

Challenges Facing NSW Energy Markets and Potential Policy Response

Presentation to the Australian Institute of Energy

Tim O'Grady

General Manager Public Policy & Government Engagement

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Since Origin was established in 2000 it has pursued a strategy of connecting resources to markets. Over that time it has become ...



A regional leader in energy markets

- Leading integrated energy markets businesses in Australia and NZ
 - Flexible and diverse fuel portfolio
 - Flexible and diverse generation portfolio
 - Leading retail customer base

A regionally significant player in Natural Gas and LNG production

- Joint developer of APLNG's 9 mtpa two train CSG to LNG project with the largest 2P CSG reserves position
- A leading producer of gas in Australia and New Zealand
- Gas exploration and development opportunities in Australia and New Zealand

With a growing position in renewable energy

- Focus on growing capabilities and increasing investment in solar, geothermal and hydro

At a glance:

- Listed in S&P/ASX 20 index with a market capitalisation of A\$17.5 billion¹
- Over 6,700² employees
- \$5.1 billion³ of undrawn committed facilities and cash
- Investment grade credit ratings from Moody's (Baa2, stable) and S&P (BBB, negative)
- TSR of 21% per annum compound average since 2000⁴

(1) As at 3 September 2014.

(2) As at 30 June 2014, excluding Contact Energy.

(3) Excludes Contact Energy and bank guarantees as at 30 June 2014. (4) From 21 February 2000 to 3 September 2014.



WE'RE A MAJOR EMPLOYER IN NSW

About 1,000 people in our NSW workforce supports Origin activities across Australia and internationally. There are:

- More than 520 people work in Origin's Sydney headquarters, primarily in corporate functions and energy trading.
- More than 450 people at Origin's Eraring Power Station near Newcastle.
- About 20 people on-site at the Shoalhaven Pump Storage Scheme.



OUR SIGNIFICANT NSW CUSTOMER BASE

Electricity

- More than 1.33 million customer accounts.

Gas

- More than 216,000 customer accounts.

LPG

- Origin has a 22 per cent market share of the NSW and ACT LPG market, with over 52,000 residential LPG customers and 8,300 commercial LPG customers.
- Just under 50% of Origin's LPG terminals (19 in total) are located in NSW and the ACT.



WE HELP POWER NSW

Eraring Power Station

- Acquired by Origin in 2013
- At 2,880 MW, it is powered by four 720 MW turbo generators making it Australia's largest coal-fired power station.
- It is one of the lowest carbon intensity and efficient coal-fired power stations in NSW. It plays a crucial role in maintaining a reliable supply of electricity to NSW.

Uranquinty Power Station

- Operational since January 2009
- With 640 MW generating capacity, it is one of Australia's largest and most efficient open cycle gas-fired peaking power stations.



Wind

- Cullerin Range Wind Farm (30 MW) was Origin's first owned and operated wind farm. It has the capacity to produce enough renewable energy to power approximately 14,000 homes.
- Origin sources renewable energy from four NSW wind farms to supply to customers.

Shoalhaven Pump Storage Scheme

- As Origin's first direct Australian investment in hydro, it consists of two pumped storage hydro power stations, Kangaroo Valley (two x 80 MW turbine units) and Bendeela (two x 40 MW turbine units).

Medium to longer term growth opportunities expanded through three recent transactions in Cooper, Beetaloo and Browse basins ...



Cooper Basin - JV with Senex and Planet Gas

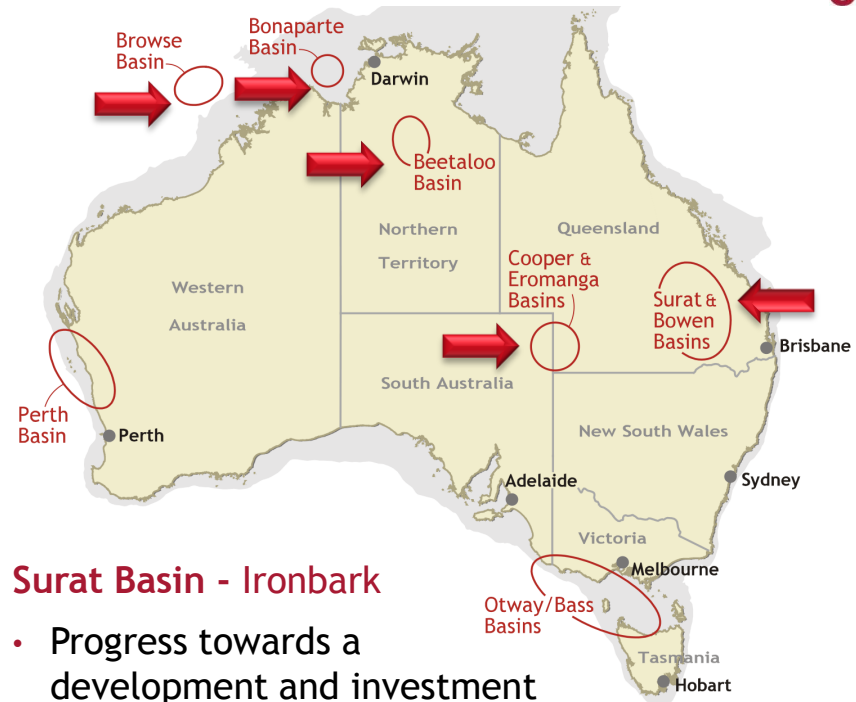
- Targeting tight sands, shale and deep coal
- Close to existing infrastructure
- Up to 50% interest in permit areas

Beetaloo Basin - JV with Falcon and Sasol

- Targeting shale gas and associated liquids in one of NT's most prospective onshore basins
- 35% interest, Origin as operator

Browse Basin - JV with ConocoPhillips and PetroChina

- Large and prospective offshore gas fields, such as the Poseidon discovery
- Various options to monetise including LNG export opportunities linked to growing demand in Asia region
- 40% interest in two exploration permits



Surat Basin - Ironbark

- Progress towards a development and investment decision for the Ironbark field continues

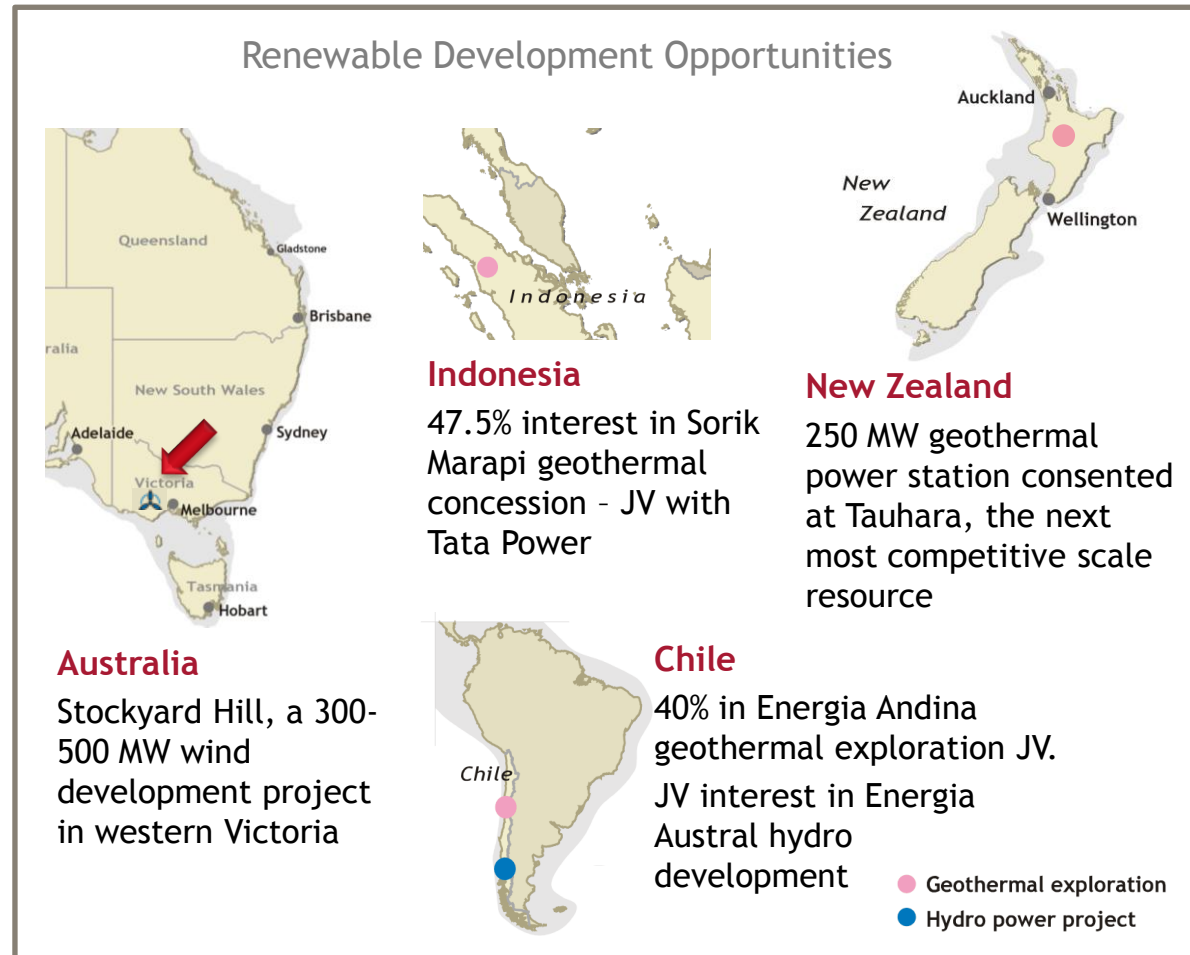
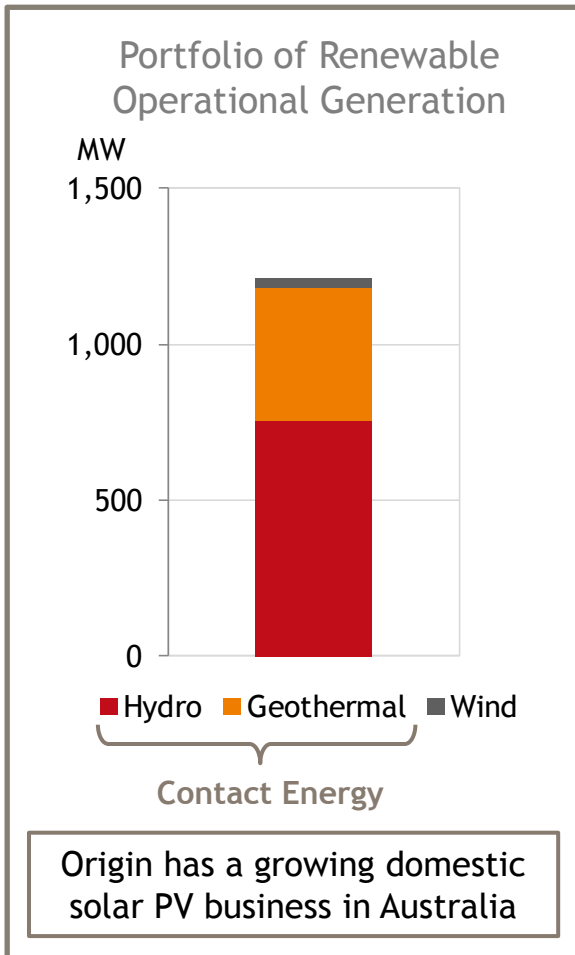
Canterbury Basin

- Exploration to continue following approval of 5 year extension and forward program variation



... and continued activity in Surat, Canterbury and Bonaparte basins

Origin is focused on leveraging its existing renewables base of 1,213 MW to increase investments in renewable energy ...



... seeking developments that do not require economic subsidies

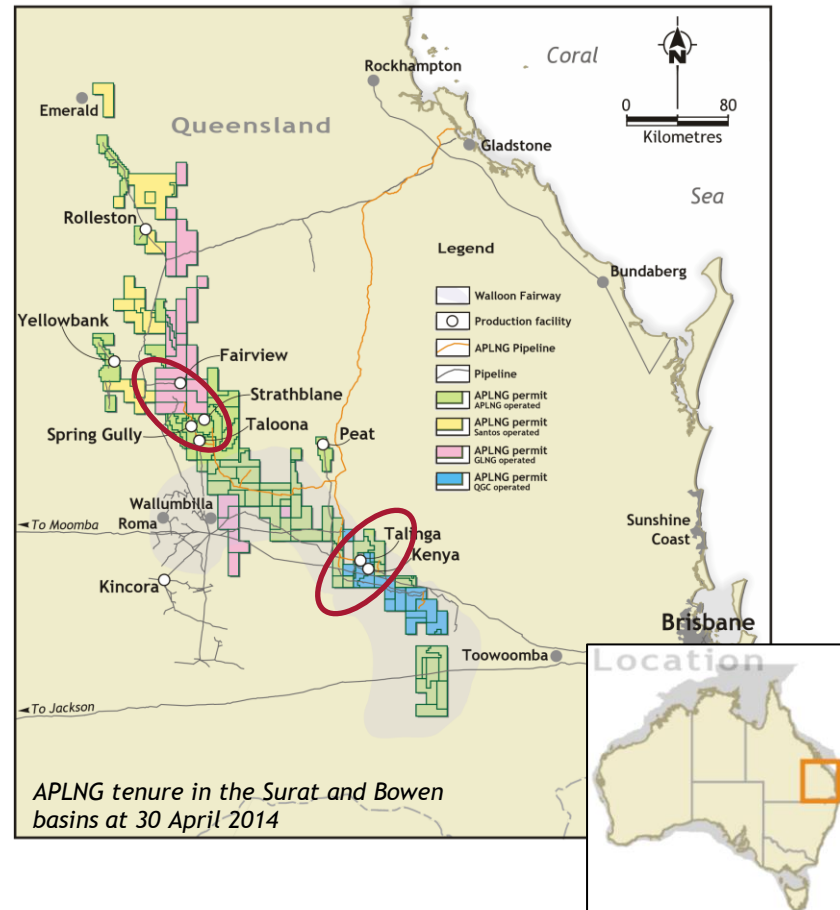
APLNG is on track to deliver first LNG in mid-2015, with distributable cash flow to Origin expected to be around US\$1 billion on average per year¹



**Upstream
76% Complete**



**Downstream
75% Complete**

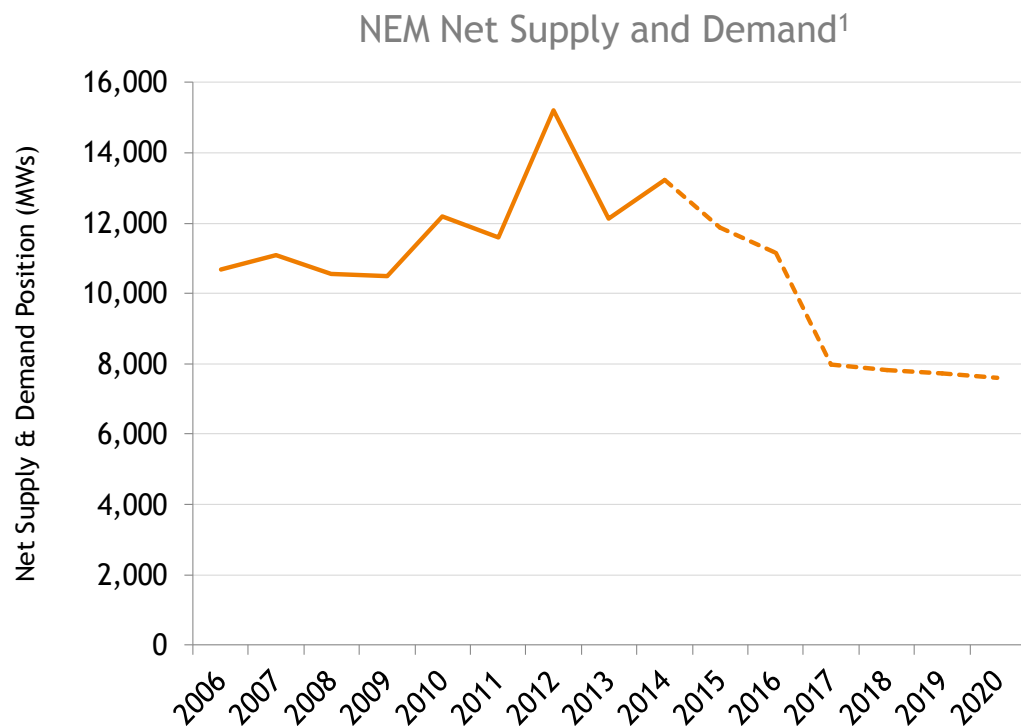


APLNG 3P reserves up 8% to 17,459 PJe² while 2P reserves remain sufficient to cover gas requirements for all domestic and LNG contracts

(1) Distributable amount is cash flow after revenues, operational expenditure, ongoing capital expenditure, project finance interest and repayments and tax. Based on current market conditions. The first full year of contribution from APLNG is expected to be FY2017.

(2) Refer to Important Information in the Appendix. 1P Reserves are 4,581 PJe, 2P Reserves are 14,091 PJe.

In Australia, wholesale electricity prices are currently suppressed by generation over supply, driving generators into retail markets and intensifying competition



- LNG production in Gladstone will help to alleviate the generation over supply through additional load and redirection of gas from power generation to LNG production, together around 15 TWh²
- Black coal utilisation is expected to increase to meet this requirement, equivalent to around 6.8 mtpa³
- AEMO's projections¹ assume over 3,000 MW of existing capacity should be retired or be placed into dry storage by 2017, with around 1,500 MW already announced
- Around 1,600 MW of capacity placed in dry storage between 2010 and 2012

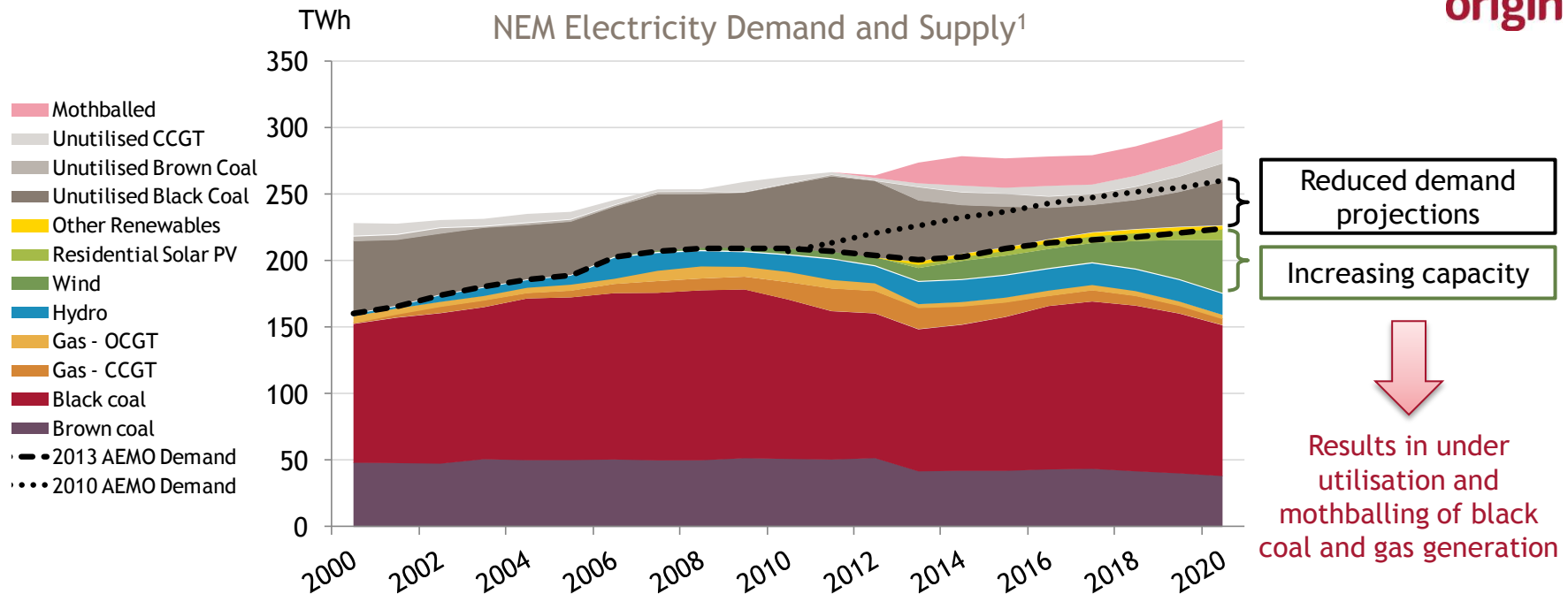
This generation over supply should improve through to 2017 as LNG production commences and additional capacity is retired, creating the opportunity to improve generator returns and moderating competitive activity

(1) Historic Supply - 2013 NTNDP, AEMO data, Origin modelling; Forecast Supply - 2013 NTNDP; Demand - 2014 NEFR and 2014 ESOO; Renewable contribution to supply derated based on AEMO modelling.

(2) AEMO's 2013 GSOO and 2014 NEFR.

(3) Assuming average heat rate of QLD and NSW coal-fired generation plants of 10.0 GJ/MWh and average specific energy of QLD and NSW black coal of 22.2 GJ/tonne.

In the electricity market, reduced demand and prior investments in generation have resulted in over supply ...



DEMAND SIDE DRIVERS

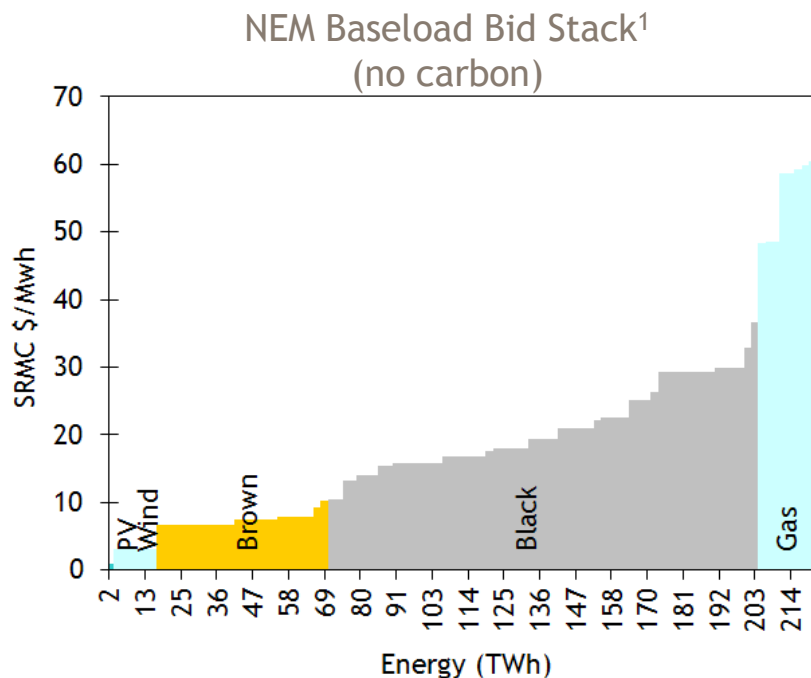
- Shutdown of some industrial load (eg smelters)
- Reduced grid demand as a result of solar PV and solar hot water installations
- Reduced household consumption from energy efficiency

SUPPLY SIDE DRIVERS

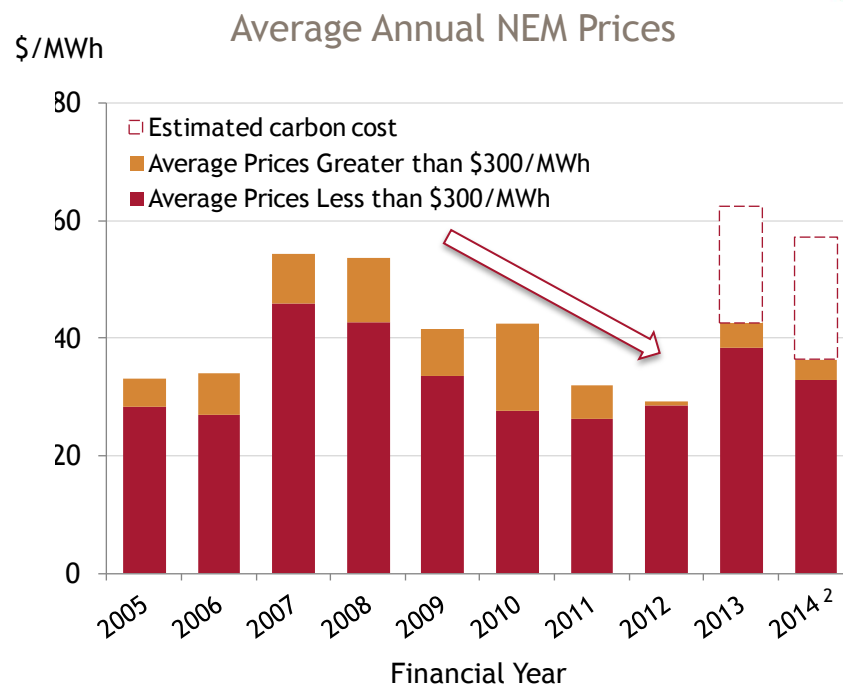
- Increased supply from prior investments in generation based on strong demand growth projections prior to 2008
- Renewable Energy Target forcing continued investment in wind capacity
- Black coal and gas underutilised due to supply exceeding demand growth

... leading to very competitive conditions in retail markets

Excess supply lowers short run marginal cost of generation to meet expected demand resulting in lower wholesale cost of energy



- Low SRMC generators (wind and brown coal) continue to run despite lower returns in the pool



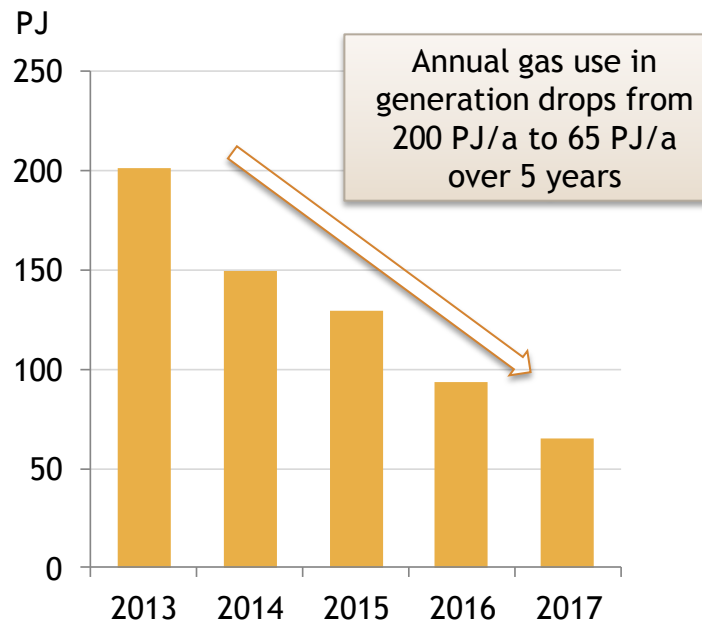
- Wholesale prices fell consistently between 2008 and 2012 as the market became oversupplied
- 2013 was marked by one-off market events as well as planned capacity withdrawals

In the normal course it would be expected that market participants will act to better balance supply with demand to restore reasonable returns to generation

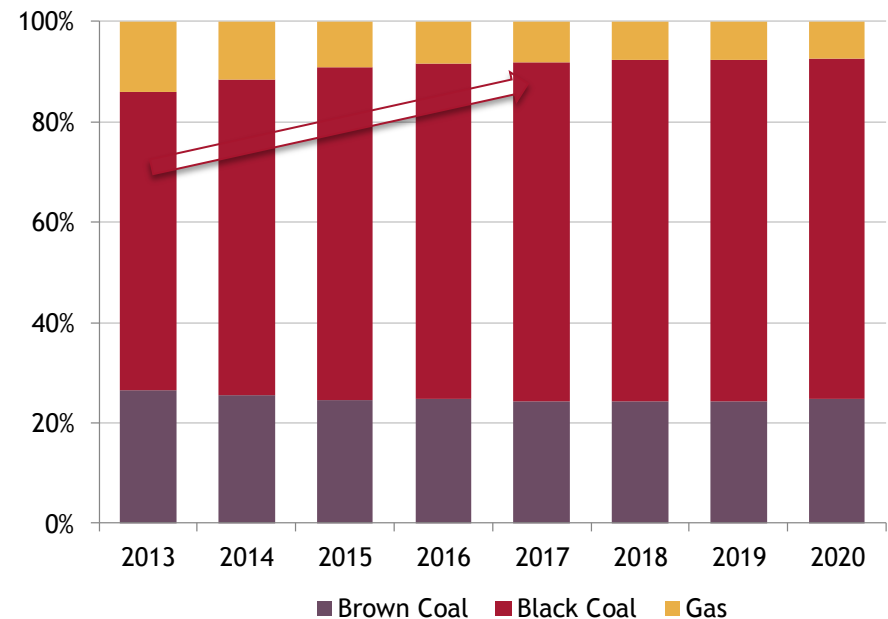
LNG production expected to pull gas from generation, driving a rotation from gas to black coal generation



Gas Used in Gas Fired Generation in the NEM¹



Thermal Energy Supply in the NEM
(based on TWh of generation)



- As electricity demand is subdued and LNG projects pull gas out of the generation market, low cost brown coal continues to run and black coal utilisation increases
- As more renewable generation comes online to meet the Renewable Energy Target, black coal and gas is displaced

The RET scheme is under review with current targets requiring new investment in excess of growth in demand ...

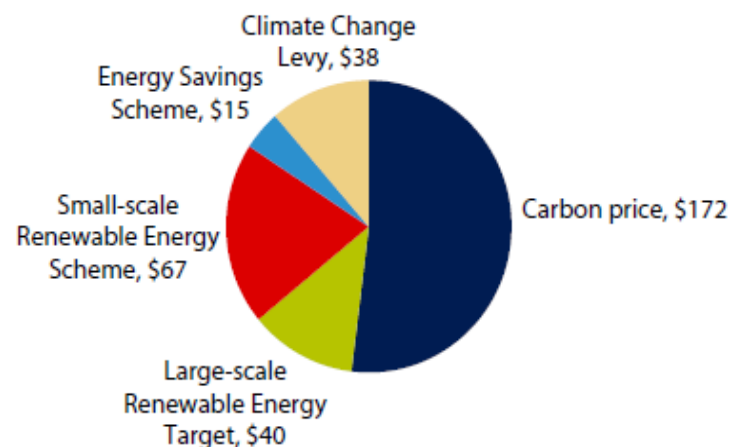


TWh	2007 Policy	2013 AEMO adjusted demand	Current
Estimate of demand in 2020	300	230	230
RET Target	45	-	-
LRET	-	41	15¹
SRES	-	11	7
Hydro/Pre-Existing	15	15	15
Total Renewables (TWh)	60	67	37
Renewable/Demand (%)	20%	29%	16%

Balance to targets	TWh
60 TWh	23
True 20% (46 TWh)	9

20% of 230 TWh is 46 TWh. Accounting for 37 TWh of existing renewables, this leaves 9 TWh to meet a true 20% by 2020 target

Annual Cost of Green Schemes For Residential NSW Customers²



- Total cost of the RET to the consumer, including feed-in-tariffs for solar PV is \$145, or \$22/MWh³

... resulting in increased costs to consumers

(1) Includes committed projects

(2) Source: IPart, \$2013/14, typical customer using 6.5 MWh per annum, includes GST and energy losses, forecast inflation is 2.5%

(3) Based on typical customer usage of 6.5 MWh per annum

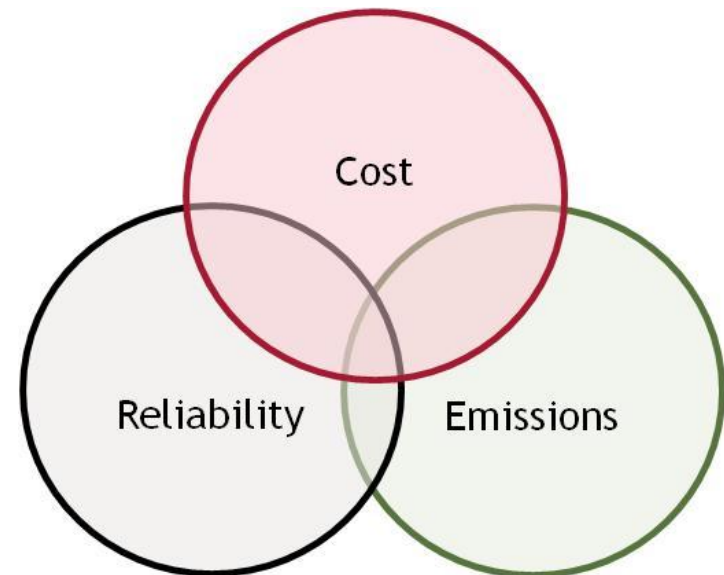
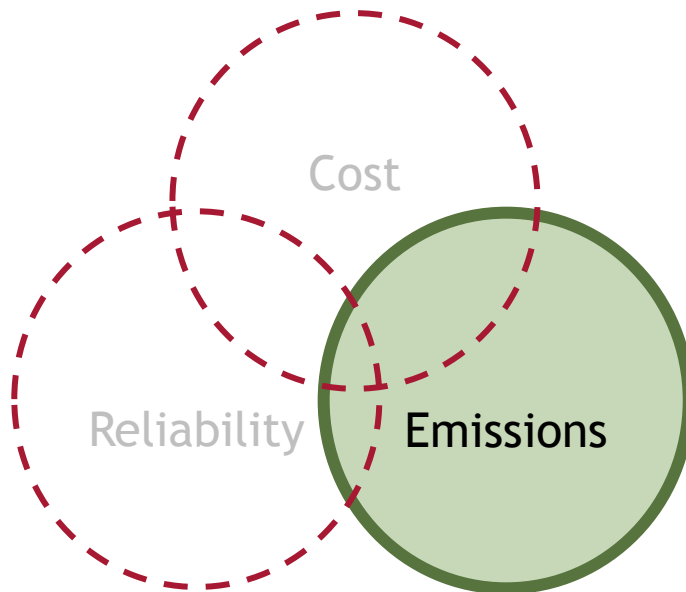
Re-Introduce Policy Balance: In recent years policy has been politically-driven, with a focus on environmental initiatives ...



Politically motivated
Poorly connected
Not transparent on costs
Not effective on emissions
Introducing system reliability concerns

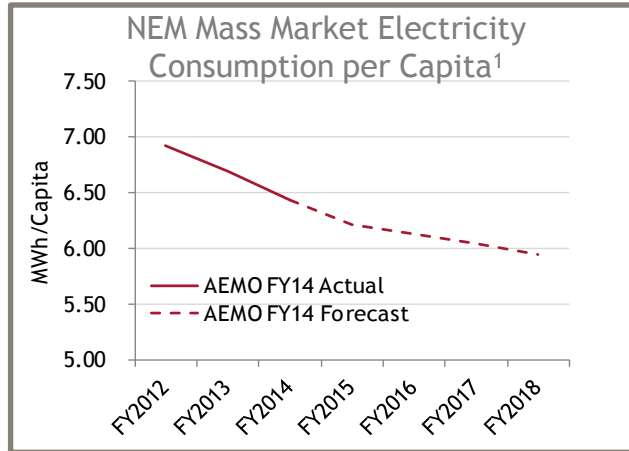


Policy focussed
Connected, consequences understood
Costs reduced and subsidies removed
Emissions reduction in Australia at lowest cost
Address developing network pricing issues



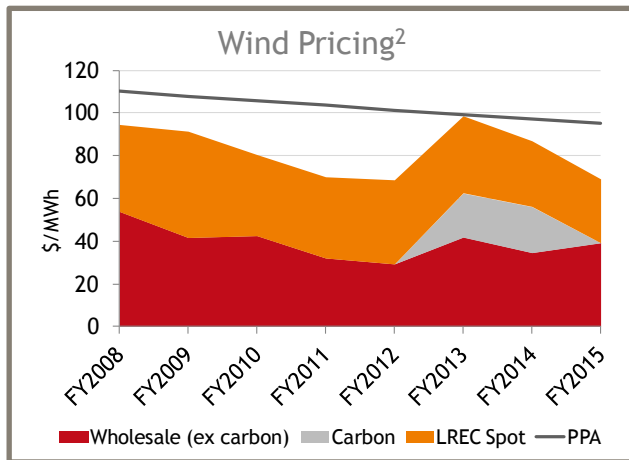
... to the extent that cost/reliability have been lesser issues, but costs are top-of-mind for consumers & emissions-reduction is ineffective

Rate of decline in consumption expected to moderate however this trend will require review of policy and regulatory settings to ensure the market operates on an economically efficient basis



Policy and regulatory settings

- Retail price deregulation - NSW, VIC and SA have full electricity price deregulation, with QLD progressing
- RET schemes currently under review
 - Current target requires new generation in excess of demand growth
 - SRES is not required as rooftop solar PV becomes cost competitive
- Review of network regulation
 - AER's new powers to set an appropriate rate of return and scrutinise submissions are moderating price increases
 - Embedded cross subsidies must be addressed to ensure equitable distribution of costs
- NEM resilience
 - NEM has been highly successful over past 16 years but is struggling to provide returns to generators in an over supplied market



Energy Solutions

- Developing energy solutions including revitalised solar business, smart meter technology, electric vehicles, distributed generation and storage

Removal of the carbon price and uncertainty of the RET review is depressing REC prices, increasing risk to future earnings

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