrigerative and evaporative air-conditioning as well as ventilation equipment. Determining the demand from these loads is the most complex element of the forecast because it is being driven by the rate of purchase and usage of new appliances. NIEIR's approach reconciles appliance sales data for Western Australia to half hourly electricity demand data combined with regression analysis equations based on the temperature for the given day and the previous day.

Major industrial loads – which covers all of the larger customers in the SWIS. This portion of the demand is assessed by consideration of known major development plans and an analysis of the flow through of general economic growth.

Embedded generation – which is generation that is co-located with major industrial loads. There are several major power stations in the SWIS, in particular those associated with the production of alumina, which are co-located with their loads. These power stations may draw stand-by supplies from the SWIS and may also have some export capability. Only these net energy transfers are included within the SWIS forecasts.

Intermittent Generation Requirements

A number of major industries within the SWIS are supplied with electricity from on-site generating plant. These industries may register as Intermittent Generators within the Market Rules which allows them to draw stand-by energy from the SWIS during periods when plant is out of service for maintenance. This demand is not captured within the forecasts prepared by NIEIR and is estimated separately.

These customers will have a capacity obligation that reflects their maximum demand from the SWIS and their diversity in likely demand. Based on data provided to the IMO, the requirement to provide coverage for outages to embedded generators will add 11 MW to the amount of capacity required to cover the summer peak demand.

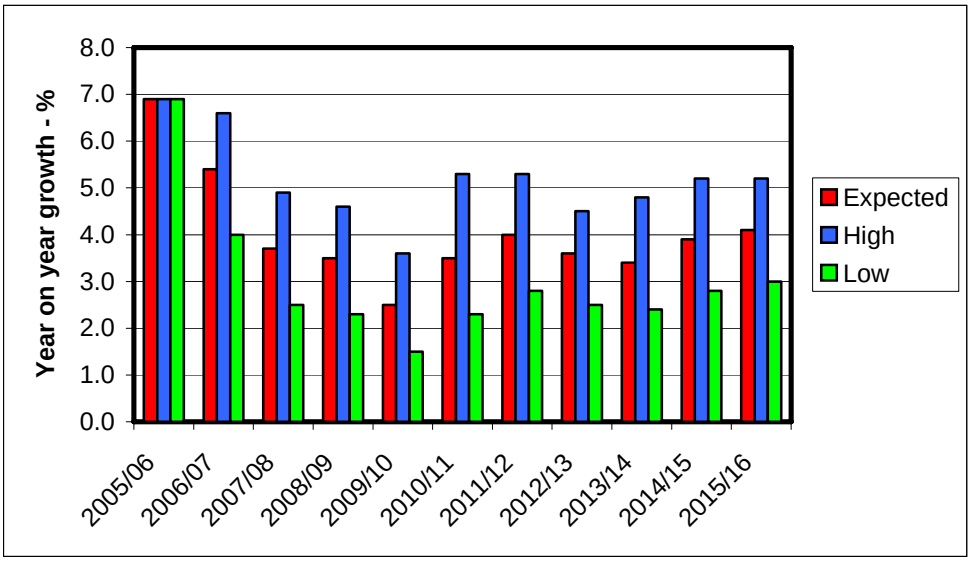
Major New Loads

In developing these forecasts, the IMO has sought information on major new electricity loads that may be developed. The most significant of these is the proposed Boddington Gold Mine which is expected to be brought on stream progressively in late 2008. This demand, expected to be in the order of 150 MW, is in addition to the forecast prepared by NIEIR.

4.3 Forecasts of Growth in State Product

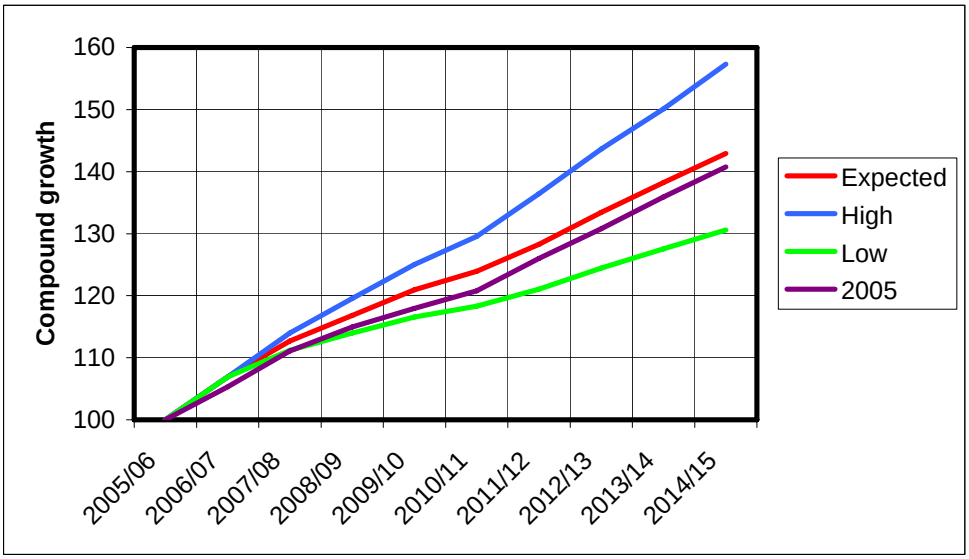
The analysis undertaken by NIEIR continues to show strong economic growth in the region served by the SWIS. Over the period through to 2015/16 the year on year growth is forecast to average 4.0% in the expected growth case, 5.2% in the high case and 3.0% in the low case. This is shown in Figure 6 below.

Figure 6: Forecast Growth in GSP within the Region Served by the SWIS



The impact of this is more readily seen by considering the compound growth. The compound growth for the 2006 expected, high and low cases and for the expected case data used to develop the 2005 SOO is shown in Figure 7.

Figure 7: Forecast Compound Growth in GSP 2005 & 2006



The economic activity in the region served by the SWIS is forecast to grow by between 25% and 55% over the period through to 2014/15. It can be seen that the NIEIR forecast undertaken in 2006 is slightly higher than that used for the 2005 SOO. This is reflected in slight increases in both maximum demand and energy sent out forecasts.

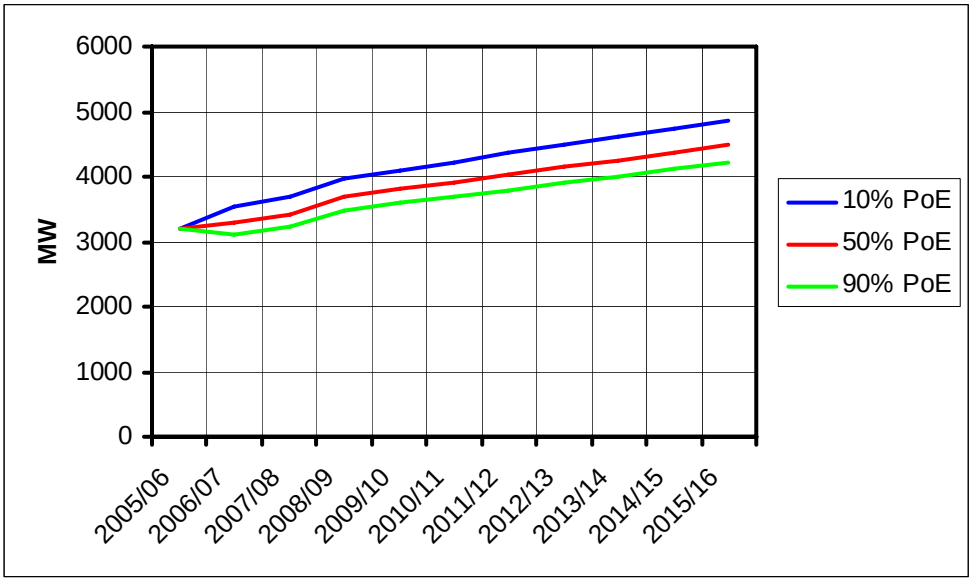
Forecasts of growth in GDP for Australia and Western Australia are shown in Appendix 2.

4.4 Forecasts of Growth in Maximum Demand

Figure 8 below shows the forecast maximum demands within the SWIS based on the assumption that underlying economic growth occurs at the expected rate. This shows forecast maximum demands corresponding to the 10%, 50% and 90% PoE weather conditions. The upper line in the chart is used as the basis for determining the capacity requirements within the SWIS and corresponds to:

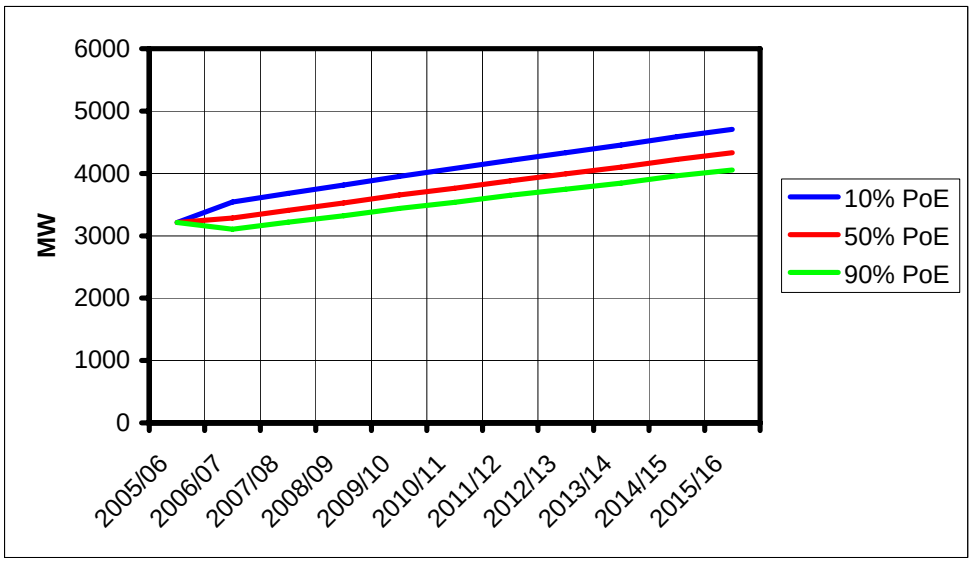
- Underlying economic growth occurring at the expected rate.
- 1 in 10 year hot summer weather conditions.

Figure 8: Forecast Maximum Demand – Expected Economic Growth with Boddington



The proposed Boddington Gold Mine development has a significant impact on these forecasts as can be seen by the step change which occurs in 2008/09. Figure 9 below shows the forecast maximum demands with Boddington excluded. This shows that the underlying peak demand, based on the 10% PoE criterion, is expected to rise at an average of 3.2% per year from 3,811 MW in 2008/09, to 4,708 MW in 2015/16. The Boddington load adds around 3.9% to the forecast demand in 2007/08, in effect, accelerating total system growth by one year.

Figure 9: Forecast Maximum Demand – Expected Economic Growth excluding Boddington

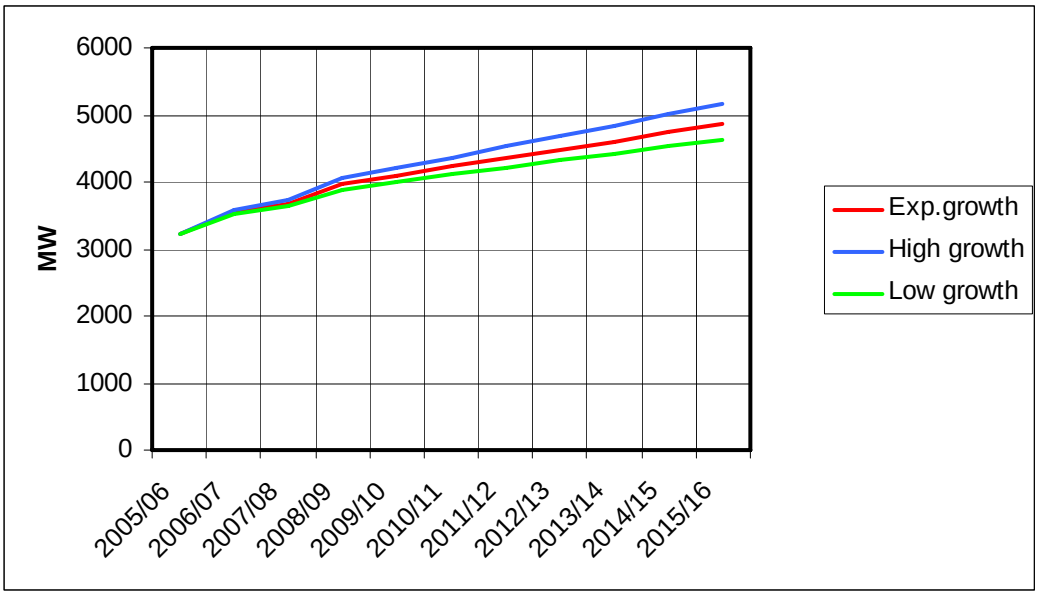


These graphs clearly show the potential variation in demand due to weather conditions. If the maximum temperature in 2008/09 is no more than the 50% PoE level, that is, there are no extremely hot business days during the summer period, the maximum demand is forecast to be 3,678 MW (including the Boddington load). However, if temperatures reach a level that might be expected to only occur once in every 10 years, the maximum demand is forecast to be around 280 MW higher at 3,961 MW. This difference is close to 8% of the demand level and is the equivalent to the largest generating unit on the system. If the summer were to be cool, then the maximum demand is forecast to only reach 3,473 MW, which is almost 200 MW less than the 50% PoE weather figure. This total range of almost 500 MW is equal to around 13% of the maximum demand.

Forecasts of maximum demand have been prepared for nine load cases, though the 90% PoE forecasts are not used to determine plant requirements. Separate series of forecasts have been prepared for maximum demands for the SWIS assuming that the underlying economic growth follows the expected rate, the high rate and the low rate, respectively. For each growth rate, maximum demand forecasts are provided corresponding to 10%, 50% and 90% PoE weather conditions. These are provided in Appendix 3.

Figure 10 below shows how the forecast maximum demands vary as a result of changes in the underlying growth rate for energy sales. If the economy slows and growth follows the low rate it is forecast that maximum demand will rise at an underlying rate of 2.6% whereas high economic growth would see the peak demand, excluding Boddington, grow at around 3.7%.

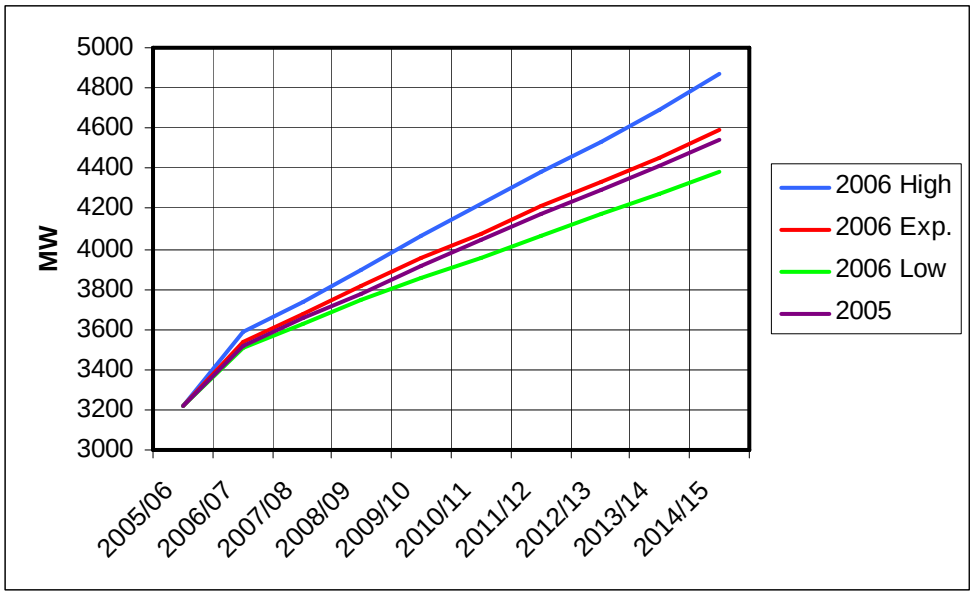
Figure 10: Impact of Economic Growth on Maximum Demand (for 10% PoE)



The potential for changes in demand driven by underlying load growth is substantially less than the temperature impact. If the economy were to follow the high growth rate, rather than the expected level, the difference in peak demand in 2008/09 would be 85 MW. Not only is this variation much less than that due to temperature variations, any acceleration of state growth would be signalled by a range of factors such as new house starts. This would give the IMO the opportunity to respond in order to maintain system reliability.

Figure 11 below compares the forecasts of maximum demand with those provided within the 2005 SOO. (The Boddington load has been excluded for comparative purposes in this Figure). This shows that the 2006 SOO forecast maximum demands are up to about one per cent higher than the comparable forecast in the 2005 SOO. The forecast is well within the forecasting bounds of the 2005 SOO being a little higher than the expected growth case but less than the 2005 high growth forecast case.

Figure 11: Forecast Maximum Demand compared with 2005 SOO Forecast (for 10% PoE)



As outlined in section 4.2 above, the rate of installation of air-conditioning has a strong impact on maximum demand. To determine the actual demand from new air-conditioning installations it is necessary to forecast both how many units will be installed and how much they will be used. While there is an underlying trend, both of these factors will vary considerably depending on the weather conditions in the year in question and the impact of what happened in the previous year.

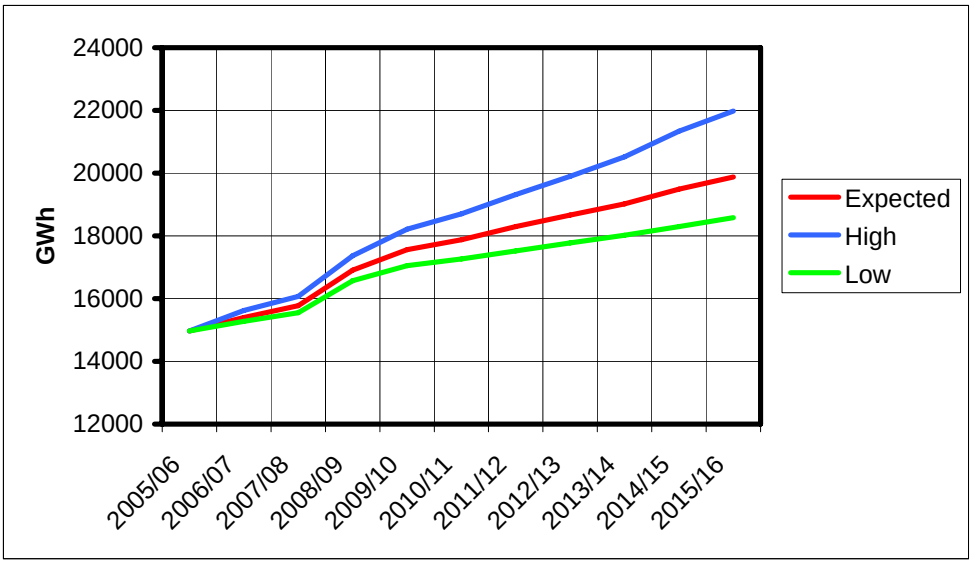
For example, if the weather in a year is particularly hot, more people will purchase air-conditioning units than if it was a cooler year. Having installed them, people will then tend to run them in the following years, even though the temperatures may not

be particularly high. This means that the demand in a median year that follows a hot year is likely to be higher than the demand in a median year that follows a cool year. Similarly, people who buy reverse cycle air-conditioning for heating will most likely use them extensively for summer cooling as well.

4.5 Forecasts of Growth in Energy

Figure 12 below shows the forecast energy sent-out from power stations based on expected, high and low economic growth rates. These figures comprise the energy used by customers plus the energy lost within the transmission and distribution figures. They therefore show the amount of energy that must be provided into the SWIS.

Figure 12: Forecast Energy Sent-out



The growth in energy sales strongly reflects the growth in Gross State Product. However, the Boddington gold mine project has a strong impact, raising energy usage by around 6%. The impact on energy is significantly greater than the impact on peak demand because the demand profile at Boddington is expected to be quite flat. The Boddington load factor is estimated to be around 85% whereas that for the rest of the system is only around 40%.

Forecasts of sent-out energy are tabulated in Appendix 4.

4.6 Availability Curve

One of the key objectives of the market is to encourage measures that manage the amount of electricity used and when it is used. One mechanism to achieve this is to adopt various DSM strategies that release capacity into the system through end users reducing their demand. This may be by users either changing their operations or by running stand-by generating capacity.

There is a limit as to how often users would want to reduce their demand in this manner. This means that DSM providers will only offer their capacity for a limited time each year. In turn, this means that while DSM can provide capacity to the SWIS, it can only provide limited quantities of energy.

As the relative quantity of DSM on the system is increased, there will be a proportionate decrease in the quantity of generating plant. However, this generating plant will still be providing almost all of the energy so the average output of each generating unit will increase. This may lead to the situation where, even though the peak demand can be met, there is insufficient generating plant to provide the energy required over the year.

The market rules address this situation by requiring the IMO to develop an Availability Curve which describes the forecast capacities that are required for more than 24, 48, 72 and 96 hours per year and the minimum capacity required to be provided by generation plant if power system security and reliability are to be maintained. This curve, which is provided in Section 6, will define the maximum quantities of DSM, and any other energy limited capacity, that can be accommodated within the SWIS.

5. GENERATION AND DSM FACILITIES

5.1 Existing Generation

All generators that want to participate in the RCM are required to have their capacity certified each year by the IMO. For the first Reserve Capacity Cycle, which was for facilities offering capacity through to October 2008, the Market Rules defined a Certified Reserve Capacity for Western Power. (Western Power, at that time, was a vertically integrated utility but has now been disaggregated). This capacity was set at 3,224 MW, which included the 260 MW power station being constructed by Transfield, and assumed the closure of Muja AB Power Station during 2006/07. This figure covered several categories of generators:

- Plant owned and operated by Western Power.
- Plant owned by Western Power but operated by third parties.
- Plant owned by IPPs and selling electricity to Western Power under contracts.

The Market Rules allowed Western Power to review this figure and submit a revised figure to the IMO as part of the certification process in August 2005. Western Power was subsequently assigned 3,097.4 MW of Capacity Credits across its generation portfolio and 120 MW to its DSM facilities.

As part of the disaggregation process, Western Power's Capacity Credits were re-assigned to Verve and Synergy. Synergy is prohibited from owning or controlling generation so Capacity Credits associated with two very small bio-mass generators, which have power sales contracts with Synergy, were re-assigned to the generators.

Table 1 below summarises the amount of generation capacity in service within the SWIS as at July 2006. In preparing this table:

- All plant capacities are determined at an ambient temperature of 41 degrees Celsius.
- Wind-farms are rated at their estimated average output.
- The capacity of generators that are associated with on-site loads, such as some cogeneration facilities, is the capacity they export to the SWIS.

Table 1: Generation and DSM Capacity as at July 2006

Provider	Capacity
Alinta Pinjarra Cogeneration	129.0
Alinta Walkaway Wind Farm	40.7
Goldfields Power/Southern Cross Energy	80.5
Small bio-mass and land fill gas operators	22.7
Synergy DSM	120.0
Verve Energy	3297.4
Water Corporation DSM	11.0
Worsley Alumina Pty	46.5
Total	**3747.8**

5.2 Changes in Generation

A substantial amount of generation capacity is under construction within the SWIS at present. In addition to capacity supported by electricity sales contracts, plant has been committed as a result of changes in the electricity market including that secured through the RCM. Developers have also indicated their interest in building new capacity through the Expression of Interest process. Others have either briefed the IMO or made development plans public.

The IMO has categorised these various projects as either "committed", which means that the projects have secured financial close and are under construction, or "proposed", which means that the project is being actively pursued but may not proceed. In making this judgement, the IMO is not making any commitment to any particular project either receiving, or not receiving, certification or being assigned Capacity Credits.

Committed New Generation

Alinta is currently constructing a second cogeneration plant, rated at 129 MW, at the Alcoa alumina refinery at Pinjarra. This is sited adjacent to the first cogeneration plant and is scheduled to commence operation at the start of 2007.

Alinta has also secured certification and Capacity Credits for construction of a new generation facility, rated at 351 MW, at Alcoa's Wagerup alumina refinery. This facility is scheduled to enter service for October 2007. It is expected that this facility will be initially built as open cycle plant but with the intention of being converted to cogeneration configuration at some later date.

NewGen is constructing a 320 MW combined cycle power station at Kwinana in response to the Power Procurement Process run by Western Power. This facility is scheduled to enter service for October 2008.

Griffin and Stanwell Corporation expect to complete commissioning of Emu Downs Wind Farm located near Cervantes, north of Perth, in the second half of 2006. This facility has an installed capacity of 80 MW and has been assigned 31.1 MW based on its expected average production level.

Griffin has also commenced construction of the Bluewaters Stage 1 power station near Collie. This is a 204 MW capacity coal fired unit that is scheduled to enter service for December 2008.

Verve Energy has committed to undertake modifications to its Muja D generating units which is expected to increase output by 52 MW. This is scheduled for completion early in 2007 so is not included in the list of existing capacity shown in Table 1).

Table 2 summarises the new capacity which is committed for construction.

Table 2: Committed New Generation Capacity as at June 2006

Provider	Capacity
Alinta Pinjarra Cogeneration	129.0
Alinta Wagerup Cogeneration	351.0
Emu Downs Wind Farm	31.1
Griffin Bluewaters 1	204.0
NewGen Kwinana Combined Cycle	320.0
Verve Energy Muja D upgrade	52.0
Total	**1,087.1**

Proposed New Generation

The recent Expressions of Interest process elicited responses indicating that 712.6 MW of new generation and DSM capacity may be offered into the SWIS. It is likely that some of this will not proceed in the immediate future, however the IMO has also been advised of a number of other proposals that were not offered through the Expression of Interest process. For confidentiality reasons, the IMO is not able to publish a list of potential developments.

A final figure for additional capacity will only be determined once applications have been made for certification of reserve capacity and Capacity Credits have been assigned in August or September 2006. Within this report, the figure shown as “Proposed Generation” is the 712.6 MW offered in the Expression of Interest process.

Plant Closures

Verve has announced that Muja AB Power Station will be closed during 2006/07 and the capacity of this station is not included within its 2007/08 certified capacity. Verve has also confirmed its plans to close Kwinana Stage B Power Station (212 MW) in 2007/08 and Stage A (194 MW) in the following year.

Demand Side Management

Two entities have been assigned Capacity Credits for DSM for the first Reserve Capacity Cycle. Synergy has been assigned 120 MW of Capacity Credits and the Water Corporation has been assigned 11 MW. Additional DSM was included within the capacity proposed through the Expression of Interest process.

Summary

Table 3 below summarises the capacity that is in place, under construction or proposed for 2008/09.

Table 3: Potential Generation and DSM facilities – 2008/09

Facilities	Capacity
Existing generation and DSM	3747.8
Committed generation	1087.1
Proposed (based on Expressions of Interest)	712.6
Closure of Muja AB and Kwinana Stage B	-412.0
Total	**5135.5**

Appendix 5 tabulates the potential generation and DSM capacity through to 2015/16.

6. SUPPLY - DEMAND BALANCE

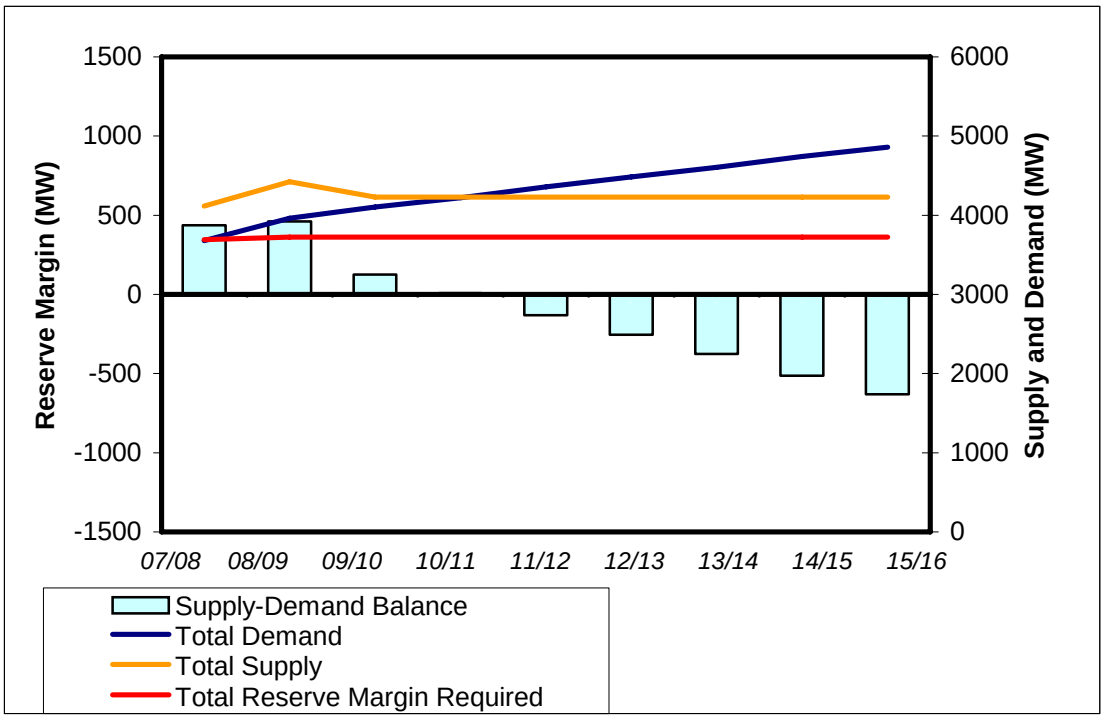
6.1 Assessment of Reserve Margin Criterion

The quantity of capacity required to be made available for the SWIS is calculated through two separate processes as outlined above. The first criterion is based on maintaining an adequate reserve margin at times of system peak. The required capacity is the sum of:

- The system peak demand based on expected economic growth and 10% PoE summer temperature conditions.
- A reserve margin to cover plant outages.
- A reserve margin to provide standby to embedded generation.

Figure 13 below summarises these requirements.

Figure 13: Required Generation and DSM capacity

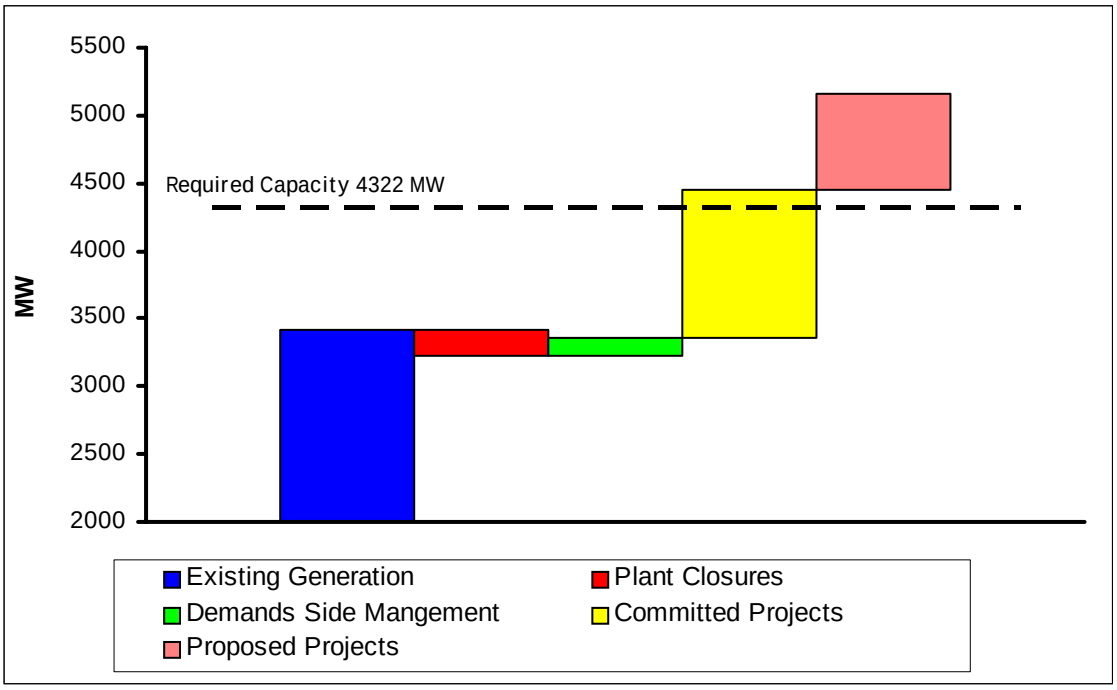


It can be seen from this chart that there is sufficient capacity either in place or committed to meet the capacity requirements based on the reserve margin criterion, through to 2008/09. However, following growth in demand and the closure of older plant, additional capacity will be required to meet the reliability criterion in 2009/10 and beyond.

6.2 Opportunities for Investment

The analysis undertaken shows that in 2008/09 a total of 4,322 MW of generation and DSM capacity must be available within the SWIS to meet the reliability criteria set in the Market Rules. Facilities that are currently in place, and are expected to remain in operation through to 2008/09, will provide 3,358.8 MW. A further 1,087.1 MW is currently committed to meet the requirements of the 2007/08 reserve capacity year giving a total of 4445.9 MW. In addition, the Expression of Interest (EOI) process indicated that a further 712.6 MW may be offered to the market. These figures are summarised in Figure 14 below.

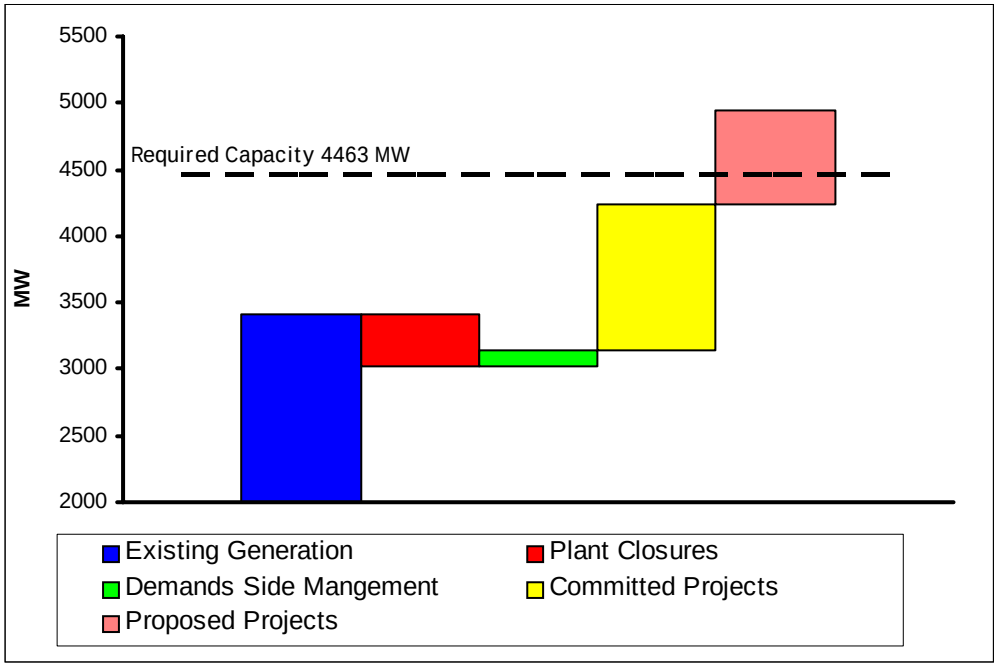
Figure 14: Capacity Requirements and Availability for 2008/09



This diagram shows that the amount of capacity that is now in place, or committed, exceeds the capacity requirement by approximately 120 MW in 2008/09. There is also the potential for capacity offered through the EOI process to be brought on stream in 2008/09. This suggests that there is sufficient generation and DSM capacity to meet demand (including the reserve plant margin).

In 2009/10, peak demand is forecast to increase by 141 MW while the existing capacity will be reduced by the closure of Verve's Kwinana Stage A power station giving a net increase in requirement of around 340 MW. As is shown in Figure 15 below, this requirement absorbs the potential surplus from 2008/09 and requires around 200 MW of new capacity to be available. This suggests significant opportunities for the development of new capacity into the market in 2009/10.

Figure 15: Capacity Requirements and Availability for 2009/10



6.3 Assessment of Expected Unserved Energy criterion

The second criterion is that there be sufficient plant to ensure that the expected level of energy not served does not exceed 0.002% in any year. This has been undertaken by McLennan Magasanik Associates (MMA) on behalf of the IMO using a proprietary modelling package called Strategist.

MMA have prepared a data set that includes information on the capacity and reliability of existing and proposed generating plant. Strategist uses this data to model the electricity demand on the SWIS and identify any occasions when full demand cannot be met due to insufficient generating units being available for service.

Strategist estimates the probability that not all demand can be supplied during these shortages and sums this over each year to provide the value of Expected Unserved Energy (EUE). From this, MMA have determined the amount of generation capacity required to ensure that expected energy shortfalls are limited to 0.002% of annual consumption.

The analysis undertaken by MMA showed that with no other new generation facilities beyond those currently identified as committed, additional facilities would be required to meet the 0.002% unserved energy criterion in:

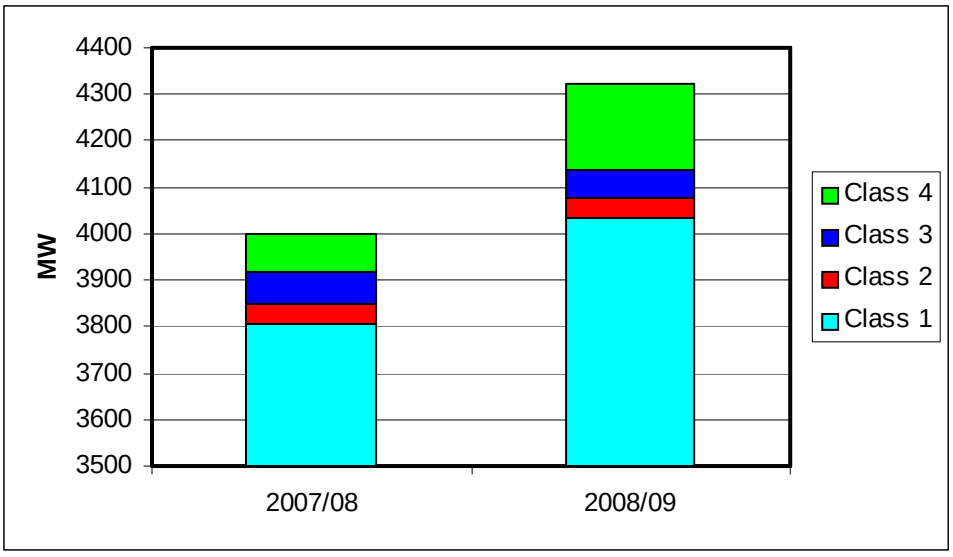
- 2012/13 if economic growth occurs at the expected growth rate.
- 2013/14 for the low growth scenario.
- 2011/12 for the high growth scenario though the criterion would be close to being breached in 2010/11.

These dates are some two years later than the dates set by application of the Reserve Margin Criterion. The Reserve Margin Criteria are therefore used to determine the required levels of new capacity.

6.4 Availability Curve

MMA have also used the Strategist model to assess the amount of capacity that can be provided by plant, mainly DSM, which is only available to operate for a few hours each year. This allows retailers, and other major customers, to tailor their DSM arrangements to the needs of the power system. The quantities of capacity that can be provided by DSM for the expected maximum demand scenario are shown in Figure 16 below.

Figure 16: Scope for DSM and Generation



This figure shows that in 2008/09, a maximum of 129 MW of capacity can be met by DSM facilities. The quantities that can be accommodated in each availability class are:

- Class 1, generation, a minimum of 4,033 MW.
- Class 2, DSM that is available for between 72 and 96 hours per year, a maximum of 46 MW.
- Class 3, DSM that is available for between 48 and 72 hours per year, a maximum 59 MW.
- Class 4, DSM that is available for between 24 and 48 hours per year, a maximum of 184 MW.

DSM which meets the requirement of any particular class can also cover the requirement for a higher Class so Class 2 DSM can cover the Class 3 or Class 4 requirements. This means that the system could accommodate a maximum of 289 MW of Class 2 DSM (covering Classes 2, 3 & 4) or 243 MW of Class 3 DSM (covering Classes 3 & 4).

It can be seen that the amount of capacity that can be provided by DSM is higher in 2008/09 than in the 2007/08. This is partly due to the overall increase in demand but is mainly due to a reduction in scheduled generator maintenance which provides increased opportunities for DSM.

7. REVIEW OF PLANNING CRITERIA AND FORECASTING PROCESSES

The Market Rules incorporate provisions for reviews to be undertaken so that experience gained in operation can be captured through rule changes. One of these processes is the requirement for the IMO, from time to time and at least once in every five year period, to undertake a review of the planning criterion and the process by which it forecasts SWIS peak demand.

The criteria used in this SOO have essentially followed those established in previous years. The IMO plans to undertake a review of planning criteria and the forecasting process, which will include consultation with stakeholders, during 2006/07. Issues to be considered will include:

- As the total system capacity increases and the number of generation facilities increases, is it still appropriate to base the system reserve on the size of largest generator on the system.
- With data now available on the performance of new, large wind farms, what assessment can be made of their actual contribution to system security.
- How the variety of DSM facilities is now being put in place contribute towards system security.
- In the past, some of the capacity available to support the system was not formally taken into account. (For example, the peak rating capability of gas turbine plant was not formally included within capacity calculations). The RCM encourages all capacity to be specifically identified, what consequence does this have on the reserve margin.

In developing its forecasts for the past two years, the IMO has relied upon a combination of generated and sent-out data from generation facilities along with customer data provided by Western Power. Once electricity trading commences, the IMO will have access to sent out data from all generation facilities within the SWIS as well as customer demand. It is therefore an opportune time for the IMO to determine whether its forecasting processes can be improved.

8. NEXT STEPS IN THE RESERVE CAPACITY MECHANISM

Persons who wish to offer generation or DSM capacity for service during 2008/09 must register with the IMO and then apply for certification of their proposed capacity. The closing date for certification is 20 July 2006. The required forms for these processes are available on the IMO website (www.imowa.com.au). Details of how to contact the IMO for further information are included at the front of this report.

APPENDIX 1 – GLOSSARY

Availability curve: a measure of the amount of reserve capacity that must be provided by generation or demand side capacity (DSM) that can operate for at lease 24, 48, 72 or 96 hours each year. The availability curve is used to determine the maximum quantity of DSM that can be accommodated within the system.

Bilateral contracts: a contract formed between any two parties for the sale of electricity or generation capacity by one party to the other.

Committed generation: new generation capacity for which a proponent has secured financial closure and which is very under construction.

Demand Side Management (DSM): the ability of a customer to reduce its consumption of electricity through either modifying their operations or operating on-site stand-by generation.

Embedded generation: Generation facilities that are co-located with the load that they supply. The most significant examples within the SWIS are the four alumina production plants.

Gigawatt-hour (GWh): a measure of electricity consumption over time. One GWh is equal to one million kilowatt-hours (kWh) where 1 kWh is equal to the electricity consumed by a one kW load when operated for one hour.

Independent Market Operator (IMO): a body, established by statute, that has responsibility to operate the Wholesale Electricity market including the Reserve Capacity Mechanism.

Independent Power Producer (IPP): any generating company other than Verve Energy. The term covers both private companies and trading enterprises that are owned by governments other than the government of Western Australia.

Maximum demand: the highest rate of usage of electricity in a given period such as a year, season or day. Maximum demand is measured in megawatts.

Megawatt (MW): a measure describing the rate at which electricity is used. A megawatt is equal to one thousand kilowatts (kW).

Planning criteria: a set of targets set in the Market Rules to which the IMO must plan the reliability of the power system.

Probability of Exceedence (PoE): the probability, or likelihood, that a certain level of demand will be exceeded. In developing load forecasts, the concept of probability of exceedence is used to estimate the likelihood that the temperature on any day will equal or exceed a given set of hot weather conditions. A 10% PoE demand event is a level of

demand that only has a 10% chance of being met or exceeded. This is a very rare event. Temperature conditions equivalent to this event would be expected to only occur during one year out of every ten.

Proposed new generation: new capacity proposals which have been made public by a developer but where the developer has not made a firm commitment to proceed.

Reserve Capacity Mechanism: the process by which the IMO determines the required capacity to be available within the SWIS and ensures that this capacity is provided.

Short Term Energy Market (STEM): a day-ahead market operated by the IMO under which market participants can buy electricity from, or sell electricity to, the IMO.

South West Interconnected System (SWIS): the interconnected transmission and distribution systems, generation facilities and associated works located in the south west of Western Australia. The SWIS covers an area generally extending between Kalbarri, Kalgoorlie and Albany.

System Management: A segregated business unit of Western Power that is responsible for dispatching the power system.

APPENDIX 2. FORECAST GDP GROWTH - %

Australia

	Expected	High	Low
2005/06	2.7	2.7	2.7
2006/07	3.1	4.3	2.1
2007/08	2.9	3.7	2.0
2008/09	2.8	3.7	1.7
2009/10	1.9	2.8	1.0
2010/11	2.9	4.0	2.2
2011/12	3.3	4.5	2.4
2012/13	2.6	3.7	1.5
2013/14	2.8	3.7	2.1
2014/15	3.1	4.2	2.2
2015/16	3.2	4.0	2.2

Western Australia

	Expected	High	Low
2005/06	6.9	6.9	6.9
2006/07	5.4	6.6	4.0
2007/08	3.7	4.9	2.5
2008/09	3.5	4.6	2.3
2009/10	2.5	3.6	1.5
2010/11	3.5	5.3	2.3
2011/12	4.0	5.3	2.8
2012/13	3.6	4.5	2.5
2013/14	3.4	4.8	2.4
2014/15	3.9	5.2	2.8
2015/16	4.1	5.2	3.0

APPENDIX 3. FORECASTS OF MAXIMUM DEMAND

Maximum Demand Forecasts With Expected Economic Growth (MW)

	10% PoE	50% PoE	90% PoE
2006/07	3,541	3,287	3,105
2007/08	3,679	3,410	3,216
2008/09	3,961	3,678	3,473
2009/10	4,102	3,803	3,587
2010/11	4,228	3,914	3,689
2011/12	4,360	4,033	3,797
2012/13	4,483	4,143	3,898
2013/14	4,604	4,251	3,996
2014/15	4,741	4,374	4,110
2015/16	4,858	4,479	4,207

Maximum Demand Forecasts With High Economic Growth (MW)

	10% PoE	50% PoE	90% PoE
2006/07	3,589	3,332	3,147
2007/08	3,741	3,468	3,272
2008/09	4,046	3,757	3,549
2009/10	4,218	3,913	3,693
2010/11	4,370	4,049	3,818
2011/12	4,529	4,193	3,952
2012/13	4,681	4,331	4,079
2013/14	4,837	4,472	4,209
2014/15	5,022	4,643	4,370
2015/16	5,171	4,778	4,496

Maximum Demand Forecasts With Low Economic Growth (MW)

	10% PoE	50% PoE	90% PoE
2006/07	3,510	3,259	3,078
2007/08	3,630	3,365	3,174
2008/09	3,743	3,464	3,263
2009/10	3,852	3,560	3,349
2010/11	3,960	3,654	3,434
2011/12	4,069	3,750	3,521
2012/13	4,174	3,843	3,605
2013/14	4,278	3,935	3,689
2014/15	4,382	4,028	3,773
2015/16	4,485	4,119	3,856

APPENDIX 4. FORECAST OF SENT OUT ENERGY – GWh

	Expected	High	Low
2006/07	15,400	15,622	15,272
2007/08	15,775	16,074	15,547
2008/09	16,913	17,366	16,574
2009/10	17,562	18,214	17,049
2010/11	17,878	18,705	17,265
2011/12	18,297	19,318	17,520
2012/13	18,664	19,901	17,775
2013/14	19,017	20,521	18,023
2014/15	19,485	21,340	18,296
2015/16	19,874	21,977	18,586

APPENDIX 5. GENERATION CAPACITY 2008/09 TO 2015/16

	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16
Existing Generation	3,204	3,110	3,110	3,110	3,110	3,110	3,110	3,110
Existing DSM	131	131	131	131	131	131	131	131
Committed Generation	1,087	1,087	1,087	1,087	1,087	1,087	1,087	1,087
Proposed New Generation	713	713	713	713	713	713	713	713
TOTAL	5,135	5,041	5,041	5,041	5,041	5,041	5,041	5,041

APPENDIX 6. LIST OF MARKET PARTICIPANTS AS AT 30 JUNE 2006

Company
AGL Energy Services
Alcoa of Australia Ltd
Alinta Power Services Pty Ltd
Alinta Sales Pty Ltd
BioEnergy Limited
EDWF Holdings 1 Pty Ltd
EDWF Holdings 2 Pty Ltd
EDWF Manager Pty Ltd
Electricity Generation Corporation trading as Verve
Electricity Network Corporation trading as Western Power
Electricity Retail Corporation trading as Synergy
Eneabba Energy Pty Ltd
Eneabba Gas Limited
Goldfields Power Pty Ltd
Griffin Power Pty Ltd
Griffin Windfarm Pty Ltd
IPM Energy Holdings Pty Ltd
Landfill Gas & Power Pty Ltd
Landfill Management Services Pty Ltd
Midwest Energie Pty Ltd
Mount Herron Engineering Pty Ltd
Newmont Power Pty Ltd
Perth Energy Pty Ltd
Perth Power Partnership ('PPP') Comprising Kwinana Power Partnership (70%) and Transfield Services (Kwinana) Pty Ltd
Premier Power Sales Pty Ltd
Southern Cross Energy
Transfield Services Kemerton Pty Ltd
Wambo Power Ventures Pty Ltd
Waste Gas Resources Pty Ltd
Water Corporation
Wesfarmers Energy Limited
Western Power Corporation
Worsley Alumina Pty Ltd

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