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Annual Report on the Operation of the Capacity Market

Report

Publication date: 19 June 2015

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Overview:

The Electricity Capacity Regulations 2014 require us to provide the Secretary of State for Energy and Climate Change (Secretary of State) with an annual report on the operation of the Capacity Market.

This is the first of these annual reports, following the first Capacity Market auction in December 2014.

Contents

Executive Summary

This is our first annual report on the operation of the Capacity Market (CM). It follows the first CM auction in December 2014 (the 2014 T-4 auction), for delivery in 2018/19. It is a largely factual presentation of the outcomes of 2014 T-4 auction and prequalification process, along with some observations from our analysis of the auction results and industry commentary. In future years, the scope of these reports will increase as more procedures related to the CM take place and its impact on the electricity market in each delivery year can be assessed.

Prequalification for the 2014 T-4 auction

A total of 65.7GW of capacity prequalified for the 2014 T-4 auction, including over 10GW of new capacity. This was 17GW more than the target level of capacity, meaning there was competition between capacity providers to win agreements in the auction. However, a significant number of capacity providers failed to prequalify at the first attempt and only prequalified following a request to review the initial decision. This suggests that a number of applicants found the first prequalification process challenging.

2014 T-4 auction

49.3GW of capacity was procured in the 2014 T-4 auction at a clearing price of £19.40/kW/year. This price was below many forecasters' expectations, which may have been the result of a number of factors, including higher than expected competitive pressure amongst existing plant to avoid closure and new capacity having lower than expected entry costs.

Over 2.6GW of new generating capacity won agreements, despite the clearing price falling significantly below the Government's estimated net cost of new entry of £49/kW/year. This new capacity included many distribution-connected reciprocating engines, which tend to have relatively low up-front investment costs but higher running costs.

The volume of participating capacity above the target contributed to 8.5GW of existing generating capacity failing to win agreements.

DSR participation

A relatively small volume of demand side response (DSR) capacity came forward for the 2014 T-4 auction, with only 174MW winning agreements. This suggests there is still work to do to realise the full potential of DSR capacity. However, we expect more DSR capacity to come forward in the first year-ahead auction in 2017, and that the transitional auctions may help support this.

Bidding behaviour

As part of our general CM monitoring role we examined bidding patterns and behaviour following the CM auction. We saw a general trend of bidders lowering their exit bids as the auction progressed. This suggests the auction's multiple round format was successful in helping to facilitate competition.

1. Background

Purpose of this report

1.1. Regulation 83 of the Electricity Capacity Regulations 2014 requires us to provide the Secretary of State with an annual report on:

- the operation of the Capacity Market (CM) (this report); and
- the Delivery Body's performance of its functions in relation to the CM.

1.2. This is our first annual report to the Secretary of State on the operation of CM, following the first auction in December 2014.

1.3. A separate report, published today, focusses on the Delivery Body's performance of its functions in relation to the CM[1].

Scope

1.4. The annual report is intended to cover all aspects of the operation of the CM over the previous year including prequalification, auction processes and the delivery year. In addition, it may contain more detailed assessments of specific issues which are particularly relevant to that reporting year.

1.5. The Secretary of State may instruct Ofgem to report on any particular matter as part of this report. No such instruction was received this year.

1.6. This year's report is a largely factual presentation of the outcomes of the 2014 T-4 auction and prequalification process, along with some observations from our analysis of the auction results and industry commentary.

1.7. We have also included two chapters on topics which we consider are of particular interest to this first reporting year. These are:

- The participation of demand side response (DSR) capacity providers; and
- Bidding behaviour in the 2014 T-4 Auction.

1.8. In future reporting years, the scope of these reports will increase as more CM procedures take place (eg, year-ahead auctions and secondary trading of capacity agreements), and the impact of the CM on the electricity market in each delivery year can be assessed.

[1] https://www.ofgem.gov.uk/electricity/wholesale-market/market-efficiency-review-and-reform/electricity-market-reform

Background to the Capacity Market

Overview of Capacity Market

1.9. The CM is one of the key policies introduced under the Government's Electricity Market Reform (EMR) programme[2]. It aims to maintain sufficient levels of capacity to ensure security of electricity supply.

1.10. Capacity providers secure revenue (capacity payments) on which they can base future investments. In return, they must deliver energy when required or face penalties.

1.11. Capacity providers must meet certain eligibility requirements and go through a prequalification process in order to participate in the CM auctions. The scheme is technology neutral and open to both generation and DSR. However, technologies receiving renewable subsidies, eg Contracts for Difference, are not able to participate.

1.12. Capacity payments are determined via competitive auctions, held four years (T-4 auction) and one year (T-1 auction) before each delivery period. The first CM auction, for delivery in winter 2018/19, was held in December 2014. Prequalification for this auction began in August 2014.

Governance framework

1.13. The powers for the CM were created in the Energy Act 2013. The operation of the CM is mainly governed by two sets of secondary legislation; the Electricity Capacity Regulations 2014[3] (the Regulations) and the Capacity Market Rules 2014[4] (the Rules).

1.14. This legislation set outs the roles and responsibilities of the different bodies involved in the CM. A high level overview of the role of the Government, Ofgem and National Grid Electricity Transmission (NGET) as the CM 'Delivery Body' is in Table 1.

1.15. The Rules provide the practical detail on how the CM will operate under the Regulations. This includes details on the contents of capacity agreements, the obligations of capacity agreement holders and the technical operation of the CM. We are responsible for managing and making any changes to the Rules. Today we published our decisions on Rules changes in 2015[5].

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[2] https://www.gov.uk/government/policies/maintaining-uk-energy-security--2/supporting-pages/electricity-market-reform
[3] http://www.legislation.gov.uk/ukdsi/2014/9780111116852/contents
[4] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/340046/capacity_market_rules.pdf
[5] https://www.ofgem.gov.uk//electricity/wholesale-market/market-efficiency-review-and-reform/electricity-market-reform/capacity-market-cm-rules

Table 1 – Enduring roles of different bodies in relation to the Capacity Market

The Department of Energy and Climate Change (DECC)	NGET (Delivery Body)	Ofgem
Determines whether auctions are held, the amount of capacity to procure and the auction parameters. Manages changes to the Regulations.	Runs prequalification and auction processes. Issues agreements and maintains capacity register. Reviews first stage (Tier 1) appeals against prequalification decisions. Recommends the amount of capacity to procure.	Monitors the operation of the CM, including bidding behaviour, and oversees the performance of the Delivery Body. Enforces the Rules and Regulations, REMIT[6] and competition law. Reviews second stage (Tier 2) appeals against prequalification decisions. Responsible for owning and managing the Rules.

[6] https://www.ofgem.gov.uk/gas/wholesale-market/european-market/remit

2. Prequalification for 2014 T-4 Auction

Overview of prequalification process

High level summary of process

2.1. In order to be eligible to participate in a CM auction, a Capacity Market Unit (CMU) must prequalify by meeting the requirements set out in the Rules and Regulations. The prequalification process is run by NGET, the Delivery Body, which reviews applications submitted by CMUs.

2.2. Applicants can dispute prequalification decisions made for their CMU and ask the Delivery Body to review its initial decision (a 'Tier 1 appeal'). Following an unsuccessful Tier 1 appeal an applicant may decide to submit a further appeal to us (a 'Tier 2 appeal'). In the first year applicants were able to submit new information at Tier 1, allowing many decisions to be overturned. This will remain the case for the second year.

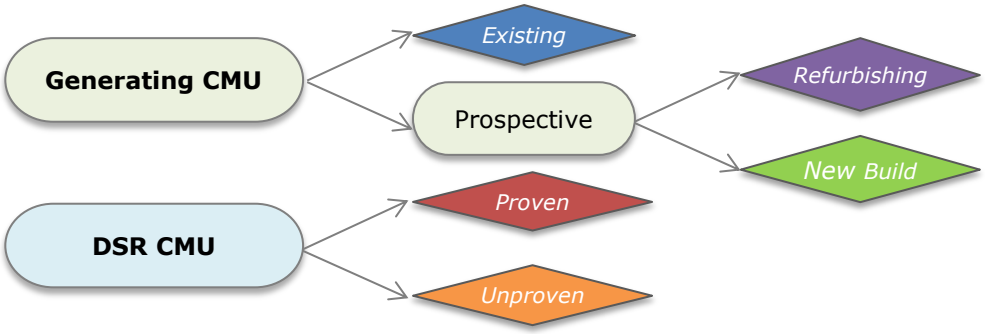
CMU types

2.3. Eligible CMUs are classified into five different types as illustrated in Figure 1. This includes current generators ('Existing'), generators who invest to renovate or restore an existing asset ('Refurbishing') and new generators ('New Build'). Capacity providers can also qualify as 'Proven' and 'Unproven' demand side response (DSR) CMUs.

2.4. Existing and DSR CMUs are eligible for one year agreements only. Refurbishing and New Build CMUs are eligible to receive longer contracts provided they meet certain expenditure thresholds for their refurbishing works (£125/kW for agreements of up to 3 years) or building their plant (£250/kW for agreements of up to 15 years).

2.5. Existing CMUs are by default 'Price Takers', which means they can only place bids below a certain threshold (£25/kW/year in the first year). In order to bid above this threshold they must become 'Price Makers' by submitting a Price Maker Memorandum to Ofgem, outlining why they may need to bid above the threshold. All other CMUs are Price Makers and can bid up to the auction price cap.

Figure 1 – Overview of different CMU types

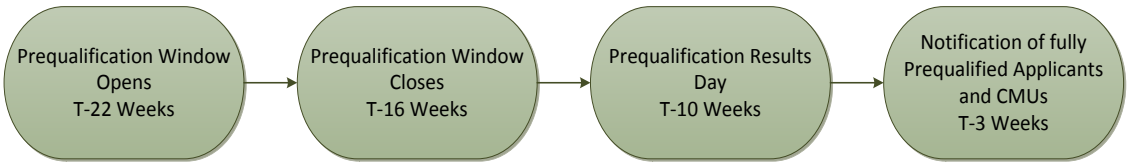


Process review

Timings

2.6. The Rules set out the milestones for prequalification, with reference to the auction's start ("T"). The process normally takes 22 weeks.

Figure 2 - Prequalification milestones



2.7. In 2014, the prequalification timeline was constrained to just over 19 weeks due to the enabling legislation not clearing parliamentary process until 1 August. The actual timings for the 2014 prequalification are set out below.

Table 2 – 2014 T-4 Auction timings

Legislation in force	1 Aug
Auction Guidelines	1 Aug
Prequalification Window	4 Aug – 5 Sep
Prequalification Results Day	3 Oct
Tier 1 Appeals Process	3 – 17 Oct
Tier 2 Appeals Window	17- 24 Oct
Final confirmed bidders	25 Nov
Auction begins	16 Dec

Issues

2.8. DECC made alterations to the Rules during prequalification, which meant that the prequalification window was extended by five working days. This had a consequential impact on the other milestones, including the auction, which was moved back one week. A letter from DECC was sent to the Delivery Body confirming the change[7].

2.9. The prequalification IT system was not ready in time so a contingency plan was used. See our report on the Delivery Body's performance for more information.

7 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/346248/2014-08-19-142756.pdf

Stakeholder views

2.10. Stakeholder views were gathered from talking to participants during the Rules change process and through our prequalification stakeholder event on 17 October 2014.

2.11. The process was generally seen as resource intensive by applicants. Some asked that the application window was not over August, when many of their staff were on holiday. It was also suggested that NGET could make the process easier in future rounds by allowing early access to the prequalification system and by pre-populating any data submitted in previous rounds.

2.12. Several stakeholders called for an iterative approach to prequalification, allowing them time to correct any problems with their application. We note that DECC extended the ability for applicants to submit new information at the first stage of appeal.

2.13. Some stakeholders noted that the information in the prequalification register was not easy to understand and could be more easily displayed.

2.14. As a result of stakeholder feedback we made streamlining prequalification a priority in the first Rules change process, as set out in our open letter[8].

Prequalification outcomes

Applications

2.15. A total of 513 CMU applications were made during the prequalification window, amounting to 67.4GW of de-rated capacity.

2.16. Twenty-six registered CMUs (8.4GW) chose to opt-out of the T-4 auction. The majority of these CMUs stated that they would be closing down or otherwise non-operational by the start of the 2018/19 delivery year.

2.17. Six CMUs opted-out despite stating they would be operational throughout 2018/19. The largest of these CMUs, ScottishPower's 2GW Longannet power station, has since announced that it is likely to close[9], whilst three CMUs belonging to Drax Power have either converted or may convert to biomass and may therefore seek support under the Government's renewables schemes.

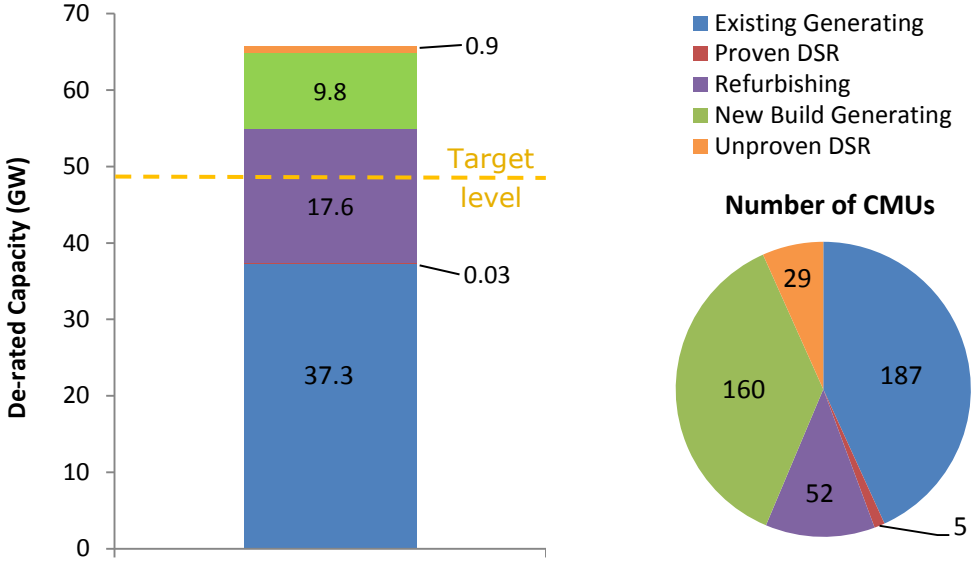
[8] https://www.ofgem.gov.uk/ofgem-publications/91547/ofgemopenlettercmrulesnov2014.pdf

[9] http://www.scottishpower.com/news/pages/scottishpower_comment_longannet_power_station_230315.asp

Prequalified CMUs

2.18. 433 CMUs were ultimately successful in prequalifying, totalling 65.7GW of de-rated capacity. This was 17GW more than the target level of capacity (48.6GW) meaning there was competition going into the auction.

Figures 3 – Prequalified capacity by CMU type



2.19. As expected, the majority (57%) of prequalified capacity was Existing capacity. Over a quarter of the prequalified volume was Refurbishing capacity, whilst 15% was New Build.

2.20. New Build CMUs made up a greater proportion of the total number of prequalified CMUs (37%) demonstrating their smaller average size (61MW) compared to Existing and Refurbishing CMUs (230MW). There were also relatively more distribution-connected CMUs in the New Build category, as seen in Figures 4 and 5. Of the 160 New Build CMUs that qualified, 148 were distribution-connected. This included small scale diesel and gas reciprocating engines and energy from waste.

2.21. The 12 remaining transmission-connected CMUs, which included 7 CCGT projects and a CHP project, accounted for about three quarters of the total prequalified New Build capacity.

Figure 4 - Connection type (volume of capacity)

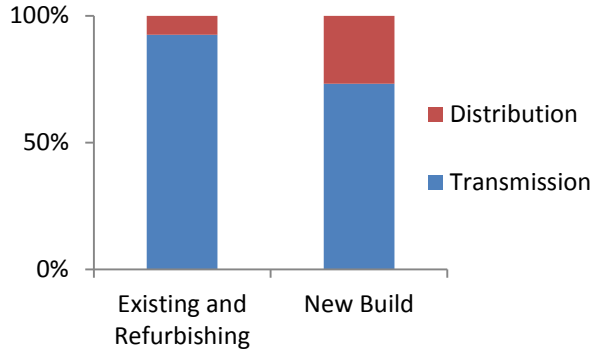
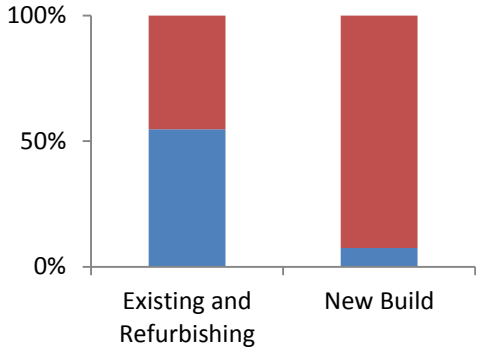
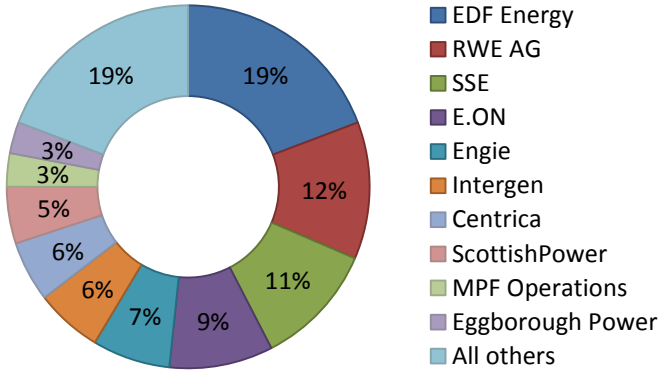


Figure 5 - Connecton type (number of CMUs)



2.22. A total of 64 different companies[10] qualified at least one CMU for the 2014 T-4 auction. Figure 6 shows the breakdown by company. The 'Big 6'[11] companies made up approximately 60% of total prequalified capacity, and 32% of the number of prequalified CMUs. UK Power Reserve (UKPR) had the highest number of CMUs with 73[12], although with an average size of 16MW, these CMUs made up less than 2% of total prequalified capacity.

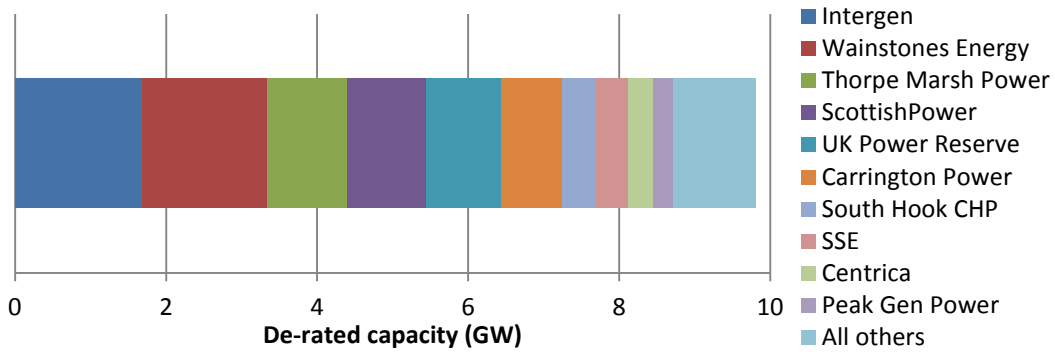
Figure 6 – Share of prequalified capacity by company



2.23. The Big 6 were much less represented in the New Build category. Centrica, ScottishPower and SSE's three new build CCGTs made up 19% of total capacity (1.8GW), whilst EDF, E.ON and RWE did not qualify any New Build. 5.2GW of New Build capacity came from Intergen, Wainstones Energy, Thorpe Marsh Power and Carrington Power's proposed CCGT projects. South Hook's 450MW CHP unit was the largest, non-CCGT project.

[10] We have aggregated results for applicant companies on the Capacity Market Register by their parent company where appropriate.
[11] These are Centrica, E.ON, EDF, RWE, ScottishPower and SSE.
[12] This included 58 New Build CMUs belonging to UK Capacity Reserve Ltd (UKCR), which is part of UKPR.

Figure 7 – Volume of prequalified New Build capacity by company



2.24. Seven companies made up the prequalified Refurbishing capacity. 11.4GW (65%) of this capacity was owned by EDF which prequalified its entire nuclear fleet as Refurbishing.

Unsuccessful CMUs

2.25. A total of 80 CMUs, amounting to 1.73GW of de-rated capacity, ultimately failed to qualify. The majority of these CMUs (66) were small, distribution-connected New Build units.

2.26. The largest CMUs to fail to qualify were Powersite DL Ltd's two 154MW New Build CCGT units, followed by a 54MW New Build OCGT belonging to E.ON.

2.27. Fifty-six of the unsuccessful CMUs originally 'conditionally prequalified' but then failed to provide planning declarations or credit cover before the auction. 11 CMUs had fully prequalified but were removed from the auction due to the opening of an enforcement investigation (see below).

Figure 8 - Unsuccessful volume by CMU type (MW)

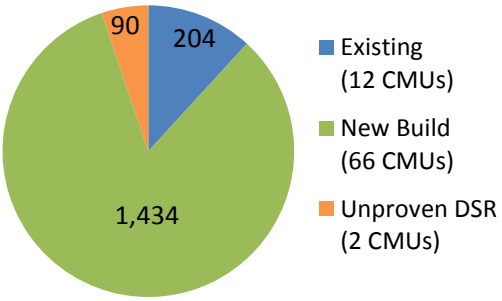
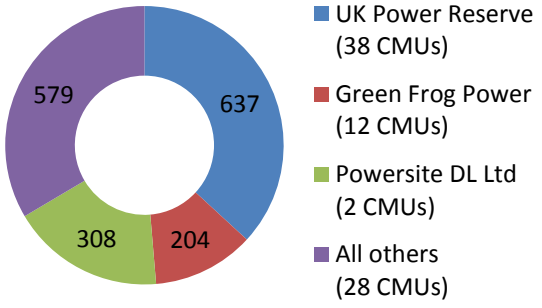


Figure 9 - Unsuccessful volume by company (MW)

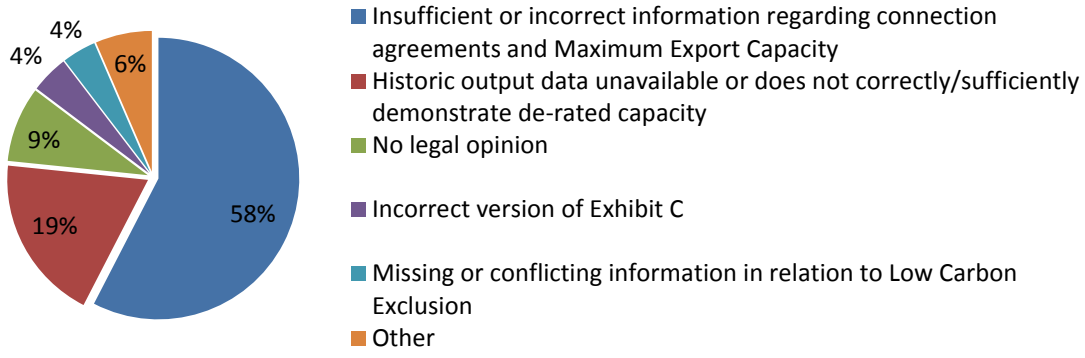


Appeals and disputes

2.28. The Delivery Body originally rejected 188 CMU prequalification applications on Prequalification Results Day. These were mainly relatively small-scale Existing and New Build generators.

2.29. The main reasons why Existing CMUs were rejected related to their historic output data. In many cases this data could not be located by NGET, whilst in others it had either been incorrectly provided or did not demonstrate the necessary historic performance to justify the unit's de-rated capacity.

Figure 10 - Grounds for prequalification rejection decision



2.30. The main reasons why New Build CMUs were rejected related to their connection agreements and information about their Maximum Export Capacity. In particular, many failed to provide a correct Distribution Connection Agreement or declare that it would be in place 18 months prior to the delivery year.

2.31. For 20 CMUs the applicant had not provided a valid legal opinion, whilst in 10 cases an older version of the 'Exhibit C form'[13] had been used (DECC updated this form during the prequalification window). As part of our Rules change process we have removed the requirement to provide a legal opinion and therefore we do not expect either of these reasons to affect applicants in the future.

2.32. The vast majority of CMUs (180 out of 188) were successful in overturning these initial prequalification rejections through Tier 1 appeals to NGET, with many using the option to submit new information during their appeal.

2.33. The significant number of initial rejections further suggests that a number of participants, particularly smaller companies, may have found prequalification for the first CM auction difficult. As part of our Rules change process we made streamlining prequalification a priority. This year we are making several changes to make things easier for applicants.

2.34. We received Tier 2 appeals in relation to 12 Existing CMUs, all owned by Green Frog Power Ltd[14]. NGET rejected these applications on the basis that

[13] Refers to Exhibit C in the Capacity Market Rules, the Certificate of Conduct
[14] NGET originally rejected eight of these applications, but subsequently rejected all 12 following the submission of a letter accompanying the Dispute Notice. Please see: https://www.ofgem.gov.uk/ofgem-publications/93301/determinationgfp201411-pdf

they failed to notify a withdrawal from long-term STOR contracts and, in eight cases, did not demonstrate the necessary performance historically. We upheld the Delivery Body's determination in all 12 cases.

Enforcement action and pull-outs prior to the T-4 auction

2.35. We asked the Delivery Body to take steps to ensure 11 CMUs owned by UKCR (which could have generated around 200MW) did not actively participate in the auction. This was due to the opening of investigations to see if UKCR provided false or misleading information in relation to planning consents.

2.36. The Authority found UKCR to have contravened a relevant requirement, namely Rule 5.13.1(b) of the Capacity Market Rules in respect of 11 of its generating units. As a result, these generating units were excluded from submission for capacity auctions taking place in the next two years. UKCR has accepted the Authority's finding[15].

2.37. Thirty-five CMUs decided not to participate in the auction despite prequalifying, taking the final number of auction participants to 398.

[15] Notice of the decision is at https://www.ofgem.gov.uk/publications-and-updates/notice-decision-whether-uk-capacity-reserve-limited-ukcr-complied-requirements-rule-5-13-1b-capacity-market-rules

3. 2014 T-4 Auction

Overview of auction process

Overarching design

3.1. The CM auction has a descending clock format, with bidders exiting the auction when the price drops below the level at which they are willing to take on a capacity obligation. There are multiple 'rounds', starting at a price cap and reducing each time. After each round the remaining capacity, rounded to the nearest GW, is revealed to the bidders to socialise information and help avoid the "winners curse"[16].

3.2. The auction continues on this basis until the total capacity offered by remaining participants falls below the target amount to be procured (the 'clearing round'). At this point, the clearing price will be calculated and all bidders still in the auction will receive a capacity agreement at this price (a 'pay as clear' auction).

2014 T-4 auction parameters

3.3. In the 2014 T-4 auction the price cap was £75/kW/year. The price decrement per round was £5/kW/year, resulting in a maximum of 16 rounds over four consecutive days.

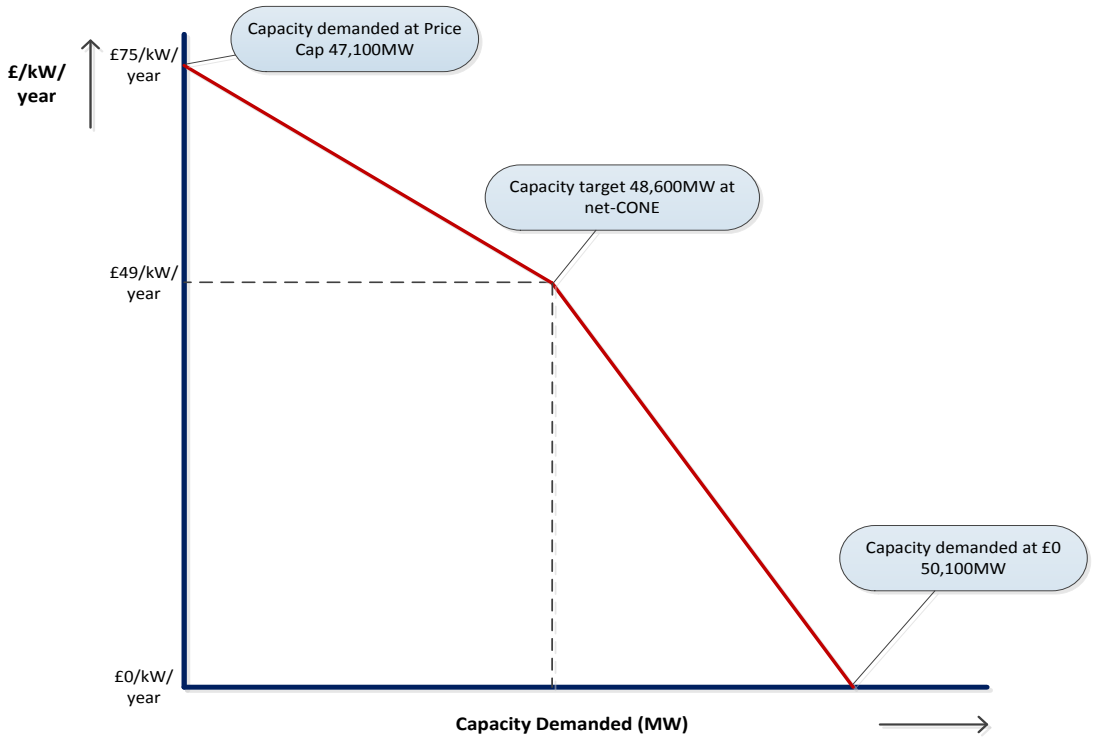
3.4. The target volume of capacity was 48,600MW, based on DECC's calculation of the net cost of new entry (net CONE) at £49/kW/year. The demand curve was sloped and kinked around this point, as illustrated in Figure 11.

CMU bidding options

3.5. As well as placing bids to exit the auction, Refurbishing and New Build CMUs may place a bid at the price at which they would like to switch from a three year or 15 year agreement to a one year agreement. Refurbishing CMUs can also specify a price at which they would like to switch to a 'Pre-refurbishing' state, where they would instead receive an Existing CMU contract for one year, with no obligation to invest in the asset.

[16] The "winners curse" refers to the idea that the winner of an auction may have bid above the intrinsic value of the good due to incomplete information.

Figure 11 –2014 T-4 auction demand curve



Process review

3.6. The 2014 T-4 auction started on 16 December and lasted three days, clearing in the 12th round. Provisional auction results were published at 7am on 19 December. The results were confirmed by the Secretary of State as final on 2 January 2015.

3.7. There were no known issues with the auction process or systems. See our report on the Delivery Body's performance for more details, including on the Auction Monitor's report.

Stakeholder views

3.8. Stakeholder views were gathered from talking to participants during the Rules change process and through our Rules change stakeholder event on 13 Jan 2015.

3.9. The majority of stakeholders thought the auction ran smoothly. Some believed that it was too long and that four hours was not required between the start of one round and the start of the next one. Some also wanted more clarity around disclosure of information. As part of our Rules changes this year we intend that in future auctions more information will be made public as the auction runs. We note DECC's clarification in their FAQ that "DECC will publish provisional auction results at 7am the day after the auction clears, and before final auction results are published".

Auction outcomes

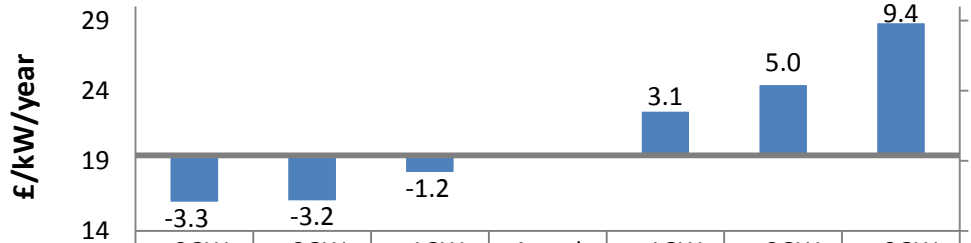
Clearing price and volume

3.10. A total of 49,259MW of capacity was procured in the T-4 auction at a clearing price of £19.40/kW/year. This price was below many forecasters' expectations, and significantly below the estimated net CONE of £49/kW/year. This resulted in 659MW of extra capacity being procured over the target level.

3.11. Further analysis, using the bid information submitted during the T-4 auction, suggests that differences in the target procurement volume could have had a relatively significant impact on the clearing price. Figure 12 shows the potential impact on the clearing price of increasing and decreasing the target volume by 1, 2 and 3GW.

3.12. A key limitation with this analysis is that it does not account for changes in participant bidding behaviour under the different scenarios. Nevertheless it provides a useful indication of the potential impacts.

Figure 12 - Potential impact of changes in the target level on clearing price



	-3GW	-2GW	-1GW	Actual	+1GW	+2GW	+3GW
Clearing Price	16.1	16.2	18.2	19.4	22.5	24.4	28.8
Change	-3.3	-3.2	-1.2	0	3.1	5	9.4

Total costs and impact on consumers

3.13. The total cost of agreements for the first delivery year is approximately £956m[17]. The cumulative forecast of the cost of the T-4 auction, including all contracts awarded over the 15 year period, is £1,733m[18].

3.14. Table 3 shows the total cost in the first delivery year based on the clearing price and volumes in the scenarios above[19]. As can be seen, each GW change in target volume would have likely had a significant impact on total costs. This underlines the importance of the target level calculation.

[17] Costs and prices are at 2012 price levels. Capacity prices are indexed so the total amount actually payable will increase in line with inflation.
[18] This figure does not discount future years.
[19] The reason a 1GW change in the procurement target doesn't necessarily translate into 1 GW change in procurement volume is due to the CM's sloped demand curve.

Table 3 – Potential impact of changes in target volume on auction costs

	-3GW	-2GW	-1GW	**Actual**	+1GW	+2GW	+3GW
Clearing volume (GW)	46.7	47.6	48.6	**49.3**	50.4	51.3	52.2
2018/19 cost (£m)	752	772	885	**956**	1,134	1,251	1,503

3.15. DECC estimate that the CM will lead to a £2 increase on the average domestic bill[20]. This is lower than the total cost of the capacity agreements (£11 on the average domestic bill) as it is expected that the CM will also result in lower wholesale electricity prices.

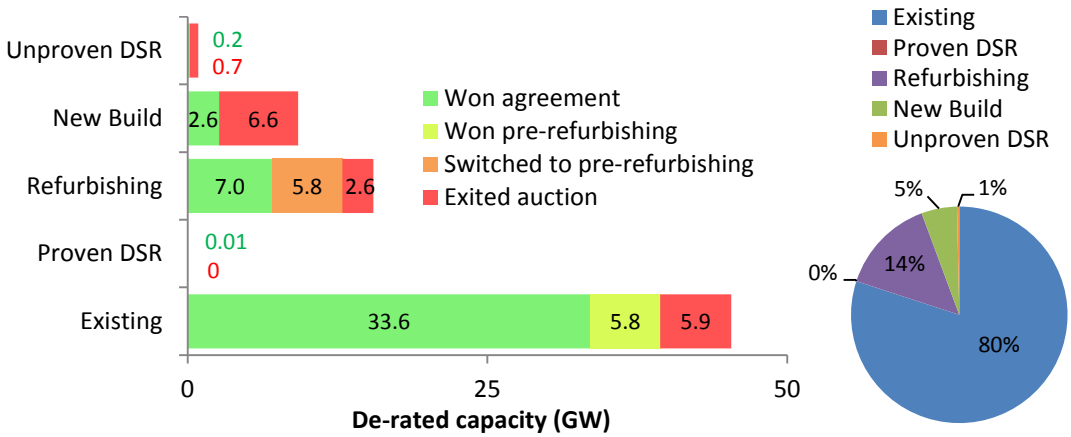
3.16. Compared to DECC's Impact Assessment, the cost of the CM will be lower than expected in the first delivery year (£956m compared to almost £2bn). However, the overall impact on bills is not known and depends on the reason for the lower clearing price. If the cost of new entry was cheaper than expected then overall costs should be lower. However, if the reason for a lower clearing price was higher expected energy market revenues, then the overall cost to consumers could be the same.

3.17. Nevertheless, all other things equal, the additional 659MW of capacity procured should result in a slightly smaller chance of stress events in the delivery year than targeted.

Results by CMU type

3.18. A total of 306 out of 398 participating CMUs were successful in the T-4 auction. The majority of cleared capacity was Existing capacity (39.4GW). This includes 5.8GW of capacity which entered the auction as Refurbishing capacity, but switched to a Pre-refurbishing contract during the bidding process[21].

Figure 13 – volume of capacity winning agreements by CMU type

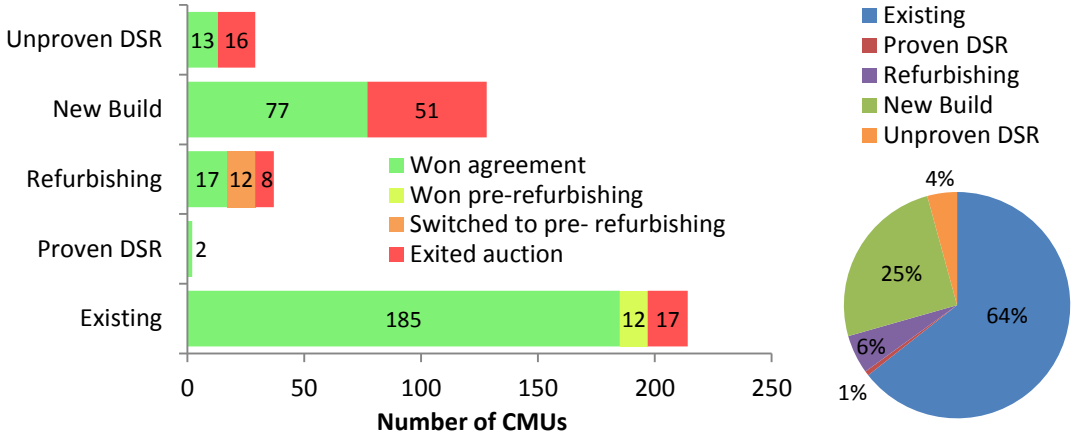


[20] https://www.gov.uk/government/news/first-capacity-market-auction-guarantees-security-of-supply-at-low-cost

[21] It also includes 2.1GW of capacity which prequalified with the option to bid for a Refurbishing agreement, but entered the auction as Existing CMUs.

3.19. Over 2.6GW of New Build capacity won capacity agreements. This was despite 8.5GW of Existing and Refurbishing capacity exiting the auction. 1.66GW of this New Build capacity belonged to Wainstones Energy's Trafford CCGT project. The other 965MW of capacity comprised 75 distribution-connected generators, such as small scale diesel and gas reciprocating engines and energy from waste.

Figure 14 – Number of CMUs winning agreements by CMU type



Results by fuel type

3.20. Around half of the cleared capacity was provided by CCGTs, 18% by Coal and 16% by Nuclear. Existing CCGT, coal and nuclear capacity had success rates of 85%, 66% and 100% respectively.

Figure 15 - Cleared and exited capacity by fuel type (GW)

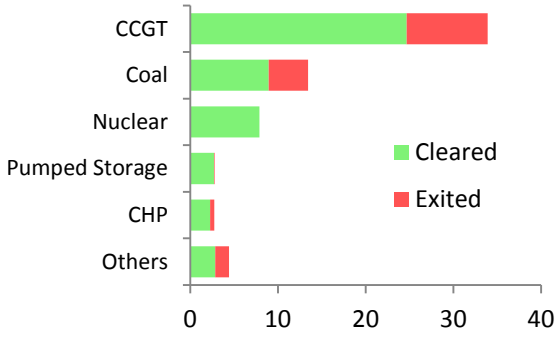
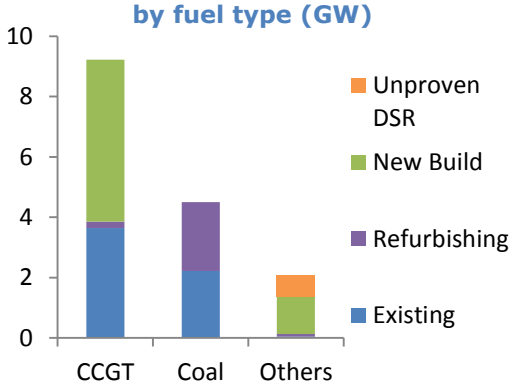


Figure 16 - Exited Capacity by fuel type (GW)



3.21. Nine new CCGT units made up approximately a third of the total exited capacity and most of the exited New Build capacity. This included Carrington Power station, which is already under construction and due to enter commercial operation in early 2016[22].

[22] http://carringtonpowerconstruction.co.uk/

3.22. The Trafford CCGT project securing an agreement came as a surprise to some commentators given the clearing price fell significantly below DECC's estimated net CONE of £49/kW (which was based on a new CCGT).

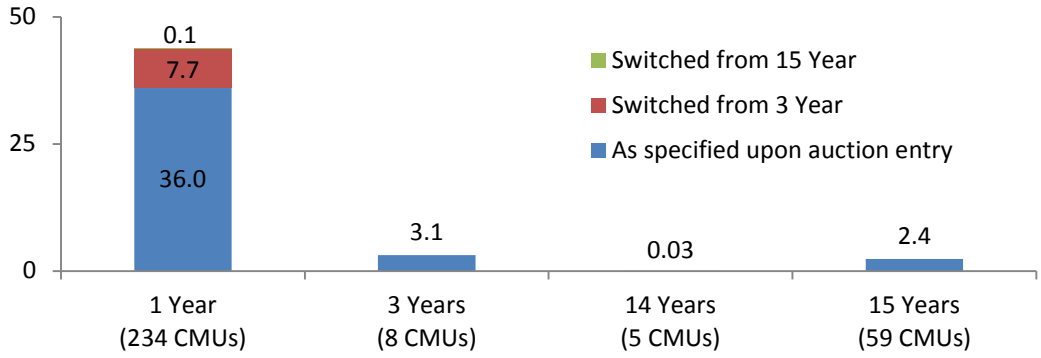
3.23. Bid data shows that New Build CCGTs exited the auction at a wide range of prices. This further suggests that there may have been significant differences between the capital costs for different projects, and their owners' future energy market expectations.

3.24. Over 8.9GW of existing coal generating capacity won agreements in the auction. This included four units from EDF's Cottam Power Station and three units from its West Burton A Power Station, which all won three year Refurbishing agreements.

Length of agreements

3.25. As expected, the majority of capacity won one year agreements. 7.7GW of this capacity had the option to obtain a three year agreement at the beginning of the auction but ultimately opted for a one year agreement.

Figure 17 – Length of agreements awarded



3.26. 5.5GW of capacity gained agreements of more than one year. This reduces the amount of capacity that needs to be procured in the 2015 T-4 auction but also reduces the amount of capacity bidding by an equivalent amount.

Results by company

3.27. Over two third of the companies which participated in the auction won agreements for at least one CMU. As can be seen in Figure 18, the amount of cleared capacity per company largely matches the current market structure. EDF, RWE and E.ON won the largest volume of contracts, including a significant volume of Refurbishing capacity.

3.28. Figure 19 shows the volume of exited capacity by company. SSE had the largest volume of exited capacity, most of which was Existing generation. Eggborough Power, Centrica and Engie also exited large volumes of existing generation, whilst Intergen, Scottish Power and Thorpe Marsh Power did not secure agreements for their New Build CCGT projects.

3.29. The varying rates of success between some of the larger companies' Existing and Refurbishing coal plant and CCGTs could signal differences between their future energy and capacity market revenue expectations.

Figure 18 – Volume of cleared capacity and success rates by company

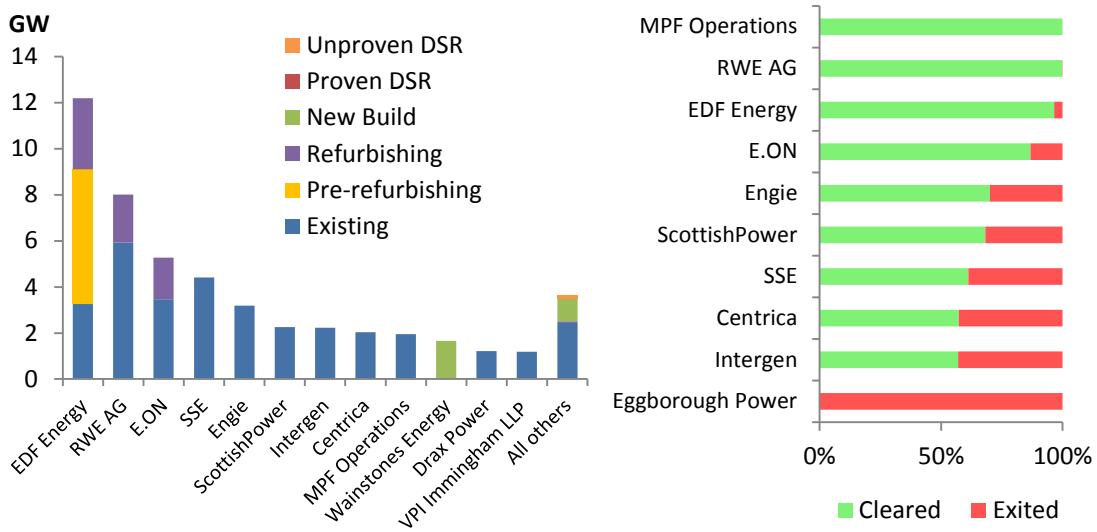
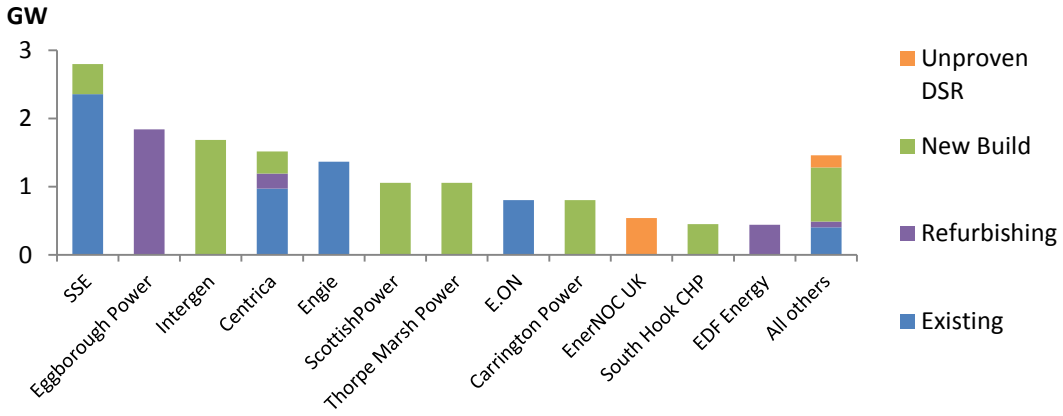


Figure 19 – Volume of exited capacity by company



Investigations following the auction

3.30. On 21 May 2015, we opened investigations to see if five generators provided false or misleading information to NGET about planning consents for some of their proposed generating units that took part in the 2014 T-4 auction. The companies being investigated are GF Power Peaking Ltd, Berangere Ltd, Adret Ltd, Alkane Energy UK and Power Balancing Service

Ltd.[23] The opening of these investigations does not imply that we have made any findings about non-compliance.

Further observations

Clearing price lower than expected

3.31. The auction cleared at a lower price than most forecasters were expecting. DECC's forecast price for the first year of the Capacity Market was £39/kW/year[24], with other analysts predicting between £25-£50/kW/year[25]. The final price of £19.40/kW/year was almost exactly half of DECC's clearing price estimate and just over 40% of net CONE, despite some new plants winning agreements.

3.32. There are a number of reasons why this might have been the case. Each of these factors creates downward pressure on the capacity price and might have been underestimated by forecasters.

- **Expected energy market revenues:** Bidders expectations of energy market revenues in the delivery year could have been higher than originally estimated. This could lower the need for capacity payments, reducing bids in the auction.

- **Liquidity in the auction:** There could have been more capacity coming forward than expected. A high amount of prequalified capacity helps to extend the supply stack, providing a range of capacity at different prices. The cheapest forms of capacity will bid at the lowest prices and push out more expensive forms of capacity. In the first auction we saw competition from new small scale generation, which was generally more competitive than marginal existing plant.

- **Pressure in the first year:** Along with the possibility that liquidity pushed down the clearing price, we note that the first year is particularly important. This is because of the amount of marginal plant currently on the system, some of which is likely to close without capacity agreements. Some bidders may have been willing to take lower capacity revenues in the first year in order to stay open and compete in future auctions.

- **Low cost of new entry:** The cost of new entry could have been lower than expected. Whilst DECC's estimate of net CONE was based on a

[23] For more information please see: https://www.ofgem.gov.uk/publications-and-updates/ofgem-opens-investigations-five-generators-compliance-capacity-market-rules
[24] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/324430/Final_Capacity_Market_Impact_Assessment.pdf
[25] https://doc.research-and-analytics.csfb.com/docView?language=ENG&source=emfromsendlink&format=PDF&document_id=1024077421&extdocid=1024077421_1_eng_pdf&serialid=vmePQ2r3s18ZyCtOXQOn1xUQ6a%2b81SVMEF5dryJeBTw%3d

new CCGT, we saw that in the auction many of the New Build plants were small scale diesel or gas reciprocating engines. These plant tend to have low capital costs and high marginal costs and therefore could have a lower cost of entry.

- **Sunk costs:** As noted above, there was a large number of small scale New Build generation. Some stakeholders have suggested that one of the reasons for this could be that some providers may have sunk costs in anticipation of entering the balancing services market, allowing them to bid at a lower price.

- **Access to long term agreements:** Long term agreements can help new projects access finance, which may have been one of the drivers for a larger number of new build projects coming forward. Longer agreements also may lead to lower bids because capacity providers prefer the certainty of multi-year agreements.

3.33. Along with these downward pressures on price, which could have had a greater effect than originally expected, some participants have suggested that the termination fees were low in comparison to the costs of building a plant and therefore some new plant may have been happy to take a lower price, using the capacity agreement as an option. We note DECC are planning to review the monitoring requirements and delivery incentives in autumn[26], which may include a review of the termination fees.

3.34. We also note that a clearing price below net CONE follows the pattern seen in US capacity markets with similar designs[27].

Existing plant not winning agreements

3.35. 2.6GW of new capacity cleared the auction. Along with the excess of existing capacity above the target capacity, this contributed to 8.5GW of existing plant failing to win agreements. These units could still win agreements in the T-1 auction in 2017. They also might participate in the next T-4 auction in 2015, for delivery in 2019/20. However, in line with expected market dynamics it is possible that some of this plant will close.

[26] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/412934/Government_Response_to_Feb_2015_consultation_on_amendments_to_the_CM_Reg.pdf
[27] http://wilsonenec.com/Forward-Capacity-Market-CONEfusion.pdf

4. DSR participation

Background

4.1. Unlocking the full potential of demand side response (DSR) capacity could help drive down the cost of delivering secure, low-carbon electricity supplies.

4.2. One reason why DECC decided to run T-1 auctions was to help ensure DSR (including embedded generation) can participate in the CM. This is because DSR may find it difficult to commit to providing capacity four years ahead of delivery.

4.3. In addition, DECC has put in place transitional arrangements to help increase the total volume of DSR on the system in advance of the first year. This includes two proposed auctions for DSR and small scale generation in 2015 and 2016, each for delivery a year later.

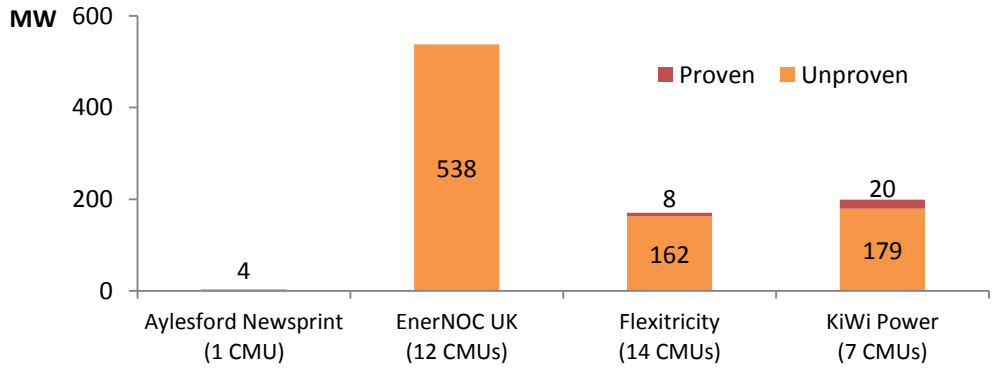
4.4. Given this context, we may not have expected large amounts of DSR capacity to come forward in the first T-4 auction, although we note some stakeholders reiterated the importance of DSR's participation in the T-4 auction.

DSR outcomes

2014 T-4 Prequalification

4.5. A total of 36 DSR CMUs, owned by four different companies, were put forward for prequalification for the 2014 T-4 auction. 34 of these units, totalling 912MW of de-rated capacity, ultimately prequalified. This was 8% of the number of all CMUs and 1% of the total capacity.

Figure 20 - Prequalifed DSR capacity

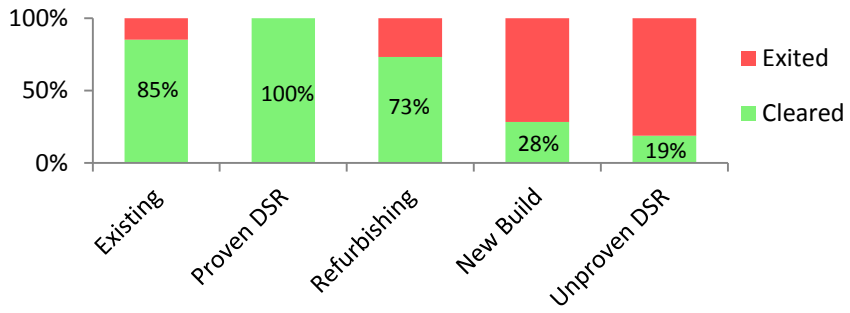


4.6. Two Unproven DSR CMUs failed to prequalify. Another three Proven DSR CMUs, belonging to KiWi Power, did not confirm entry to the auction despite prequalifying. This took the number of Proven DSR CMUs in the auction to only two (8MW of de-rated capacity).

2014 T-4 Auction

4.7. 15 out of 31 DSR CMUs secured capacity agreements. Whilst both Proven DSR CMUs secured agreements, 718MW of the 884MW Unproven DSR capacity failed to win an agreement. Aylesford Newsprint and Flexitricity secured agreements for all of their Unproven DSR capacity, whereas KiWi Power and EnerNOC exited all of theirs.

Figure 21 – Auction success rates for different CMU types



4.8. Overall this meant that only 0.17GW of the 49.3GW of capacity procured in the T-4 auction belonged to DSR CMUs (equivalent to 0.4%).

4.9. As can be seen in Figure 21, Unproven DSR capacity had a 19% success rate in the auction. This compares to the 28% success rate for New Build generating capacity.

Conclusions

4.10. The small proportion of DSR capacity participating and winning agreements in the 2014 T-4 auction suggests there is still a lot to do to realise the full potential of DSR capacity. We expect more DSR capacity to come forward in the T-1 auction, and for the transitional auctions to help support this. Additionally, we are making Rules changes for the second capacity auction which should help DSR to prequalify.

5. Bidding behaviour

Background

Bidding options in 2014 T-4 auction

5.1. In each round, the following actions are available to auction participants:

- **Exit Bid** – all CMUs can specify the price at which they exit the auction
- **Duration Bid Amendment (DBA) –** New Build and Refurbishing CMUs that qualify for longer agreements can specify the price at which they want to reduce the length of their agreement
- **Continue as Pre-refurbishing –** Refurbishing CMUs can specify a price to switch to an Existing contract (and as a result only receive a one year agreement)

5.2. In each round, bidders also have the option of placing 'Proxy Bids' for any of the above actions. These are bids which take effect in a later round.

5.3. CMUs that qualified as Price Makers could place Exit Bids up to the auction cap of £75/kW/year. This included all New Build, Refurbishing and DSR CMUS, and Existing CMUs which submitted Price Maker Memorandums. Price Takers could only place bids at less than or equal to £25/kW/year.

5.4. Bidders that confirmed entry to the auction, but did not log into the auction system to place a bid, were assumed to not place an Exit Bid.

Our monitoring

5.5. We monitor bidding patterns and behaviour following the CM auctions. We monitor for several reasons, including statutory duties, such as our role as a Competition Authority and a National Regulatory Authority, and to monitor compliance with the CM Rules. We also monitor generally to inform our decisions on whether to make changes to the CM Rules and to keep Ofgem informed of issues which are important to consumers.

5.6. Some of the key themes and trends form this year's auction are summarised below.

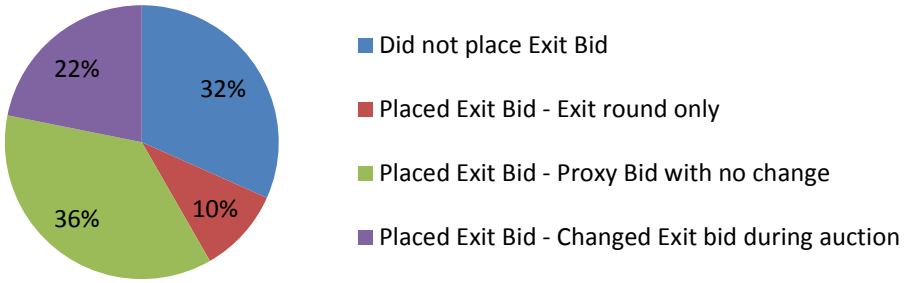
Summary of bidding behaviour

Exit bidding approach

5.7. Fewer than 300 CMUs, owned by 49 bidding groups, placed Exit Bids in the T-4 auction. This meant that more than 100 CMUs did not place an Exit Bid and therefore gained agreements when the auction cleared.

5.8. It is possible that many of these CMUs would have entered the auction during a later round if it had continued, but opted not to place a Proxy Bid. As can be seen in Figure 22, 10% of CMUs decided against using Proxy bids despite eventually placing an Exit Bid.

Figure 22 – Bidding approaches for CMUs

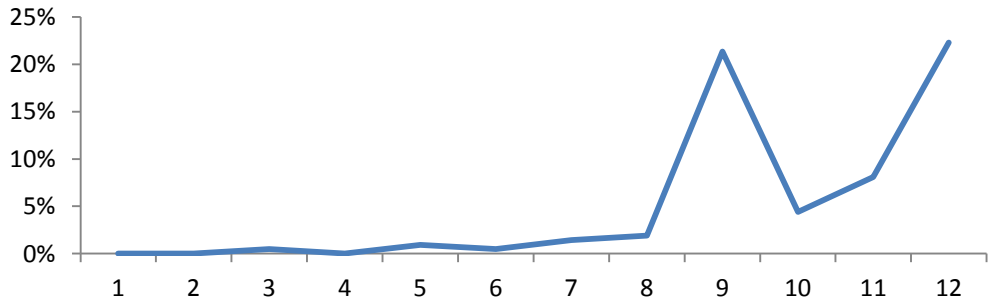


5.9. Over half of those that did place an Exit Bid used the Proxy Bid option and did not change their price. 22% of all CMUs placed a Proxy Bid and then changed this price in a later round.

Bidding trends

5.10. There was a general trend to reduce Exit Bids as the auction progressed. As can be seen, the highest level of activity was in round 9 and round 12 where 21% and 22% of bidding CMUs changed their Exit Bid price from the previous round. This suggests the auction's multiple round format was successful in helping to facilitate competition.

Figure 23 – % of changed Exit Bids in each auction round



Pre-refurbishing bids and Duration Bid Amendments

5.11. In total, around 25 New Build and Refurbishing CMUs placed bids to reduce their contract length from fifteen or three years to one year.

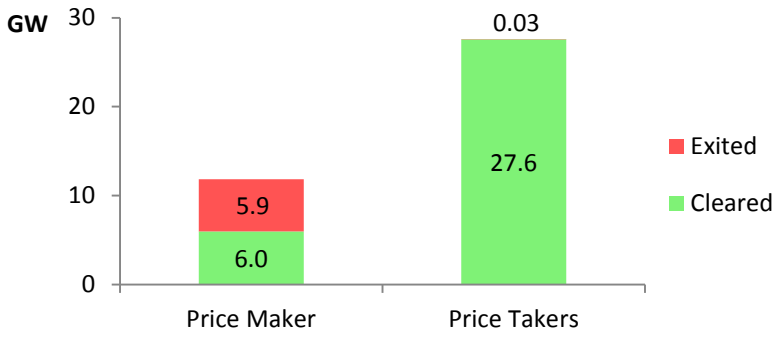
5.12. Most of the Refurbishing CMUs in this group opted to switch to one year Pre-refurbishing agreements. However, some opted to switch to one year agreements and remain as a Refurbishing plant. This meant these CMUs received a shorter agreement length but at a higher capacity than their pre-refurbishing status.

5.13. The number of DBAs suggests that there were several auction participants who felt they could secure a higher price in a future auction.

Price Makers and Takers

5.14. Over half of the volume of Existing generating capacity that had signed a Price Maker Memorandum (enabling them to bid above £25/kW) cleared the auction, despite the clearing price being below the Price Taker threshold.

Figure 24 – Cleared and exited capacity by Existing Price Makers and Price Takers



5.15. It is possible that a number of bidders' expectations may have changed in-between prequalification and the auction, however we think it is more likely that many CMUs submitting a Price Maker Memorandum did so to gain flexibility with their bidding strategy.