

Annual Report on the Operation of the Capacity Market in 2015

Report

Publication date: 6 June 2016

Contact: Milja Keijonen

Team: Security of Supply Policy

Tel: 0207 901 7000

Email: EMR_CMRules@ofgem.gov.uk

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 second of these annual reports, following the second round of Capacity Market auctions in December 2015 and January 2016.

Contents

Executive Summary	3
1. Background	5
Purpose of this report	5
Scope of this report	5
Background to the Capacity Market	6
Overview of Capacity Market	6
2. Prequalification and Auction process for 2015 Auctions	7
Overview of the prequalification process	7
A high level summary of the prequalification process	7
Classification of CMUs	7
	8
Prequalification timescales and process review	8
Timings of the prequalification process	8
Overview of the Auction process	11
3. 2015 T-4 Auction	13
Prequalification outcomes for the 2015 T-4 Auction	14
Prequalification applications for the T-4 Auction	14
Prequalified CMUs for the T-4 Auction	14
CMUs that didn't prequalify for the T-4 Auction	18
2015 T-4 Auction outcomes	18
Further observations	26
4. Transitional Capacity Auction	27
Prequalification outcomes for Transitional Capacity Auction	27
Prequalification applications and prequalified CMUs for the Transitional Capacity Auction	27
CMUs that didn't prequalify for the Transitional Capacity Auction	30
2015 Transitional Capacity Auction	30
Further observations	34
5. DSR participation	35
Background	35
DSR prequalification and auction outcomes	35
6. Interconnector participation	39
Background	39
Interconnector prequalification and auction outcomes	39
7. Bidding behaviour	42
Background	42
Summary of bidding behaviour in the 2015 T-4 Auction	42

Executive Summary

This is our second annual report on the operation of the Capacity Market (CM). There have been two Capacity Market auctions this year: the T-4 Auction securing capacity for delivery in 2019/20 and the first Transitional Capacity Auction, (the "TA") securing capacity for 2016/17. This report is a largely factual presentation of the outcomes from these auctions. It describes the prequalification and auction processes, along with some observations from our analysis of the auction results.

Prequalification for the 2015 T-4 Auction and Auction Results

The final number of prequalified CMUs for the T-4 Auction was 379, totalling around 57.7GW of de-rated capacity. This compares with the target capacity of 44.7GW, implying there was considerable competition going into the auction. 216 capacity providers failed to prequalify at the first attempt and only prequalified following a request to National Grid to review the initial decision.

A total of 46.4GW of capacity was awarded in the T-4 Auction at a clearing price of £18.00/kW/year. This resulted in 1.689GW of extra capacity being awarded over the target level. The majority of cleared capacity was existing generating capacity (42.0GW). New build generating capacity accounted for around 1.94GW of total acquired capacity, whilst existing interconnector CMU capacity accounted for another 1.86GW.

Prequalification for the 2015/16 Transitional Capacity Auction and Auction Results

The Transitional Capacity Auctions (the "TAs") are one year ahead auctions intended to help support DSR and small scale participation in the CM. One took place in 2015/16 and the other will take place in 2016/17. 78 CMUs prequalified, totalling around 1.1GW of de-rated capacity. This exceeded the procurement target of 900MW. Unproven Demand Side Response (DSR)¹ capacity accounted for around 56% of the total prequalified capacity. Existing generating CMUs accounted for 43% and new build generating CMUs for around 1%. A total of 28 different companies qualified at least one CMU for the 2015 TA.

A total of 78 CMUs entered the auction, totalling 1.1GW of capacity. 73% of CMUs that entered the auction secured a Capacity Market Agreement for delivery in 2016/17 with contract duration of one year. A total of 802.7MW of capacity was awarded in the TA at a clearing price of £27.50/kW/year. The majority of the successful de-rated capacity was unproven DSR (around 475MW, or 59% of the total secured capacity). Cleared existing generating de-rated capacity totalled around

¹ Demand Side Response service incentivises customers to lower or shift their electricity use at peak times.

315MW (equivalent to 39% of the total). New build generating CMU capacity accounted for less than 2% of the total successful capacity.

DSR Participation

Overall DSR CMU participation in the 2015 T-4 auction increased from 2014 but remained relatively low. A total of 28 DSR CMUs prequalified for the 2015 T-4 auction, with a total de-rated capacity of around 673MW. This accounted for around 1% of the total prequalified capacity for the 2015 T-4 auction, and broadly 7% of all prequalified CMUs. In the 2015 T-4 Auction, 23 DSR CMUs secured a capacity agreement, totalling around 456MW of capacity. This accounted for approximately 1% of total successful de-rated capacity.

A total of 47 DSR CMUs prequalified for the Transitional Capacity Auction, with a total de-rated capacity of 621MW. Out of the total prequalified auction capacity, 36 DSR CMUs secured an agreement, totalling around 475MW of capacity and accounting for 59% of all successful Transitional Capacity Auction capacity.

Interconnector Participation

Existing and potential interconnectors expected to be operational during the delivery window of 2019/20 were able to participate in the T-4 auction for the first time in 2015.

The potential interconnector participants in the 2015 T-4 Auction included both new build and existing interconnectors. Three interconnectors prequalified to participate in the 2015 T-4 Auction accounting for around 2.4GW of de-rated capacity, and consisted of both existing interconnector capacity (1.9GW de-rated) and new build interconnector capacity (0.54GW de-rated). Out of the total interconnector capacity that entered the auction, 1.9GW of de-rated existing interconnector capacity secured a capacity agreement.

1. Background

Purpose of this report

- 1.1. Regulation 83 of the Electricity Capacity Regulations 2014 requires Ofgem to provide the Secretary of State for the Department for Energy and Climate Change (DECC) with an annual report on²:
 - The operation of the Capacity Market (CM) (this report); and
 - National Grid's (the Delivery Body) performance of its functions in relation to the CM.
- 1.2. This is our second annual report to the Secretary of State on the operation of CM, and covers the second T-4 auction in December 2015 and the first Transitional Capacity Auction (TA) in January 2016.

Scope of this report

- 1.3. The annual report covers the operation of the CM over the previous year including prequalification, auction processes and the delivery year. In addition, it contains more detailed assessments of specific issues which are particularly relevant to that reporting year.
- 1.4. The Secretary of State may instruct us to report on any particular matter as part of this report. No such instruction was received this year.
- 1.5. This year's report is a factual presentation of the prequalification process and the auction outcomes of the 2015 Capacity Auction with capacity to be delivered in 2019/20 (T-4 CM Auction), and the Transitional Capacity Auction for delivery in 2016/17³.
- 1.6. We also cover two topics which we believe are of particular interest to this reporting year:
 - the participation of interconnectors in the 2015 T-4 Auction; and
 - bidding behaviour in the 2015 T-4 Auction.

² [The Electricity Capacity Regulations 2014](#)

³ National Grid has published final auction results for both the 2015 [T-4 Capacity Market Auction](#) and [Transitional Capacity Market Auction](#). See www.emrdeliverybody.com

Background to the Capacity Market

Overview of Capacity Market

- 1.7. The CM is one of the key policies introduced under the Government's Electricity Market Reform (EMR) programme⁴. It aims to maintain sufficient levels of capacity to ensure security of electricity supply.
- 1.8. The CM provides revenue in the form of capacity payments to potential capacity providers. In return, participants must commit to delivering energy at times of system stress and face penalties if they fail to do so.
- 1.9. Capacity payments are determined via competitive auctions, held four years (T-4 Auction) and one year (T-1 Auction) before each delivery period. In addition, transitional auctions are being run in 2015 and 2016 for delivery in 2016/17 and 2017/18 respectively to help DSR and small scale generation prepare for participation in the CM⁵. The second T-4 auction, for delivery in winter 2019/20, was held in December 2015, and the first TA in January 2016. Prequalification for these auctions took place between July and August 2015.
- 1.10. Prospective capacity providers must meet certain eligibility requirements and prequalify before they can participate in the CM auctions. Alternatively, prospective capacity providers may choose to opt out of an auction.
- 1.11. These auctions are technology neutral, and any generating technology or capacity providers may choose to apply for a permit to participate in a CM auction. From the 2015 auction, interconnectors were also able to participate in the CM. However, capacity receiving specified renewable subsidies, eg Contracts for Difference, is not able to participate.

⁴ See <https://www.gov.uk/government/policies/maintaining-uk-energy-security--2/supporting-pages/electricity-market-reform>

⁵ The Government has set out its intention to refine the eligibility criteria for the 2nd TA to focus on supporting turn-down DSR. See DECC, Government Response to the March 2016 consultation on further reforms to the Capacity Market, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/521301/Govt_response_to_March_2016_consultation_FINAL.pdf

2. Prequalification and Auction process for 2015 Auctions

Overview of the prequalification process

A high level summary of the prequalification 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 Capacity Market Rules (the "Rules") and Regulations⁶. The prequalification process is run by National Grid Electricity Transmission (NGET), the Delivery Body, who review applications submitted by CMUs and determine whether they are successful. The results are announced on Prequalification Results Day.
- 2.2. Unsuccessful 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 the Authority (a 'Tier 2 appeal'). Applicants have the ability to submit new information at Tier 1.

Classification of CMUs

- 2.3. Eligible CMUs are classified into different types as illustrated in Figure 1. These include: generating and interconnector CMUs that are currently operational ('Existing'), generators looking to invest to renovate or restore an existing asset ('Refurbishing') and new generators and interconnectors ('New Build'). Capacity providers can also qualify as 'Proven' and 'Unproven' Demand Side Response (DSR) CMUs⁷.
- 2.4. Existing generation, interconnector and Proven 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 (£130/kW for agreements of up to 3 years) or building their plant (£255/kW for agreements of up to 15 years)⁸.
- 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 2015 T-4 CM auction, and

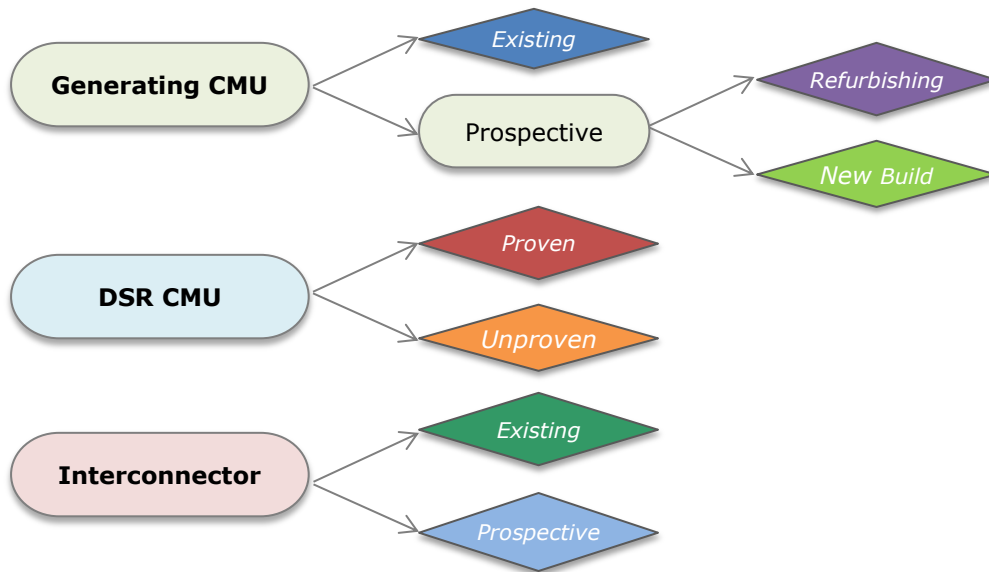
⁶ [The Electricity Capacity Regulations 2014](#) and [the Capacity Market Rules](#)

⁷ Demand Side Response service incentivises customers to lower or shift their electricity use at peak times.

⁸ [Capacity Auction Parameters](#) and [changes to the demand curve](#) for the T-4 auction taking place in December 2015.

£15/kW/year in the TA⁹). In order to bid above this threshold they must become 'Price Makers' by submitting a Price Maker Memorandum to us, 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 (£75kW/year in the 2015 T-4 auction and £40kW/year in the TA¹⁰).

Figure 1 – Overview of different CMU types



Prequalification timescales and process review

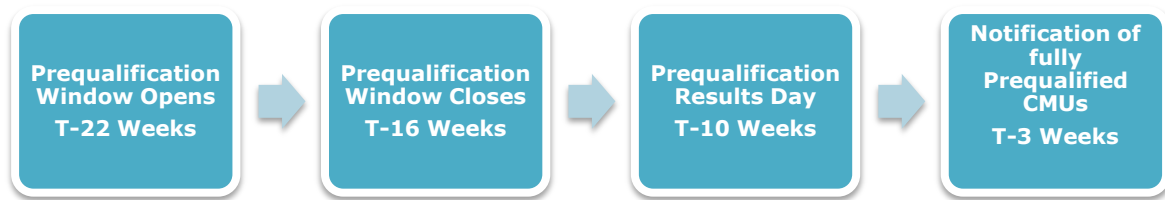
Timings of the prequalification process

- 2.6. The CM Rules set out the milestones for prequalification, with reference to the auction's start ("T"). The process normally takes 22 weeks (Figure 2).

⁹ Ibid.

¹⁰ Ibid.

Figure 2 - Prequalification timeline



2.7. Due to IT problems, in 2015 the prequalification window launch was delayed by two weeks and, as a result, it did not close until 28 August 2015. See our report on the Delivery Body’s performance for more information¹¹.

Table 1- 2015/16 Auction timings¹²

	T-4 Auction	Transitional Auction
Prequalification Window Opens	27 July 2015	27 July 2015
Prequalification Window Closes	28 August 2015	28 August 2015
Prequalification Results Day	25 September 2015	25 September 2015
Tier 1 Appeals Process	25 September 2015	25 September 2015
Tier 2 Appeals Process	9 October 2015	9 October 2015
Final Confirmed Bidders	24 November 2015	12 January 2016

¹¹ Report on the EMR Delivery Body’s performance of its functions in relation to the Capacity Market in 2015.

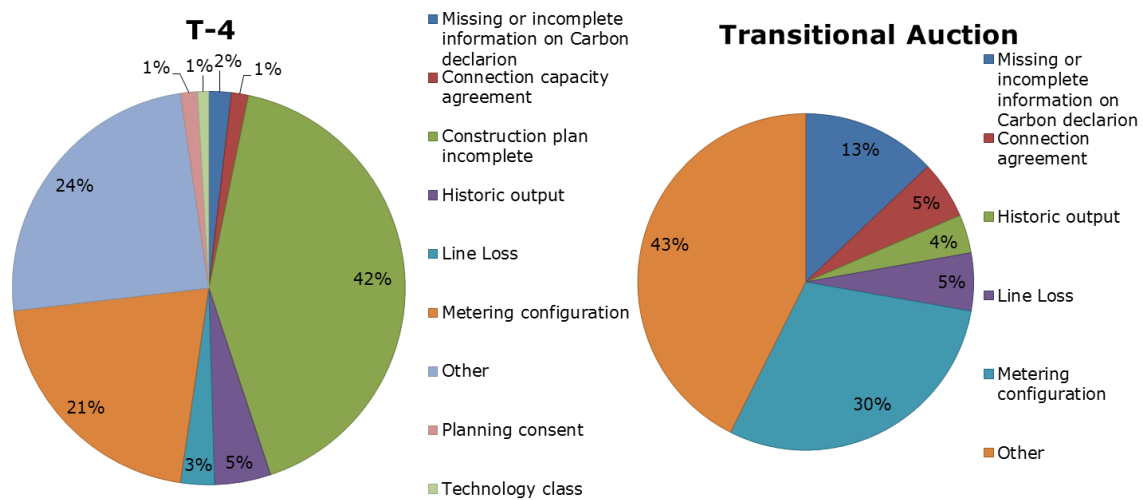
¹² [National Grid](#) - information on CM the timings in 2015.

Auction Begins	8 December 2015	26 January 2016
Auction Closes	10 December 2015	27 January 2016

Tier 1 and 2 Appeals and Disputes

- 2.8. After the closure of Prequalification Window, the results were announced on the Prequalification Results Day on 25 September. The Delivery Body initially rejected 216 CMU prequalification applications for the 2015 T-4 Auction, and 54 applications for the TA.
- 2.9. Figure 3 below shows the initial prequalification application rejections broken down by the reasons provided. Results are shown separately for the T-4 auction and the TA. In some cases, there was more than one reason resulting in an unsuccessful application.
- 2.10. Insufficient information regarding the construction plan for the plant was the most commonly stated reason for the rejection for an application for the 2015 T-4 auction. Absent metering configuration information was another commonly cited reason. Almost a quarter of unsuccessful T-4 applications were rejected for other reasons, eg for incomplete application form details such as missing signatures, official address details or prequalification certificate details.

Figure 3 - Grounds for prequalification rejection decision



- 2.11. Unsuccessful applications for the TA were most commonly the result of insufficient metering configuration information, or a mixture of other reasons (mostly due to missing, or incomplete information on the application form).
- 2.12. For the Tier 1 appeals, National Grid received 216 appeals for the 2015 T-4 and 54 for the TA auction that applicants submitted for review. Following the Tier 1 application process, out of the 216 initially rejected T-4 prequalification applications 159 applications prequalified. And, out of 54 Tier 1 applications for the TA, 39 prequalified.
- 2.13. We received two Tier 2 appeals by Green Frog Power Limited (GFP) regarding decisions made by the EMR Delivery Body on its two applications for FLASTO CMU to participate in the 2015 T-4 Capacity Auction and 2015 TA¹³. We upheld the Delivery Body's determination in both cases due to insufficient evidence of historic production capacity exceeding the anticipated de-rated capacity as required under CM Rules.

Overview of the Auction process

Overarching design

- 2.14. The CM auctions have 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 incrementally. 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"¹⁴.
- 2.15. 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).
- 2.16. The 2015 T-4 Auction started on 8 December and lasted three days, clearing in the 12th round. NGET published provisional auction results on 11 December 2015, and the final auction results were published on 22 December 2015.
- 2.17. The auction for the 2015/16 Transitional Capacity Auction started on 26 January 2016 and concluded on 27 January 2016, clearing in the 5th round.

¹³ Ofgem's determinations on Tier 2 Capacity Market disputes are available at www.ofgem.gov.uk.

¹⁴ 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.

- 2.18. There were no known issues with either auction's processes or systems. For further details, see our report on the Delivery Body's performance (including on the Auction Monitor's report).

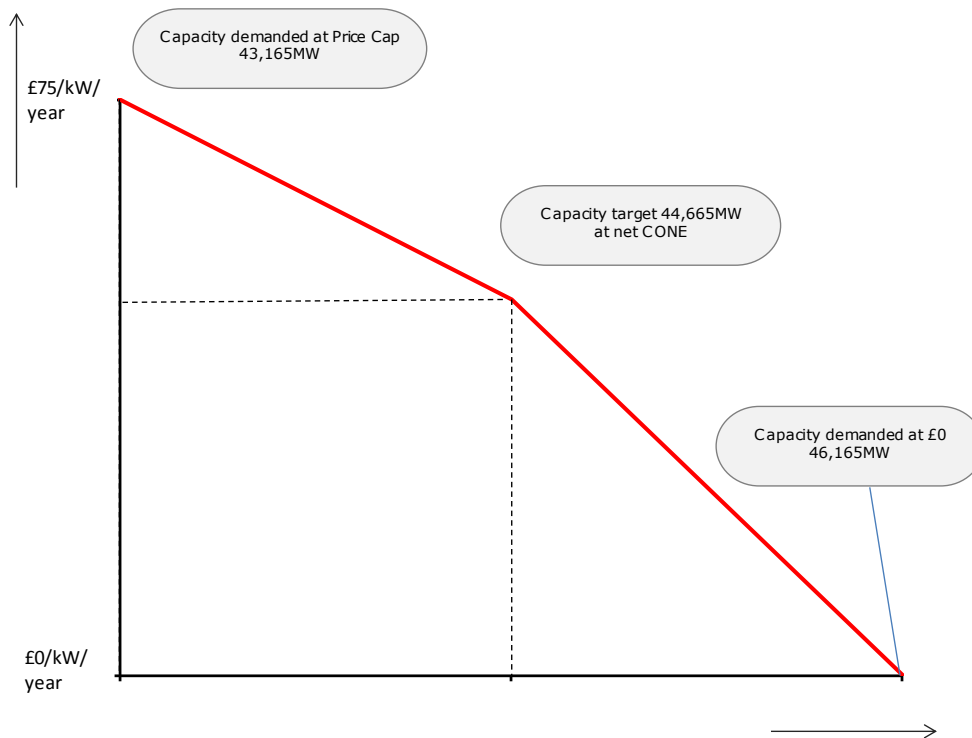
CMU bidding options

- 2.19. 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.

3. 2015 T-4 Auction

- 3.1. The 2015 T-4 Auction and Transitional Capacity Auction prequalification and auction outcomes are covered separately. This section focuses on the 2015 T-4 Auction. The TA is discussed in chapter 4.
- 3.2. In the 2015 T-4 Auction the price cap was £75/kW/year¹⁵. The price decrement per round was £5/kW/year, resulting in a maximum of 16 rounds over four consecutive days.
- 3.3. The final target volume of capacity was 44,665MW, based on DECC's calculation of the net cost of new entry (net CONE) at £49/kW/year¹⁶. The demand curve was sloped and kinked around this point, as illustrated in Figure 4.

Figure 4 – 2015 T-4 Auction demand curve



¹⁵ Auction parameters are expressed in 2014/15 prices.

¹⁶ Maximum capacity demanded at the price cap was 43,165MW (target capacity minus 1.5GW), and minimum capacity demanded at £0/kW/year was 46,165MW (target capacity plus 1.5GW).

Prequalification outcomes for the 2015 T-4 Auction

Prequalification applications for the T-4 Auction

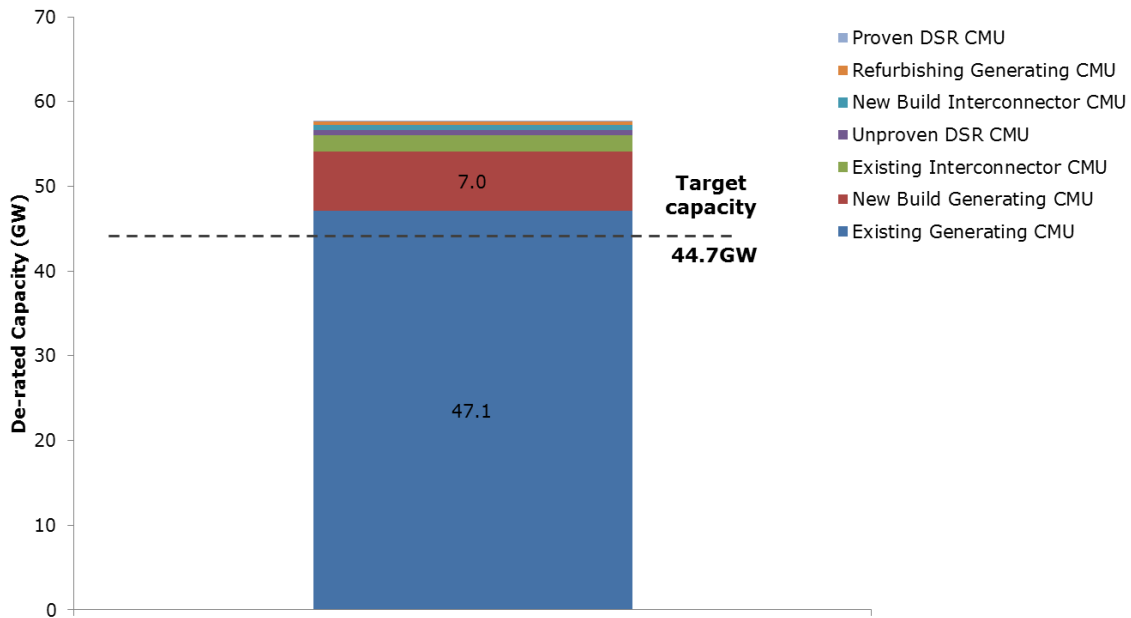
- 3.4. 467 CMU registrations were made during the prequalification window, an equivalent of 58.8 GW of de-rated capacity. 22 CMUs, totalling 12.6GW of capacity, opted out.
- 3.5. Out of the 22 CMUs opting out of the T-4 Auction, 17 were going to be closed down, decommissioned or otherwise non-operational by the start of the Delivery Year 2019/20. Five CMUs opted-out despite the intention to remain operational throughout the Delivery Year. This decision to opt out implies that these CMUs would have needed a price above the cap of £75/kW to be attracted to participate in the auction. This decision may have risen from the uncertainty around whether the CMU remains operational in the delivery year, and the potential associated penalties around non-delivery.

Prequalified CMUs for the T-4 Auction

- 3.6. Entering into the auction, the number of prequalified CMUs initially totalled 381. The final number of prequalified CMUs for the 2015 T-4 Auction was 379, totalling around 57.7GW of de-rated capacity¹⁷. This compares with the target capacity of 44.7GW, implying there was considerable competition going into the auction (Figure 5).
- 3.7. Following the prequalification results, National Grid recommended a downward revision to the target capacity for the T-4 Auction to account for plants opting out but remaining operational. As a result of this recommendation, the target was reduced by 735MW from 45.4GW.

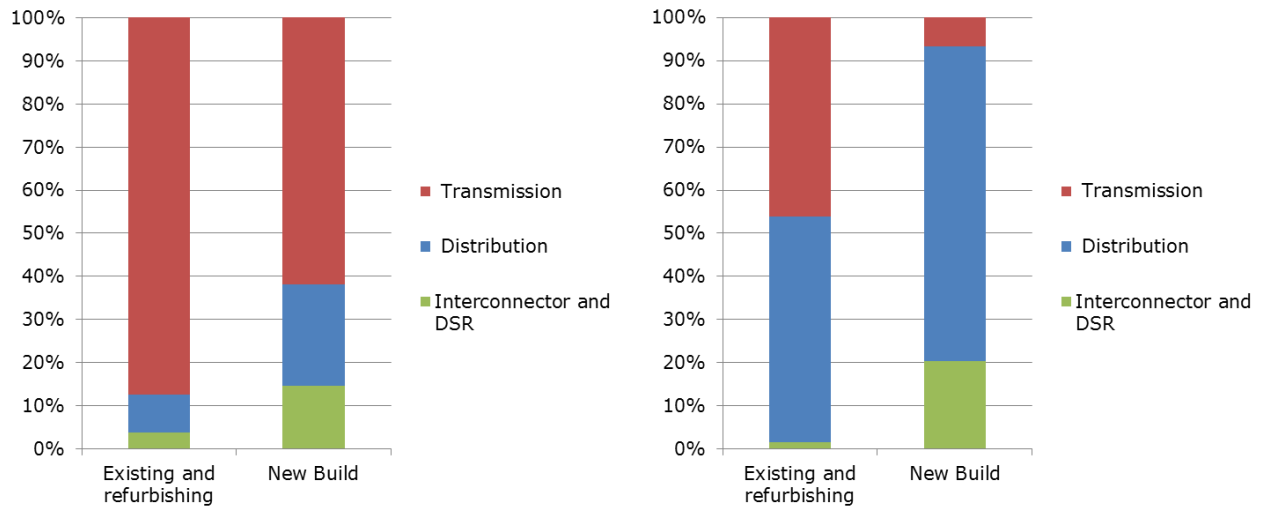
¹⁷ Following the prequalification window, two CMUs were granted a prequalified status, but this decision was later overturned as a result of incomplete data submission. This explains the discrepancy in the number of prequalified CMUs.

Figure 5 – Prequalified capacity by CMU type



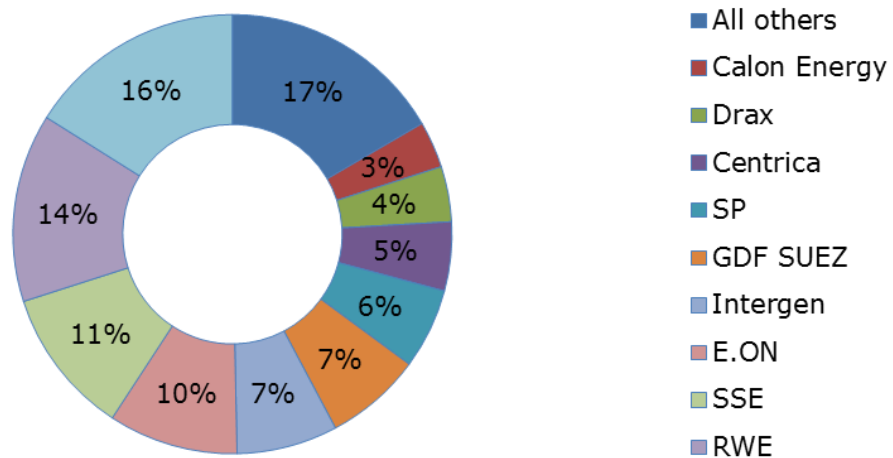
- 3.8. Around 82% of total prequalified de-rated capacity was Existing generating CMU capacity. Around 12% of prequalified de-rated capacity was New Build generating capacity, and around 3% Existing interconnector capacity.
- 3.9. Looking at the number of prequalified CMUs, Existing generating capacity accounted for the largest share (62%). The proportion of New Build generating CMUs of the total prequalified CMUs was around 28%, over double their share of the de-rated capacity, demonstrating their smaller average size (67MW) than that of the Existing generating assets (200MW).

Figure 6 – Connection type (volume) **Figure 7 – Connection type (CMUs)**



3.10. A total of 64 different companies¹⁸ qualified at least one CMU for the 2015 T-4 Auction. Figure 8 shows the breakdown by company. The 'six largest vertically integrated companies'¹⁹ made up approximately 61% of total prequalified capacity.

Figure 8 – Share of prequalified capacity by company

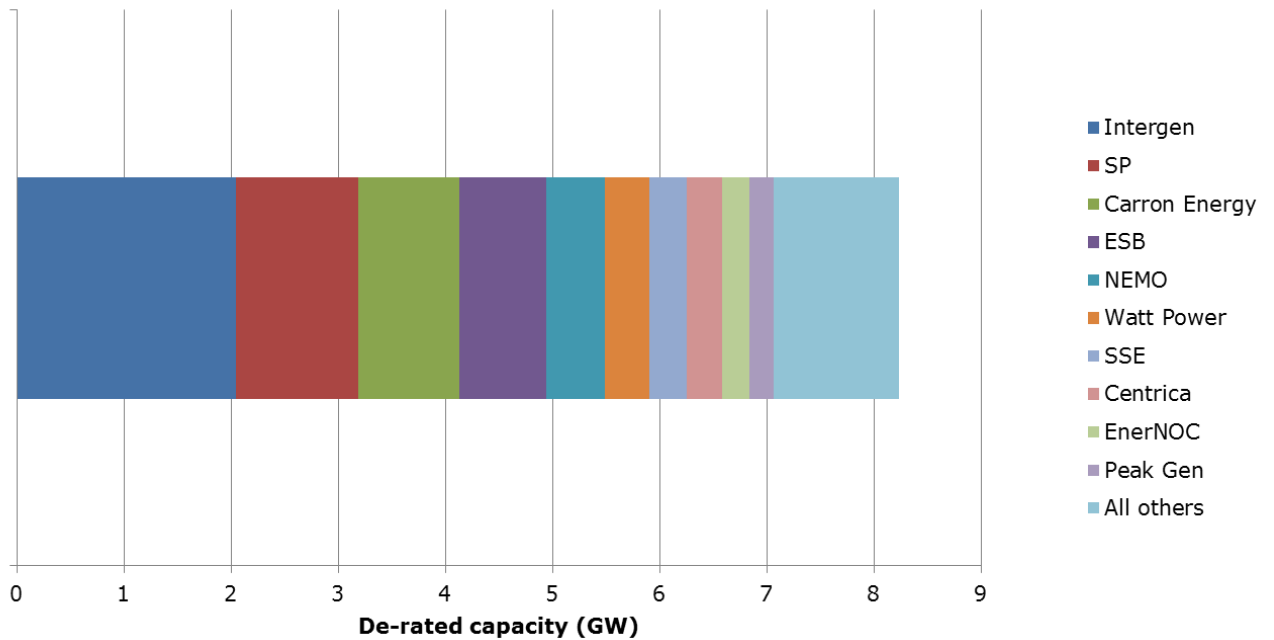


¹⁸ We have aggregated results for applicant companies on the Capacity Market Register by their parent company where appropriate.

¹⁹ These are Centrica, E.ON, EDF, RWE, ScottishPower and SSE.

- 3.11. In 2015, the 'six largest vertically integrated companies' accounted for a larger proportion of the prequalified New Build category than in the 2014 prequalification round for the T-4 Auction (approximately 19% of total New Build capacity in 2014). Centrica, ScottishPower and SSE's four new build power stations made up around 23% of total New Build capacity (1.6GW), whilst EDF, E.ON and RWE did not qualify any New Build.
- 3.12. In total, Intergen, Carron Energy and ESB provided approximately 3.48GW of New Build prequalified de-rated capacity. This capacity included a 1.1GW unit by Intergen, the largest single project not provided by the 'six largest vertically integrated companies'.

Figure 9 – Volume of prequalified New Build capacity by company

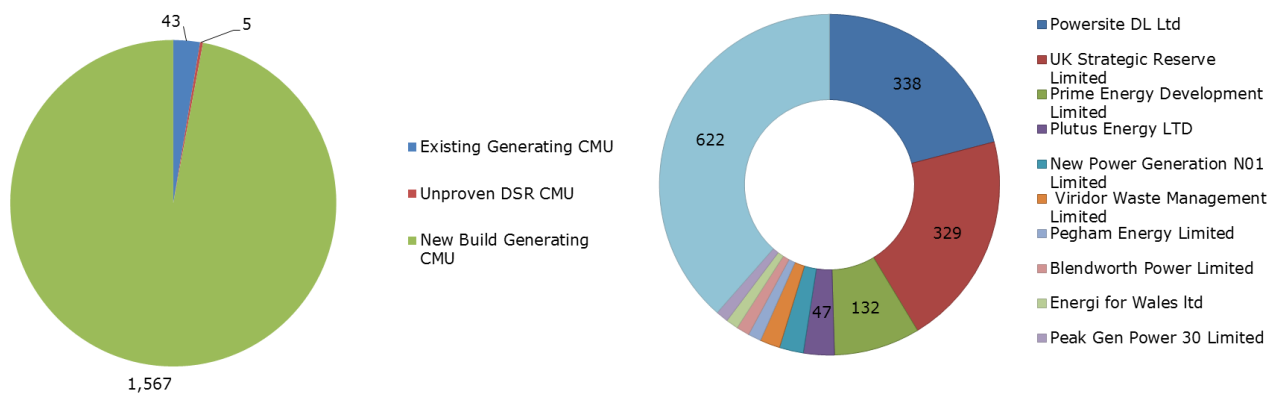


- 3.13. Seven companies made up the total prequalified Refurbishing capacity, totalling around 478MW with around 68% of this capacity owned by Centrica. Peterborough OCGT gas fired power station was the largest asset to prequalify as a refurbishing asset (around 233MW).

CMUs that didn't prequalify for the T-4 Auction

- 3.14. A total of 88 CMUs failed to qualify for the T-4 Auction, totalling around 1.6GW of de-rated capacity (Figure 10)²⁰. As in the 2014 T-4 Auction, the majority of these CMUs were small, distribution-connected New Build units.
- 3.15. Thirty-one of the unsuccessful CMUs were initially granted a conditional prequalification status following the Prequalification Results Day, but later failed to provide sufficient satisfactory information regarding planning consent or credit cover before the auction to meet the conditions imposed.

Figure 10 – Unsuccessful volume by CMU type and by company (MW)



2015 T-4 Auction outcomes

- 3.16. The target volume of capacity was 44,665MW, which applied at 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 4.

Clearing price and volume

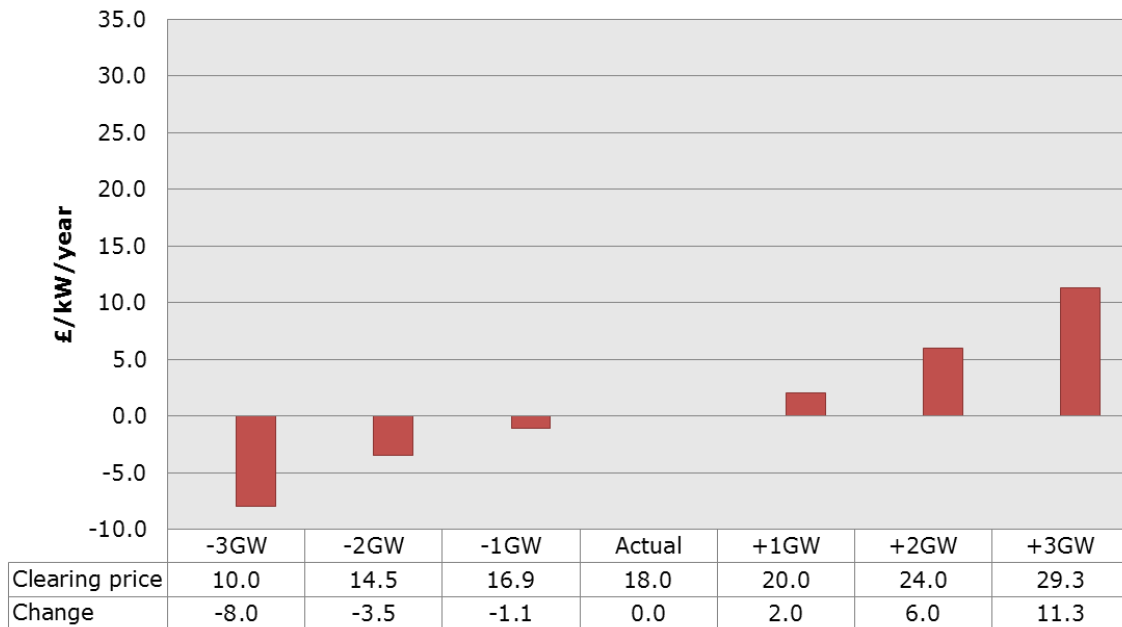
- 3.17. A total of 46,354MW of capacity was awarded in the 2015 T-4 Auction at a clearing price of £18.00/kW/year. We believe this price was slightly below forecasters' expectations²¹. It was also significantly below the estimated net CONE of £49/kW/year. This resulted in 1,689MW of extra capacity being awarded over the target level.

²⁰ These CMUs that didn't prequalify for an auction following the Prequalification window include assets that were given either a 'Rejected' status, or units that failed to provide sufficient evidence to consolidate their conditional status into prequalified.

²¹ As reported by [Bloomberg](#), market analysts from Sanford C. Bernstein & Co. to RBC Capital Markets LLC suggested that the 2015 T-4 Auction clearing price was below expectations.

- 3.18. Further analysis using the bid information submitted during the T-4 Auction suggests that differences in the target auction volume could have had a relatively significant impact on the clearing price. Figure 11 shows the potential impact on the clearing price of increasing and decreasing the target volume by 1, 2 and 3GW.
- 3.19. 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 11 - Potential impact of changes in the target level on clearing price



Total costs and impact on consumers

- 3.20. The total forecast cost of Capacity Agreements awarded for the first delivery year is approximately £834m (Table 2) based on the clearing price and volumes in the scenario above^{22, 23}. The cumulative forecast of the cost of the T-4 Auction, including all contracts awarded over the 15 year period, is around £1,082 million (compared to the nominal estimate of around £1,733m in 2014)²⁴. However, some of the capacity awarded through the 2014 T-4 Auction secured delivery contracts for over one year and the cost for these

²² Costs and prices are in 2014/15 prices. Capacity prices are indexed so the total amount actually payable will increase in line with inflation.

²³ 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.

²⁴ This figure does not discount future years.

contract agreements have been incorporated in the 2014 T-4 Auction cost calculation (around 5.5GW of power secured a contract for over a year in the 2014 T-4 Auction).

3.21. 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.

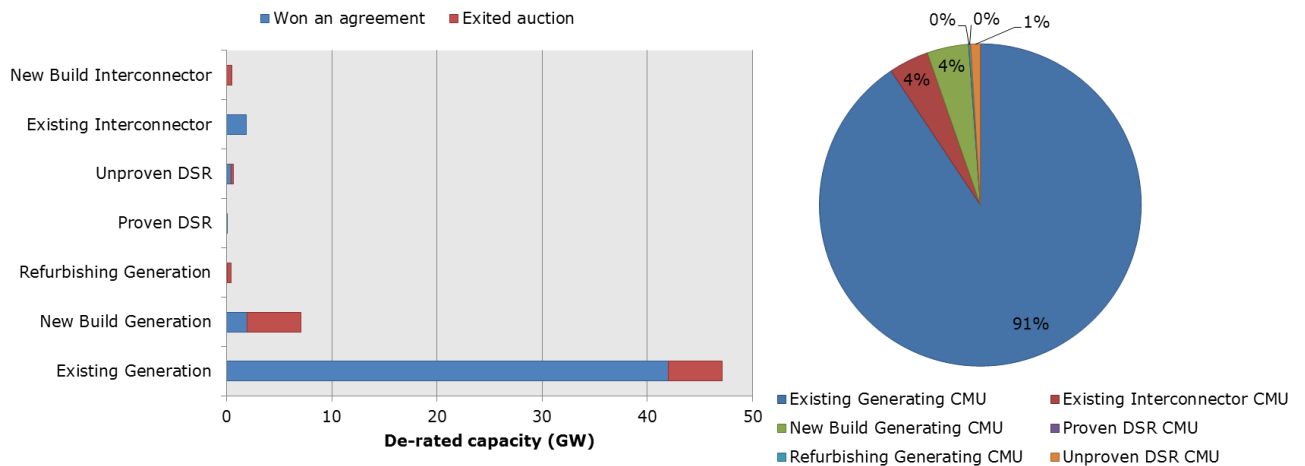
Table 2 – Potential impact of changes in target volume on auction costs

(GW)	-3.0	-2.0	-1.0	Actual	+1.0	+2.0	+3.0
Clearing volume (GW)	42.9	43.8	44.7	46.4	46.5	47.1	48.4
2019/20 cost (£m)	429.5	635.4	755.9	834.4	930.7	1131.2	1417.6

Results by CMU type

3.22. A total of 309 out of 379 participating CMUs were successful in the T-4 Auction. The majority of cleared, or successful, capacity was Existing capacity (42.0GW) as demonstrated in Figure 12. New Build generating capacity accounted for around 1.94GW of total acquired capacity, whilst Existing interconnector CMU capacity accounted for another 1.86GW.

Figure 12 – Volume of capacity winning agreements by CMU type



3.23. Over 1.9GW of New Build capacity won capacity agreements. This was despite 11.4GW of Existing and Refurbishing capacity exiting the auction. Almost half of this New Build capacity that secured an agreement was due to Carrington Power Limited’s CCGT project (805MW). The remaining 1.13GW of capacity comprised mainly of small scale distribution-connected generators, such as small scale diesel and gas reciprocating engines and energy from waste. In

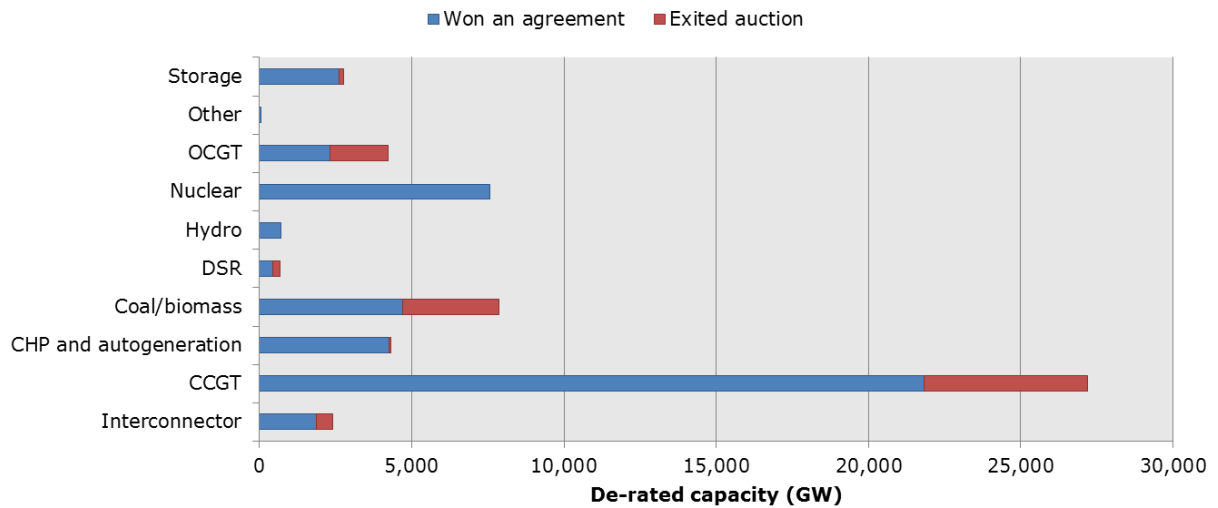


addition, conventional steam generators using coal or biomass fuelled generators accounted for around 14% of this New Build capacity.

Results by fuel type

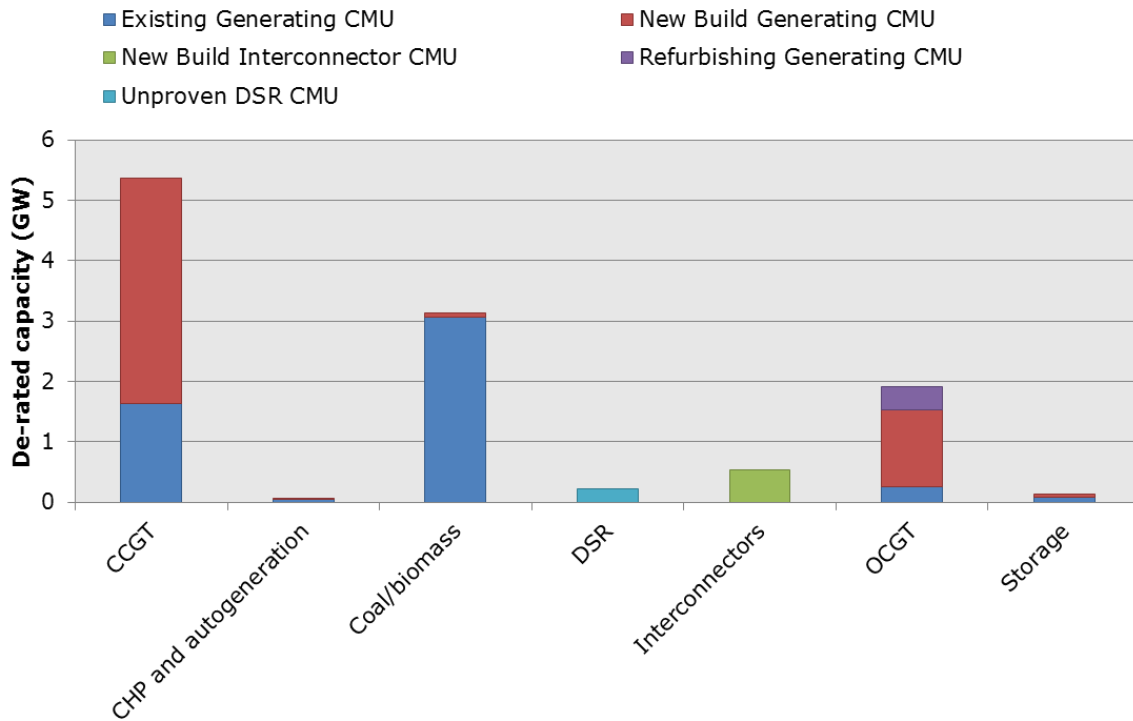
3.24. Around half of the acquired capacity obligations were provided by CCGTs (totalling around 47%), 16% by Nuclear, and 10% by generators using coal or biomass as a fuel. CCGT, coal/biomass and nuclear capacity had success rates of around 80%, 60% and 100% respectively.

Figure 13 – Cleared and exited capacity by fuel type (GW)



3.25. New Build capacity accounted for the majority of exited CCGT and OCGT capacity, whilst all of the exited interconnector capacity was down to New Build assets. In comparison, out of the exited coal/biomass capacity Existing generating capacity accounted for the largest share.

Figure 14 – Exited capacity by fuel type (GW)



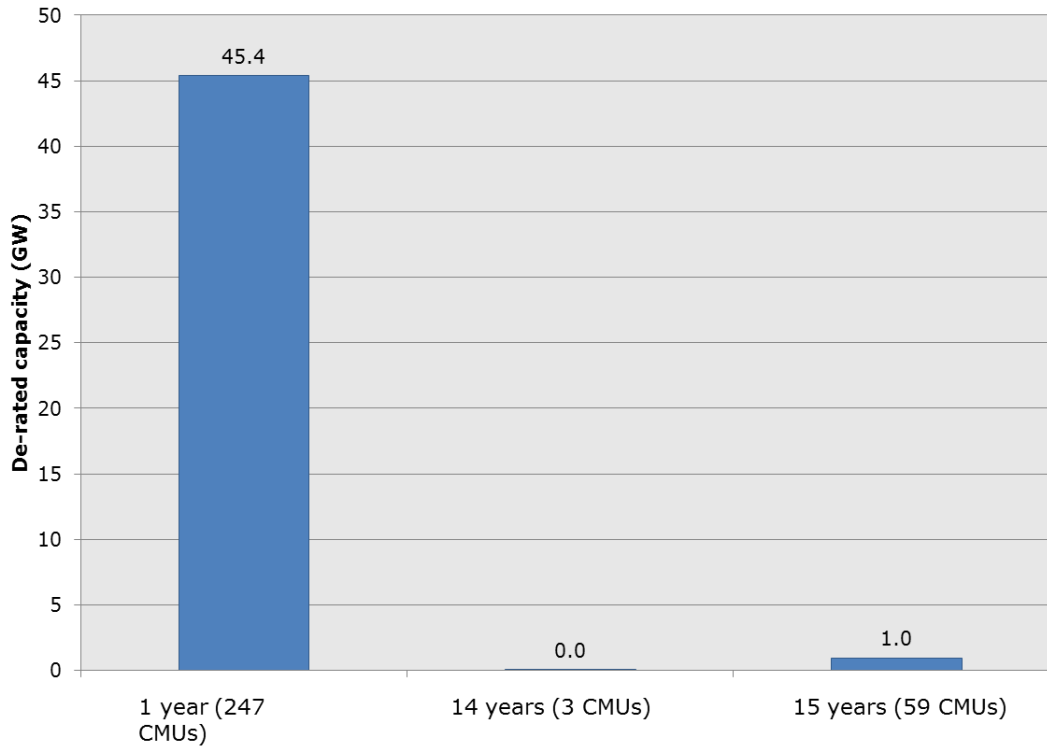
3.26. Three coal/biomass units made up over a third of the total exited estimated de-rated capacity.

3.27. Out of the three prequalifying interconnector CMUs, only the two Existing CMUs received an agreement. The New Build interconnector CMU, NEMO Link, due to begin commercial operation in 2019, exited the auction above the clearing price.

Length of agreements

3.28. As in the 2014 Capacity Market auction, the majority of capacity in the 2015 T-4 Auction won one year agreements (Figure 15), and the total de-rated capacity that secured contracts for one year totalled around 45.4GW of power. Only one CMU had the option to obtain a three year agreement at the beginning of the auction but ultimately opted for a one year agreement. Additionally, Carrington power station, a New Build CCGT, and due to become operational in 2016, accepted a one year agreement despite being eligible for a 15-year agreement.

Figure 15 – Length of agreements awarded



3.29. Just under 1.0GW of capacity was awarded agreements of more than one year in the T-4 2015 auction. This will reduce the amount of capacity that needs to be procured in the 2016 T-4 auction but also reduces the amount of capacity bidding by an equivalent amount. The low volume of longer term agreements awarded in the 2015 T-4 auction may be partly explained by the fact that some New Build capacity had already secured agreements in the 2014 T-4 Auction (around 5.5GW of power secured an agreement longer than one year in the 2014 T-4 auction).

Results by company

3.30. Over 80% of the companies that entered the auction won agreements for at least one CMU. The acquired capacity through the 2015 T-4 auction closely reflects the current market structure in power generation. In volume terms, EDF, RWE and E.ON secured the most capacity (22.2GW). The ‘six largest vertically integrated companies’ in total secured around 28.3GW of capacity out of the total 46.4GW (equivalent to over half of the total). The majority of all cleared capacity was Existing Generating capacity as demonstrated in Figure 16. This may at least partially reflect the successes of refurbishing CMUs in securing CM agreements in the 2014 T-4 auction.

3.31. As measured by de-rated capacity, out of the ‘six largest vertically integrated companies’, SSE had the largest volume of de-rated capacity that exited auction above the clearing price, most of which was Existing generation due

to close down before the expected delivery window (Figure 16). Scottish Power and Centrica also exited capacity above the clearing price (around 1.1GW and 877MW respectively).

3.32. Figure 17 demonstrates the success rates in the T-4 auction for the 10 companies securing the highest volumes of capacity in the auction. All but one of the ten largest auction participants by secured de-rated capacity had a success rate of over 80%. This is a substantial improvement from the 2014 performance for this particular group, potentially reflecting the fact that the majority of secured capacity was Existing generating capacity. In 2014, refurbishing and new build capacity played a greater role both in terms of capacity approved and exited following the auction.

Figure 16 – Volume of cleared capacity by company

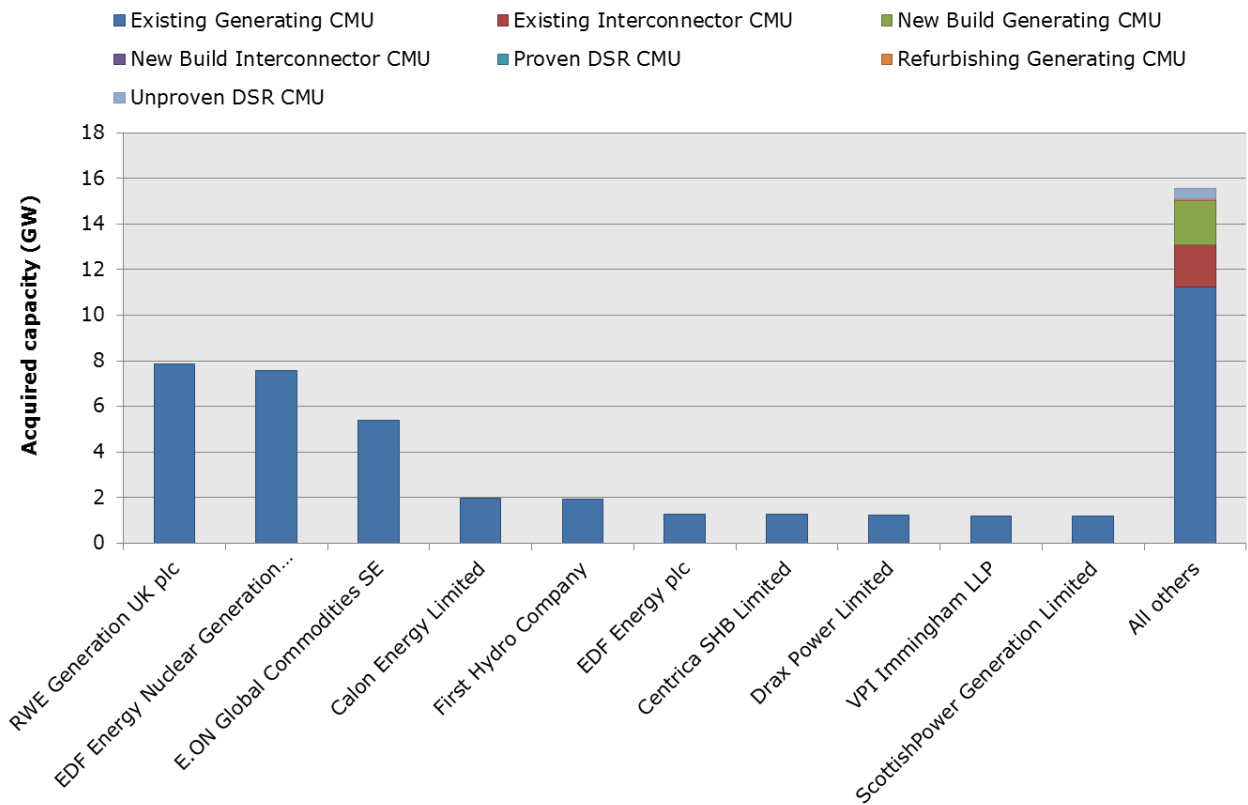
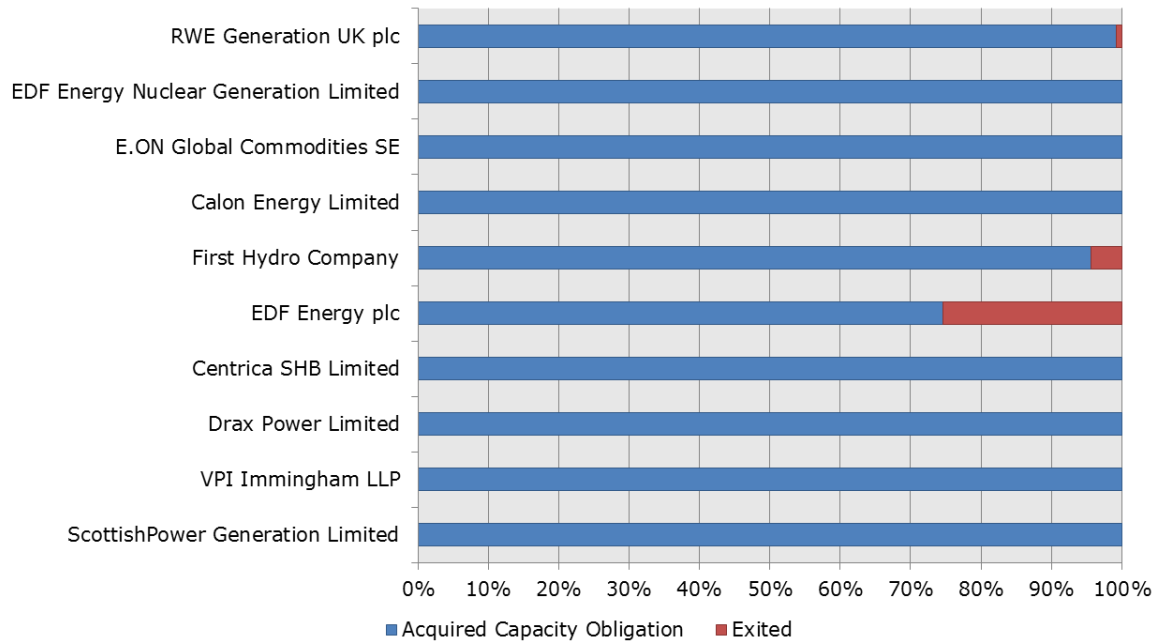
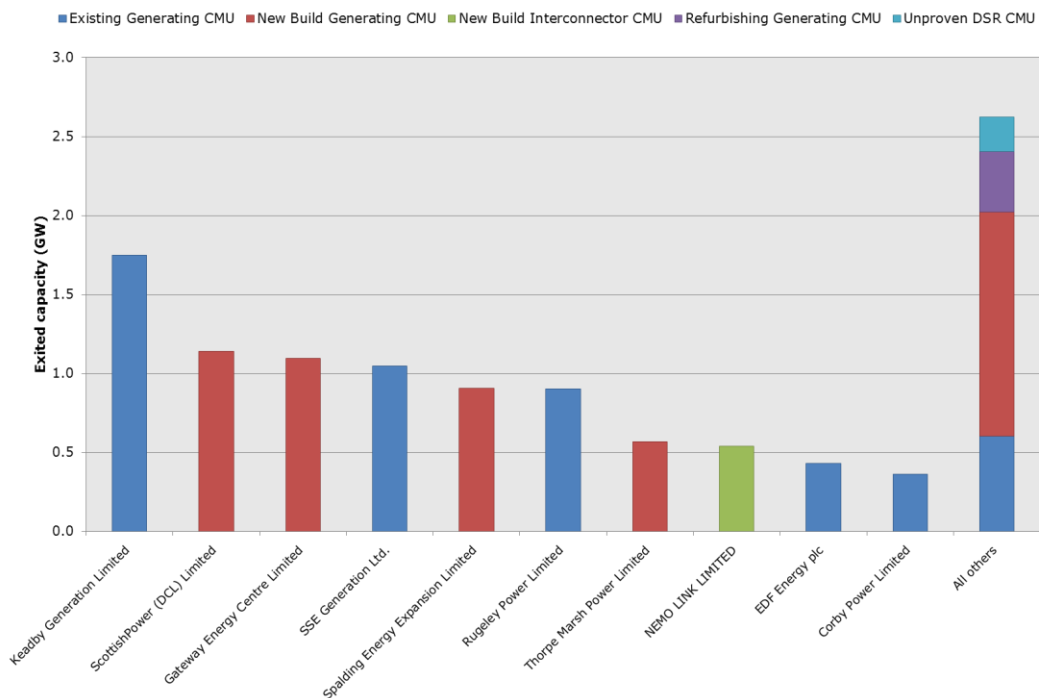


Figure 17 – Success rates by company of 10 largest companies by de-rated capacity



3.33. Figure 18 shows the composition of exited CMU volume by company and suggests that New Build generating CMU accounted for a significant proportion of this.

Figure 18 – Volume of exited capacity by company



Further observations

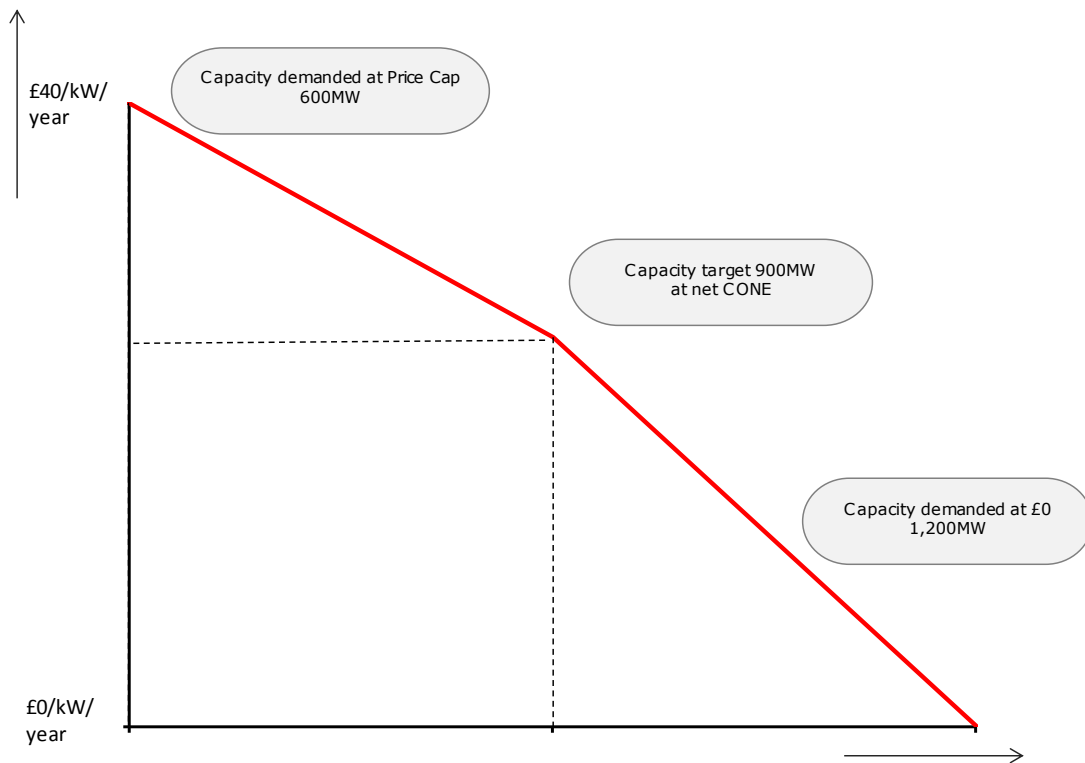
Clearing price lower than in the 2014 T-4 auction

- 3.34. The auction cleared at a lower price than in 2014. The final price reached £18.00/kW/year, compared to £19.40/kW/year in 2014. The final price of £18.00/kW/year was around 37% of net CONE, compared to just over 40% of net CONE in 2014.
- 3.35. As in the previous T-4 Auction, 5.5GW of power in the 2015 T-4 auction of existing plants failed to clear capacity even though their share of the prequalified de-rated capacity exceeded the procurement target by around 2.5GW. This may imply that some of this capacity will close earlier than initially anticipated.

4. Transitional Capacity Auction

- 4.1. In the 2015 TA the price cap was £40/kW/year. The price decrement per round was £2.50/kW/year, resulting in a maximum of 16 rounds over four consecutive days.
- 4.2. The final target volume of capacity was 900MW, set at the net cost of new entry (net CONE) of £25/kW/year. The demand curve was sloped and kinked around this point, as illustrated in Figure 19.

Figure 19 – 2015 Transitional Auction demand curve

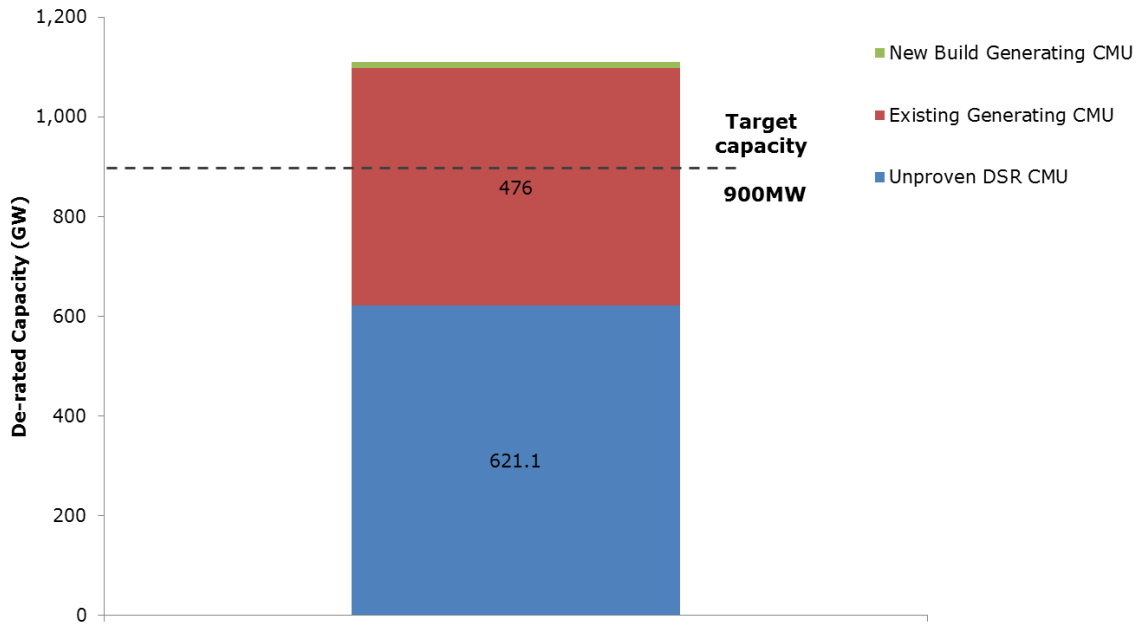


Prequalification outcomes for Transitional Capacity Auction

Prequalification applications and prequalified CMUs for the Transitional Capacity Auction

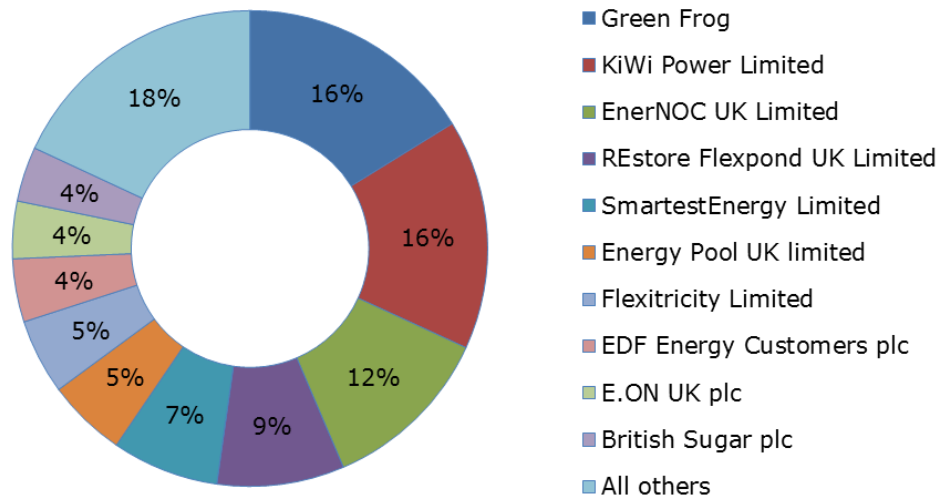
- 4.3. There were 109 initial company registrations for the 2015 TA. All of them submitted prequalification applications, an equivalent of 1.6 GW of de-rated capacity.

Figure 20 – Prequalified capacity by CMU type



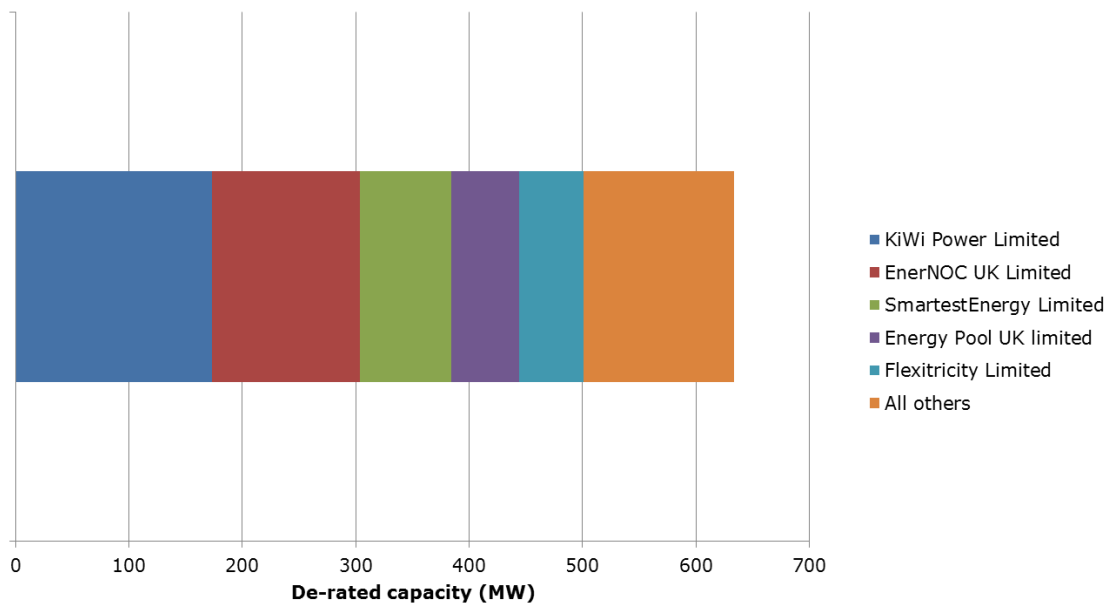
- 4.4. For the TA, 78 CMUs prequalified, totalling around 1.1GW of de-rated capacity, exceeding the procurement target of 900MW.
- 4.5. Unproven DSR capacity accounted for around 56% of the total prequalified capacity. Capacity of Existing generating CMUs accounted for 43% and New Build generating CMUs for around 1%. A total of 28 different companies qualified at least one CMU for the 2015 TA. Figure 21 shows the breakdown by company.

Figure 21 – Prequalified capacity by company



4.6. As an individual company, Kiwi Power Limited prequalified the largest volume of New Build de-rated capacity (174MW), followed by EnerNOC UK Limited and SmartestEnergy Limited with 130MW and 81MW of capacity respectively (Figure 22). The average de-rated capacity size of a prequalified CMU was around 13MW.

Figure 22 – Volume of prequalified New Build and Unproven DSR capacity by company



- 4.7. Green Frog accounted for the largest proportion of Existing Generating Capacity, totalling 180MW (around 38%). Kiwi Power prequalified the largest amount of Unproven DSR de-rated capacity (28%), followed by EnerNOC UK (21%).

CMUs that didn't prequalify for the Transitional Capacity Auction

- 4.8. A total of 20 applicants for the Transitional Capacity Auction failed to prequalify for the auction, totalling around 250MW of de-rated capacity (applications for these CMUs were either rejected or not prequalified). The majority of the unsuccessful capacity was distribution connected New Build generating CMUs, with a de-rated capacity of 107MW and an average size of 18MW.
- 4.9. Eleven DSR applications were initially rejected, but later this decision was overturned and these CMUs prequalified, whilst seven DSR applications were initially rejected, and ultimately failed to prequalify. Incomplete application information submitted at the Prequalification Window stage was the main reason for initial rejections in all seven cases.

2015 Transitional Capacity Auction

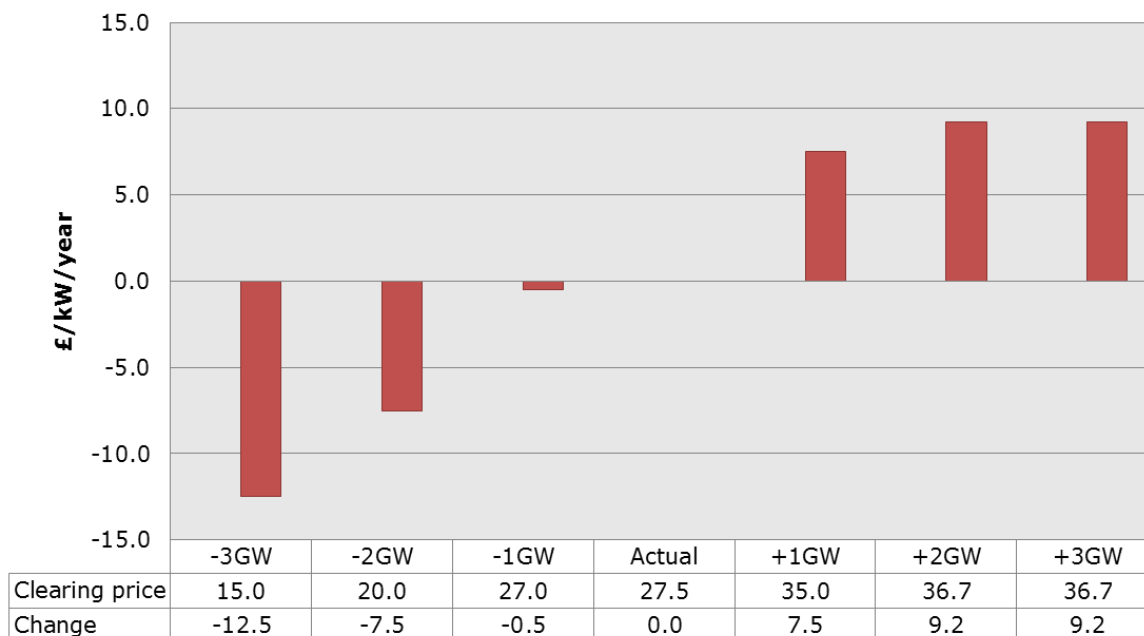
- 4.10. The 2015 TA started on 26 January 2016 and cleared in bidding round 5 on 27 January 2016.
- 4.11. A total of 1,110MW entered the auction, of which around 72% secured a Capacity Market Agreement for delivery in 2016/17 with contract duration of one year.
- 4.12. In the 2015 TA the price cap was £40/kW/year. The price decrement per round was £2.50/kW/year, resulting in a maximum of 16 rounds over four consecutive days.
- 4.13. The target volume of capacity was 900MW, set at the net cost of new entry (net CONE) of £25/kW/year.

Clearing price and volume

- 4.14. A total of 802.7MW of capacity was awarded an agreement in the TA at a clearing price of £27.50/kW/year.
- 4.15. Further analysis, using the bid information submitted during the TA suggests that differences in the target procurement volume could impact on the clearing price. Figure 23 shows the potential impact on the clearing price of increasing and decreasing the target volume by 100, 200 and 300MW.

4.16. 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 23 - Potential impact of changes in the target level on clearing price



4.17. The total cost of agreements for the delivery in 2016/17 is approximately £22 million (Table 3).

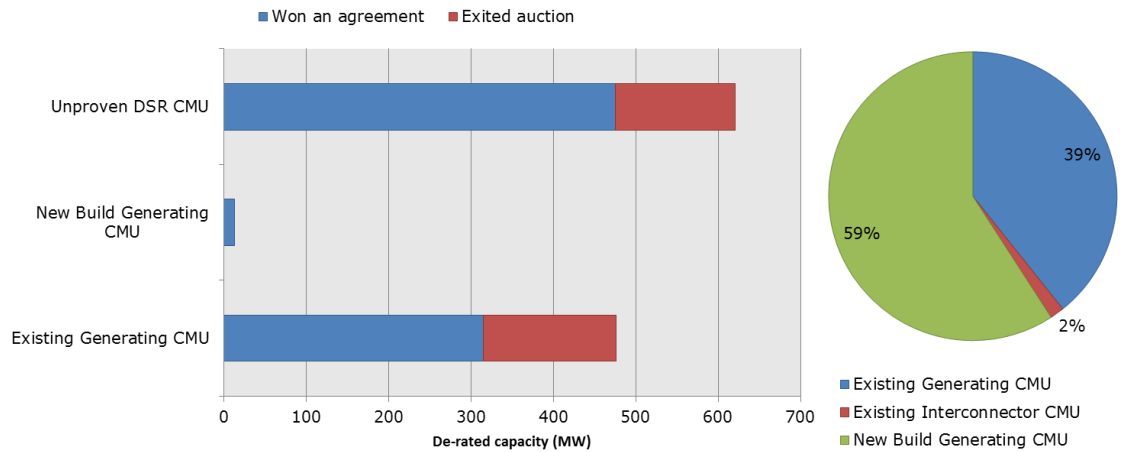
Table 3 – Potential impact of changes in target volume on auction costs

(MW)	-300	-200	-100	Actual	+100	+200	+300
Clearing volume (MW)	725.9	767.8	770.4	802.7	863.5	865.2	865.2
2016/17 cost (£m)	10.9	15.4	20.8	22.1	30.2	31.8	31.8

Results by CMU type

4.18. A total of 57 out of 78 participating CMUs were successful in securing a capacity agreement through the TA (an equivalent to 802.7MW, with an average size of 14MW) as demonstrated in Figure 24.

Figure 24 – Volume of capacity winning agreements by CMU type



4.19.

4.20. Figure 24 shows the composition of successful de-rated capacity securing an agreement in the TA. The majority of the successful de-rated capacity was Unproven DSR (around 475MW or 59% of the total). Cleared Existing generating capacity totalled around 315MW (equivalent to over a third of the total). New Build generating CMU capacity accounted for only 2% of the total successful capacity.

Results by fuel type

4.21. Figure 25 demonstrates the cleared and exited capacity by fuel type. Around 59% of capacity that secured an agreement was DSR CMUs, whilst Combined Heat and Power (CHP) and auto-generation capacity accounted for around 34% of all agreements won (with Existing capacity totalling 32% of the total). Existing generating OCGT and oil capacity accounted for around 6% and 1% of the total secured capacity respectively.

Figure 25 – Cleared and exited capacity by fuel type (MW)

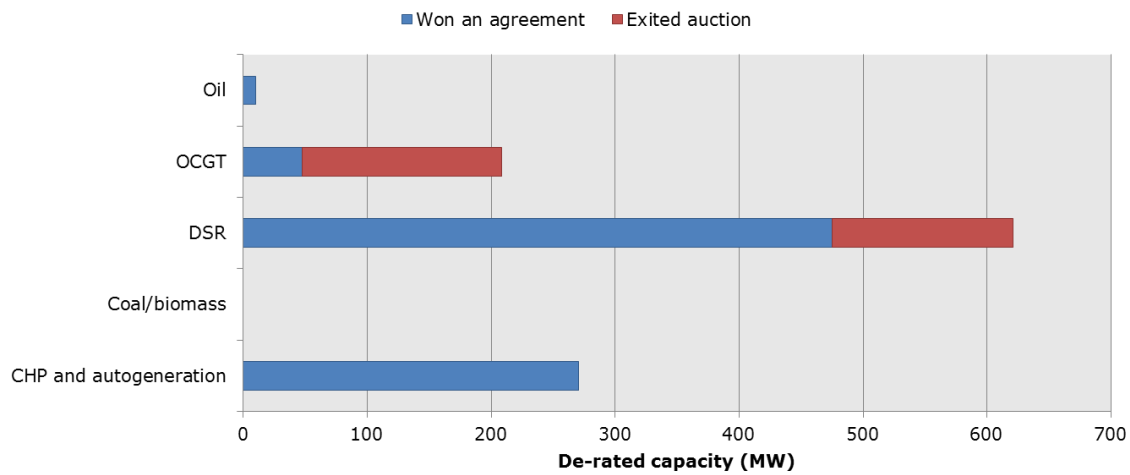
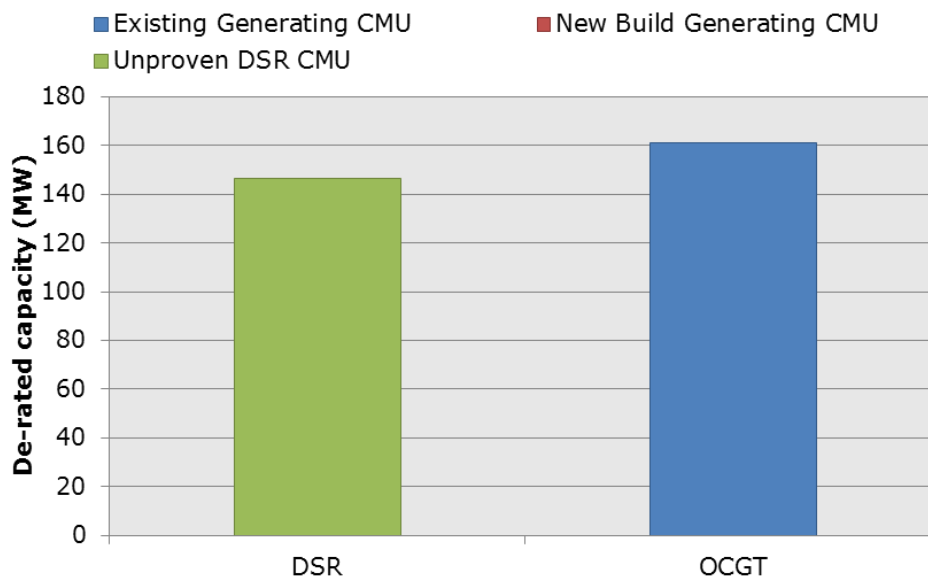


Figure 26 – Exited Capacity by fuel type (MW)



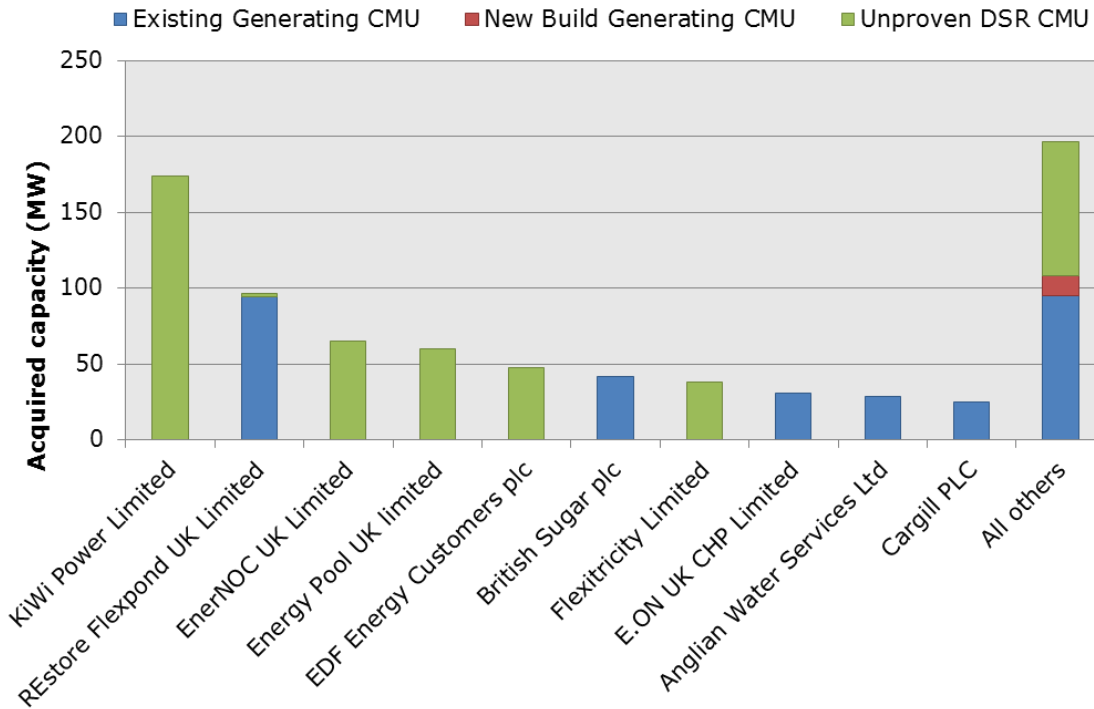
4.22. The amount of exited capacity totalled around 307MW, equivalent to 21 CMUs (Figure 26). In capacity terms, OCGT Existing generating CMUs accounted for most of exited capacity (around 161MW), and Unproven DSR CMUs the rest (equivalent to around 146MW).

Results by company

4.23. Around 73% of the companies that entered the auction won agreements for at least one CMU. In volume terms, Kiwi Power Limited, REstore Flexpond UK Limited and EnerNOC UK Limited secured the most capacity (335MW), out of the total 803MW of total cleared capacity (equivalent to around 42% of the total), as demonstrated in

4.24. Figure 27 (next page).

Figure 27 – Volume of cleared capacity by company



Further observations

- 4.25. The auction cleared at £27.50/kW/year with 803MW of capacity procured. The final price was £2.50 above net CONE. (Net CONE proxy as estimated by DECC was £25/kW.)
- 4.26. Following the Prequalification Window, the procurement targets for both T-4 and TA targets were amended to reflect the fact that a number of CMUs chose to opt out whilst remaining operational during the delivery year.

5. DSR participation

- 5.1. This section brings together DSR participation from both the 2015 T-4 and Transitional Capacity Auctions.

Background

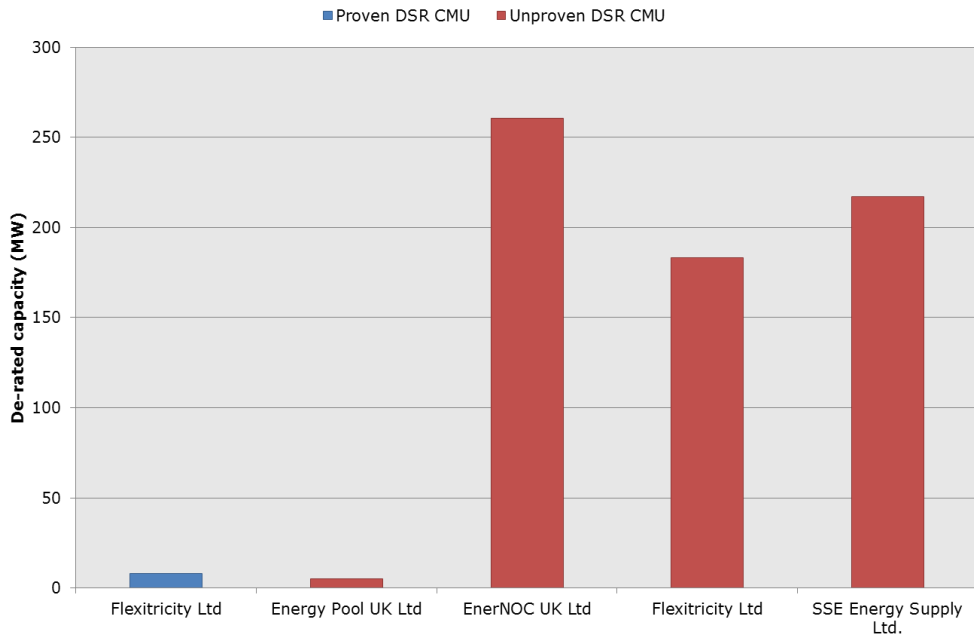
- 5.2. Unlocking the full potential of Demand Side Response (DSR) capacity could help drive down the cost of delivering secure, low-carbon electricity supplies.
- 5.3. In the first CM Auction in 2014, DSR participation was low. Out of a total of 36 DSR CMUs, 34 CMUs prequalified accounting for around 1% of the total capacity.
- 5.4. In the first T-4 Capacity Market auction that took place in 2014 Auction, 15 DSR CMUs secured capacity agreements. Whilst Proven DSR CMUs secured agreements, 718MW of the 884MW prequalified Unproven DSR capacity failed to win an agreement. Overall, only 0.17GW (equivalent to 0.4%) of the 49.3GW of capacity procured in the 2014 T-4 auction belonged to DSR CMUs.
- 5.5. As part of the original design of the CM, DECC included a number of arrangements to help DSR participation. The T-1 auctions are partly designed to reflect that DSR may find it difficult to commit to providing capacity four years ahead of delivery. DECC also decided to hold two Transitional Auctions (the "TAs") for DSR and small scale generation for delivery in the years ahead of the capacity market fully coming into effect. The first of the TAs took place in 2015/16.

DSR prequalification and auction outcomes

2015 T-4 Prequalification

- 5.6. A total of 28 CMUs prequalified for the T-4 auction, with a total de-rated capacity of around 673MW. This accounted for around 1% of the total prequalified capacity for the 2015 T-4 auction and broadly 7% of all prequalified CMUs.
- 5.7. As Figure 28 demonstrates, EnerNOC UK Limited (391MW) accounted for the largest share of prequalified DSR capacity for the 2015 T-4 auction by company, followed by Kiwi Power Limited (260MW).

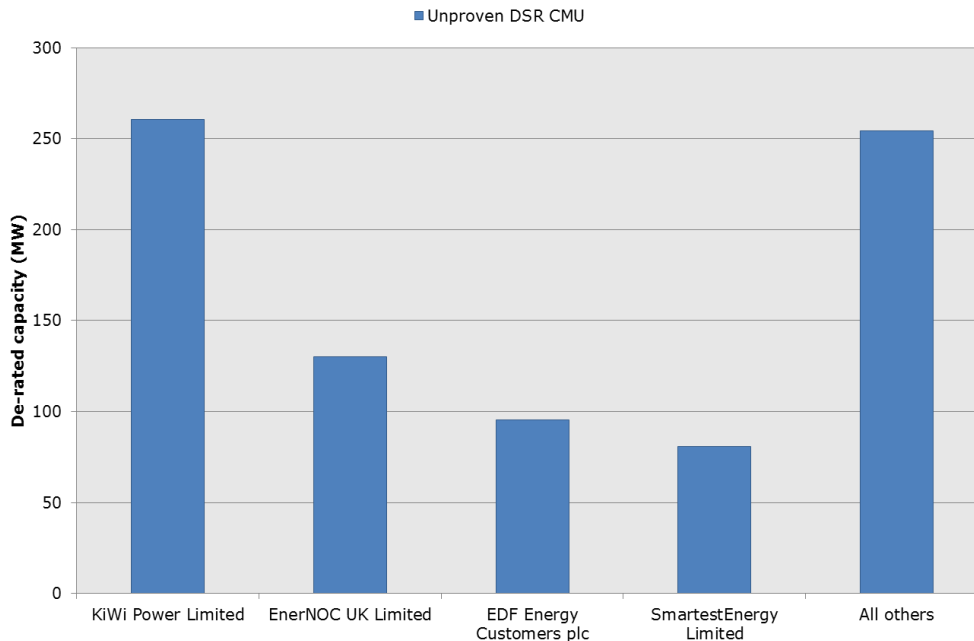
Figure 28 – Prequalified DSR capacity in the 2015 T-4 Auction



2015/16 Transitional Capacity Auction Prequalification

5.8. A total of 47 DSR CMUs prequalified for the Transitional Capacity Auction, with a total de-rated capacity of 621MW. This accounted for around 59% of the total prequalified capacity for the 2015/16 Transitional Capacity Auction.

Figure 29 – Prequalified DSR capacity in the 2015 Transitional Capacity Auction



2015 T-4 Auction

5.9. Out of the total prequalified 2015 T-4 Auction capacity, 23 DSR CMUs secured an agreement totalling around 456MW of de-rated capacity. This compares with an auction outcome of 15 CMUs securing an agreement in the 2014 T-4 auction, and the successful de-rated capacity accounted for around 174MW.

Transitional Capacity Auction

5.10. Out of the total prequalified Transitional Capacity Auction capacity, 36 DSR CMUs secured an agreement, totalling around 475MW of capacity and accounting for 59% of all successful capacity.

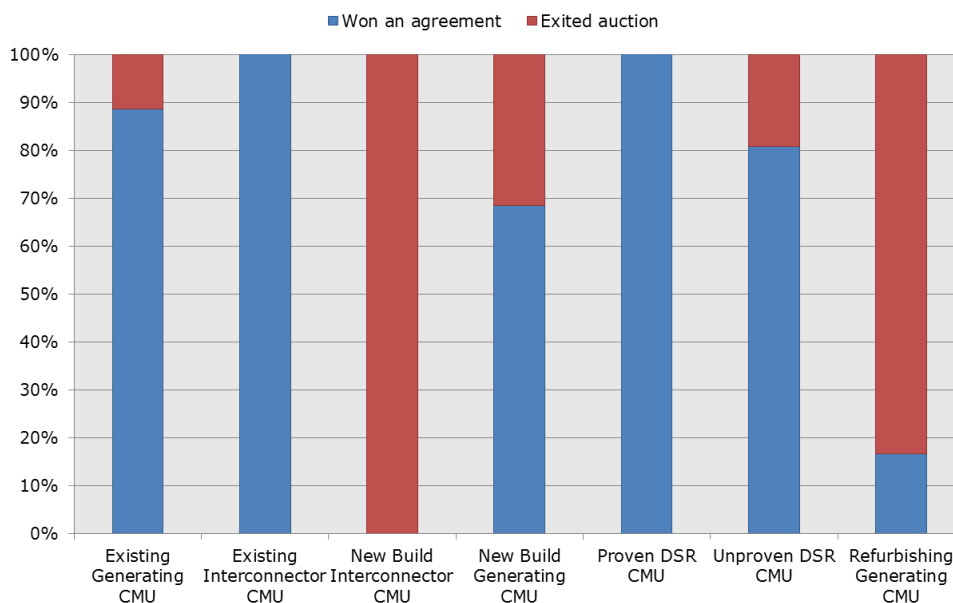
Success rate of DSR in the 2015 auctions

5.11. In volume terms, DSR CMUs managed to secure significantly more de-rated capacity in the 2015 auctions than in the previous year.

5.12. Success rates amongst DSR capacity CMUs were also considerably higher compared to the T-4 2014 Auction. There are a number of potential factors influencing this including changes to the Rules made between 2014 and 2015 to encourage DSR participation, and further development of the DSR sector.

5.13. In the 2015 T-4 auction, DSR capacity as measured by de-rated capacity had an overall success rate of around 82%. Only two Proven DSR CMUs entered the 2015 T-4 Auction securing an agreement. The success rate amongst Unproven CMUs was around 81% (Figure 30).

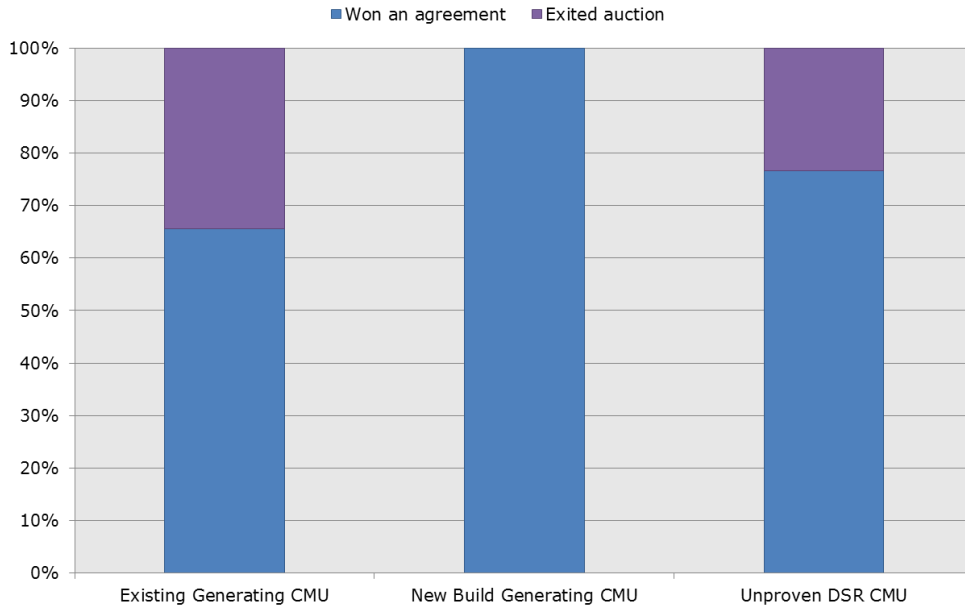
Figure 30 – Auction success rates for different CMU types in the 2015 T-4 auction





5.14. In the 2015 TA, DSR CMUs had a success rate of around 77%.

Figure 31 – Auction success rates for different CMU types in the 2015 Transitional Capacity Market Auction



5.15. The volume of DSR capacity securing auction agreements in the 2015 auctions increased from that of 2014. However, this may largely be linked to the running of the first TA in 2015, designed specifically to encourage DSR and embedded generation participation. We note that the Government has set out its intention to refine the eligibility criteria for the 2016 TA to focus on turn down DSR rather than generation-derived DSR²⁵.

²⁵ DECC, Government Response to the March 2016 consultation on further reforms to the Capacity Market, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/521301/Govt_response_to_March_2016_consultation_FINAL.pdf

6. Interconnector participation

Background

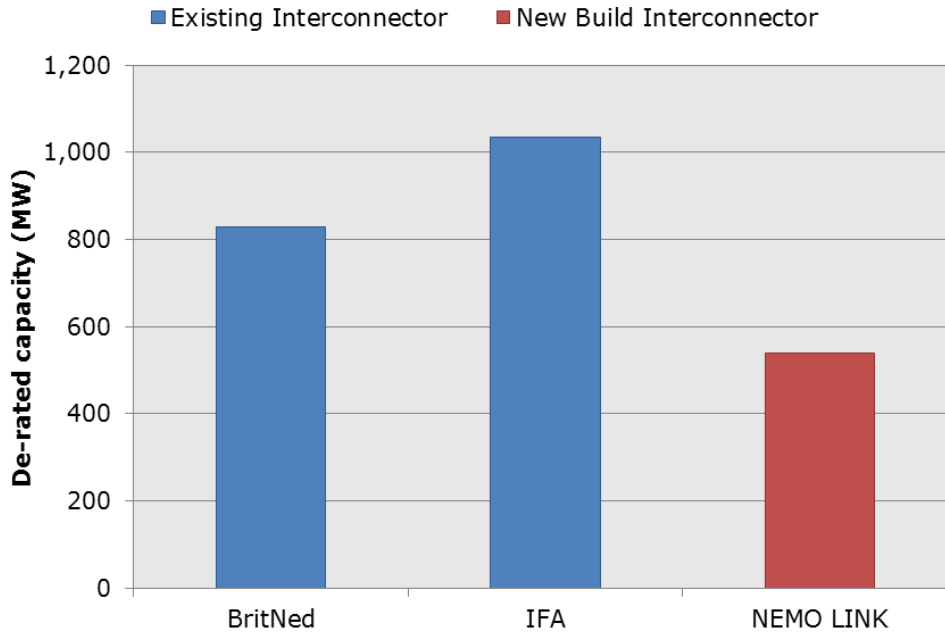
- 6.1. In the 2015 T-4 Auction, interconnectors linking Britain to other European countries were able to participate for the first time in the CM.
- 6.2. The potential interconnector participants in the 2015 T-4 Auction included both New Build and Existing interconnectors expected to be operational during the delivery window of 2019/20. The total potential estimated de-rated capacity of these interconnectors available for auction prior to the prequalification window was around 2.4GW.

Interconnector prequalification and auction outcomes

2015 T-4 Prequalification

- 6.3. There were five existing or prospective interconnectors who would have been eligible to participate in the 2015 T-4 Auction. Of these, two opted out from the auction process before the prequalification process began (EWIC and Moyle Interconnector Ltd). The other three CMUs successfully prequalified (BritNed, Interconnexion France-Angleterre (IFA) as Existing interconnectors, and NEMO Link as a prospective CMU).
- 6.4. Figure 32 (next page) demonstrates the interconnector capacity that successfully prequalified for the 2015 T-4 Capacity Market Auction. Jointly these three prequalified CMUs accounted for around 2.4GW of capacity, and consisted of both Existing interconnector capacity (1.9GW de-rated) and New Build interconnector capacity (540MW de-rated).

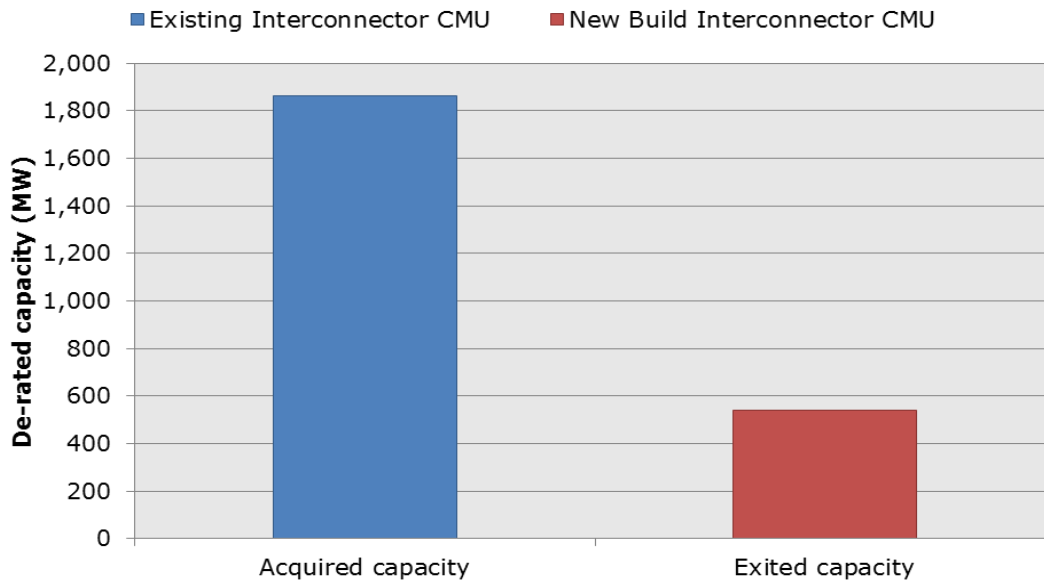
Figure 32 – Prequalified Interconnector capacity



2015 T-4 Auction

6.5. Out of the 2.4GW of interconnector capacity that entered the auction, capacity contracts were awarded for 1.9GW in total. The de-rated capacity that exited the auction above the clearing price totalled 540MW, and consisted of the prospective interconnector capacity (NEMO Link).

Figure 33 – Successful interconnector capacity



- 6.6. Interconnector capacity accounted for less than 1% of the total capacity procured through the auction.

- 6.7. Due to the small share of successful interconnection capacity in the 2015 T-4 CM Auction and the large pipeline of projects that are in development, it can be expected that interconnectors will potentially play a larger role in future capacity market auctions.

7. Bidding behaviour

Background

Bidding options in 2015 T-4 Auction

- 7.1. 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)
- 7.2. 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.
- 7.3. 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.

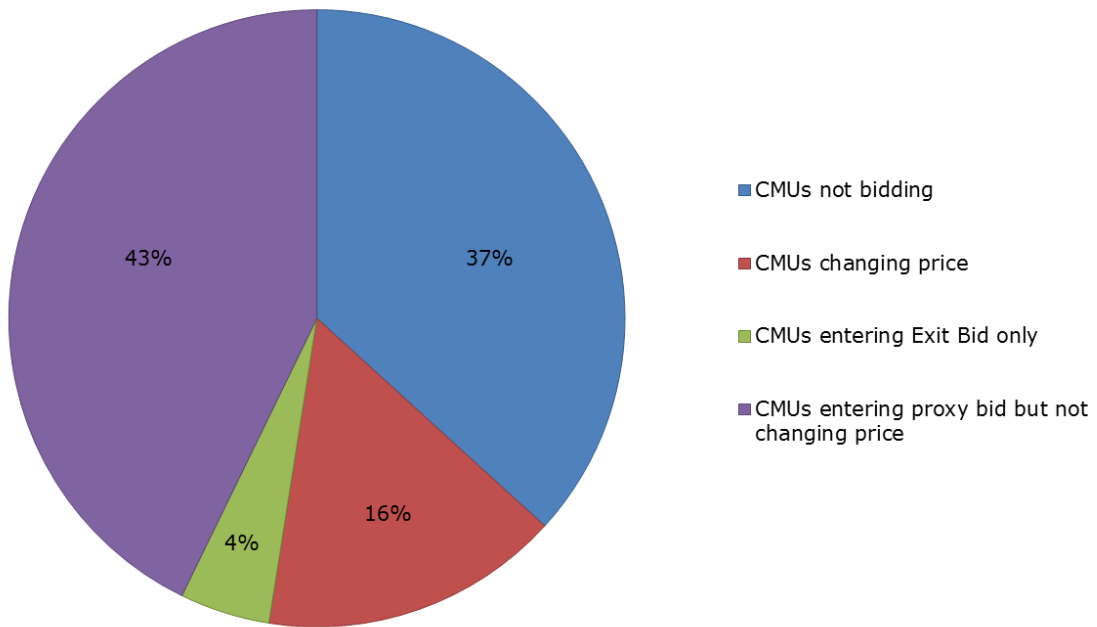
Our monitoring

- 7.4. 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.
- 7.5. Some of the key themes and trends from this year's auction are summarised below.

Summary of bidding behaviour in the 2015 T-4 Auction

- 7.6. Looking at the 2015 T-4 Auction data, 37% of CMUs did not place any bids during the auction. A further 18 CMUs placed only an exit bid (around 4% of the total). The remaining CMUs either changed the price of their bid (60 CMUs, equivalent to around 16% of the total CMUs participating in the 2015 T-4 auction), or entered a proxy bid but did not change the price (around 43% of all CMUs in the auction).

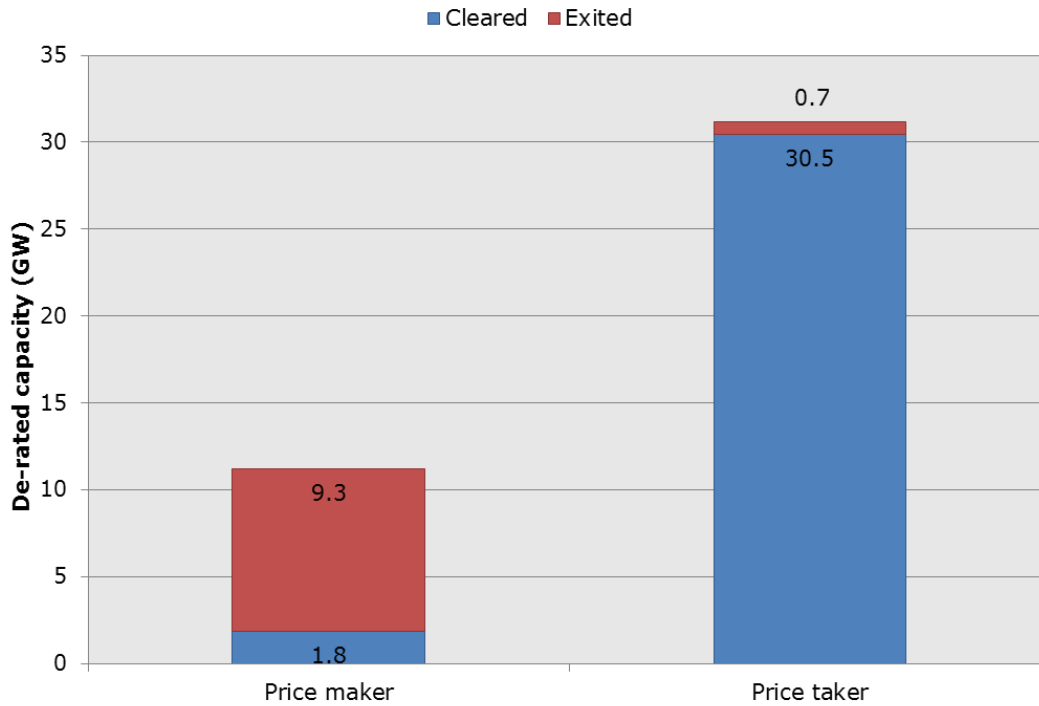
Figure 34 – Bidding approaches for CMUs



Price Makers and Takers

7.7. Looking at all price maker CMUs by de-rated capacity participating in the 2015 T-4 Auction, the majority of capacity (approximately 84%) exited the auction without an agreement (Figure 35). Around 42% of existing CMUs that had signed a Price Maker Memorandum (enabling them to bid above £25/kW) cleared the auction.

Figure 35 – Cleared and exited capacity by Existing Price Makers and Price Takers in the 2015 T-4 Capacity Market Auction



7.8. Overall, the bidding behaviour in the 2015 T-4 Capacity Market Auction did not significantly differ from the 2014 T-4 Auction. A substantial proportion of auction participants placed an exit bid without amending the price. The majority of price makers that entered the auction failed to secure an agreement, whilst most price takers secured an agreement.