

Linnfall
Consulting

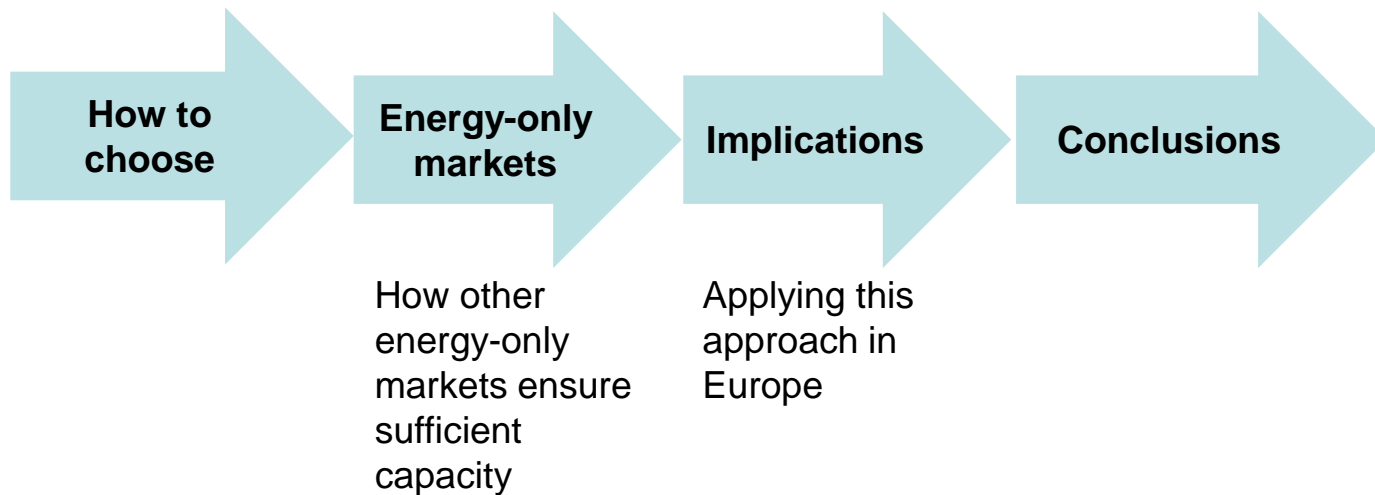


Market design: the energy-only market model

Linnfall Consulting
September 2015

Structure of this presentation

Which market design is most appropriate to Europe?



Identifying the most appropriate market design

Genuine inquiry

Recognise there is no single 'correct' design

Options for deepening energy-only markets and for capacity mechanisms – challenges with both

Informed inquiry

Recognise similarities between energy-only and capacity markets – and refine analysis of the actual differences

Look at the behaviour of market participants to manage risk, not just at market design

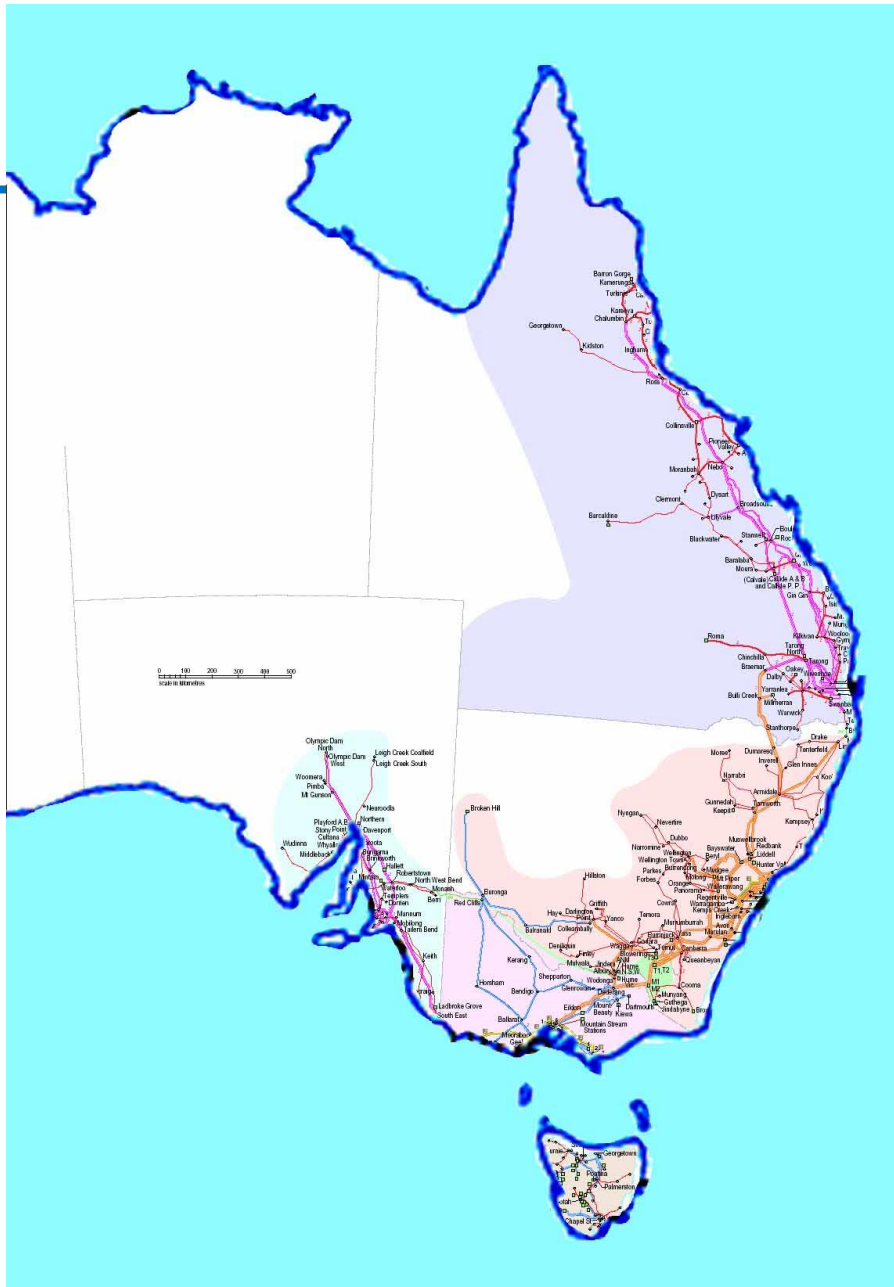
Skilled inquiry

Recognise that market will need to keep evolving in response to impact of renewables, smart meters, distributed generation.....

Ensure an institutional framework that ensures effective and co-ordinated response, analytic capacity, and due process



Australian NEM



Mandatory gross pool

Energy only, day ahead bids and offers. Renewables dispatchable

Five price zones: prices separate when transmission constrained

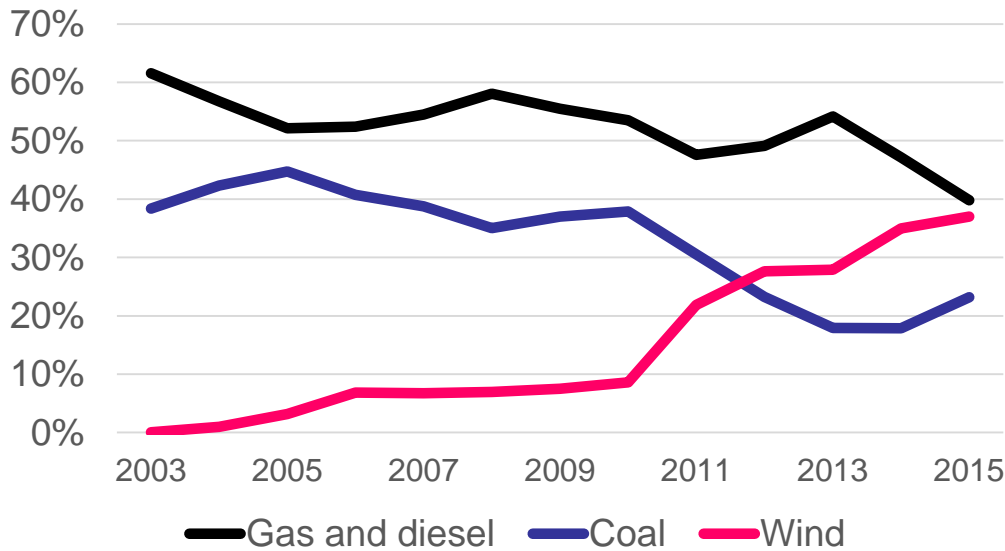
Price caps and floors reset every 4 years by Reliability Panel to meet Reliability Standard

**Price cap currently
A\$13,100/MWh (c. €8,300)**



A large share of renewable energy is located in South Australia

Energy generated in South Australia by technology



Source: 2015 SA Historical Market Information Report, 2010 Supply and Demand Outlook at www.aemo.au

Wind 16% of installed capacity FY 2015. Likely to rise substantially given projected withdrawal and investment

Strong wind regime: 33% average load factor, 37% of energy generation in SA in FY 2015

Among the highest globally. 2011 comparison of Soder Metric - max wind/(min demand plus max export):

- Ireland 98%
- Western Denmark 59%
- ERCOT 27%
- Iberian peninsula 94%
- South Australia 67%

Sources: AEMO statement of opportunities FY2015, ECAR Energy 2011 report to AEMO



This market experiences extreme price spikes....

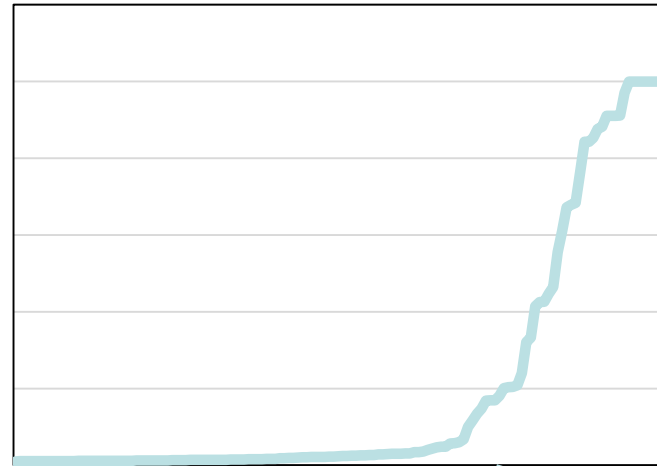
Price curve 2010 Calendar Year

\$9.000
\$7.000
\$5.000
\$3.000
\$1.000
-\$1.000

Approximately 3 days of negative price periods

Top 3 days of price periods

\$12.000
\$10.000
\$8.000
\$6.000
\$4.000
\$2.000
\$0



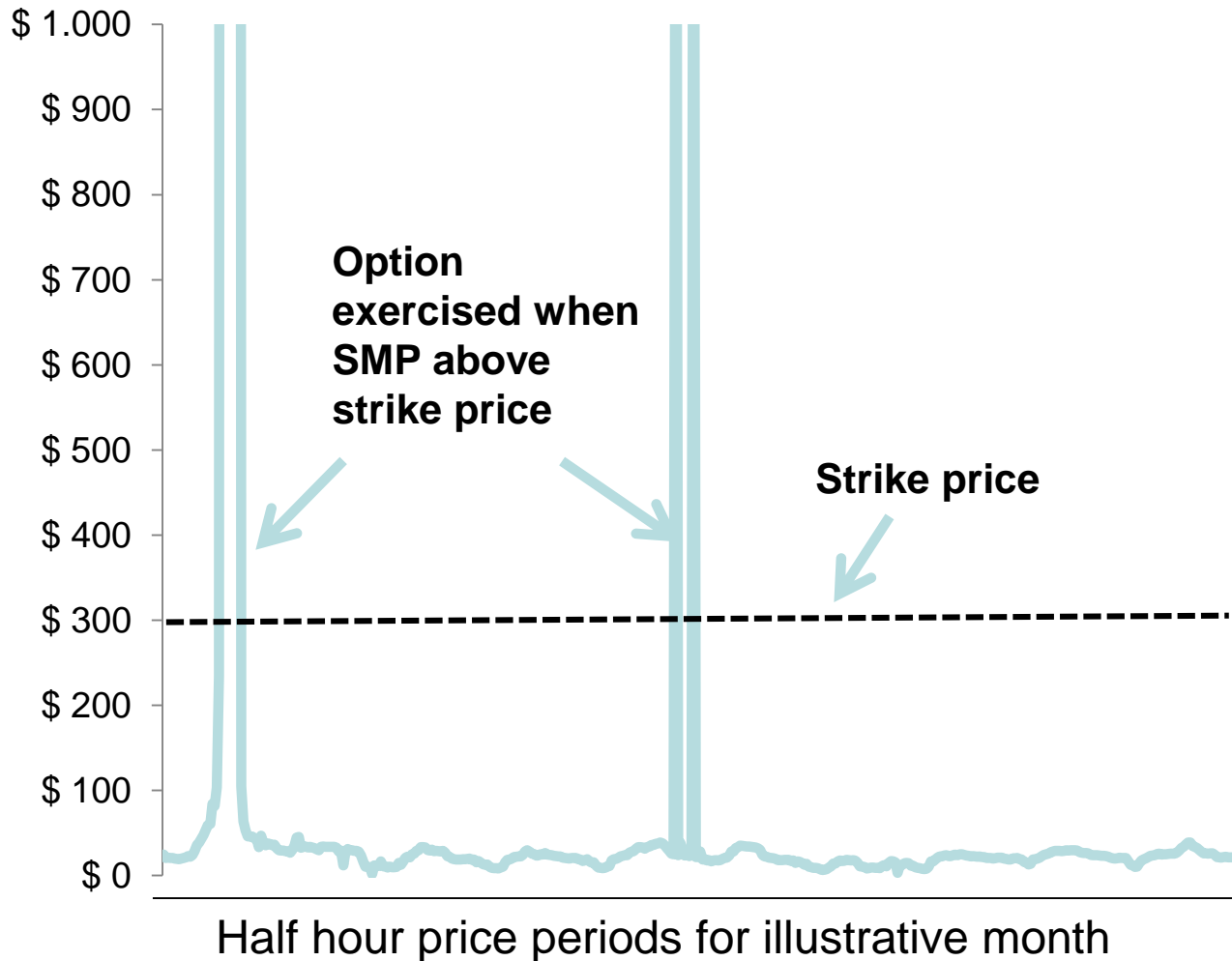
Top 3 days of price periods in SA:

- 50% of turnover 2008 and 2009
- 44% of turnover 2010
- 26% in 2011

Source: AEMO price data
EUAA submission to PC review



.... participants hedge this risk in part through 'cap' contracts – very similar to 'reliability options'...



One way option. Seller pays buyer when market price exceeds strike price

Unit: 1 MW per hour over CY or quarter for a region

Strike price: often \$300 MWh, close to operating cost of OCGT

Volume and price set by market

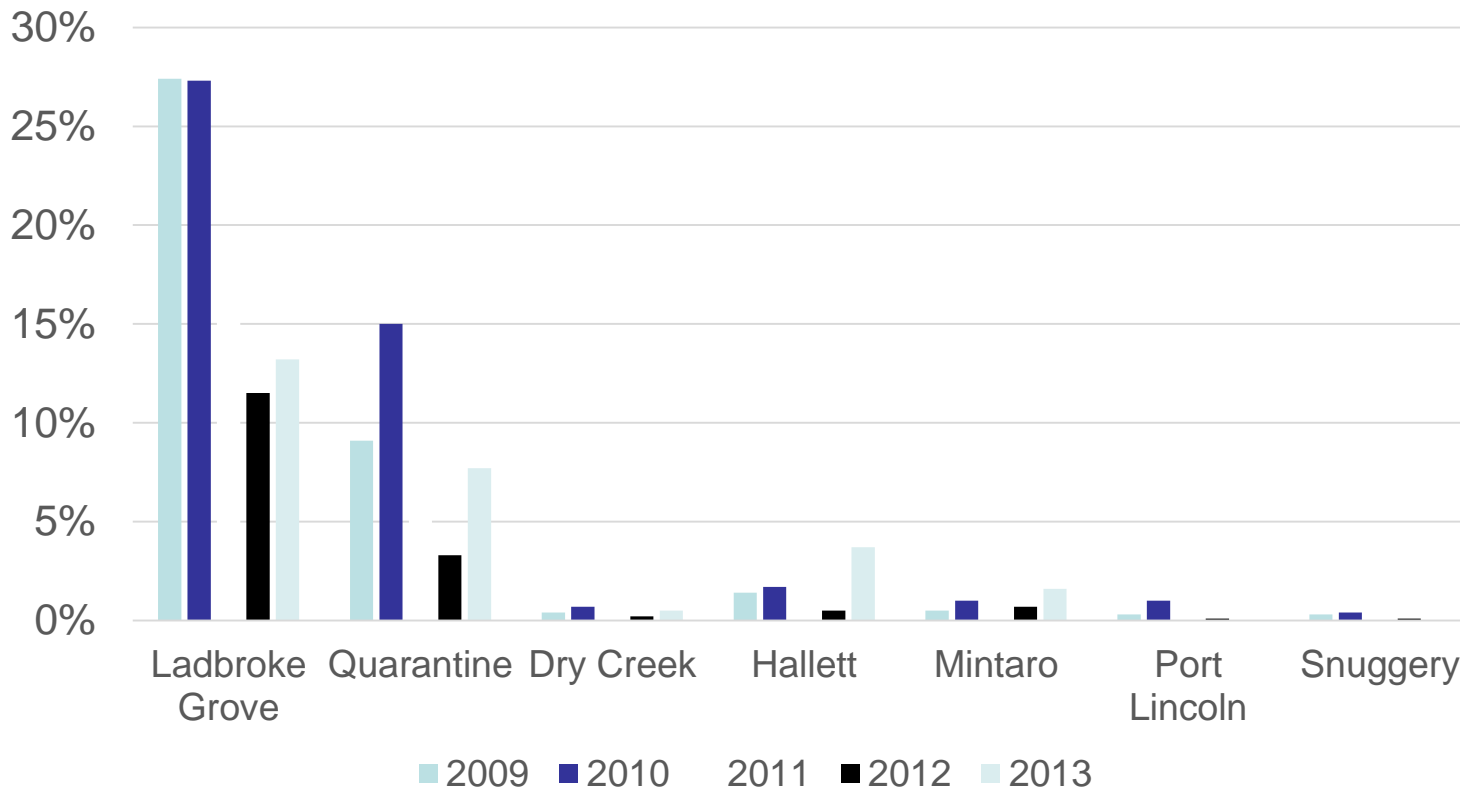
Share in contract market varies by region and year: from very low to 50%

Sources: Australian Financial Markets Report 2014 statistical annex, AFMA 2015 Electricity Market Conventions



...and this supports low load factor peaking plant to back up wind

Annual load factor for OCGTs in South Australia



Source: South Australia Electricity Report, 2013, AEMO

This approach has similarities – and differences – to other capacity mechanisms

	Cap contracts in the NEM	UK Capacity Auction
Locational structure	Zonal	Single price
Quantity or price based	Price	Quantity
Price	Price per MW per year set by market	Price per MW per year set by market
Term	Season to 3 years Bilateral deals	1, 3 or 15 years
Penalty	Uncapped exposure from A\$300/MWh to A\$13,100/MWh	Lower capped penalties



What is needed for a similar solution to evolve in Europe?

Preconditions

Price spikes – and option contracts to manage them – only emerge under conditions of tight supply. Their absence before the conditions are met is not a concern

Pricing

High prices allowed to occur to ensure investment incentives can have full effect. Zonal pricing to reflect major constraints

Incentives

Balance responsible parties need incentives to ensure they have contracted enough power. Ineffective if penalties/risks are too low

Efficiency

Ensure no barriers to efficient response – through trade, demand side participation and other measures

Acceptability

Measures to protect against market power
Out of the market measures to reassure on sufficient capacity?



Conclusion – how would we manage the evolution of the energy-only model, if that is the way forward?

Central evolution
of the energy-
only model

*Defined work
program to implement
the target model
ACER: ENTSO-E:
Network Codes:
Comitology: NRA
implementation*

National Govt
action on capacity
mechanisms

*Examples include:
strengthening of price
mechanisms (Germany
Market-2);
delegated supplier
responsibility (France);
centrally managed
auction (UK)*

**How do we ensure an
effective co-ordination
between these two
approaches to market
evolution?**

