Capacity mechanisms in Europe

If there is to be a capacity mechanism, then what is the appropriate design?

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Which form of capacity market design is most appropriate for Europe?

Outline of Presentation

1. What are the main CRM design choices?
2. How well do these designs fix the 'problems' with an energy-only market?
3. What are some of the lessons from experience with CRMs?
4. How should Europe select its preferred market design?
What are the main CRM design choices?

**Price-based CRM**
- A capacity payment ‘adder’ to an energy-price is a way of ‘fixing’ scarcity pricing in an energy-only market: \((\text{LoLP} \times \text{VoLL} - \text{SMP})\)
- Capacity payments do not directly result in a target level of capacity
- So, if it is concluded that scarcity-pricing in an energy-only market is not effective at delivering reliability, then a capacity payment ‘adder’ to an energy-price is also not likely to be considered an effective mechanism

**Targeted CRM**
- Targeted reserves (“Strategic Reserves”) are usually segregated from the energy-only market – otherwise they would constitute balancing services
- Principal role of targeted reserves is to provide a ‘back-stop’ to the energy-only market rather than an entry-support mechanism for all new generation capacity
- Where support for all new capacity becomes necessary, segregation from the energy market is no longer possible and the targeted reserve becomes a means of discriminating against existing capacity

**Centralised auction vs. Decentralised obligation**
- This is the critical choice assuming it is determined that energy-only markets cannot efficiently ensure system reliability to an appropriate security standard
### How well do the main design options fix the ‘problems’ with an energy-only market?

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<tr>
<th>Incentives for new entry – ‘the missing money’</th>
<th>Decentralised</th>
<th>Centralised</th>
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<tbody>
<tr>
<td>▪ Market for ‘certificates’ required to provide efficient capacity price</td>
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<td>▪ Auction design required to deliver efficient capacity price</td>
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<td>▪ Opportunity for more tailored solutions with bi-lateral contracting</td>
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<td>▪ Central planners may be biased towards over-procurement</td>
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<td>▪ Risks of excess/deficient capacity borne by Suppliers</td>
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<td>▪ Costs are socialised and risks of excess/deficient capacity passed through to Consumers</td>
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<th>Illiquid contract markets</th>
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<td>▪ Vertical integration of suppliers (self-supply) may limit capacity market liquidity</td>
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<td>▪ Centralised auctions with standardised contract specification promotes transparency and capacity market liquidity</td>
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<td>▪ Suppliers may be reluctant to contract sufficiently long-term</td>
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<th>Demand-side participation</th>
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<td>▪ Incentives for demand-side management on Suppliers</td>
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<td>▪ Requires standardised approach to DSR</td>
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<td>▪ DSR can participate directly offering contracts/certificates</td>
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<th>Problems with ‘gaming’</th>
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<td>▪ Bi-lateral contract determination limits scope for ‘gaming’ capacity/certificates depending on market depth/liquidity</td>
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<td>▪ Auction rules can constrain ‘gaming’ capacity while promoting market depth/liquidity</td>
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<td>▪ ‘Imbalance’ penalties required</td>
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<td>▪ Penalties for capacity non-performance required: reliability options may also mitigate potential energy market distortions</td>
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What are some of the lessons from experience with CRMs?

- Capacity markets, including centralised auctions, can attract innovative offers
- The cost of capital for generators is impacted – and this needs to be set off against the associated risk transfer to consumers

GB 2014 CM Auction

Ex-post bid curve analysis*

Almost 1 GW of new embedded generation cleared the auction at a price lower than expected. This may be driven by bullish assumptions on various different revenue streams (e.g. STOR, triad management, etc.), or low capital cost assumptions.

* Note that there is no information available to re-construct the actual bid curve of the clearing round. The curve above has been constructed based on our ex-ante analysis of costs and revenues, modified where necessary with information on the generators that cleared and did not clear the auction.

Source: CRA analysis based on National Grid’s published pre-qualification results.
What are some of the lessons from experience with CRMs?

- PJM CRM has evolved from capacity credits purchased by Load Serving Entities to the centralised Reliability Pricing Model

**Key Problems**

- Vertical demand curve led to volatile, ‘bi-polar’ capacity prices
- Failed to support contestability of new entry in generation due to limited contract maturities
- Collateral requirements inhibited contracting
- Lacked locational requirements
What are some of the lessons from experience with CRMs?

- Centralised auctions are complex and tend to involve multiple, successive rule changes.
- Longer-term capacity prices are also difficult to anticipate but have been successful in supporting new entry.

![Graph showing capacity price trends with various notes on events such as bidding restrictions, large plant retirement, increase in CONE, new DSM, and rule change and its effects on prices.](image)
Are there minimum harmonisation requirements between capacity markets – some key considerations

- **Stress Events**
  - Rules required to ensure flows are consistent with capacity contract obligations and performance during coincident stress events

- **Performance Incentives**
  - Different approaches to non-performance penalties may drive differences in capacity offers

- **Product Definition**
  - Basing product on capacity availability (as opposed to delivery) supports merit order operation cross-border
  - But availability needs to be assessed in relation to energy market offers

- **Interconnector Capacity Allocation**
  - May depend on mechanism: continuous capacity pricing with certificates would support direct selling, while centralised capacity design may require implicit interconnector auctions

- **De-rating/Qualification**
  - Different approaches to de-rating/qualification would make the same capacity worth more/less in different jurisdictions only because of regulation

  - Interconnector de-rating to/from neighbouring countries needs to be consistent, appropriately reflecting risk of coincident stress events
**How should Europe select its preferred market design?**

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| - Competitive underlying market structure or effective regulation  
  - Vertical Integration not inhibiting generators access to certificates/capacity contracts  
- Market for ‘certificates’ develops to support competitive new entry  
  - Prices reflecting supply/demand  
  - Availability of ‘long-term’ contracts  
- Appropriate penalties for non-performance | - Effective constraints on any central planning bias to over-procurement  
  - Including ‘excessive’ long-term contracts  
- Limiting the tendency to rule changes to avoid ‘regulatory instability’  
  - Providing for some innovation in contracting/generator requirements  
- Appropriate penalties for non-performance |