

Capacity Market Auction Guidelines

2023 four year ahead Capacity Market Auction (T-4)

Delivery year 2027/28

January 2024

V1.00

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Capacity Market Auction Guidelines

These Capacity Market Auction Guidelines must be used in conjunction with the Electricity Capacity Regulations 2014 (with subsequent amendments) and Capacity Market Rules 2014 (with subsequent amendments); failure to do so may result in unsuccessful Prequalification or failure to gain a Capacity Agreement in the Capacity Auction.

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In the past the Auction User Guide and Capacity Market Auction Guidelines have been published as two separate documents. This Capacity Auction Guidelines document is an amalgamation of those two documents.

Executive summary

The Electricity Capacity Regulations 2014 (“the Regulations”) and the Capacity Market Rules 2014 (“the Rules”), both as amended, oblige National Grid Electricity System Operator Limited in its role as Delivery Body to publish Auction Guidelines. This document has been prepared to discharge that obligation.

The Regulations, the Rules and these Capacity Market Auction Guidelines (Here on in referred to as ‘Auction Guidelines’) set out the requirements for market participants wishing to enter the Capacity Market and for owners of Mandatory CMU’s not wishing to enter the Capacity Market. In addition to these obligatory Auction Guidelines, the Delivery Body has prepared non-statutory user support guides, providing information and training which is referenced in this document.

Capitalised terms used in these Auction Guidelines shall have the meanings given in the Rules.

In accordance with the Regulations and Rules these Auction Guidelines provide the following specific information for the four year ahead Capacity Auction for Delivery Year 2027/28 (T-4).

- The date on which the Capacity Auctions will start
- Instructions on using the EMR Delivery Body Portal and the IT Auction System
- The Auction Parameters determined by the Secretary of State
- The approved De-Rating Factor for each Generating Technology Class, each DSR CMU and each Interconnector CMU
- Contingency arrangements for Auction bidding, in the event of failure of a participant’s access to the system

Other supporting documentation will be provided in the form of:

Pre-Auction Activities guidance – these slide packs were available following Prequalification Results Day and are applicable to all Prequalified CMUs and is available on the [EMR Delivery Body Portal](#). The Pre-Auctions Activities guidance can be found [here](#).

Pre-Auction Activities Guidance videos – there are guidance videos of how to complete the relevant tasks outlined within the Guidance slide pack. These videos are available upon our YouTube Channel [here](#).

Pre-Auction Activities Webinar – the Webinar, produced by the EMR Delivery Body Capacity Market Auction Team, delves into more depth regarding certain Pre-Auction Activities to be completed prior or during the Confirmation of Entry window, as well as providing information regarding the Auction System. The Webinar can be found [here](#).

Auction System User Training - Following the webinar detailing key Auction information including use of the Auction system, EMR DB Delivery Body hosted a training session where successful applicants could use the Auction system in a sandbox environment. The session was advertised on the 22nd November 2022 via the latest news items in the portal and delivered on the 18th January 2023.

This Auction system will be accessed via the [EMR Delivery Body Portal](#) once the Confirmation of Entry Window Closes. Please use the associated [Pre-Auction Activities Guidance 06](#) – Accessing User Credentials for the Auction System to do so.

All Auction Participants please be aware:

We have been instructed by the Secretary of State that, if the Remaining Capacity exceeds the Capacity determined by the Demand Curve at the end of the Bidding Round where the Bidding Round Floor Price is £0, the Auction does not clear and no agreements will be issued. We would like to remind Bidders that if an Auction Participant fails to enter a bid, this is interpreted to be a bid at £0 (zero price bid) and would therefore not lead to an agreement should the Auction fail to clear.

1. Auction Data

1.1 Auction Timetable

Table 1 provides the timetable for the four year ahead Capacity Auction for 2027/28 (T-4).

Table 1. Auction timetable

Auction	T-4
Prequalification Submission Window opens	26/07/2023
Prequalification Submission Window closes	19/09/2023
Prequalification Results Day	31/10/2023
Prequalification Results Day – Post disputes	28/11/2023
Notification of Prequalified CMUs pursuant to Rule 5.5.10(b) and associated update of affected Auction Parameters	T-3 weeks 06/02/2024
Notification of updated Auction Parameters and confirmation of the conditional Prequalified Applicants which have fully Prequalified pursuant to Rule 4.6.3	T-3 weeks 06/02/2024
Confirmation of Entry and decisions under Rules 5.5.11, 5.5.13 and 5.5.14 notified to DB	T-15 to T-10 06/02/2024 – 13/02/2024
Mock Auction – users' login, check CMU details, run through a scripted Auction in readiness for live Auction	T-8 days 15/02/2024
Auction start (T)	27/02/2024

1.2 Auction Parameters

The Auction Parameters for each Capacity Market Auction are determined by the Secretary of State, informed by analysis undertaken by National Grid ESO. The Secretary of State has specified the quantity of Capacity required at certain prices during the Auction. These parameters are given in **Table 2**.

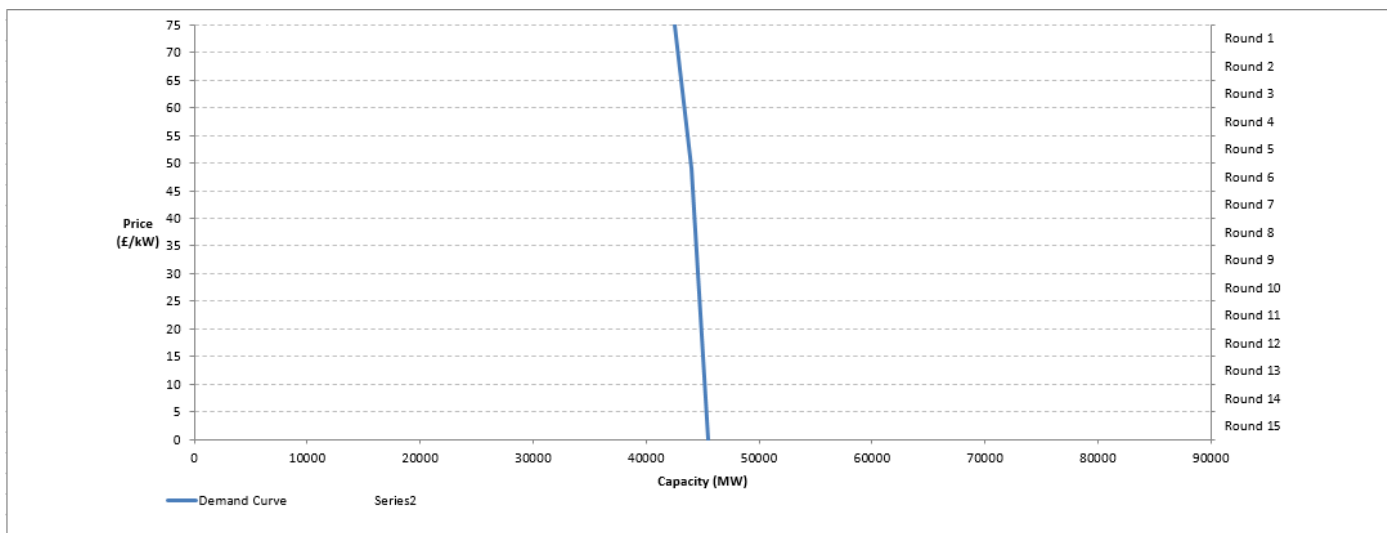
Table 2. Auctions Parameters

Auction	T-4
Target Capacity	44.0 GW
Demand curve coordinate – volume at price cap	42.5 GW
Demand curve coordinate – volume at £0/kW	45.5 GW
Reliability Standard	3 hours LOLE
Price cap	£75 /kW/year
Net CONE	£49 /kW/year
Price Taker Threshold	£25 /kW/year
15 Year Minimum £/kW Threshold	£325/kW (De-rated Capacity)
3 Year Minimum £/kW Threshold	£165/kW (De-rated Capacity)
Indexation base period	2022/23**
Round price decrement	£5

The Demand Curve (**Figure 1a** below) demonstrates the Capacity sought for the T-4 Capacity Auction as a function of price. The Demand Curve captures the trade-off between cost of Capacity and security of supply. The gradient of the Demand Curve is such that more Capacity is procured as the price descends. The key coordinates for this are supplied by the Secretary of State.

** Base Period for Indexation: October 2022/April 2023 inclusive

Figure 1a. T-4 Auction Demand Curve



1.3 De-rating Factors

The De-Rating Factor for each Generating Technology Class and DSR have been calculated in accordance with the methodology in Rule 2.3.5. and are explained in more detail within the [Electricity Capacity Report \(ECR\)](#). These factors are set out in **Table 3**.

The interconnector De-rating methodology is detailed in the Secretary of State (SoS) Confirmation of Capacity Auction Parameters published 18th of July, the same date as ECR/AG is published. Please note that the De-Rating Factors for Secondary Trading Entrants applying for the Delivery Year 2024/25 will be the T-1 2024/25 Auction De-Rating Factors.

Table 3. De-Rating Factors by Generating Technology Class

Name for Technology Class	Plant Types Included	De-rating factors T-4 (%)
Oil-fired steam generators	Conventional steam generators using fuel oil	94.35
Open Cycle Gas Turbine (OCGT)	Gas turbines running in open cycle fired mode	94.35
Reciprocating engines ¹	Gas turbines running in open cycle fired mode Reciprocating engines not used for auto generation	94.35
Nuclear	Nuclear plants generating electricity	78.00
Hydro (excluding tidal / waves / ocean currents/ geothermal / storage)	Generating Units driven by water, other than such units: (a) driven by tidal flows, waves, ocean currents or geothermal sources; or (b) which form part of a Storage Facility	91.20
Storage	Conversion of imported electricity into a form of energy which can be stored, the storing of the energy which has been so converted and the re-conversion of the stored energy into electrical energy	Storage Duration: 0.5h 03.87
		Storage Duration: 1h 07.74
		Storage Duration: 1.5h 11.52
		Storage Duration: 2h 15.39
		Storage Duration: 2.5h 19.26
		Storage Duration: 3h 23.04
		Storage Duration: 3.5h 26.91
	Storage Duration: 4h 30.78	

¹ There is no Transmission connected data for these technologies (in accordance with 2.3 of Capacity market rules) the de-rating is based on the closest transmission technology. (Biomass and EFW comes from coal, Reciprocating comes from OCGT)
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	Storage Duration: 4.5h	34.65
	Storage Duration: 5.0h	38.43
	Storage Duration: 5.5h	42.12
	Storage Duration: 6h	45.80
	Storage Duration: 6.5h	49.49
	Storage Duration: 7h	53.08
	Storage Duration: 7.5h	56.77
	Storage Duration: 8h	60.36
	Storage Duration: 8.5h	63.86
	Storage Duration: 9h	94.37
	Storage Duration: 9.5h+	94.37
Combined Cycle Gas Turbine (CCGT)	Combined Cycle Gas Turbine plants	91.59
Combined Heat and Power (CHP)	Combined heat and Power plants (large and small-scale)	91.59
Biomass ²	Conventional steam generators using biomass	88.52
Energy from Waste ²	Generation of energy from waste, including the generation of energy from: (a) conventional steam generators using waste; (b) anaerobic digestion; (c) pyrolysis; and (d) gasification	88.52
DSR	Demand Side Response	79.02
Intermittent Renewable Technologies	Onshore Wind	07.03
	Offshore Wind	08.69
	Solar PV	06.35
Interconnectors	IFA (France)	59.00
	IFA2 (France)	60.00
	Eleclink (France)	64.00
	BritNED (Netherlands)	61.00
	Greenlink (Republic of Ireland)	54.00
	Moyle (Northern Ireland)	54.00
	EWIC (Republic of Ireland)	54.00
	NemoLink (Belgium)	64.00
	NSL (Norway)	83.00
VikingLink (Denmark)	55.00	

² There is no Transmission connected data for these technologies (in accordance with 2.3 of Capacity Market Rules) the de-rating is based on the closest transmission technology. (Biomass and EFW comes from coal, Reciprocating comes from OCGT)

2. Processes

2.1 Prequalification

The EMR Delivery Body uses an online system for Applicants to submit Applications and supporting information for Prequalification. This system can be accessed via the EMR Delivery Body Portal, <https://www.emrdeliverybody.com/cm/home.aspx>.

For Prequalification 2024, a new EMR Delivery Body Portal will be used for Applications. The new [EMR Delivery Body Portal](#) is now open for company registrations. For access to guidance documents and tutorial videos covering Company Registration, Company Management, Company Name and Address Change and User Registration and Management please go to 'Tutorial content and guides' under 'Support Documentation' on the EMR Delivery Body Portal webpage.

2.1.1 Prequalification guidance

Applicants can find an overview on the Prequalification process and requirements in the [Capacity Market Prequalification guidance document](#), which contains information such as:

- Instructions on how to use the EMR Delivery Body Portal for Prequalification activities
- How to Register and how to complete security and identity checks for all individuals that require access to the EMR Delivery Body Portal System
- Where to access the required forms to be completed by Applicants as part of the Prequalification process
- Required file formats for the uploading of any supporting documentation

2.1.2 Capacity Market Operational Plan

The [Capacity Market Operational Plan](#) identifies the key milestones and activities required to deliver the Capacity Market Auctions in 2023. The timeline for operation of the 2023/24 Capacity Market is based on the Capacity Market Regulations and Rules and covers the T-1 and T-4 Auctions.

2.2 Capacity Market Register

The Capacity Market Register for each individual Auction can be accessed on the [EMR Delivery Body website](#).

2.3 Notifications

All notifications from Applicants should be submitted to the EMR Delivery Body through the EMR Delivery Body Portal. Applicants are required to first Register in order to use the EMR Delivery Body Portal before notifications can be issued and received.

2.3.1 Prequalification results

The EMR Delivery Body provides notification to each Applicant, who submitted an Application, informing them if they are successful or otherwise by 5pm on Prequalification Results Day.

3. Auction

3.1 What is the Auction?

The Capacity Market Auction is the competitive process to award Capacity Market Agreements to try and meet the target Capacity for the relevant Delivery Year. Capacity Market Units (CMUs) which have been Prequalified and if required confirm their entry will enter into the Auction.

Table 4 indicates the relevant start dates of each Capacity Market Auction scheduled, including the relevant start times. The Auction will continue until it clears or the end of the final round is reached and the Auction has not cleared (see bold paragraph), this must be within 2 working days of Auction commencement.

The Capacity Auction is a descending clock Auction (also known as “pay as clear” or “Dutch Auction”), where Bidders withdraw Capacity as the price drops subject to the conditions set out in Chapter 5 of the Rules. This means:

- The Auction starts at a price cap set out in section 1.2 of this document
- The price is reduced in each round by a set decrement
- Bids must be placed in fixed windows
- Participants must submit an Exit Bid to leave the Auction
- The Exit Bid is the minimum price at which you would accept a Capacity Agreement
- The Auction clears when the Capacity that remains in the Auction is less than Capacity sought

All successful CMUs receive the same Agreement price (the clearing price). The Auction will start at the Price Cap indicated in **Table 2** and will have the price decrement also indicated in **Table 2**. **Table 4** indicates how the Auction is structured in terms of the rounds, an Auction table is provided in [Appendix A](#) of this document. The Auction will continue as scheduled over the two days until a “Clearing Round” is reached whereby at the end of the round the supplied Capacity is less than the Capacity demanded. At the end of this round the Clearing Price will be calculated, anyone still in the Auction below the Clearing price will be eligible for an Agreement.

Provisional Capacity Auction results are notified to Bidders within 24 hours of the Capacity Auction clearing. Results are published on the EMR Delivery Body Portal, and the Capacity Market Register updated, within 8 working days of the results, subject to Rule 5.10.6.

EMR Delivery Body has been instructed by the Secretary of State that, if the Remaining Capacity exceeds the Capacity determined by the Demand Curve at the end of the Bidding Round where the Bidding Round Floor Price is £0, the Auction does not clear and no agreements will be issued. We would like to remind Bidders that if an Auction Participant fails to enter a bid, this is interpreted to be a bid at £0 (zero price bid) and would therefore not lead to an agreement should the Auction fail to clear.

The T-4 Auction will be a Non-Variable Price Duration Auction. All successful Bidders receive the Clearing Price. **Table 4** below sets out further information pertaining to each Auction.

Table 4. Auction specific summary information

Parameters	T-4
Non-Variable or Variable Price-Duration Auction	Non-Variable Price Duration Auction
Bidding round price spread	£5/kW/year per round
Auction start time	27/02/2024 09:00
First bidding round (of both days) duration	60 mins
Bidding round duration thereafter	30 mins
Time between rounds (recess)	15 mins
Number of Auction rounds per day	Day 1 - 10 rounds Day 2- 5 rounds
Number of Auction days planned	2 days

The Auction System is an online system, accessed by standard web browsers. Prequalified Applicants will be provided with access details to allow them to enter via the EMR Delivery Body Portal. Within the IT Auction System, bidders will be able to enter and modify their exit bids and eligible bidders will be able to change their agreement length by entering data directly on the online system.

Training to use the system, including placing Exit Bids, will be available in advance of system go-live. Training took place on the 17th January 2024 and included a Bidder Manual, Screen Casts and User Trials. The Mock Auction on the 15th February 2024 will be the next opportunity to use the Auction system.

Table 5 summarises the activities participants must carry out during T-15 to T-10 window for the T-4 Auction. More details and guidance will be available closer to the time.

Table 5. Summary of activities for participants to carry out prior to Auction

Activity	Task	System to use
Bidder setup	Amend bidding groups	EMR Delivery Body Portal
	Setup Authorised Individuals for bidding (Minimum recommendation of 2 AI's/ Maximum per Bidding Group of 4)	
Confirmation of Entry	Existing CMUs: check Price Maker/Taker status	EMR Delivery Body Portal
	New Build/Refurbishing CMUs: to check length of agreement and Confirm Entry	
	DSR CMUs: check Capacity, Agreement Length and Confirm Entry	
Mock Auction	Login to Auction System and check CMU details	The Auction System
	Participate in Mock Auction	
Live Auction	Participate in Auction	

3.2 Bidding Company and Authorised Individual management

Bidding Companies will be automatically created in the EMR Delivery Body Portal for each participant who has been prequalified or conditionally pre-qualified for the relevant Auctions. These will be created at sub company level. If the participant only has one company, the Bidding Company will be at the main company level.

Main Admin users of the main/sub company will be the default Authorised Individuals (AI's) for access to the Auction System. **A minimum of 2 Authorised Individuals is recommended by the EMR Delivery Body**, however Bidding Companies are able to have a maximum of 4. Please refer to [the Pre-Auction Activities guidance document](#) for managing Bidding Company and Authorised Individuals.

3.3 Contingency Bidding Arrangements

This section describes the backup systems referred to in Rule 5.5.21 and which are to be utilised in the circumstances where a Bidder is unable to submit a Duration Bid Amendment or Exit Bid through the IT Auction System due to a technical fault in their connection to the system. In such circumstances the Auctioneer can place bids on behalf of Authorised Individuals (AI's) by telephone. AI's are the named users registered to bid Prequalified CMUs. This is only available as a contingency arrangement for loss of systems.

The procedure for placing bids by telephone will be as follows:

- The AI is unable to place bids on IT Auction System
- The AI contacts EMR Delivery Body Capacity Market Auction Team via the Bidder Support phone
- Using a pre-defined unique code, the identity of the bidder is confirmed by the EMR Delivery Body Capacity Market Auction Manager
- The AI requests the EMR Delivery Body Capacity Market Auction Manager to place a bid in that round
- The EMR Delivery Body Capacity Market Auction Manager enters the bid in the Auction system on behalf of the bidding company and confirms, in the call the value entered
- All telephone calls will be recorded and a confirmation receipt can be requested
- The placing of the bid on the Auction system on behalf of the Bidding Company will be shown in the audit log

Note: It is recommended that the identity verification codes (instructions in the user guide for the Auction system) are printed off and retained by participants before the Auction starts as they would be needed for the Auctioneer to authenticate the caller in the event of IT failure or disaster recovery. Telephone instructions cannot be actioned unless the caller can provide the relevant unique identification code.

3.4 Auction Monitor

In accordance with Rule 5.14 the EMR Delivery Body must appoint a third party to monitor the conduct of each Capacity Auction (an "Auction Monitor"). The Auction Monitor must carry out the role as described in the Rules.

The Auction Monitor must report to the Secretary of State, with a copy to the Authority, within 2 Working Days of the conclusion of the Capacity Market Auction on whether the procedures in the Capacity Market Rules and Auction Guidelines have been properly followed in the conduct of the Capacity Market Auction. The identity of the Auction Monitor is Deloitte for the T-4 Capacity Auction.

3.5 Reporting of Results

3.5.1 Intra-Round reporting

In accordance with Rule 5.5.18; prior to the start of each round the high-level previous rounds results will be made publicly available. This will include the Bidding Round Price Spread, Potential Clearing Capacity at the price floor for that round, Excess Capacity rounded to 1GW for the T-4 Auction.

The EMR Delivery Body Portal is used to display these round updates.

3.5.2 Detail around the Auction reporting following the clearing round

To allow participants the opportunity to prepare for the release of results, the below describes the timeline and process which differs depending on the round that clears.

On the day that the Auction clears, the provisional results will be published after markets have closed:

- EMR Delivery Body publishes on EMR Delivery Body Portal the Clearing Round price range within the cleared round recess.
- EMR Delivery Body sends the individual Provisional Results to bidders via the Auction system by 19:30 and also publishes the Clearing Price on the EMR Delivery Portal.
- EMR Delivery Body will endeavour to upload the full provisional report to EMR Delivery Body Portal around 19:00.

The EMR Delivery Body must within 24 hours of the Capacity Market Auction clearing notify Bidders whether, based on the Provisional Results, they have been provisionally awarded a Capacity Agreement with respect to a Bidding CMU. Such notification is provisional only and does not constitute notification of a Capacity Agreement.

3.5.3 Final results

The Auction Monitor will send a report to the Secretary of State (and copy to Ofgem) with their findings within 2 working days following the Capacity Market Auction and unless instructed otherwise at 8 working days after the Auction the EMR Delivery Body publishes the final results to Bidders (this becomes the 'Auction Results Day'). The results are final when they have been entered into the Capacity Market Register. Within 8 working days of the Auction Results Day the EMR Delivery Body notifies each bidding CMU whether or not they have been awarded a Capacity Agreement.

3.6 What happens during the Capacity Market Auction?

The Capacity Market Auction is held on a web platform and can only be accessed by the Bidders selected in advance by each Applicant. Please refer to Auction System User Manual (link will be available on the appropriate date) and in the online tutorials for more information on how to use the Auction System.

3.6.1 Start of the Capacity Market Auction

When the Capacity Market Auction starts, each Bidder will see their CMUs, the agreement lengths and the capacities as specified in advance of the Capacity Market Auction. Bidders are also strongly advised to print a copy of their Offline Verification Codes. These will be required if the Bidder needs to contact the Auctioneer via telephone. The Auctioneer will not be able to provide any assistance without first verifying the Offline Verification Code.

3.6.2 During Bidding Rounds

During Bidding Rounds, participants will have the opportunity to:

- Submit Exit Bids that take effect in that Bidding Round
- Submit Exit Bids to take effect in a later round (a Proxy Bid)
- Amend or delete any Exit Bids

A Bidder must place an Exit Bid to exit the Capacity Market Auction. If bidders do not place an Exit Bid, they will remain in the Capacity Market Auction and will be awarded an agreement, unless the Auction does not clear.

The minimum price specified by the Applicant at which they would seek an agreement is known in the Auction as an Exit Bid. Price Makers can submit Exit Bids at any price in the Capacity Market Auction.

3.6.3 Price Maker CMUs

A CMU's status as a Price Maker will have been confirmed in either the Applicant's notification of Prequalification Results; their notification of a Reconsidered Decision following a Tier 1 Appeal; or via notification from the EMR Delivery Body (if an Applicant subsequently provided a Price-Maker Memorandum and Certificate).

A Price Maker CMU is able to specify an Exit Bid at any price at or below the Price Cap in the Capacity Market Auction, and bids that have not yet been realised can be revised within rounds. If the Capacity Market Auction continues past the round for which the Exit Bid was made, the CMU will be out of the Capacity Market Auction and if that round is not the Clearing Round then the CMU will not get a Capacity Agreement. If that round is the Clearing Round then the Exit Bid will be deemed a Relevant Exit Bid and will be considered in the clearing calculation.

If a Bidder does not enter an Exit Bid, they will receive a Capacity Agreement at the Clearing Price, subject to tie break rules.

3.6.4 End of Bidding Round

At the end of each round, the Bidding window will close at which time bids will no longer be able to be amended or placed. During the recess, if the Capacity Market Auction continues, then the Auctioneer will post the results of the round that has just closed and announce the next bidding round.

3.6.5 Start of a new Bidding Round

The excess Capacity at the start of the Bidding Round will be announced during the recess before the start of the next Bidding Round. The Auctioneer will announce the Capacity required in line with the published Demand Curve. The next round will then be opened for Bidders in line with the Capacity Market Auction schedule (See Appendix A).

In accordance with the Rules the excess Capacity is rounded to the nearest 1GW in the Capacity Market Auction. For example, if the excess Capacity is 1500.000MW, the bidders will see an excess Capacity of 2GW stated. If the excess is 1499.999MW, the bidders would see an excess of 1GW stated.

3.6.6 End of the Capacity Market Auction

Once the Clearing Round has been identified there will be no further rounds and the Capacity Market Auction will remain in recess. Within 24 hours Bidders will be notified of the Provisional Results for their CMUs via the Capacity Market Auction System (discharging EMR Delivery Body obligations under Rule 5.10.1). This will specify the Clearing Price, which of a Bidder's CMU have been awarded an agreement and what the Capacity and duration of the agreement is. For the avoidance of doubt, you will only see provisional results for your own CMUs.

3.7 How and when does the Capacity Market Auction finish?

In the Clearing Round, the Capacity Market Auction will finish when there is more Capacity demanded than supplied at the end of the Bidding round.

3.7.1 Capacity Market Auction Clearing

If a completed round is identified as the Clearing Round, then all the CMUs that have not been subject to an Exit Bid above the Clearing Round price floor will be eligible for an agreement. In addition to these units, the Auction System will also identify CMUs (if any) that submitted an Exit Bid in the Clearing Round are also eligible for an Agreement. In doing so, this will determine what the Clearing Price of the Auction is.

An Exit Bid which is made in the Clearing Round is known as a Relevant Exit Bid. Relevant Exit Bids are ranked by the following methodology and order

1. Price (lowest to highest)
2. Capacity Offered (highest to lowest)
3. Duration of Agreement (lowest to highest)
4. Lottery via a random number (lowest to highest)

Table 6 demonstrates this Exit Bid ranking. In the event of a tie break, the system will use this hierarchy to decide who is eligible for an agreement. In the example shown in **Table 6**, CMU 5 is not eligible for an agreement using this methodology.

Table 6. Exit Bid ranking example sorting bids by price, Capacity, duration and then via lottery

Rank	CMU	Exit Bid	Capacity	Duration	Lottery
1	CMU 1	£6	100	3	5
2	CMU 2	£7	105	3	4
3	CMU 3	£7	100	1	3
4	CMU 4	£7	100	3	1
5	CMU 5	£7	100	3	2

When the Capacity Market Auction clears, there are two possible scenarios. The Capacity Market Auction System will first check if there has been an Exact Match between the Capacity supplied and the Capacity demanded at a particular price within the round. If there has not been an Exact Match, it will assess if over-procuring or under-

procuring Capacity would be most economically beneficial for the consumer. This is calculated using the Net Welfare Algorithm (NWA).

Once the Clearing Round has been identified, the system will determine if the Capacity Market Auction has cleared via an Exact Match, or if it needs to apply the Net Welfare Algorithm. To establish how the Capacity Market Auction has cleared, the system will first calculate the Capacity remaining at the end of the Clearing Round (the total Capacity of all CMUs that have not exited the Auction at this point).

In the scenario where Capacity Market Rule 5.9.4A would apply, the Net Welfare Algorithm will be switched off and clearing will be based on Capacity Market Rules 5.9.4A(i), 5.9.4A(ii) and 5.9.4A(iii). For (i), this is where the Clearing Capacity is met exactly by ranking the Exit Bids. For (ii), clearing will take place of the lowest ranking Exit Bid where the Potential Clearing Capacity is not exceeded. For (iii), the clearing price will be the Price Floor for the clearing round if no Relevant Exit Bid in (ii) is determined.

Capacity Market Rule 5.9.4A applies in respect to a T-1 Capacity Auction in which the Target Capacity is adjusted by the Secretary of State under Regulation 13(1), and following that adjustment, the Target Capacity is equal to 50% of the T-1 Auction Set Aside previously determined under Regulation 12(A)(b) for that T-1 Auction and Delivery Year. The Auction will clear aligning with CM Rule 5.9.4A(i), 5.9.4A(ii) and 5.9.4A(iii).

3.7.2 Exact Match

After the system has calculated the Capacity remaining at the end of the Clearing Round, it will then work backwards up the supply curve to add back the Relevant Exit Bids in order from the highest ranked to the lowest ranked in order to determine if it can establish a point on the supply curve that exactly meets a point on the Demand Curve (**Figure 2**)

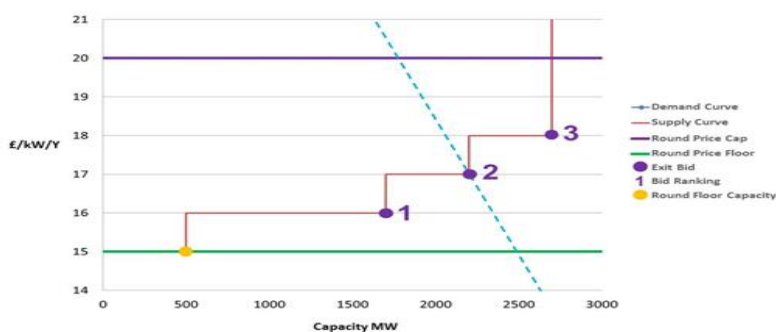


Figure 2. An example of a Clearing Round where there is an exact match.

The starting point for the calculation is represented by the orange dot on the supply curve at the Clearing Round price floor (which is equal to the total Capacity of all continuing CMUs at the price floor) in **Figure 2**. Bid 1 is the highest ranked whilst bid 3 is the lowest ranked. The highest ranked bid is added back first, which takes us to point 1 on the supply curve. This is not a point on the Demand Curve so we have not established an exact match. Relevant Exit Bids continue to be added back until either an Exact Match has been identified, or until we have reached a point where the supply curve has crossed the Demand Curve and no exact match has been found. In the example shown in **Figure 2**, the second Relevant Exit Bid which is added back (point 2) takes us to a point on the supply curve which is also a point on the Demand Curve and therefore an Exact Match has been established.

In an Exact Match clearing scenario, the Relevant Exit Bid which caused the exact match would set the Clearing Price and Capacity. This means all CMUs which were still in the Capacity Market Auction at the end of the Clearing Round, including all CMUs with Relevant Exit Bids ranked higher than the CMU that caused the exact match (along with the CMU that caused the exact match) would all be eligible for a Capacity agreement. CMUs that have a lower Exit Ranking than the CMU which caused clearing e.g. the CMU that exited at point 3) together with all CMUs which had exited in a previous round would not be eligible for a Capacity Agreement.

3.7.3 Net Welfare Algorithm

In reality it is unlikely the Capacity Market Auction will clear via an Exact Match since the supply curve and the Demand Curve would need to match to the exact kW. Therefore, the Clearing Price and Capacity is likely to be determined by the Net Welfare Algorithm.

The purpose of the Net Welfare Algorithm is to establish where the Capacity Market Auction should clear when there is not an exact match. This is completed by comparing the nearest points of supply on either side of the Demand Curve to determine which point is most beneficial to the consumer.

The Net Welfare Algorithm is defined in the Capacity Market Rules as shown in **Figure 3**.

For the purposes of Rule 5.9.4(c) the Auctioneer must calculate the integral

$$\int_{Ql}^{Qh} P(Q)dQ$$

and subtract the product of

$$(PhQh - QlPl)$$

Figure 3. The Net Welfare Algorithm used to assess whether over-procurement or under-procurement of Capacity would be economically beneficial for the consumer in the event there are tied bids.

In order to calculate the Net Welfare Algorithm, we first need to determine the values of the inputs into the clearing algorithm, these are shown in **Table 7**.

Table 7. Net Welfare Algorithm inputs and explanations

Net Welfare Algorithm Inputs	Explanation
Pl	Pl is the price of the lowest ranked Relevant Exit Bid that is below the demand curve. If there is no Relevant Exit Bid below the demand curve then Pl is the price at the Clearing Round Floor.
Ql	Ql is the Capacity of all continuing bids, plus the Capacity of all Relevant Exit Bids in the ranking order, up to and including the lowest ranked Relevant Exit Bid that is below the demand curve. If there is no Relevant Exit Bid below the demand curve, then Ql is the Capacity supplied at the Clearing Round Floor.
Ph	Ph is the price of the highest ranked Relevant Exit Bid that is above the demand curve. If there is no Relevant Exit Bid above the Demand Curve then Ph is the price at the Clearing Round Cap.
Qh	Qh is the Capacity of all continuing bids, plus the Capacity of all Relevant Exit Bids in the ranking order, up to and including the highest ranked Relevant Exit Bid that is above the demand curve. If there is no Relevant Exit Bid above the demand curve, then Qh is the Capacity supplied at the Clearing Round Cap.
P(Q)	Represents the Demand Curve as specified by the Secretary of State (price as a function of quantity)

To find these inputs we use the same starting point as when calculating an exact match. On this occasion, we are looking to identify the closest Relevant Exit Bids on the supply curve that fall either side of the Demand Curve. In **Figure 4** the Relevant Exit Bids ranked 1 & 2 would be used to identify these input values, with the lowest ranked bid below the Demand Curve (Bid 1) setting Ql/Pl and the highest ranked bid above the Demand Curve (Bid 2) setting Qh/Ph.

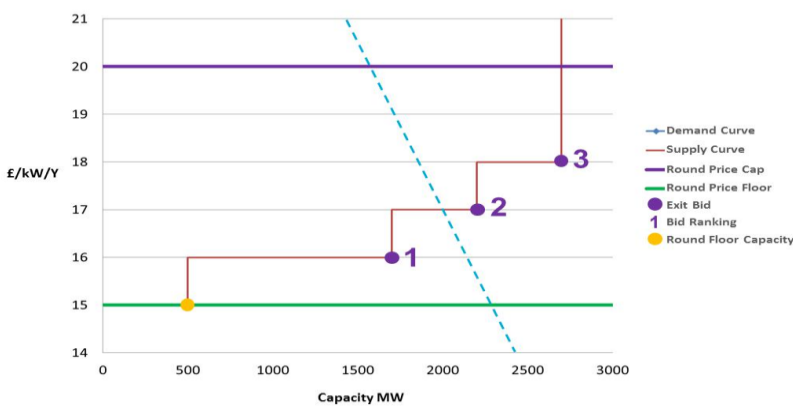


Figure 4. Tied bids scenario where use of the Net Welfare Algorithm is required.

Please note that in some scenarios there may not be a Relevant Exit Bid below and/or above the Demand Curve. If there are no Relevant Exit Bids below the Demand Curve, then Ql/Pl will be taken from the point where the supply curve crosses the bidding round floor price. Equally if there are no bids above the Demand Curve, then Qh/Ph will be the point where the supply curve crosses the bidding round cap price.

Once the inputs into the Net Welfare Algorithm have been established, we can then calculate at which point the Capacity Market Auction should clear at. The first step is to calculate the integral of the Demand Curve between Ql and Qh (this is the area under the Demand Curve between the two points specified), a calculation that represents the extra benefit for the consumer in clearing the Capacity Market Auction at the higher quantity (Qh) rather than the at the lower quantity (Ql). The red shaded area in **Figure 5 (below)** shows the result of the integral calculation between bid 1 and 2.

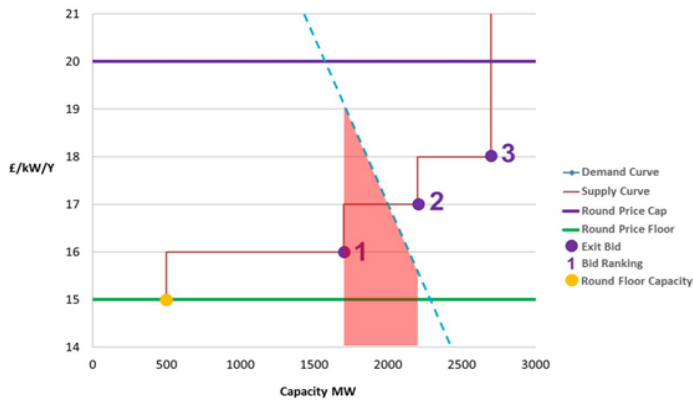


Figure 5. Tied bids scenario where use of the Net Welfare Algorithm is required with area below demand curve highlighted.

Once we have established the extra benefit of the higher Capacity to the consumer, we must then calculate the additional cost of procuring the higher level of Capacity, in order to see if the benefit outweighs the cost. To do this we calculate the total cost of procuring the higher amount of Capacity (PhQh) and subtract the total cost of procuring the lower amount of Capacity (QlPl). The result of this calculation gives us the extra cost associated with procuring Qh rather than Ql. This is represented graphically by the blue shaded area in **Figure 6**.

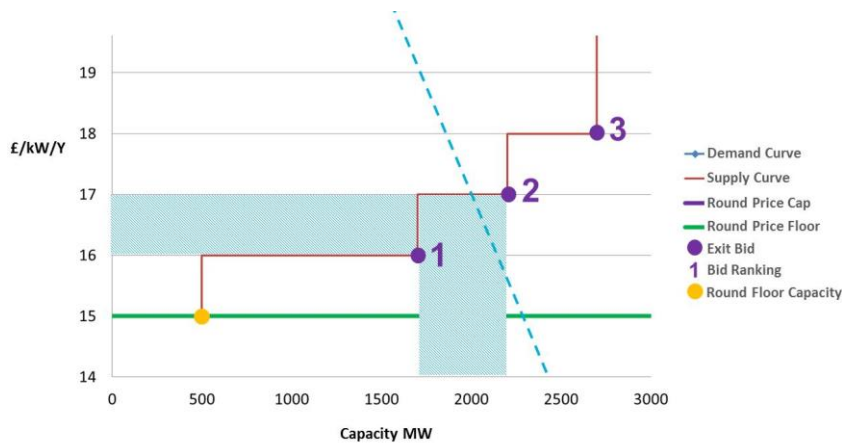


Figure 6. Tied bids scenario where use of the Net Welfare Algorithm is required with total cost of procuring the higher amount of Capacity (PhQh) minus the total cost of procuring the lower amount of Capacity (QlPl) highlighted in blue.

Finally, to determine the outcome of the Net Welfare Algorithm, the product of (PhQh – QlPl) must be subtracted from the integral calculation. If the result of the Net Welfare Algorithm is positive, this means the benefit of procuring Qh outweighs the additional cost and the Capacity Market Auction clears at a Capacity of Qh and a price of Ph. Otherwise, if the result is not positive, then the benefit does not outweigh the cost and the Capacity Market Auction would clear at a Capacity of Ql and a price of Pl.

In this scenario, all CMUs still in the Capacity Market Auction at the end of the Clearing Round, including all CMUs in the exit ranking (up to including the CMU that sets clearing) would be eligible for an agreement.

As previously mentioned, in some scenarios there may not be a Relevant Exit Bid below and/or above the Demand Curve. In such a scenario if the Net Welfare Algorithm results in selecting Ql/Pl at the Clearing Round floor, then all CMUs that remain in the Auction at the end of the clearing round would be eligible for an agreement. Similarly, if the Net Welfare Algorithm results in selecting Qh/Ph, and this is at the Clearing Round cap, then all CMUs who were still in the Auction at the start of clearing round would be eligible for an agreement.

As mentioned previously in 3.7.1 above, in the scenario where Capacity Market Rule 5.9.4A would apply, the Net Welfare Algorithm will be switched off and clearing will be based on Capacity Market Rules 5.9.4A(i), 5.9.4A(ii) and 5.9.4A(iii). For (i), this is where the Clearing Capacity is met exactly by ranking the Exit Bids. For (ii), clearing will take place of the lowest ranking Exit Bid where the Potential Clearing Capacity is not exceeded. For (iii), the clearing price will be the Price Floor for the clearing round if no Relevant Exit Bid in (ii) is determined.

Capacity Market Rule 5.9.4A applies in respect to a T-1 Capacity Auction in which the Target Capacity is adjusted by the Secretary of State under Regulation 13(1), and following that adjustment, the Target Capacity is equal to 50% of the T-1 Auction Set Aside previously determined under Regulation 12(A)(b) for that T-1 Auction and Delivery Year. The Auction will clear aligning with CM Rule 5.9.4A(i), 5.9.4A(ii) and 5.9.4A(iii).

4. Important Information

4.1 Offline Verification Codes

The offline verification codes will be used to verify a Bidder's identity for Capacity Market Auction related queries from D-9. These codes will also be necessary for use of the backup bidding procedure during both the mock and the actual Capacity Market Auction. It is strongly advised that all Bidders print these verification codes off from the system at the earliest opportunity as without them you will not be able to make any backup bids via the telephone. Each code can only be used once and are used sequentially. How to find the access codes can be found in the bidder support guide.

4.2 Help During the Capacity Market Auction

If you need require help during the Capacity Market Auction, either submit a message on the Auction System platform, or call **01926 656574**. This number should only be used in the event of a systems failure and to use this line you will need to quote your offline verification codes in order to confirm your identity.

For all queries not specific to the Capacity Market Auction process including general Rule queries, please call the Capacity Market Auction helpline **01926 655300**.

Please be aware that if you exit the Capacity Market Auction by accident there is nothing the Auctioneer can do. Users are therefore advised to submit Exit Bids with care.

5. Frequently Asked Questions (FAQs)

Can I submit my Exit Bids at the start of the Capacity Market Auction?

Yes, providing the Bidding Round is open you can submit an Exit Bid at any time. An Exit Bid that will become active in a later Bidding Round is called a Proxy Bid.

Within my Bidders can I see who has submitted Exit Bids and/or Duration Bid Amendments?

Bidders can see this information within the Capacity Market Auction system. They would find this information in the downloads section called My Exit Bids and Duration Bid Amendments.

Can a Price Maker still get an agreement below the Price Taker Threshold? Can a Price Maker submit an Exit price below the Price Taker Threshold?

A Price Maker is able to submit an Exit Bid at any price between the Price Cap and £0 as such they are entitled to an agreement at a clearing price below the Price Taker Threshold, providing they did not submit an Exit Bid that took effect in an earlier Bidding Round. If a Price Maker exits the Capacity Market Auction above the Price Taker Threshold then they will not be entitled to an agreement if the Capacity Market Auction clears below the threshold.

Can a Price Taker get an agreement above the Price Taker Threshold?

A Price taker will get an agreement above the Price Taker Threshold if the Capacity Market Auction clears above the Price Taker Threshold. Exit Bids for Price Taker CMUs must be at or below the Price Taker Threshold.

If I have a Refurbishing Capacity of 180MW and Pre-Refurbishing Capacity of 150MW what is the Capacity seen by the Auction system, is it 330MW?

When the Refurbishing CMU is in the Capacity Market Auction the system will see a Capacity of 180MW, then when/if you submit a Duration Bid Amendment and switch to the Pre-Refurbishing State, which then takes effect, the system will see 150MW. The Auction system will never combine the Capacity of the two different states.

If I don't get an agreement in the provisional results is it likely that this will change when the results are final?

The provisional results become final following checks from the Auction Monitor and Secretary of State, there will not be a change to the demand.

Appendix A- Auction Timetable

Day 1 T-4 27/28: 27/02/2024	Round Spread (£)	Start Round	End Round	Recess
R1	75-70	09:00	10:00	15mins
R2	70-65	10:15	10:45	15mins
R3	65-60	11:00	11:30	15mins
R4	60-55	11:45	12:15	15mins
R5	55-50	12:30	13:00	15mins
R6	50-45	13:15	13:45	15mins
R7	45-40	14:00	14:30	15mins
R8	40-35	14:45	15:15	15mins
R9	35-30	15:30	16:00	15mins
R10	30-25	16:15	16:45	15mins
Day 2 T-4 27/28: 28/02/2024	Round Spread (£)	Start Round	End Round	Recess
R11	25-20	09:00	10:00	15mins
R12	20-15	10:15	10:45	15mins
R13	15-10	11:00	11:30	15mins
R14	10-5	11:45	12:15	15mins
R15	5-0	12:30	13:00	15mins

Faraday House, Warwick Technology Park,
Gallows Hill, Warwick, CV346DA

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