

## Capacity Market

WINTER 2018/19 AUCTION

OCTOBER 2014

### What can we learn from the pre-qualification results?

In December the GB power market will hold its first Capacity Market auction, a new government policy designed to ensure that there is sufficient generation to meet the demand for electricity. Through the auction, the Department of Energy and Climate Change (DECC) will buy a defined volume of capacity to ensure we have sufficient generation capacity to keep the lights on in the peak periods of each year.

This new market fundamentally changes the way in which generators are paid, moving away from a power only market where they are only paid for generation, to one where they are also paid for available capacity. The cost of the capacity purchased will be charged to suppliers and eventually to end customers. The government's latest projections suggest that the cost of providing this support will be in excess of £2bn per annum with the actual cost capped at a maximum of £3.7bn for the first auction.

On 3 October 2014 National Grid [announced](#) the list of generators that have pre-qualified to participate in this auction for delivering capacity in the winter of 2018/19. These results have given us the first insight into what we can expect from bidders in the auction on 16 December. In this briefing, we look at who has (and has not) pre-qualified and what this might mean for auction outcomes.

#### Level of participation

Participation in the Capacity Market is higher than many would have expected. In the run up to pre-qualification there was concern that insufficient capacity would come forward, risking a high clearing price. However, the results show a comfortable margin with 62.5GW of derated capacity already qualified and an additional 5GW that could be successful after the dispute resolution process.

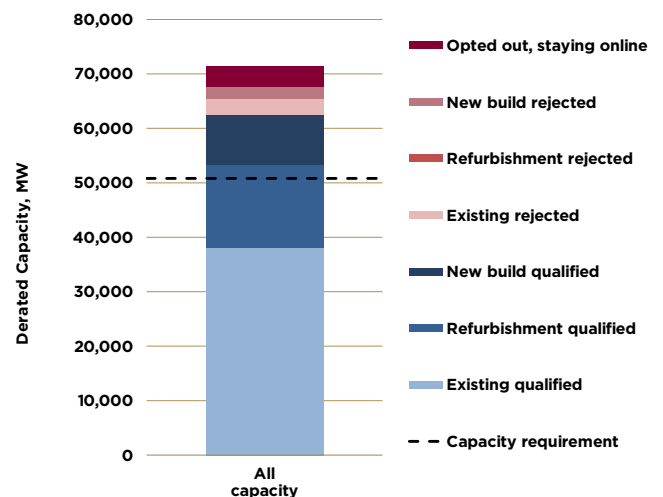
This is comfortably higher than the auction requirement of 50.8GW and means that over 15GW of capacity could miss out on the auction. This is good news for consumers as high levels of competition should reduce auction prices, and therefore the impact on bills. However, it also puts many existing generators in a precarious position as those who miss out on the auction may need to close.

Tom Porter

Partner

LCP

*The level of competition is good news for consumers but also creates a huge risk for many existing generators. Over 5GW of current capacity is set to miss out and face potential closure.*



79%

of new capacity outside  
the “Big 6”

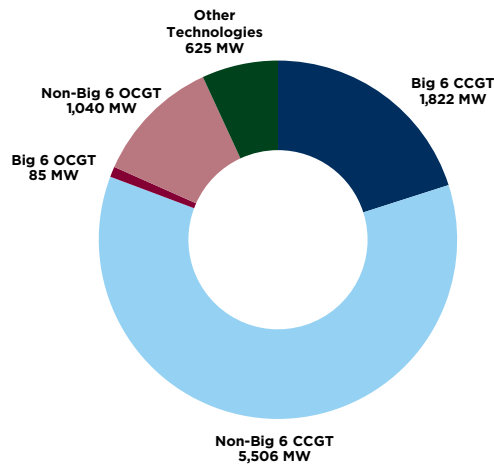
7.3GW

of new CCGTs have  
qualified

### Volume of new plant

One of the main headlines is the volume of new capacity that has pre-qualified for the auction across a range of technologies. Combined Cycle Gas Turbines (CCGTs) dominate with 7.3GW of new capacity qualifying. In contrast, and contrary to many expectations, there has been little interest from new large scale Open Cycle Gas Turbines (OCGTs), typically the cheapest option on a capacity basis.

The “Big Six” energy companies, that own 68% of the existing capacity, represent just 21% of pre-qualified new capacity with only SSE, Scottish Power and Centrica having pre-qualified new build CCGTs. The low proportion of new build applications from the Big 6 may indicate a reduced appetite for investment in new conventional generation projects. This result will please those who are looking for more diverse ownership of Britain’s generation fleet.



Much of this new capacity has the potential to be competitive in the auction with existing plant which will be a concern for those that might be close to the margin. New bidders, that receive a 15-year contract if successful in the first auction, will also be concerned by the [consultation](#) published by DECC last week on the price-duration curve that is likely to reduce the income that new plant can achieve in future auctions. This makes it even more important for new projects to clear in the first auction which may further depress the auction clearing price.

### Opt-out decisions

Over 10GW of plant have opted out of the auction, the majority of which was expected due to planned closures before 2018/19. The main exception is Scottish Power who opted out Longannet, Scotland’s largest power station, but has indicated that it intends to continue operating the plant in 2018/19. This gives National Grid a difficult decision on whether to revise the target for the auction down by its 2GW capacity despite the

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continuing speculation that Longannet may close earlier. Drax have also opted out three of their units leaving the option open to convert all of these to biomass under renewable subsidies. Grangemouth CHP (142MW) is the only other opted-out plant that intends to remain open through the delivery year.

All other opted out plant have already closed or announced they intend to close. This means all of the remaining CCGT fleet intend to compete in the auction, despite many of these plants currently operating with significant losses.

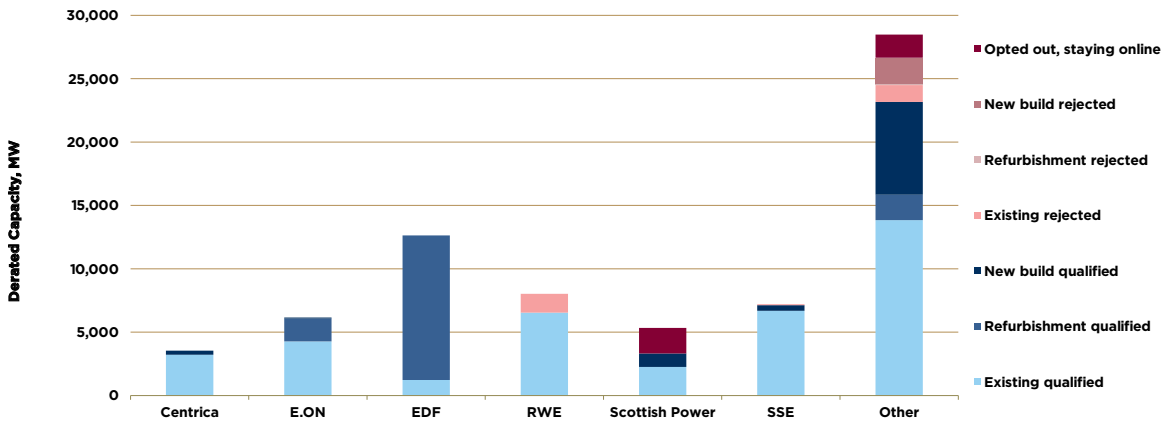
**Refurbishments**

Of the qualifying capacity 15.2GW of capacity has registered for a 3-year refurbishment contract. Contrary to many expectations EDF has registered all of its nuclear fleet (7.9GW) as refurbishments entitling it to bid for a 3-year contract thanks to the expectation of high on-going costs.

More widely we have also seen a large proportion of the existing coal fleet registering for 3-year refurbishments. Cottam, Eggborough, Ratcliffe-on-Soar and West Burton coal stations have all pre-qualified as refurbishments, totalling 7.2GW of derated capacity.

**90%**  
of EDF's plant capacity has qualified as refurbishments

**Summary of capacity by owner**



**Rejections and appeals**

One of the most notable headlines from the auction results are the 188 units that have been rejected setting National Grid up for a busy appeals period. Notably RWE's Aberthaw (1692MW) was the largest unit to miss out but we understand that it is hopeful of being successful in appeal. DECC has [indicated](#) that it expects the majority of rejected capacity to be successful after the dispute process.

**32%**  
of applications have been initially rejected

Dan Roberts  
Director  
Frontier Economics

*The successful bidders in the auction are likely to be those with the most optimistic view of future income. Those that are “prudent” when determining their bid risk missing out.*

**What does pre-qualification tell us about auction outcomes?**

The key question is whether any of this tells us anything about the way participants may behave in the auction and ultimately about the clearing price. To answer this we need to understand how bids may be priced by participants.

**How will participants construct their bids?**

Demand for derated capacity has already been announced. Through a multi-round auction process (a “descending clock auction”), parties will express their willingness to supply derated capacity at different price levels. The clearing price will be determined where just enough capacity has been withdrawn through successive auction rounds for supply to equal demand.

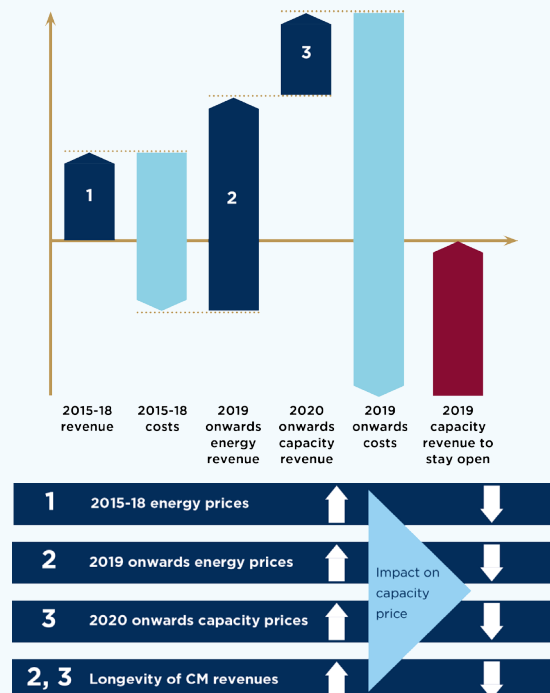
This sounds straight forward and for future auctions it may well be so. However, in the first auction, existing plant are committing to have capacity available for the winter of 2018/19. For some there is a high chance of losses in the intervening years. Bidders will want to include these losses as a cost of being available in 2018/19.

Participating plant also need to consider potential future energy and capacity revenues (unlike new plant, they do not get a 15 year contract for capacity, and have to rebid into the auction each year). If their expected profits in the energy, capacity and ancillary services markets from 2018/19 onwards are low (or negative) they will again require higher capacity revenue. And they will need to consider political uncertainty. There are a number of changes to next year’s capacity auction already planned which will affect price levels, and experience suggests these will not be the last.

**EXAMPLE**

- Consider a 400MW CCGT that might be the marginal plant in the capacity auction.
- Assume expected energy revenues of £2.5m do not cover costs of £12m leading to a loss of £9.5m per annum before any capacity revenues are considered.
- Capacity auction bid is a function of:
  - Revenues to 2018/19: assume one year of losses (2014/15) already sunk, so summing the remaining three years before 2018/19, the plant has £31m\* of fixed costs and £6.5m\* of net revenues.
  - Losses from 2018/19 onwards: assume the plant expects to continue making losses after the first auction and that the bidder only looks at costs and revenues up to three years after the auction. They expect a further £18m\* of losses.
  - Capacity revenue from 2018/19 onwards: assume that the plant has forecast future capacity revenue at £40/kW, totalling £28m\*.
- On these assumptions, the plant requires £22m in order to remain open, which for a 400MW plant translates into £62/kW allowing for derating.

\* Discounted at 7.5%



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All this means that prices will depend on bidders' forecasts of a wide range of uncertain factors. In the stylised example, above, the bid of £62/kW depends on:

- energy market price forecasts;
- capacity price forecasts; and
- a view on how long capacity revenues are forecast to last.

Small changes in any of these have a big impact. If the plant owner does not take any future revenue into account (because, for example, they expect the capacity mechanism not to last beyond the next election) then their bid would increase significantly to £88/kW (this is above the price cap, suggesting they wouldn't bother to actually participate in the auction). In contrast, if they are relatively bullish about future capacity revenues and expect £50/kW per year instead of £40/kW, and factor in five years of future revenues, their bid price could reduce to £17/kW. If they assumed at least seven years of future revenue then the bid would fall to zero.

#### **What can we learn for the pre-qualification results?**

There have been a number of surprises in the pre-qualification results and while there still remains significant uncertainty in what this may mean there are some high level conclusions we can draw.

- A lot of plant has pre-qualified, implying that they would be happy to stay open at a capacity price of £75/kW or less. This could signal a widespread view of reasonably high future energy or capacity prices, or that participants are discounting political uncertainty and assuming that the capacity auction regime will remain a fixture for some time to come. This in turn might imply a capacity auction clearing price materially below the £75/kW level.
- Longannet's decision to opt-out might have revealed further information, as it may have indicated they could not operate at £75/kW or less. However, wider factors such as issues around changes to transmission charges may have more to do with this decision.
- The high levels of new entrants registering may be a more reliable signal of higher energy price expectations. In particular, the large number of CCGTs and corresponding lack of large scale OCGT shows that some investors see attractive margins for new build CCGTs in the wholesale power market.
- A significant volume of existing generation capacity is likely to miss out in the auction and then need to decide whether to close. If they do we are likely to see much tighter margins in the period from 2015 to 2018. This will add additional pressure on National Grid's interim Supplementary Balancing Reserve (SBR) and Demand Side Balancing Reserve (DSBR) while also pushing up wholesale prices.

- If new projects succeed an even more significant volume of existing plant will potentially close. The government has already announced potential changes to the auction next year (the inclusion of supply from interconnectors and the introduction of a variable price duration curve) which may make the first auction a more attractive proposition. This could result in a situation where we swap old plant for new, which might be the right outcome.
- However, it may alternatively be a result of policy design. In particular, new plant is insured against future capacity price risk by 15 year contracts, whereas existing plant is not. So rather than reflecting an efficient outcome, this might simply reflect the fact that new plant appear lower cost because the customer has underwritten some of their risk.

Ultimately, because the capacity price will be a function of so many variables, reading the runes of pre-qualification in terms of price is not straightforward. We can say that the Capacity Market appears to have attracted interest in new power station development (and looks set to keep some existing plant going). But, it has also introduced more uncertainty and potentially some unintended consequences. The big question remains – what will happen in the auction in December and what will be the cost of keeping the lights on?

### **About LCP**

LCP's Energy Analytics practice has been at the heart of Electricity Market Reform (EMR) analysis since the first design proposals. We provide analytic and consulting services that support the industry in understanding the impacts of these significant reforms to the GB power market. We also provide some of the key tools in the industry, including the Dynamic Dispatch Model that is used by DECC and National Grid for analysis such as the final EMR delivery plan and the setting of the capacity requirement for the first capacity auction. More widely we support our clients, including many of the Big 6, to understand how these fundamental changes to the market will affect portfolio profitability and risk over the medium to long term. We provide a range of services including asset valuation, impact analysis and strategic advice.

### **About Frontier Economics**

Frontier Economics is one of the largest economic consultancies in Europe with offices in Brussels, Cologne, Dublin, London and Madrid. We use economics to help clients improve performance, make better decisions and keep ahead of the competition. Our expertise is broad, covering not just micro-economics but finance, statistical modelling, game theory, market research and even the psychological side of economics.

We work with a wide range of clients from the private sector, government, regulators, other public authorities and charities. We distil complex issues to focus on what matters to our clients. We help them make credible arguments and good decisions, backed up by robust evidence and analysis. While our analysis may be complex, the advice we provide is clear, honest and delivered using plain language.

## Contact us

If you would like to discuss any aspect of the Capacity Market in more detail or any of our wider services, please contact Tom Porter (LCP) or Dan Roberts (Frontier Economics) using the details below.



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