



CRA Insights: Energy

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Great Britain's first capacity market auction: a primer for European policymakers?

Background and market rationale

The first capacity market auction covering Great Britain's (GB) electricity sector took place in December 2014 and ended after 11 rounds of bidding with a clearing price of £19.40/kW-year. Capacity contracts were awarded to 49.3 GW for delivery in 2018/2019. Although hailed a success, the auction design is expected to undergo further development as policymakers evaluate whether reliability has been delivered at the least overall cost.

The GB capacity market design and the outcome of its first auction are not just of interest to market participants in GB. Capacity markets, otherwise known as capacity remuneration mechanisms (CRMs), are being developed across the European Union to provide an additional source of revenue for generating plants with the aim of improving capacity adequacy, and with it, security of supply. In addition, the European Commission has recently launched a sector inquiry to ensure that these new CRMs do not distort competition or trade in the Single Market. This is not straightforward since the design of capacity markets presents challenges, such as:

- providing a sufficient source of long-term revenue to support new entrants without excessively raising costs to consumers;
- meeting capacity adequacy targets, while ensuring that capacity is not over procured;
- providing opportunities for market entry to new technologies *and* sustaining confidence in the operational performance of such technologies during periods of system stress; and
- designing a *market* mechanism that mitigates the risk of undesired strategic bidding or other adverse consequences.

GB capacity market design

The GB capacity market covers new and existing supply and demand-side resources in GB. There are four-year-ahead auctions for all plants and demand-side resources (T-4 auction). Supply-side participants are eligible for three different contract durations: one-year contracts for

existing plants, three-year contracts for “refurbishing plants,”¹ and fifteen-year contracts for new plants. Currently, demand-side resources are only eligible for one-year contracts. A one-year-ahead auction (T-1 auction) is contemplated to allow for the purchase of any additional capacity and demand-side response that may be needed as a result of higher-than-expected retirements or load growth, or delays in the commissioning of new plants.

The auction is organized as a descending clock, pay-as-clear auction with a demand curve constructed through a set of administratively defined parameters, which include an assumption for the cost of new entry (CONE), an auction price cap, and a target capacity with tolerances on both sides of the target. These parameters result in a sloped demand curve.

Key outcomes

Despite anticipated capacity shortages, the first GB capacity market auction cleared at £19.40/kW-year, which is less than half of the CONE set at £49/kW-year. Even with such a low clearing price, 2.6 GW of new plants secured capacity contracts while almost 6 GW of existing plants exited the auction above the clearing price, unable to secure a capacity agreement.

A clearing price below most analysts’ expectations

Although it was clear a few months before the auction that the supply of capacity would significantly exceed the auction demand, energy market revenues have been so depressed in the past few years that most analysts expected higher clearing prices for the auction. CRA’s own analysis of the bid-formation drivers under a range of scenarios found that the low clearing price was likely to be consistent with expectations of higher energy market prices than the levels of prices that actually prevailed in traded-forward contracts prior to the auction.

New plants clearing ahead of existing plants

The most surprising outcome from the auction was that a new combined-cycle gas turbine (CCGT), Trafford Power, secured a capacity contract ahead of existing plants. Given that pre-qualified existing plants exceeded the capacity target set by the Government (as advised by National Grid), neither the Department for Energy and Climate Change (DECC) nor most market analysts expected new plants to clear the auction at such a low price. Even assuming much higher expected energy prices, CRA’s analysis indicates that new transmission-connected generation is unlikely to be economic below a £40/kW-year capacity clearing price, unless the provision of capacity contracts with a 15-year duration has a significant impact on the cost of capital for new plant.

Conclusions

Overall, the first GB capacity auction generally achieved its objectives. It secured capacity above the set target, ensuring the required level of system adequacy; and helped increase the number of market participants with new entrants in both transmission and distribution-connected capacity. With a clearing price lower than most analysts expected, consumers will benefit from relatively low costs and regulators have some confidence that the auction was conducted on a competitive basis. However, the unexpected outcome of new generation clearing ahead of so much existing generation draws attention to two design elements.

¹ “Refurbishment” is currently defined in relation to a capital expenditure threshold of £125/kW.

First, limiting the availability of 15-year contracts to new capacity was established to mitigate the risks to consumers of locking-in prices for a long period of time. Because existing plants were only eligible for one-year contracts, the difference in contract lengths available may have stimulated new capacity at the expense of existing capacity. Establishing an appropriate trade-off between a low clearing price and the duration of future commitments is likely to be subject to further review and challenges. US capacity markets, such as New England and PJM, have significantly shorter capacity agreements for new plants.

Second, some market participants view the penalties for non-completion of new capacity as not particularly onerous, with failure to achieve the Financial Commitment Milestone² attracting a penalty of £5/kW and failure to achieve the Minimum Completion Requirement³ attracting a penalty of £25/kW. Further, non-performance of contracted plant during a system stress event carries penalties that may not exceed the annual capacity payment, creating a “tails I win, heads I don’t lose” problem. It remains to be seen whether this will result in non-delivery and adversely impact system reliability. In the US during the extremely cold winter of 2013/2014, non-performance of contracted capacity led to proposals to increase performance penalties. Regulators and governments considering some form of capacity market across the EU are likely to take note.

Contacts

Ana Barillas

Associate Principal

London

+44-20-7959-1547

abarillas@crai.com

Robin Cohen

Vice President

London

+44-20-7959-1444

rcohen@crai.com

Nanthawit Sukthaworn

Consulting Associate

London

+44-20-7959-1469

nsukthaworn@crai.com

² Deemed in the regulations to have been met if by no later than 18 months after the Auction Results Day the Delivery Body has acknowledged receipt of a report prepared by an Independent Technical Expert which states that Capital Expenditure is at least equal to 10% of the Total Project Spend for the project; or, the capacity provider has, or will have, sufficient financial resources to meet the Total Project Spend and additional (specified) contractual relationships have been entered into.

³ Deemed in the regulations to have been met if the generating unit is Operational by the Long Stop Date with a physical generating capacity which, after derated by the relevant factor, exceeds 50% of its capacity obligation.

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