

Background on setting Capacity Market parameters¹

This note summarises the current process for setting Capacity Market parameters and sets out the evidence which informs these parameters. This responds to stakeholder feedback (including through the recent evaluation of EMR) for greater transparency of Capacity Market parameters, including those relating to the demand curve.

A. Process

1. The auction parameters are reviewed annually, alongside the process which recommends to the Secretary of State an amount of capacity to target. This process seeks to ensure that evidence and assumptions continue to be in line with market developments and the Capacity Market continues to fulfil its design objectives:
 - Limit market power and gaming
 - Meet the Reliability Standard
 - Promote fair competition of different technologies
 - Remain resilient against uncertainties, changes in market conditions and lumpy investment
2. A decision about the amount of capacity to target through the Capacity Market is made each year on the basis of evidence and an accompanying recommendation provided by National Grid (through its Electricity Capacity Report²). The independent Panel of Technical Experts³ scrutinises this recommendation.
3. The parameters for the 2015 Capacity Market (CM) T-4 auction, for delivery in 2019/20, have been reviewed and maintained but updated for inflation.⁴ Reviewing and updating parameters seeks to strike a balance between providing continuity to market participants, which has been explicitly emphasised by stakeholders, while reflecting recent market developments.
4. In addition to the annual process, regulations⁵ require that CM policy is reviewed on a five-yearly basis to assess:
 - The extent to which its objectives have been achieved,
 - Whether those objectives remain appropriate and,
 - The extent to which those objectives could be achieved in a less burdensome way.This review will be published.

¹ A description of the Capacity Market design can be found here:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/324176/Implementing_Electricity_Market_Reform.pdf

² <https://www.emrdeliverybody.com/Capacity%20Markets%20Document%20Library/Electricity%20Capacity%20Report%202015.pdf>

³ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/438714/PTE_2015_ECR_Report_final.pdf

⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/439232/150629_SoS_NG_Confirmation_of_Capacity_Auction_Parameters.pdf

⁵ <http://www.legislation.gov.uk/ukdsi/2014/9780111116852/regulation/81>

B. Cost of New Entry (Net-CONE)

5. Net-CONE is defined as the cost of a new entrant after accounting for wholesale and ancillary market revenues. It is the key anchor point for the CM demand curve, by providing an estimate of CM revenue requirements of a new entrant.
6. Therefore, setting the level of net-CONE requires two key factors:
 - The reference technology (i.e. the likely new entrant technology of choice), and
 - The capital, operating and other appropriate costs of this technology and its expected operating performance.

Current approach

7. Net-CONE is currently based on the lowest CM bid of a new Combined Cycle Gas Turbine (CCGT) in DECC's Dynamic Dispatch Model (DDM).⁶
8. DECC consulted on the reference technology in October 2013⁷, the result of which led to a switch from a large-frame Open Cycle Gas Turbine (OCGT) to a CCGT. This choice of technology will remain unchanged for the T-4 auction in 2015, but we will keep it under review for the future, pending further evidence. The costs of this reference technology is informed by the latest available evidence on CCGT costs, including DECC's Generation Costs report⁸ which is externally commissioned. The net-CONE remains at £49/kW for the T-4 auction in 2015.
9. Setting the level of net-CONE is subject to large uncertainties, with different risks depending on whether this level is under- or overestimated. If net-CONE is underestimated, supply may be discouraged to bid into the auction (as sufficient "missing money" cannot be recovered by new entrants). As participants would bid in at the "true" net-CONE, it is likely that an inefficiently low level of capacity would be procured at T-4. If net-CONE is overestimated, this could attract excess supply, which could mean buying extra capacity in T-4 (which may have otherwise been cheaper in a future T-1 auction).
10. However, in a sufficiently competitive auction, the influence of net-CONE on auction outcomes is likely to be limited. The clearing price should be driven down by competing plants.

Evidence for future reviews

11. Due to requirements to publish parameters for each auction, the reference technology and the level of net-CONE will be reviewed annually. We will use:
 - Updated estimates of bid data from DECC's DDM model,
 - DECC's generation cost and hurdle rate studies, which are commissioned externally and provide inputs for the DDM,

⁶ The DDM takes into account the impact of Cash-out reform and allows market prices to spike up to £6,000/MWh.

⁷ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/252743/Capacity_Market_Impact_Assessment_Oct_2013.pdf

⁸ The 2015 version is forthcoming, the 2013 version is available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/223940/DECC_Electricity_Generation_Costs_for_publication_-_24_07_13.pdf

- Market and technology developments in the UK, as well as the latest project pipeline for the reference technology, and
- Previous auction outcomes and relevant evaluation evidence.

12. However, new evidence may be limited in some years and elements of this data are confidential. Were the evidence to suggest that the reference technology should change, we aim to seek views from stakeholders to validate the revised choice.

C. Further demand curve parameters

13. In the current CM design, the other auction parameters determining the shape of the demand curve (price cap, price-taker thresholds, target capacity tolerances), are set with reference to the level of net-CONE.

a. Auction price cap

14. The price cap limits market power and limits costs to consumers. Therefore, the trade-off in setting the price cap is for it to be high enough to enable competition (by allowing a wide range of projects and technologies to participate in the auction), but low enough to avoid exposing consumers to significant costs (from speculative and/or anti-competitive bidding).

15. In theory, it could be appropriate to impose a price cap at a level of net-CONE, as it would not be reasonable to expect the market to clear above that level, unless there is a lack of competition in the auction.

16. However, in practice there is potentially significant uncertainty around the estimate of net-CONE, as set out above. It is therefore desirable to set the price cap at a multiple of net-CONE – with the size of the multiple recognising the degree of uncertainty around the estimate.

17. Furthermore, a higher price cap leads to a steeper demand curve. This may increase clearing price volatility, as even small changes to the supply curve can lead to a more pronounced clearing price response.

Current approach

18. The current approach for setting the price cap is to apply a multiple to net-CONE. In line with practices in other capacity markets – notably in the United States, where such markets are more mature and have been in operation for many years – this multiple is currently set at 1.5, which results in a price cap of £75/kW.

Evidence for future reviews

19. When reviewing the price cap, we plan to take into account a range of evidence (e.g. updated DDM results, insights from previous auctions and market developments) to assess the sensitivities around the net-CONE estimate.

b. Price-taker threshold

20. Existing capacity providers are price-takers and cannot exit the auction until the price drops below the price-taker threshold. Existing capacity can opt for price-maker status,

backed by the submission of an appropriate business plan⁹. This could allow existing plants to recover higher costs. Ofgem assesses the submitted justification.

21. The price-taker threshold aims to mitigate market power where existing plants seek a high price; for example in years where new entry may exert less of a competitive constraint. The price-taker threshold is therefore intended to cover the majority of existing plant, such that overall revenues (from the wholesale market, ancillary services and CM combined) do not significantly exceed that of a competitive outcome.

Current approach

22. The current approach is informed by DDM-based modelling of existing plant bids into the CM auction, with the intention to capture the vast majority of them beneath a particular threshold. On the basis of current evidence, the price-taker threshold is £25/kW (50% of net-CONE).

Evidence for future reviews

23. Updated DDM modelling results will provide relevant new evidence, as well as results from previous auctions (to the extent they are available to DECC).

c. Target capacity tolerances

24. The band above and below the capacity to target is intended as an anti-gaming measure, as it reduces the ability for a single unit to influence the auction outcome by withholding capacity. The thresholds influence the demand curve slope and allow for marginal adjustments in the auction to the target capacity, so as to optimise the outcome from a social welfare perspective.
25. If the auction clears below net-CONE, it is expected that more capacity would be procured (depending on the net welfare algorithm). If the auction clears above net-CONE, the opposite could apply. The target tolerances aim to strike a balance between ensuring adequate capacity and value for money, while reducing gaming risk.

Current approach

26. The current level of these target capacity tolerances is set at 1.5GW above and below the target capacity to target. This equates to two average-sized CCGTs (consistent with its selection as the reference technology of choice for net-CONE).

Evidence for future reviews

27. If the net-CONE reference technology were to change, the size of the target thresholds would be reviewed and tested to assess the impact on the overall shape of the demand curve. This would need to take into account a range of potential auction outcomes and any other parameter changes.

d. Capital expenditure thresholds

28. The capital expenditure thresholds determine eligibility for longer CM agreements – i.e. three-year (refurbishment) and 15-year (new-build) agreements.

⁹ This justification must be provided to an appointed third party who will certify receipt of it to National Grid. Ofgem will be able to request this information from the third party using its information gathering powers as part of any investigation into abuse of market power.

29. Each expenditure threshold is intended to allow substantial capital investment projects to come forward at a CM price that is competitive with other participants by providing greater revenue certainty over more of the project lifespan. However, a threshold set “too low” could subsidise non-additional projects, i.e. those that would have gone ahead anyway (albeit with shorter agreements). A threshold set “too high” may incentivise plants to choose more costly investment plans than necessary, or exclude plants that could justifiably benefit from longer agreements.
30. With respect to the refurbishment expenditure threshold, uncertainties are particularly large – refurbishment varies significantly, for example based on the age and configuration of a plant. This makes it difficult to obtain precise estimates of different types of refurbishment across technologies. Finally, certain “routine” maintenance processes could be timed simultaneously to qualify as refurbishment expenditure above the threshold; this risks allowing existing plants to access 3-year agreements, when that is not aligned to the policy intent.

Current approach

31. The threshold for new-build plant to access 15-year agreements is set at the lower range of estimates of new-build capital expenditure. The threshold for refurbishment plant to qualify for 3-year agreements is based on the cost estimate of installing Selective Catalytic Reduction (SCR) equipment on a coal plant, for the purposes of NO_x abatement.

Evidence for future reviews

32. As with net-CONE, these thresholds require a reference cost level. For the latter, we use DECC’s latest published evidence on generation costs (commissioned externally), as well as updated DDM modelling results and latest market intelligence.