

INCAPACITATED

Why the capacity market for electricity generation is not working, and how to reform it

Byron Orme | March 2016
www.ippr.org | @IPPR

The logo for the Institute for Public Policy Research (IPPR), consisting of the letters 'IPPR' in a white, sans-serif font on a dark grey background. A thin orange diagonal line is positioned to the right of the letters.

Read online or download at:
www.ippr.org/publications/incapacitated

60-SECOND SUMMARY

To keep the lights on over the next 15 years, two major challenges need to be overcome. The first is that a large number of power stations are set to close over that period, so their capacity will need to be replaced. The second is that the rollout of renewable technologies creates new difficulties for balancing supply and demand, because their output is variable.

In 2014 the government introduced a scheme – the ‘capacity market’ – designed to meet these twin challenges. It has so far awarded £2.8 billion in subsidies to power stations in exchange for a guarantee that they will be online when they are required in order to meet electricity demand. Unfortunately, the scheme is failing. It is providing poor value for money for billpayers, is working against the government’s decarbonisation objectives, and is too focussed on large power stations at the expense of more efficient, demand-side solutions.

This report argues that the capacity market is therefore in need of fundamental reform. Changes should include the splitting of the scheme into two separate auctions for old and new generation capacity, and the introduction of an emissions performance standard that excludes the most polluting plants from the scheme. Taken together, the reforms that we propose would align the capacity market scheme with the government’s decarbonisation objectives, protect billpayers from excessive costs, and create a genuinely secure supply of electricity into the future.

KEY POINTS

- The capacity market was designed by the Coalition government to ‘encourage the investment we need to replace older power stations and provide backup for more intermittent and inflexible low-carbon generation sources’. It awards payments to power stations in exchange for a guarantee that they will be online when required. The payments are allocated through an annual auction.
- Two capacity market auctions have already been held, in December 2014 and December 2015, which between them awarded contracts worth £2.8 billion.
- The scheme has three major flaws which together make it not fit for purpose.
 - **It provides poor value for money:** across the two auctions held so far, nuclear power plants have received payments amounting to £153 million in 2014 and £136 million in 2015, despite being almost certain to remain open during those years without receiving these subsidies. In the 2014 auction, a third of contracts were awarded to plants that had indicated that they did not need subsidy to stay online.
 - **It works against decarbonisation:** it has provided a lifeline to several old coal-fired power stations, which have received a total of £373 million in subsidies from both auctions. It has also heavily incentivised the proliferation of new diesel generators, which are even more polluting than coal and which were awarded a total of £176 million in subsidies in 2015.
 - **It is focussed on generation:** the capacity market is designed around the requirements of large power stations, rather than around the needs of smart energy technologies such as demand response and electricity storage, or for actions that would permanently reduce demand for electricity. The National Infrastructure Commission has estimated that billpayers could save £8 billion a year by 2030 if these alternatives were supported.
- The government is currently consulting on proposals to expand the capacity market so that it incentivises the construction of new gas-fired power stations. Our view is that the proposed changes do not solve the scheme’s problems, outlined above, and that further reforms continue to be required.

RECOMMENDATIONS

1. The capacity market should be split into separate auctions for old and new capacity

The capacity market currently awards the same per-unit price for capacity to all operators. This means that existing power stations that would be able to operate without any payments at all receive the same price-per-unit as a new power station. The government has now made clear that it wants the capacity market to deliver new gas-fired power stations. This is likely to increase the price paid to all operators, and the total costs of the scheme. Instead, there should be a separate auction for new and old capacity. The payments would become more targeted to the capacity that bids for them and the scheme would be more efficient overall. There would also be far greater control of the amount of new capacity that is rewarded through the scheme.

2. An emissions performance standard should be applied to all capacity in receipt of capacity payments

Carbon-intensive generation should be explicitly prevented from accessing the capacity market through the introduction of an 'instantaneous' emissions performance standard. This would effectively prevent any station that has a carbon intensity above a certain level from bidding into the capacity market. This limit could be set at a level that does not impact on any less carbon-intensive generation, such as new gas, that the government wants to incentivise.

3. New large-scale gas power plants should commit to using carbon capture and storage (CCS) if they are to stay open in the long term

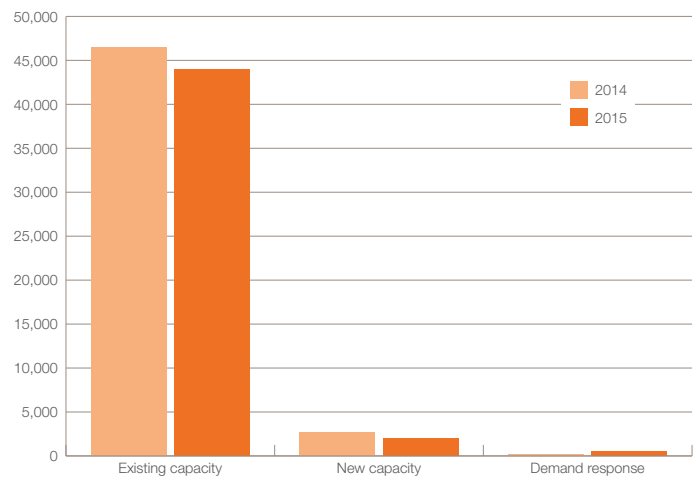
There is a role for new gas plants in replacing coal and providing flexible back-up as the electricity system is decarbonised. However, given the very low levels of carbon emissions that the UK's electricity supply needs to be producing by 2030, there can be only a very limited role for unabated gas generation. To access longer-term contracts, large-scale gas plants should either be built with CCS, or be required to install it in future.

4. Demand response providers should have access to longer contracts

The capacity market currently favours traditional generation over new technologies that can reduce demand and so limit the number of power plants that need to be built. Demand response providers do not currently have access to the longer-term contracts available to power stations. The disparity in contract lengths available makes it difficult for them to compete with traditional generation. To remedy this, the capital expenditure thresholds (that is, the amount that a new plant needs to invest in order to access longer contracts) should be removed, and all new capacity should be permitted to bid for contracts of up to 15 years' duration.

New capacity accounts for a small fraction, and demand response for an even smaller fraction, of capacity market contracts

Contracts (MW) awarded to existing and new capacity, and demand response, in the 2014 and 2015 capacity markets



Sources: National Grid 2014 and 2015c

For the full report, including all references, data sources and notes on methodology, see: www.ippr.org/publications/incapacitated

Citation: Orme B (2016) *Incapacitated: Why the capacity market for electricity generation is not working, and how to reform it*, IPPR. <http://www.ippr.org/publications/incapacitated>

Permission to share: This document is published under a creative commons licence: Attribution-NonCommercial-NoDerivs 2.0 UK <http://creativecommons.org/licenses/by-nc-nd/2.0/uk/>