Market design: the energy-only market model

Linnfall Consulting
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Structure of this presentation

Which market design is most appropriate to Europe?

- How to choose
- Energy-only markets
- Implications
- Conclusions

How other energy-only markets ensure sufficient capacity

Applying this approach in 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
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.

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**

- Approximately 3 days of negative price periods

**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.

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<th>Locational structure</th>
<th>Cap contracts in the NEM</th>
<th>UK Capacity Auction</th>
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<th>Term</th>
<th>Season to 3 years Bilateral deals</th>
<th>1, 3 or 15 years</th>
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<th>Penalty</th>
<th>Uncapped exposure from A$300/MWh to A$13,100/MWh</th>
<th>Lower capped penalties</th>
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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?