Capacity mechanisms in Europe

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

Robin Cohen

28 September 2015

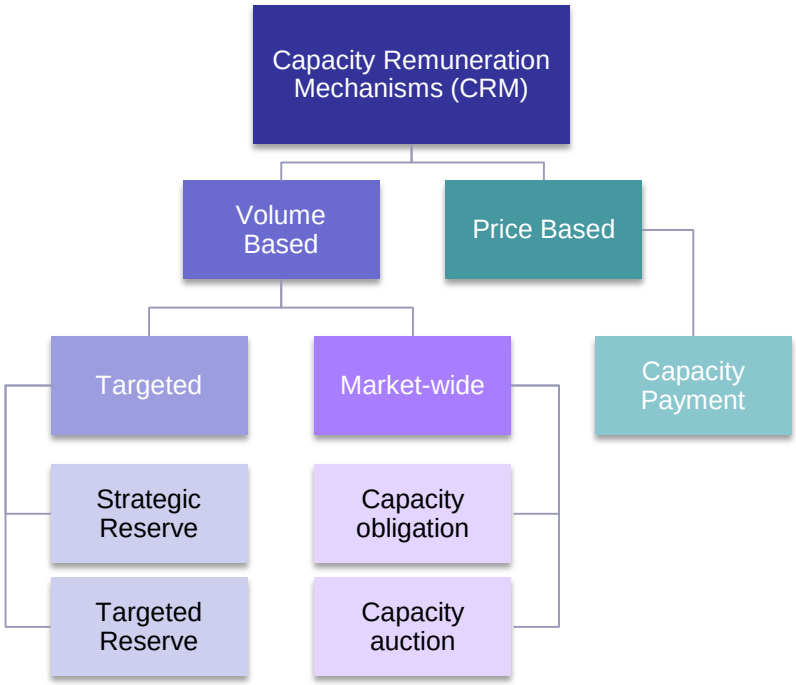
CRA Charles River Associates

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: (LoLP * VoLL- 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?

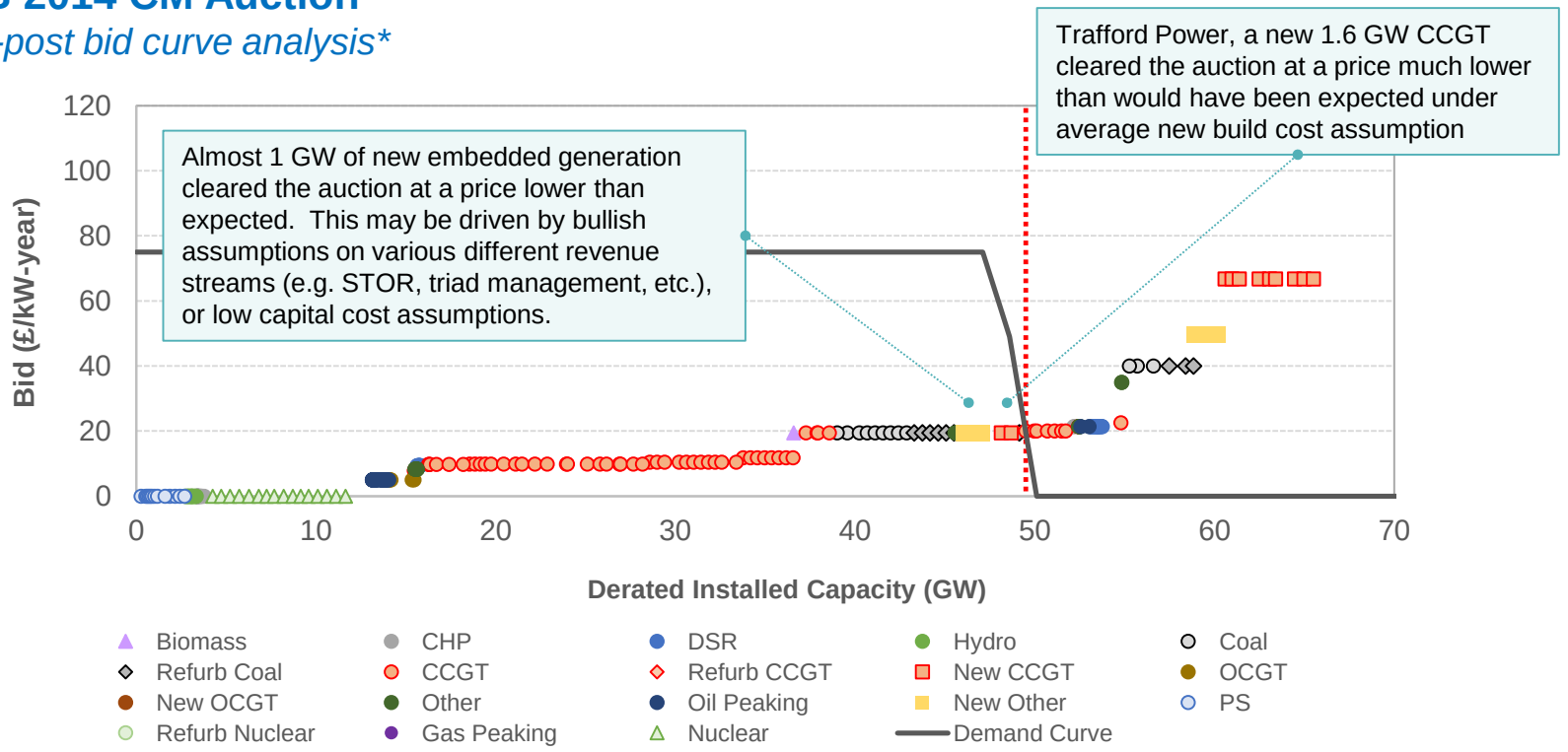
	Decentralised	Centralised
Incentives for new entry – 'the missing money'	▪ Market for 'certificates' required to provide efficient capacity price ▪ Opportunity for more tailored solutions with bi-lateral contracting ▪ Risks of excess/deficient capacity borne by Suppliers	▪ Auction design required to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

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**



** 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.*

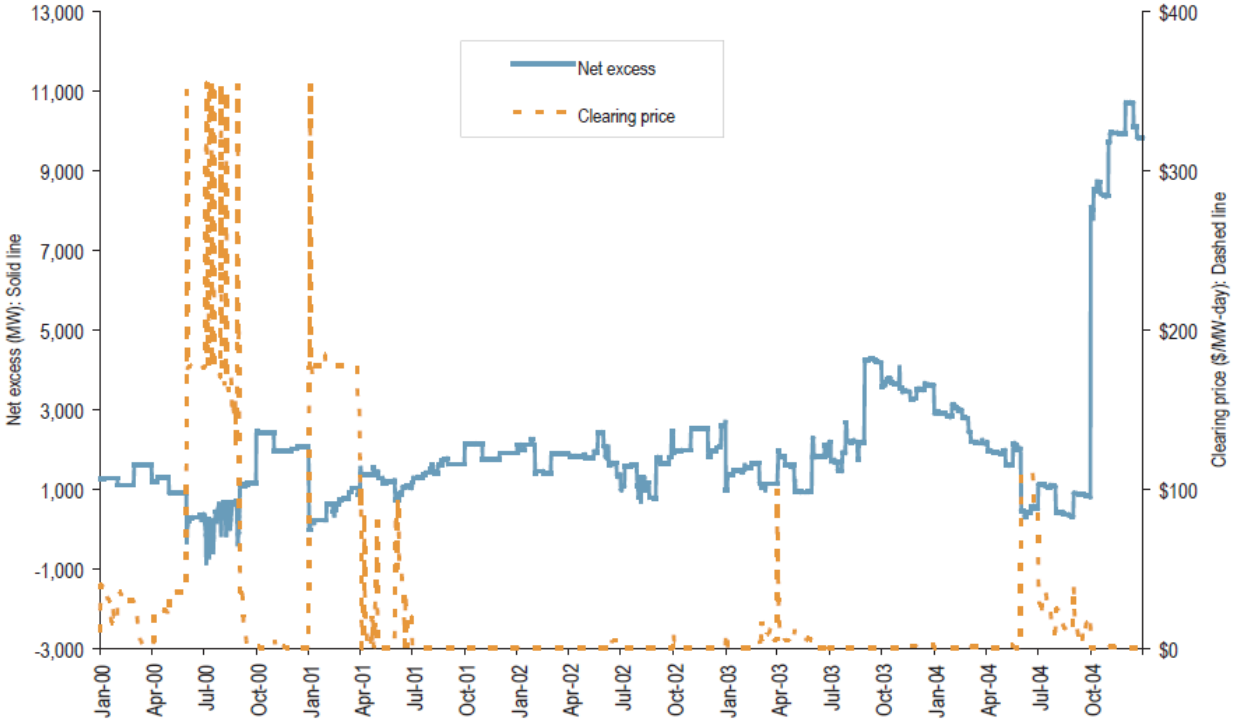
Source: CRA analysis based on National Grid's published pre-qualification results.

CRA Charles River Associates

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

Figure 4-9 - The PJM Capacity Market's net excess vs. capacity credit market-clearing prices: January 2000 to December 2004



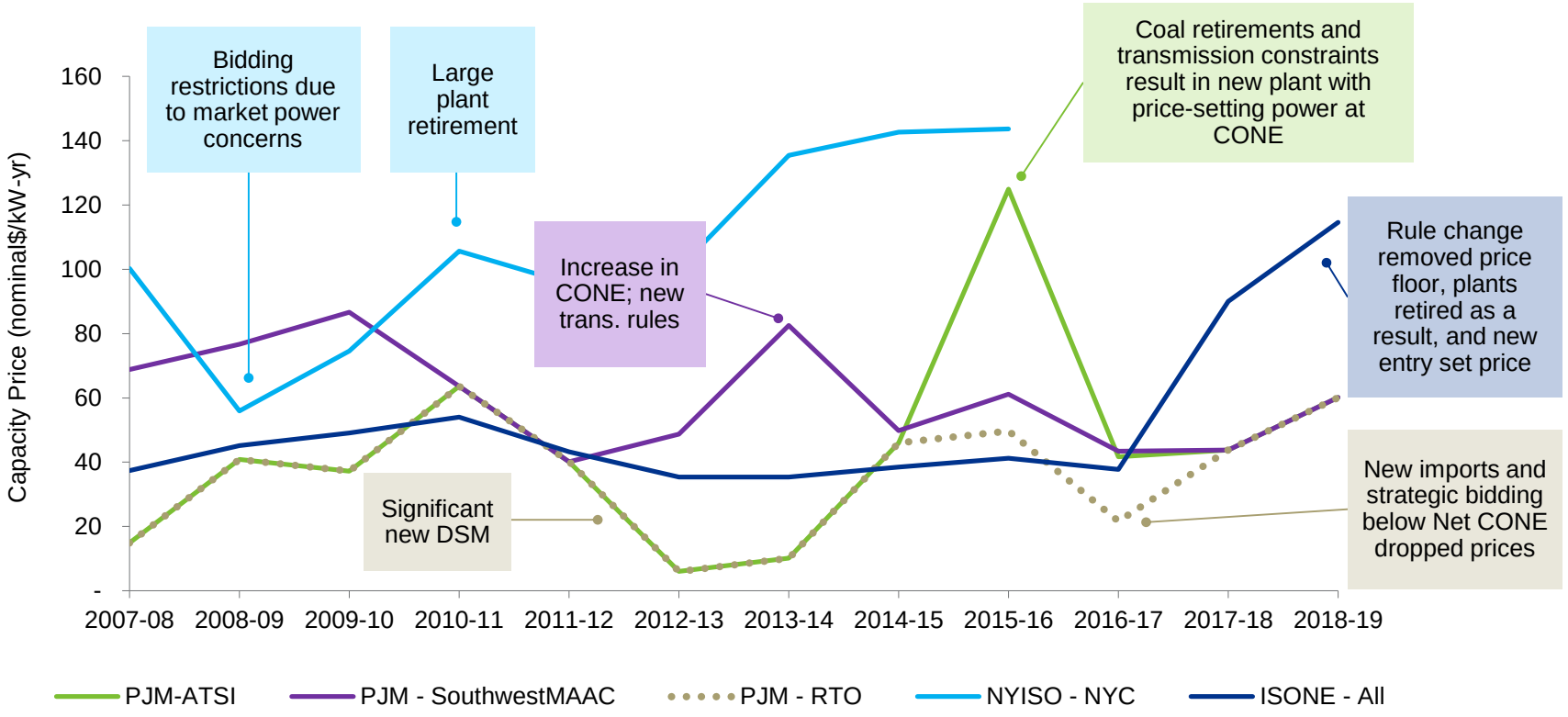
Key Problems

- 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

CRA Charles River Associates

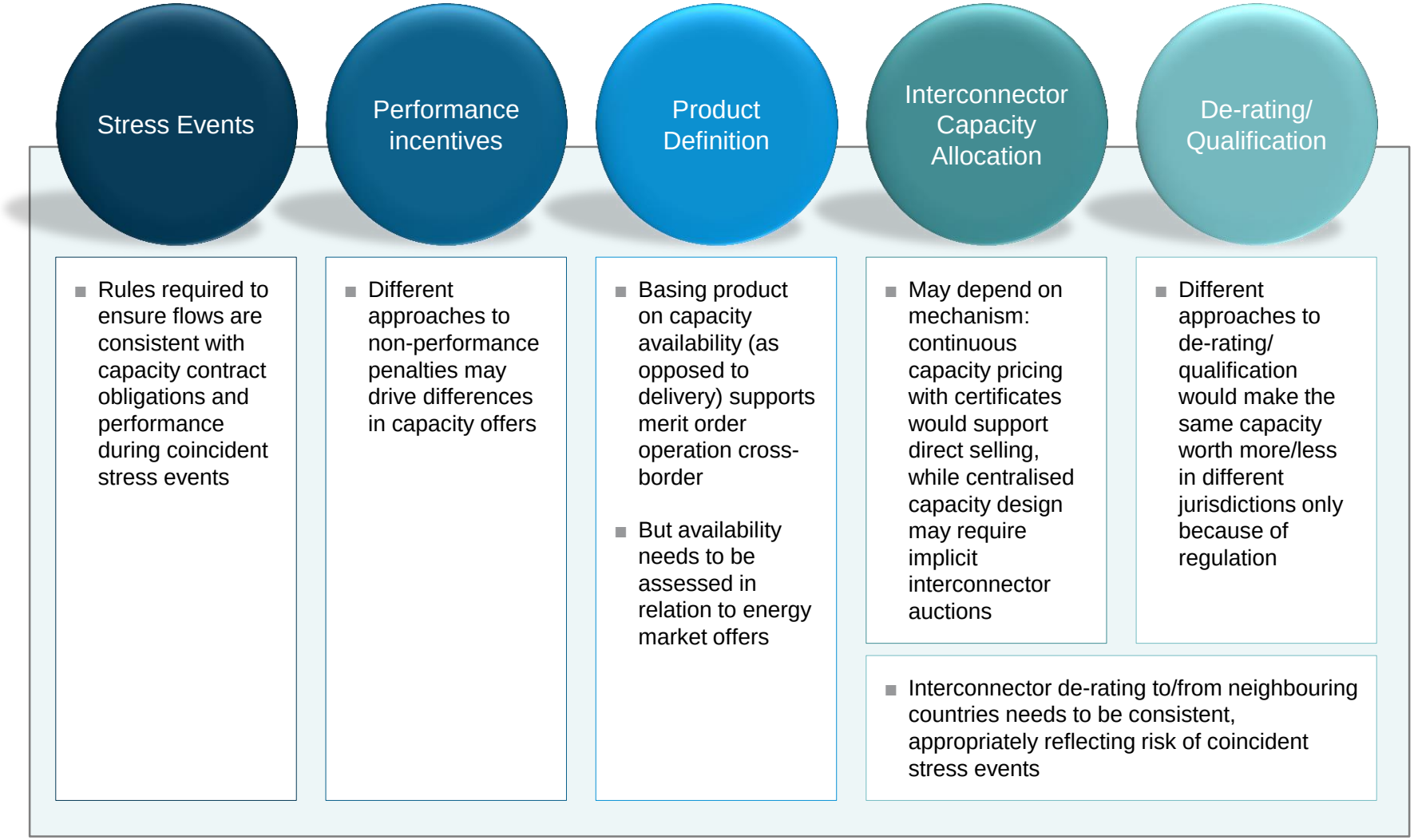
What are some of the lessons from experience with CRMs?

- 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



CRA Charles River Associates

Are there minimum harmonisation requirements between capacity markets – some key considerations



How should Europe select its preferred market design?

Some key conditions for success

Decentralised

- 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

Centralised

- 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

London
Tel +44 (0)20 7664 3700
Fax +44 (0)20 7664 3998
99 Bishopsgate
London EC2M 3XD
United Kingdom

Robin Cohen

+44 20 79591444 direct
+44 7881518181 mobile
rcohen@crai.com

www.crai.com/energy