



Successfully implementing an Electricity Market with tight supply

The Western Australian Market Story

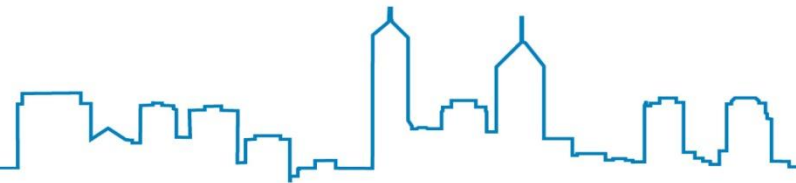
Allan Dawson
CEO

Independent Market Operator



Path to Electricity Reform

- National Electricity Market – 1998
- The electricity reform process – initiated in 2001 by the Western Australian Government
- WA's electricity industry was the least competitive in Australia
- Paved the way for the Wholesale Electricity Market (WEM)



The Wholesale Electricity Market

- The WEM operates in the south-west region of Western Australia
- Market design was dictated by:
 - Capacity shortages
 - A need to incentivise private investment
 - A need to stimulate competition



Market Structure

- Separate capacity and energy mechanisms were developed
- The WEM is a net bilateral market with respect to both capacity and energy
- IMO trades capacity and energy not covered by bilateral contracts

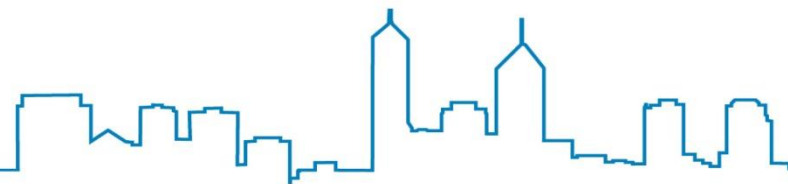
Market Implementation

- Capacity Mechanism Implementation
 - Commenced before energy market – 2005
 - At commencement capacity shortage 200-300 MW
 - Incentivising investment to meet peak load
- Energy Market
 - Began operation in 2006
 - Day ahead energy market (STEM) allows adjustment to bilateral position
 - Balancing mechanism - ex-post reconciliation

Reserve Capacity Mechanism Performance

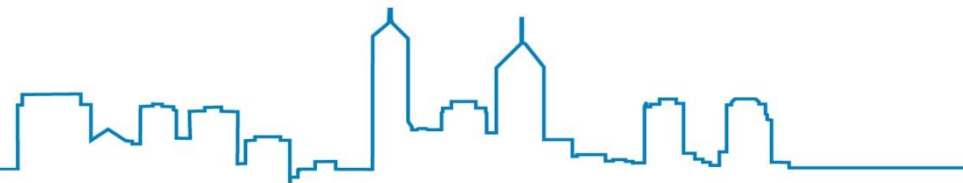
- Required Capacity – required to meet a one-in-ten-year peak demand event plus margin

Cycle Year	Capacity Year	Required Capacity (MW)	Procured Capacity (MW)	Capacity Cushion (MW)
2005	2005/06	3531*	3531*	Approx -200
	2006/07	3744*	3744*	Approx -200
	2007/08	4000	4114	115
2006	2008/09	4322	4600	278
2007	2009/10	4609	5136	527
2008	2010/11	5146	5258	113
2009	2011/12	5191	5493	302



Reserve Capacity Mechanism Performance

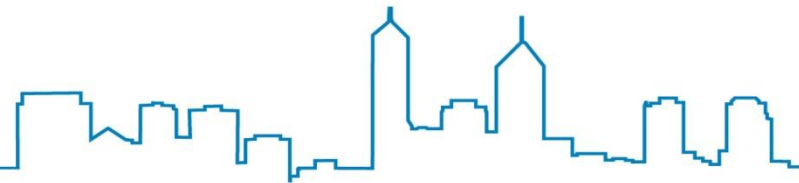
- At commencement - 9 market generators (less than 10% of energy)
- By 2011/12 - 24 market generators
- Over 300 MW provided through facility upgrades
- Over 250 MW of Demand Side Management has entered the market
- Dominant State-owned generator (Verve Energy) market share:
 - 90% at market commencement
 - 57% in 2011/12



Energy Market Performance

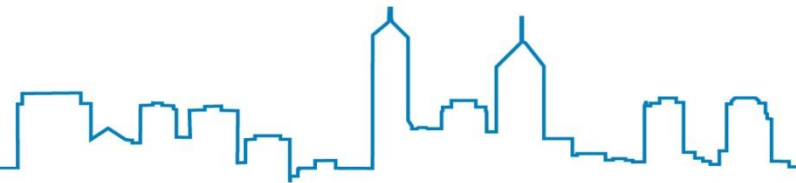
- Trends indicate that energy prices are declining
- Competitive behaviour and increased participation over time

Year	STEM Price (Weighted)	Balancing Price (Weighted)
2006	\$ 135.17	\$ 129.61
2007	\$ 43.43	\$ 61.45
2008	\$ 63.66	\$ 125.47
2009	\$ 47.29	\$ 54.11



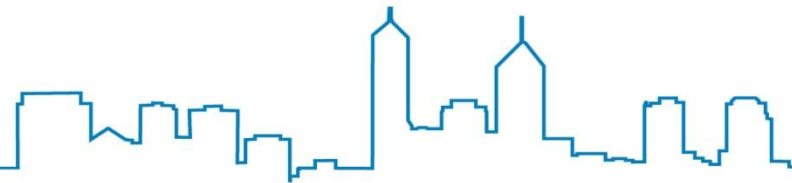
Reserve Capacity Mechanism – Introduction

- The IMO sets the level of capacity required in the Market two years in advance
- The IMO takes a project lifecycle approach applied to capacity projects and is involved in:
 - Project development
 - Construction
 - Commissioning
 - Operation



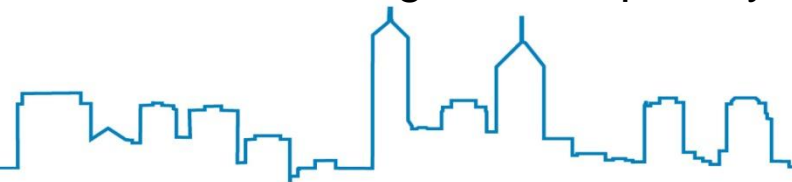
Reserve Capacity Mechanism – Construction & Commissioning

- The IMO monitors the progress of capacity entering the Market
 - New facilities
 - Existing facility upgrades
- Developers submit quarterly reports on construction progress
- Closer liaison during the final stages of development
 - Monthly reports in the final year of construction
- Reserve Capacity Security acts as a construction incentive to the market



Reserve Capacity Mechanism – Capacity Certification

- The IMO certifies the capability of all generation facilities annually
- The IMO assesses each facilities independently and assigns a capacity value
- Extensive due diligence applied to both new and existing facilities:
 - Fuel requirements (transport and storage), sighting of contracts
 - Machine specifications/capability
 - Historic performance
 - Network access agreements
 - Government and environmental approvals
 - Water requirements
 - Contracts/load characteristics for Demand Side Management capability

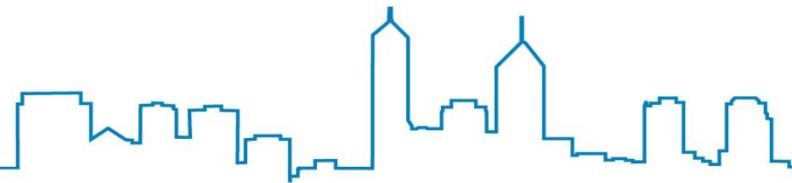


Reserve Capacity Mechanism – Operation

- Capacity providers pay capacity refunds in periods where capacity is made unavailable
- Sculpted refund regime emphasises delivery during peak demand times (both seasonally and daily)
- Facility tested every six months
- Adjustment to Capacity Credit levels as a result of capacity tests

Reserve Capacity Mechanism – Conclusions

- Effective market design can overcome the challenges of shortages in supply of capacity
- The IMO ensures reliability of supply through critical assessment of capacity capability and performance
- The IMO uses a lifecycle approach to capacity

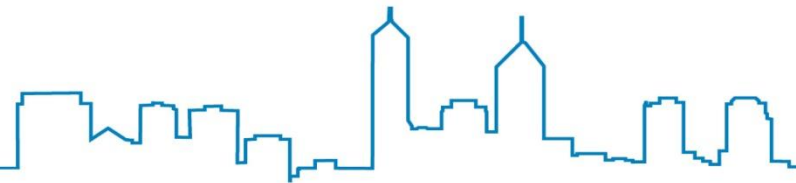


Reserve Capacity Mechanism Evolution

- Tuning of refund mechanisms to incentivise reliability of supply
- Accommodating - long lead time projects
- Incentivising diversity in fuel supply
- Capacity contribution made by intermittent generation

Future Challenges

- Pressure on fuel supplies
 - Strong growth in gas generation has put pressure on supplies
- Transmission access
 - Network is nearing capacity
 - The entry of new generation may be constrained
- The entry of renewables
- State generator profitability



Thank you

