



INDEPENDENT
MARKET
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Enhancing forecasting capabilities in the IMO: Presentation to the MAC

Peter Shardlow

Technical Specialist Market Modelling

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Presentation Overview

Technological innovation is changing electricity market fundamentals.

- New technologies are providing exciting opportunities for market participants and customers.

The IMO recognises the need to adapt to the evolving energy landscape.

- Enhancing our forecasting and modelling capabilities to meet the challenges of changing conditions in the Western Australian energy market.

We're focused on delivering improvements in three key areas in FY16:

- Long term demand forecasting;
- Analysis of customer behaviour and segmentation; and
- Modelling of small-scale solar PV and storage technology.

The electricity market is evolving in response to technological innovation

Where we've been



Utilities focused on the safe, reliable delivery of reasonably priced electricity.



Demand driven by population growth, economic activity, air conditioning sales and efficiency measures.



Little scope for dynamic interactions between customer and supplier.

Where we're heading



Traditional consumer/producer model breaking down due to microgeneration and storage.



Demand influenced by technology that gives consumers control over how and when they use energy.



Internet-linked technology allowing for continuous interaction between consumer, retailer and wholesale market.

Our capacity to undertake detailed analysis of energy data is also improving

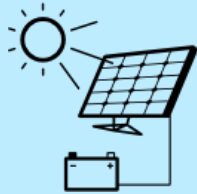
New sources of information



Satellite
cloud cover
data



Smart
Metering



Live solar +
storage data



Improved analytical capabilities

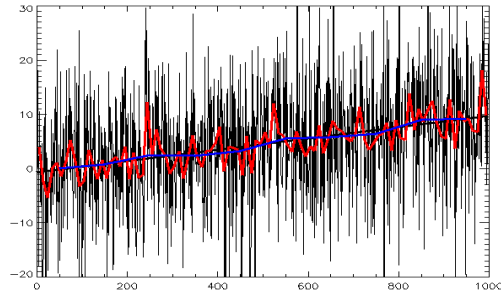


Low cost IT
infrastructure



New
analytical
techniques

Three focus areas for delivering improved forecasting and analysis at the IMO



Long-term demand forecasting

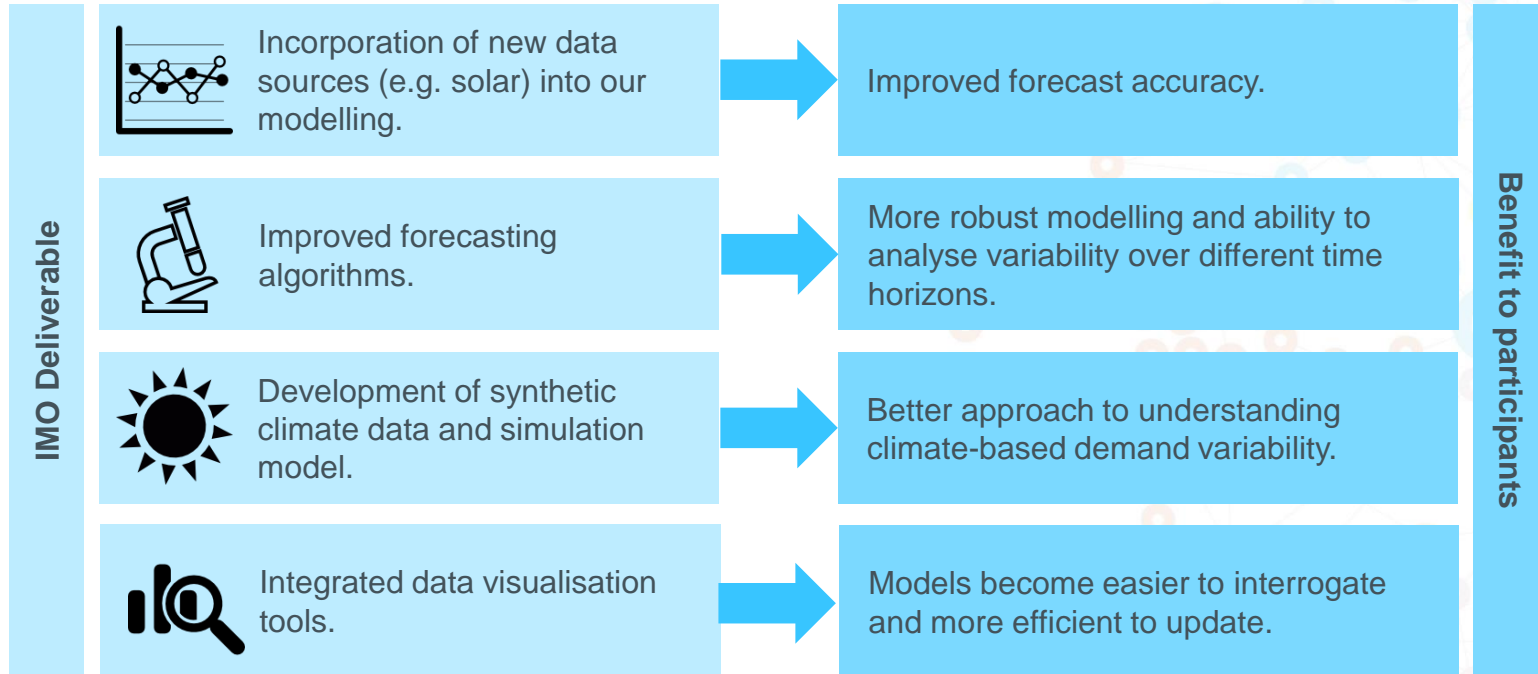


Customer behaviour analysis

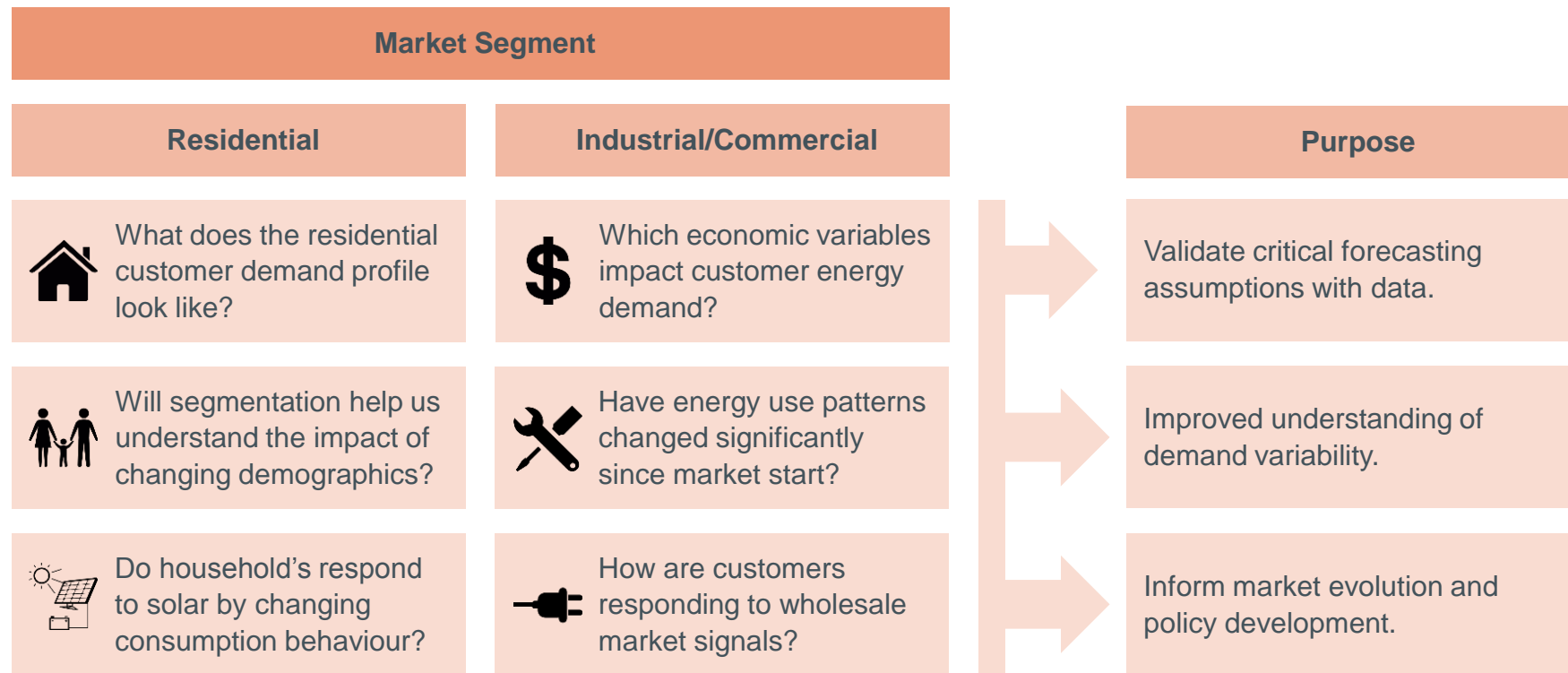


Modelling of solar PV and storage technology

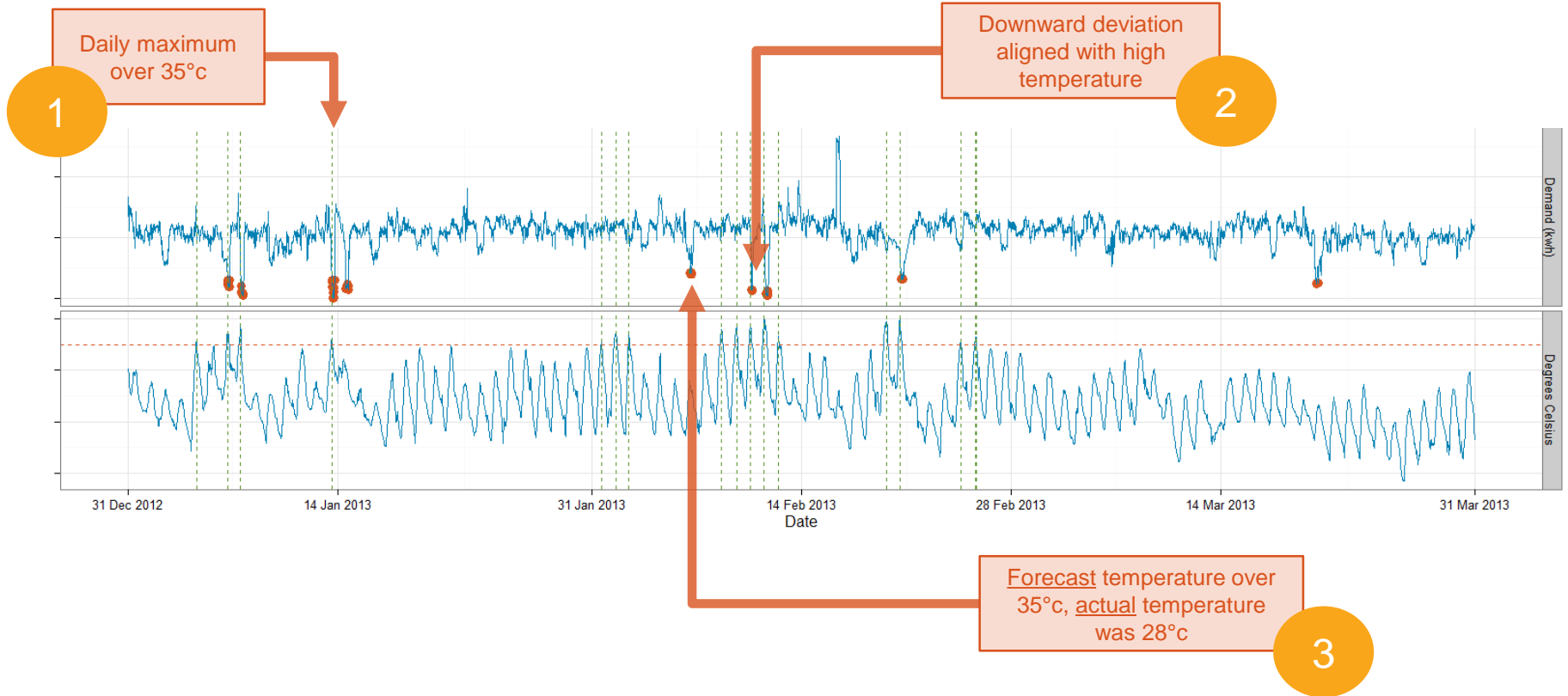
Improving the IMO's long-term demand forecasting capabilities



Market Segmentation will focus on six questions to better understand energy use in Western Australia



Analysis of metering data is providing insight into how customers are responding to market mechanisms



Delivering improved small-scale PV and storage simulation models and analysis



Project	Real-time rooftop solar generation data (FY16)	Improved battery storage modelling (FY16)	Near-term rooftop solar forecasting (FY17)
Deliverable	Publish estimates of small-scale solar PV generation in the SWIS.	Incorporate simulation modelling of battery controller technology in the next ESOO.	Use cloud cover data to forecast rooftop solar generation.
Benefit	Provides participants with data for (unmetered) solar generation.	Better understanding of the opportunities and risks around small-scale storage.	Better forecasts of net customer demand in the near future.

How we're using real-time data to gain insight into the impact of solar PV variability on the SWIS








Rooftop Solar + Metered Generation		
		
10:30	75%	2,300 MW
11:00	25% 	+70 
12:00	85% 	-100 

Figure 1: Estimated SWIS Rooftop solar production (% of maximum output)

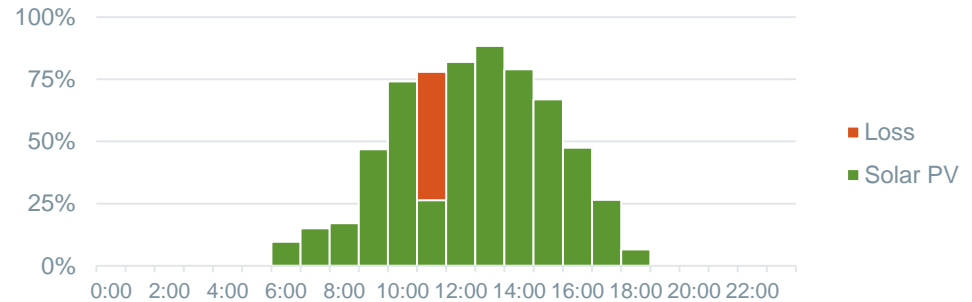
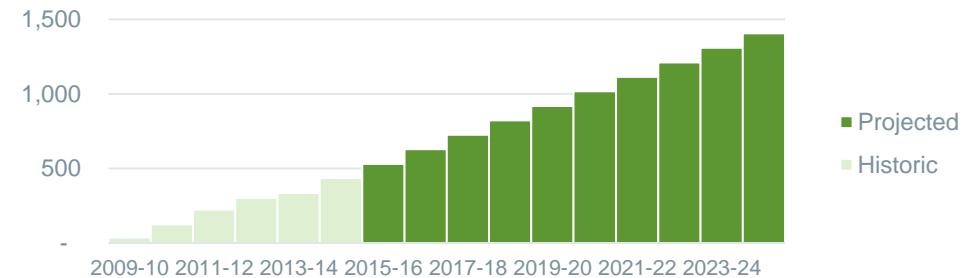
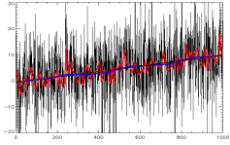


Figure 2: Historic and projected solar PV capacity, 2014 ESOO expected case



Three focus areas for delivering improved forecasting and analysis at the IMO



Long-term demand forecasting



Customer behaviour analysis



Modelling of solar PV and storage technology

Support the IMO and market participants in delivering on the Wholesale Electricity Market objectives

Project next steps

Three ways the MAC can assist the IMO to deliver better analysis.

①

The IMO's forecasting work is not developed in a vacuum

We would like feedback on how market participants use our analysis and how we can better align our deliverables with stakeholder requirements.

②

We believe that transparency is paramount

We believe there are opportunities to work with analysts from other organisations to obtain critical feedback on our methodology and results.

③

We need assistance to understand new innovative technologies

The market is evolving rapidly, and we need to adapt our modelling to capture the effects of innovative new technologies.