

WATTS ON

ELECTRICITY DEMAND OUTLOOK ///

2014 SWIS Electricity Demand Outlook



Launch of 2014 SEDO at the IMO office

The IMO was pleased to publish the 2014 SWIS Electricity Demand Outlook (SEDO) on Tuesday 17 June 2014, which was followed by a presentation to all interested Market Participants, and other stakeholders, Wednesday 2 July 2014 at the IMO office. The IMO would like to thank everyone who attended and contributed to this valuable session on the demand and energy forecasts for the 10 year outlook period.

The 2014 SEDO was published this year in place of the Electricity Statement of Opportunities (ESOO) due to changes to the 2014 Reserve Capacity Cycle.

On 29 April 2014, the IMO received a Direction from the Minister for Energy to defer certain aspects of the 2014 Reserve Capacity Cycle. This was the first time the IMO has received a Ministerial Direction, which was issued under the *Wholesale Electricity Market (Independent Market Operator) Regulations 2004*. In light of this, the IMO delayed the publication of the ESOO, and the setting of the Reserve Capacity Target for the 2016-17 Capacity Year, until 17 June 2015.

The 2014 SEDO has been prepared by the IMO to provide updated electricity and peak demand forecasts for the period 2014-15 to 2023-24, for the information of current and potential participants in the Wholesale Electricity Market (WEM) and other interested stakeholders.

In addition to the scenarios normally produced for the ESOO, the IMO has prepared a 'high customer response' scenario for the SEDO. This is based on the 10 per cent probability of exceedance (PoE), expected case forecasts, and

has been developed to explore the effect of continued growth in customer demand response on peak demand, through the Individual Reserve Capacity Requirement (IRCR) and installation of solar photovoltaic (PV) systems.

The key findings from the report are as follows:

- peak demand for 2013-14 was 3,702 MW, which occurred in the 5:30 pm to 6:00 pm trading interval on 20 January 2014;
- peak demand is forecast, under the 10 per cent PoE, expected case forecast, to increase at an average annual rate of 2.1 per cent between 2014-15 and 2023-24;
- sent out energy is forecast, in the expected case, to grow at an average annual rate of 1.8 per cent between 2014-15 and 2023-24;
- no new capacity is expected to be required in the SWIS until 2023-24 on the 10 per cent PoE, expected case forecast (plus an indicative Reserve Margin) and, if the circumstances underpinning the high customer response scenario occur, no new capacity will be required at any point in the forecast period; and
- peak demand in the high customer response scenario is forecast to grow at an average annual rate of 0.8 per cent between 2014-15 and 2023-24.

Electricity price rises have continued to drive changes in customer behaviour, as customers attempt to save energy through investment in technology and changes to their patterns of consumption. In the residential sector, average electricity use per household fell by 6.6 per cent between 2007-08 and 2012-13. This decline is largely a result of customers choosing energy efficient appliances, as well as changing behaviour. In addition, the uptake of solar PV continued with around 20,000 customers installing solar PV systems between 2012-13 and 2013-14, reducing demand from the electricity network. At the time of the peak demand on 20 January 2014, solar PVs reduced demand by an estimated 53 MW, even though the peak occurred quite late in the day.

Commercial customers are also looking for ways to reduce their energy costs. Ninety one unique customers have now demonstrated an ability to significantly reduce their load at the time of system peak, in response to incentives provided through the Individual Reserve Capacity Cost Recovery (IRCCR) mechanism.

These trends have the effect of slowing growth in SWIS electricity consumption and peak demand, and are consistent with similar trends observed in other Australian states.

Downloadable copies of the SEDO report can be found on the IMO website; [http://imowa.com.au/reserve-capacity/electricity-statement-of-opportunities-\(esoo\)](http://imowa.com.au/reserve-capacity/electricity-statement-of-opportunities-(esoo)) and a limited number of hard copies are available at the IMO office.



Highlights from our CEO

It has been a busy time at the IMO since my last update and I'm pleased to take this opportunity to update you on some of our recent activities and achievements across the Wholesale Electricity Market (WEM) and our Gas Services Information (GSI) functions.

The State Government recently released the much anticipated Electricity Market Review Discussion Paper. The IMO is currently preparing its submission for consideration by the Review's Steering Committee. We encourage our market stakeholders to make their submissions to support the Review, the Market Objectives and the best outcome for the Western Australian consumers.

We look forward to continuing to work closely with the Review Team and our market stakeholders as we move through the various phases of the Review.

Friday 1 August 2014 marked the successful first year of the Gas Bulletin Board (GBB) providing a valuable information platform for all of our Gas Market Participants. In June the Emergency Management Facility (EMF) was activated for the first time due to an outage at a gas production facility. I'm pleased to confirm that throughout the incident, the GBB continued to provide useful information to the public as well as restricted access data to EMF users authorised by the Public Utilities Office.

The Australian Energy Market Operator is currently looking into re-developing the design of the National Gas Market Bulletin Board. The IMO is pleased to have been able to assist by sharing the learnings from the design of the GBB and we look forward to seeing the final result.

In July the IMO completed the Annual Review of the Gas Advisory Board (GAB) as required by the Gas Services Information Rules and the GAB Constitution. I would like to welcome new members; Mr Ian Mumford, Mr Mike Lauer and Ms Elizabeth Walters who bring with them a wealth of experience in the gas and utilities sector. In addition, I would like to thank the departing and current members for their significant contribution.

The GAB is currently considering the potential of developing an independently operated wholesale gas market in Western Australia. To facilitate these discussions, the IMO has developed a proposed high level market design and undertaken significant consultation on the benefits and proposed structure. The IMO team has enjoyed undertaking this work on behalf of the GAB and looks forward to facilitating the next steps in the evolution of the Western Australian gas industry.

In the past year, the IMO released two Gas Statement of Opportunities reports. The next edition is well underway and we look forward to publishing this on 31 December 2014 with an associated stakeholder briefing in early 2015.

From a WEM's perspective; it has also been very busy with the following recent events and new initiatives.

The carbon tax repeal legislation received Royal Assent on Thursday 17 July 2014, with effect from 1 July 2014. The IMO is currently investigating options to assist Market Participants dealing with the repeal of the carbon tax.

In June the IMO published the 2014 SWIS Electricity Demand Outlook (SEDO). The SEDO was published in place of the Electricity Statement of Opportunities (ESOO) due to changes to the 2014 Reserve Capacity Cycle. Similar to the annual launch of the ESOO, the IMO hosted a briefing for all Market Participants to update them on the demand and energy forecasts for the 10 year outlook period. I would like to thank everyone who attended and contributed to this session.

Over the last 12 months the IMO has taken advantage of the increased range and frequency of data made available as a result of implementing the Market Evolution Programme and more particularly the new Balancing Market. Stage one of the IMO's Data Visualisation Project has been available on the IMO website through the icon 'Explore the Market' since June 2013. Following queries from a number of Market Participants, we have now launched a version that runs

as a slide show. This enables all interested stakeholders to display up-to-date WEM market information on monitors in their offices, meeting rooms, foyers and reception areas.

The IMO is very committed to market transparency and we continuously explore ways to present complex market data in a digestible form. Stage two of the Data Visualisations Project is currently under development and will be progressively rolled out throughout the remainder of 2014.

The Muja transformer failures of BTT1 and BTT2 earlier this year has resulted in the SWIS operating in a High Risk Operating state for much of 2014, with Market Participants incurring significant extra constrained on costs. The IMO has adopted an open approach to this issue and has endeavoured to keep our Market Participants and stakeholders informed as to the impact of these transformer failures on the market. With the aim of reducing the operational risk and constraint costs associated with the failures, the IMO established a small dedicated team to work with System Management to analyse and model potential dispatch options to assist in dispatch planning.

The IMO is regularly hosting market updates and I encourage you to visit our website for further details including copies of all presentations.

I would like to also take this opportunity to update you on the recent changes on the IMO Board. I'm very pleased to welcome Mr Peter Kolf as a Director to the IMO Board. Peter brings a wealth of knowledge to the IMO based on his extensive experience in the oil, gas and utilities industries, and in economic regulation. At the same time, I would like to acknowledge the efforts and contribution made by recently departed Director; Mr David Huggins who has served on the IMO board since November 2006.

Lastly, I'm delighted that our Graduate Development Program continues to be popular and attract strong and talented applicants with a passion for the WA energy sector. Applications for the 2014/15 Program closed at the end of June with an impressive 344 applicants, this follows on from over 400 applications received in 2013/14. We are currently reviewing applications and I look forward to welcoming two new graduates to the IMO team in February 2015. I would like to thank everyone who applied.

As always, I encourage you to share your thoughts and feedback with myself and my team, so please don't hesitate to get in touch.

Allan Dawson

2014 Annual Review of the Gas Advisory Board

The Gas Advisory Board (GAB) is a committee of gas industry representatives who have been appointed as individual members to advise the IMO in relation to rule changes, procedure changes, the operation of the Gas Bulletin Board (GAB) and the preparation of the Gas Statement of Opportunities (GSOO).

Each year the IMO is required by the Gas Services Information Rules and the GAB Constitution to review the composition of GAB. The 2014 review was completed in June. The IMO received many high-calibre applications for membership on the GAB from across the gas industry.

The IMO has appointed representatives to the Board on the basis of the members' skills, knowledge and industry expertise as they relate to the class to which they were appointed.

The IMO is pleased to welcome three new GAB representatives:

Mr Mike Lauer

Mike is the founder and Director of gasTrading Australia Pty Ltd, a company that provides energy management services in the WA gas industry. Over the last 30 years, Mike has played a significant role in major projects in the energy sector across Australia.

His experience is broad and includes policy, commercial and project construction management, gas transportation and sales.

Mr Ian Mumford

Ian is the Regional Gas Marketing Manager for BHP Billiton. He has over 20 years experience in the WA and Australian domestic gas and LNG export fields. Ian has a breadth of experience and knowledge of the WA energy sector across development, commercial trading, shipping, operations and marketing functions. Ian also has experience in a number of international markets.

Ms Elizabeth Walters

Elizabeth is the Assistant Director of Electricity at the Economic Regulation Authority (ERA). She has worked in the regulated utilities industry for more than 15 years, initially in the water industry in the United Kingdom. Elizabeth joined the ERA in 2010 with her first role being to review Western Power's access arrangement before becoming involved in the markets area in 2013. This has provided her with experience from across the WA electricity sector.

This year, a number of existing GAB members were reappointed to their positions, including

Mr Mark Cooper, Mr Stewart Gallagher and Mr Mike Shaw. The IMO Board would like to acknowledge the GAB members for their efforts throughout the year and thank the outgoing members, Mr Stan Reid and Mr Nenad Ninkov for their valuable contribution.

GAB members are required to act in the best interest of the gas industry as a whole and must have regard to the GSI Objectives of promoting the long term interest of consumers of natural gas in relation to:

- the security, reliability and availability of the supply of natural gas in the State;
- the efficient operation and use of natural gas services in the State;
- the efficient investment in natural gas services in the State; and
- the facilitation of competition in the use of natural gas services in the State.

To view all the 2014/15 GAB members please see our website where the IMO also publishes GAB related meeting papers:

[http://imowa.com.au/governance/gas-advisory-board-\(gab\)](http://imowa.com.au/governance/gas-advisory-board-(gab))

Gas Advisory Board Appreciation Dinner



John Kelly during his welcome speech



Joachim Tan, John Jamieson, Laura Koziol and Erin Stone



John Kelly, Stewart Gallagher and Allan Dawson

The IMO held the annual GAB Appreciation Dinner following the July GAB meeting to farewell departing members and welcome the new members.

This yearly event provides an opportunity for previous, existing and new GAB members to get together to discuss the current and upcoming challenges in evolving the gas market in WA.

At the dinner, the Chairman of the IMO Board, Mr John Kelly noted the significant achievements over the year:

- the formal establishment of the GAB under the GSI Rules which commenced in June 2013;
- 1 August 2014 marked the successful first year of the operation of the Gas Bulletin Board;

- the release of two Gas Statement of Opportunities; the first edition was in July 2013, and the second in January 2014. The next edition is well underway and due to be published by 31 December 2014; and
- extensive consultation with the broader gas industry with respect to the potential development of an independently operated wholesale gas market in WA.

Muja Transformer Failure Market Updates

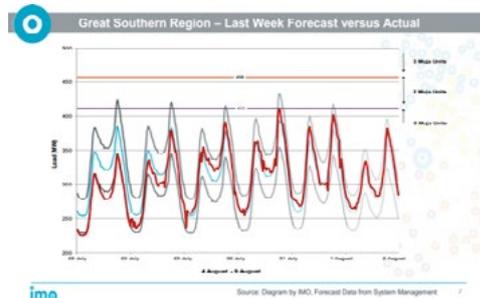
The IMO has tasked a dedicated team to analyse and model potential dispatch options following the failures at the Muja substation Bus Tie Transformers (BTT) 1 and 2. The IMO invites all Market Participants, and other interested stakeholders, to attend regular market updates.

The IMO believes in creating competition, transparency and accountability in the Wholesale Electricity Market and our role is to keep wholesale energy prices efficient and competitive. The Muja transformer failures of BTT1 and BTT2 earlier this year has resulted in the SWIS operating in a High Risk Operating state for much of 2014, with Market Participants incurring significant extra constrained on costs. The IMO held two initial market updates on the 14 May 2014 and 25 June 2014 to brief Market Participants on market dispatch to the affected network and the estimates

of constrained on and off payments.

With the aim of reducing the operational risk and constrained costs associated with the failures the IMO tasked a dedicated specialist team to work with System Management to analyse and model potential dispatch options to assist in dispatch planning.

The IMO has adopted an open approach to this issue and has endeavoured to keep Market Participants, and other stakeholders, informed through hosting regular market updates. These updates focus on the sensitivity estimates of constrained payments based on Western Power Networks' and System Management's forecast dispatch requirements for the impacted period. These include; reviewing previous period's forecast and its related financial impact compared to what happened; reviewing of System Management's indicative six day-ahead Muja dispatch plan and a



Source: Diagram by IMO, Forecast Data from System Management

discussion on the scenarios provided and the underlying assumptions.

For details on our next market update, and to view previous sessions' presentations, please visit:

<http://imowa.com.au/industry-briefings-muja-transformer-failure>

MARKET DATA VISUALISATIONS ///

Our innovative infographics are now available as a slide show.

The IMO has recently launched a slide show feature of our Market Data visualisations.

You may previously have seen this presentation, as it has been running in the IMO foyer since September 2013.

The IMO is excited to make this presentation readily available to our stakeholders; enabling them to display up to date market information on monitors in their offices, meeting rooms, foyers and reception areas.

The Market Data visualisations were launched in June 2013 providing information on the 'Diversification since Market Start', 'Live Market Activity' and 'Live Wind Generation'. In September 2013, additional infographics were added providing information on 'Current Generation', the 'Short Term Energy Market (STEM)' and the 'Weekly Numbers'.

The project goal for the Market Data visualisations has remained the same; to promote greater market transparency for our Market Participants and assist in the general understanding of the Wholesale Electricity Market (WEM) and its evolution since it began in September 2006.

Another interesting area of our website is the central repository for WEM data; <http://data.imowa.com.au/>. Each data set can be downloaded in CSV format and includes field definitions to assist users in understanding the information provided.

Overview of Market Data visualisations

Current Generation

illustrates the amount of energy generated by each facility relative to their capability. This is updated half hourly to display the generation relating to the most recently completed 30 minute period, commencing on the hour or half hour. It also displays a geographical representation of the generators in the SWIS.

Generation Diversification since Market Start

illustrates the evolution of the WEM since market start, with a breakdown of actual generation share and capacity market share by participant.

Live Wind Generation

displays a geographical view of the SWIS where the size of the wind turbines shown represents the relative capacity of each wind farm and the speed of turbine rotation shown represents its relative output.

Short Term Energy Market (STEM)

illustrates the amount of energy purchased and sold in the STEM by



Explore the Market: <http://imowa.com.au/explore-the-market>

participant. This infographic is updated monthly and the slider allows the user to select any month since market start.

Market Activity

includes forecast balancing prices, forecast loads, generation volumes, intermittent generation forecasts and generation by participants, updated every 30 minutes.

Weekly Numbers

allows users to compare total generation, non-scheduled generation and balancing prices from week to week.

The IMO has worked hard in making these innovative features to present complex data in a more digestible form; however the work does not stop here. The next phase of the Market Data visualisations

has just commenced and we look forward to updating you on this.

We welcome any suggestions or comments you may have, please email us at imo@imowa.com.au or call 08 9254 4300

The IMO welcomes Mr Peter Kolf as Director of the IMO Board



Peter Kolf was appointed by the Minister for Energy as a Director of the IMO 1 July 2014. Peter brings a wealth of knowledge to the IMO based on his extensive experience in the oil, gas and utilities industries, and in economic regulation. His professional career commenced with the Gas and Fuel Corporation of Victoria, leading to energy related management and senior management roles at both State and Commonwealth levels of government. In addition, Peter has held senior positions in telecommunications, the regulation of national air fares and in the water industry covering market management, pricing and corporate planning.

In 1998, Peter took on the role of Executive Director of Western Australia's Office of Gas Access Regulation which led to his appointment as General Manager and

subsequently Chief Executive Officer of the State's Economic Regulation Authority. He is currently Director, KPK Specialist Advisory Services Pty Ltd.

Peter holds a Bachelor of Commerce (Hons.) and a Master of Economics. He is a Certified Practising Accountant and a Fellow of the Australian Institute of Energy.

Peter's term as Director at the IMO expires 30 June 2017.

The IMO would like to acknowledge the efforts and contribution made by recently departed Director; Mr David Huggins.

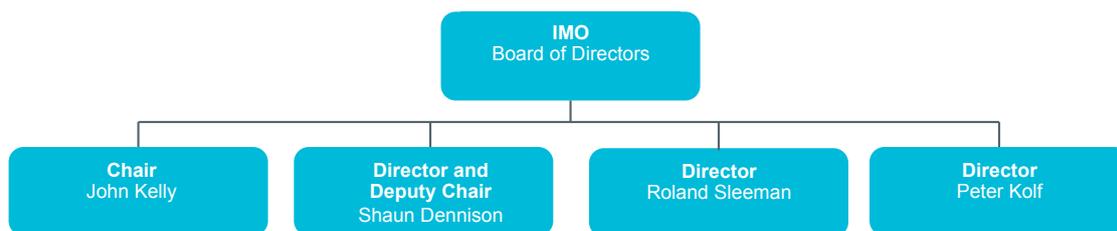
David Huggins was initially appointed as a Director of the IMO in November 2006 and was subsequently re-appointed to the board twice with his term expiring on 30 June 2014.

David provided the IMO with considerable experience, particularly from a risk, compliance, monitoring and regulation perspective. Two significant projects approved by the Board during David's tenure included the implementation of the Market Evolution Project and the Gas Information Services Project.

David currently has his own legal practice and has previously held positions with the Australian Securities Exchange, Australian Securities Commission and a major law firm.

The IMO Chairman, Board, CEO and staff would like to thank David for his valued contribution to the IMO.

You can find more information on our Board of Directors and Governance on our website.



First activation of the Emergency Management Facility

The Emergency Management Facility (EMF) is an information distribution platform on the Gas Bulletin Board (GBB). Some of the information collected is commercially sensitive and can only be viewed by users authorised by the Coordinator of Energy; Dr Ray Challen, Deputy Director General, Public Utilities Office. It is the Coordinator of Energy that directs the IMO to activate or deactivate the EMF. The EMF will be activated in the event of a gas supply emergency to assist those managing the emergency.

On the 6 June 2014 the EMF was activated for the first time when a gas production facility experienced a production outage. The Coordinator of Energy activated the EMF, which then required the gas pipelines and other participants to submit additional data to provide improved situational awareness

during the supply shortage. In this case the production issues were resolved the same day; the EMF was deactivated when line pack pressures were resolved.

The IMO is pleased to inform that throughout the incident, the GBB continued to provide useful information to the public as well as restricted access data to EMF users authorised by the Public Utilities Office.

Friday 1 August 2014 marked the successful first year of operation of the GBB. The IMO must operate the GBB in accordance with the GSI Act, the GSI Regulations, the Rules and any applicable Procedures.

If you have not already; we encourage you to visit the GBB on: <https://gbb.imowa.com.au/>



EMF activated Friday 6 June 2014

The GBB is a public website showing short-term forecasts and actual natural gas production, transmission, storage and consumption information for Western Australia. It currently has 54 registered participants and more than 100 unique visitors per week.

Market Trial Environment

To assist the market to transition changes, both technical and commercial, the IMO makes the Wholesale Electricity Market (WEM) Market Trial environment available to all Market Participants. It is a replica of the WEMs with access to historical market data but with no market or financial impact.

Market Participants can practice submissions for Balancing, LFAS, reserve capacity and Short Term Energy Market (STEM) and view the results without the concern of financial impact as a result of these simulated trades.

In addition, the Market Trial environment provides a preview mechanism for important WEMs changes and allows Market Participants to experiment with features, train staff and validate system interfaces in an environment with no market or financial impact. The IMO makes system updates planned for the WEMs available in the Market Trial environment approximately two to four weeks prior. In this period the IMO invites all Market Participants to test their system interfaces, try the new features and put forward any queries they

may have, so that any problems can be resolved prior to 'going live' in the WEMs.

The IMO wants all Market Participants to be competent trading in the WEM to facilitate competition and an efficient market. The Market Trial environment is available 24 hours for Market Participants through the Market Participant Interface and the WEMs' data base can be refreshed upon request.

Market Participants can access the Interface via: <https://wems-mkt.imowa.com.au/mpj>

STAFF PROFILE ///

Martin Maticka

Group Manager, Operations and Technology

What is your role at the IMO?

I joined the IMO in late 2010. I'm the Group Manager of the Operations and Technology team who are the main contact for Market Participants and are responsible for the operation, settlement and technical support of the Wholesale Electricity Market and the Gas Bulletin Board. In addition, we support the IMO's corporate systems: infrastructure, data communications and datacentres.

What is your background?

I've got a formal background in engineering, physical and computing and later did some advanced study in management to broaden my business skills. Earlier in my career I worked in the mining industry, but I always had an interest in finance and a love of complex

systems. It was only a matter of time before I became involved in energy markets which was about 15 years ago now, with the last six years in the electricity industry.

What do you enjoy the most about working for the IMO?

The team I'm working with and the tangible benefits we offer.

What is your biggest achievement?

It is rare to get an opportunity to be part of the implementation of a new market, so working on the Market Evolution Program was fantastic. This included the implementation of new competitive markets for Balancing and Load Following Ancillary Services. The IMO receiving an award in 2013 from the WA Information Technology and Telecommunications Awards (WAITTA) for the project was an added bonus.

What are you working on now?

The major focus currently is to promote greater market transparency. Over the last 18 months we have spent a lot of time bringing market data to



life, and making it more accessible, through our Market Data visualisations on our website. I'm really happy with the results to date and I look forward to rolling out the next phase.

How about outside of work?

I spend a lot of time with my family; my wife and two daughters. I've also always enjoyed cycling. In recent years I've taken up running as a way to keep fit. As part of pushing how far I can go, I managed to complete the Perth Marathon in 2013, which has always been on my bucket list. In fact, I've just completed my second marathon at this year's City to Surf.

KEY UPDATES AND UPCOMING EVENTS ///

September 2014

- 10 **IMO Training**
Energy Market Introduction
- 17 **IMO Training**
Reserve Capacity Mechanism Market Operations, STEM and Balancing
- 24 Market Advisory Committee Meeting

October 2014

- 8 **IMO Training**
Energy Market Introduction
- 14 Gas Advisory Board Committee Meeting
- 15 **IMO Training**
Reserve Capacity Mechanism Market Operations, STEM and Balancing

Please visit our website for the most up to date information on upcoming events: www.imowa.com.au