



Department
of Energy &
Climate Change

Capacity Market Consultation Workshop on DSR, storage and embedded generation

21 November 2013

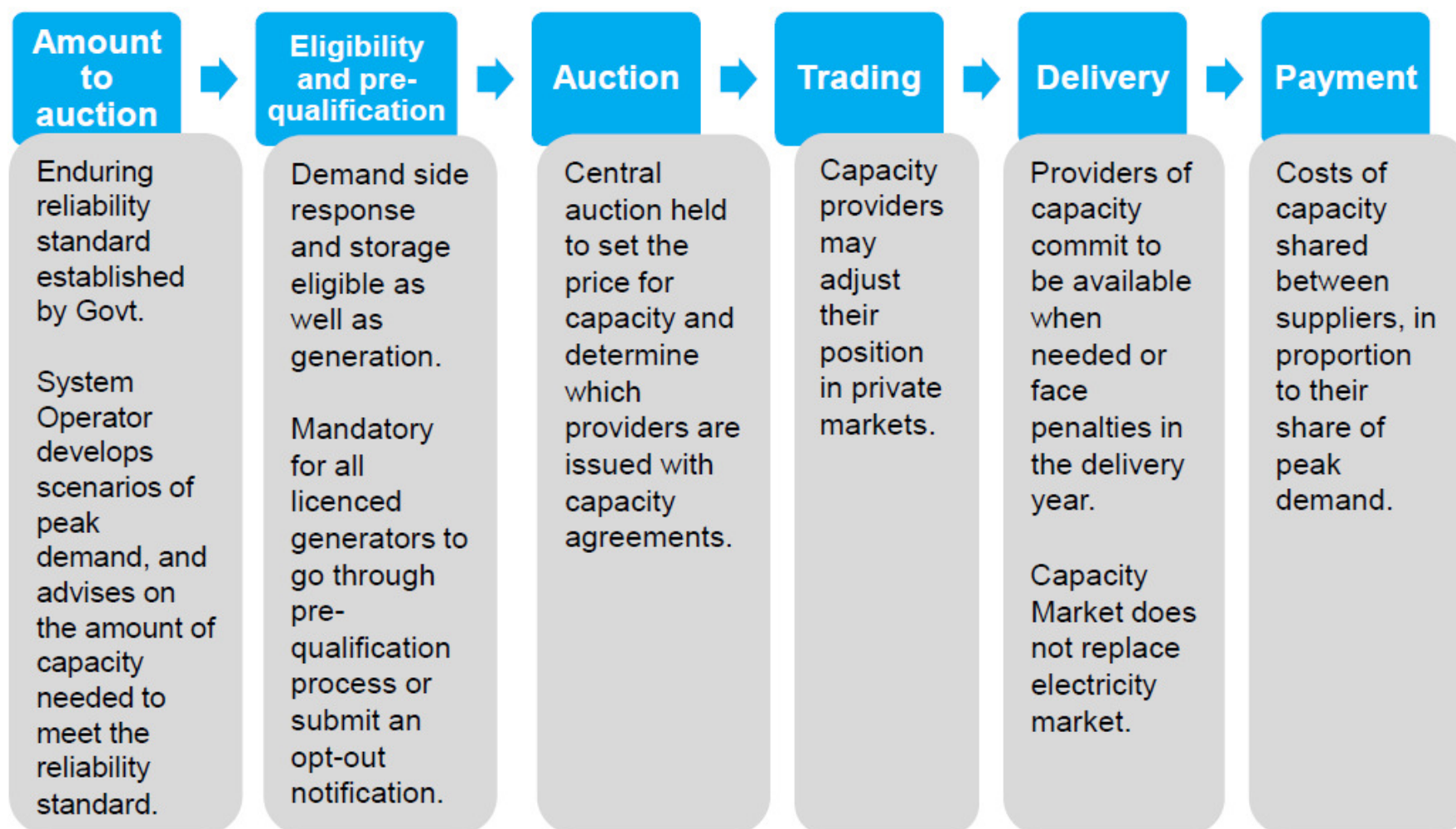


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Introduction

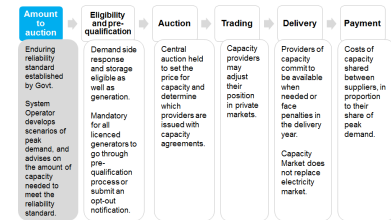


Capacity Market high level design



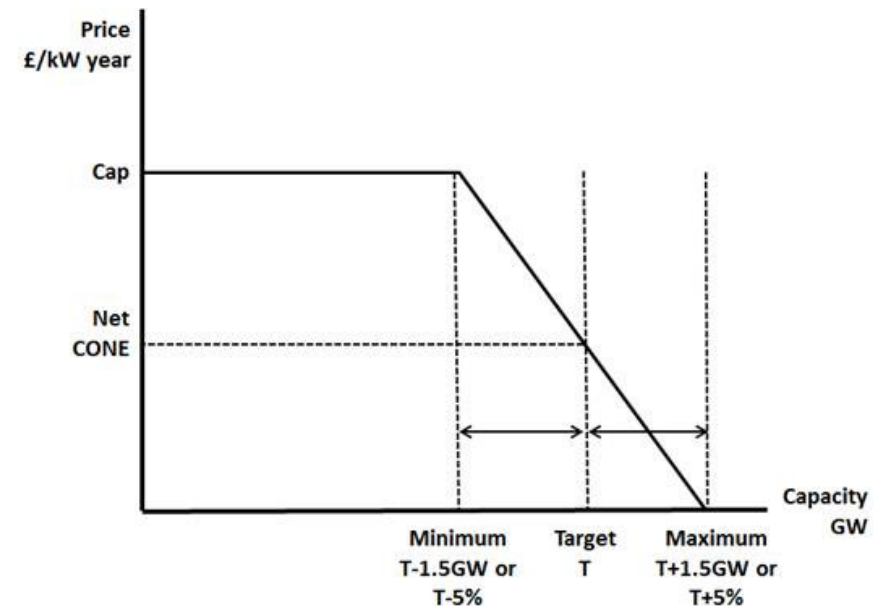


Amount to auction



- The first auction will run in November 2014, for delivery in the winter of 2018/19*
- Ministers will set enduring reliability standard and a method for establishing demand curve
- Demand curve sets target level of capacity to auction, enables cost/reliability trade off and sets maximum price cap for auction
- Annual security of supply analysis by National Grid independently scrutinised
- Ministers will decide final volume of capacity to procure (based on National Grid's advice)
- Quantity required procured through auctions four years ahead and one year ahead of delivery
- Process intended to be as mechanistic as possible, while controlling costs

Illustrative capacity demand curve





Eligibility and pre-qualification



Eligible



- New and existing generation (inc. CHP)
- Demand response (inc. embedded generation)
- Electricity storage

Ineligible

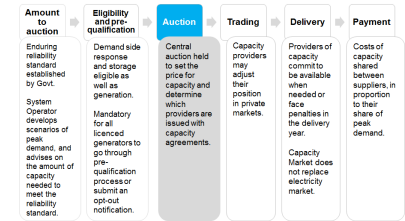


- Capacity receiving low carbon support (e.g. CfD)
- Participants in UK's CCS commercialisation programme
- Interconnected non-GB capacity and interconnectors (for 2014 auction)
- Capacity below 2MW (although may aggregate to qualify)

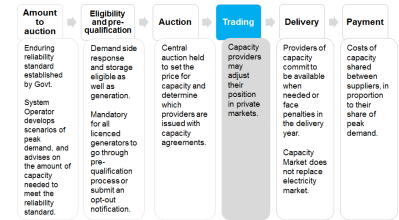
- Pre-qualification stage – confirms eligibility and bidding status of applicants
- All licenced generators must pre-qualify. Demand curve adjusted for such plant which states it will remain operational for the delivery year
- De-rating ranges will be set for each capacity type. Applicants may choose their level of risk by selecting their de-rating factor within the range
- Existing plants wishing to bid above a low threshold must provide justification



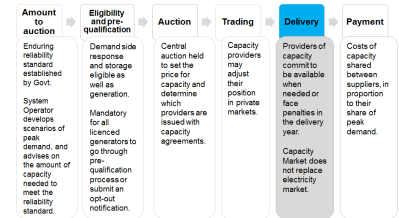
Auction



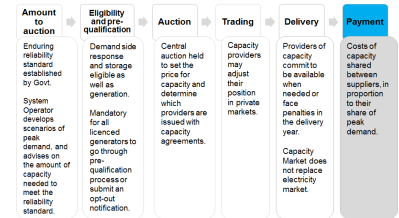
- Pay-as-clear descending clock auction format. Technology neutral
- Clearing price set by most expensive successful bidder
- Offers in auction – price (£/MW) and term (years)
- CAPEX threshold determines term length: < £125/kW one year, between £125/kW and £250/kW up to three years and > £250/kW for longer agreements
- Ability to postpone/ cancel auction if considered it will be insufficiently competitive
- Participants to sign ‘Certificate of Ethical Conduct’
- Auction monitor will be appointed to verify that auction rules were followed



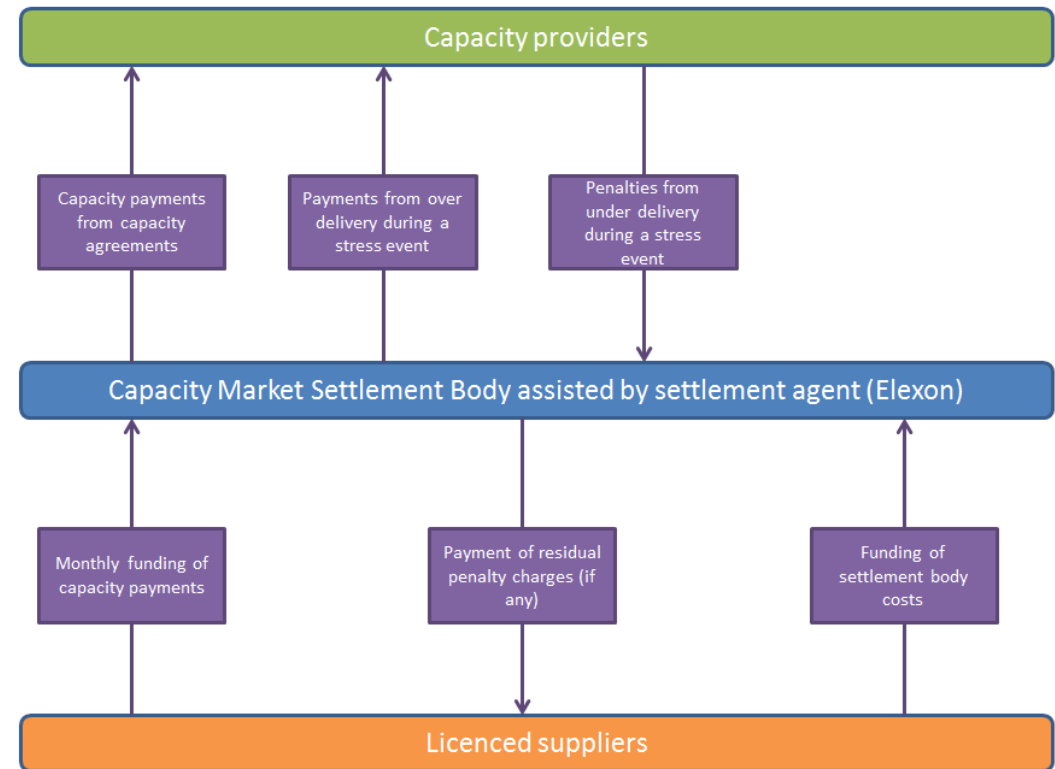
- Obligations can be physically traded (where obligation transfers) from a year ahead of a delivery year and throughout a delivery year
- Trading parties' eligibility and pre-qualification status assessed
- Plant able to take on additional obligations include:
 - Plant unsuccessful in auction
 - New plant commissioned early
- Plant with capacity obligations acquired through an auction, opted out plant or retiring plant will not be able to take on additional obligations
- Registry for capacity obligations
- Historic penalty liabilities will not transfer with physical trades – remain with the party that incurred the original penalty
- All plant able to hedge their positions financially in private markets



- Penalties applied in ‘system stress events’ where demand is not met, where preceded by a Capacity Market warning
- Performance relative to intended position up to four hours after warning. Switches to load following obligation after this time
- Obligation level and delivery performance will be assessed after the event
- Financial penalties for delivery failures applied at rate of (Value of Lost Load x penalty scaling factor) minus system imbalance price
- Overdelivery paid at rate of penalty revenue. Funded by penalty receipts
- Penalty liability capped at [101-150%] of annual capacity revenues. Applied on a portfolio-wide basis
- System of checkpoints and sanctions for delayed refurbishing and new plant to ensure they build on time
- System Operator spot testing regime
- Obligations adjusted to account for provision of balancing services



- Government-owned settlement body provides ultimate accountability for payment flows
- Costs of the Capacity Market will be recovered from licenced suppliers according to their share of peak demand
- Overdelivery payments will be funded from penalty receipts. Any excess will be returned to suppliers
- Suppliers required to lodge collateral to cover one month's payments
- Providers not required to lodge collateral against penalties. Defaults will be covered by withholding future payments or subsequent mutualisation across suppliers





Non-conventional resources in the Capacity Market

Aim of the Capacity Market:

To ensure security of electricity supply at least cost to consumers

- Demand side response (DSR), embedded generation and storage have a central role to play in meeting this aim.
- As well as providing capacity, these resources can improve system flexibility and diversity, and help with the move to a low carbon future.
- The Capacity Market has been designed to allow these valuable resources to contribute, competing alongside standard generation.



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Participation of DSR, storage and embedded generation in the Capacity Market



Participation in the Capacity Market

All resources will participate on largely the same terms

- Same obligation to deliver at system stress
- Eligible for T-4 and T-1 auctions, clearing on price
- Capacity held back for T-1 auction (50% guarantee*)
- Same payment secured in the auction

Rules are needed for different resource types to reflect operational differences

1. Pre-qualification

- Proven and unproven
- Demonstrating capacity

2. Measuring performance

- Baseline and performance
- Testing

3. Metering

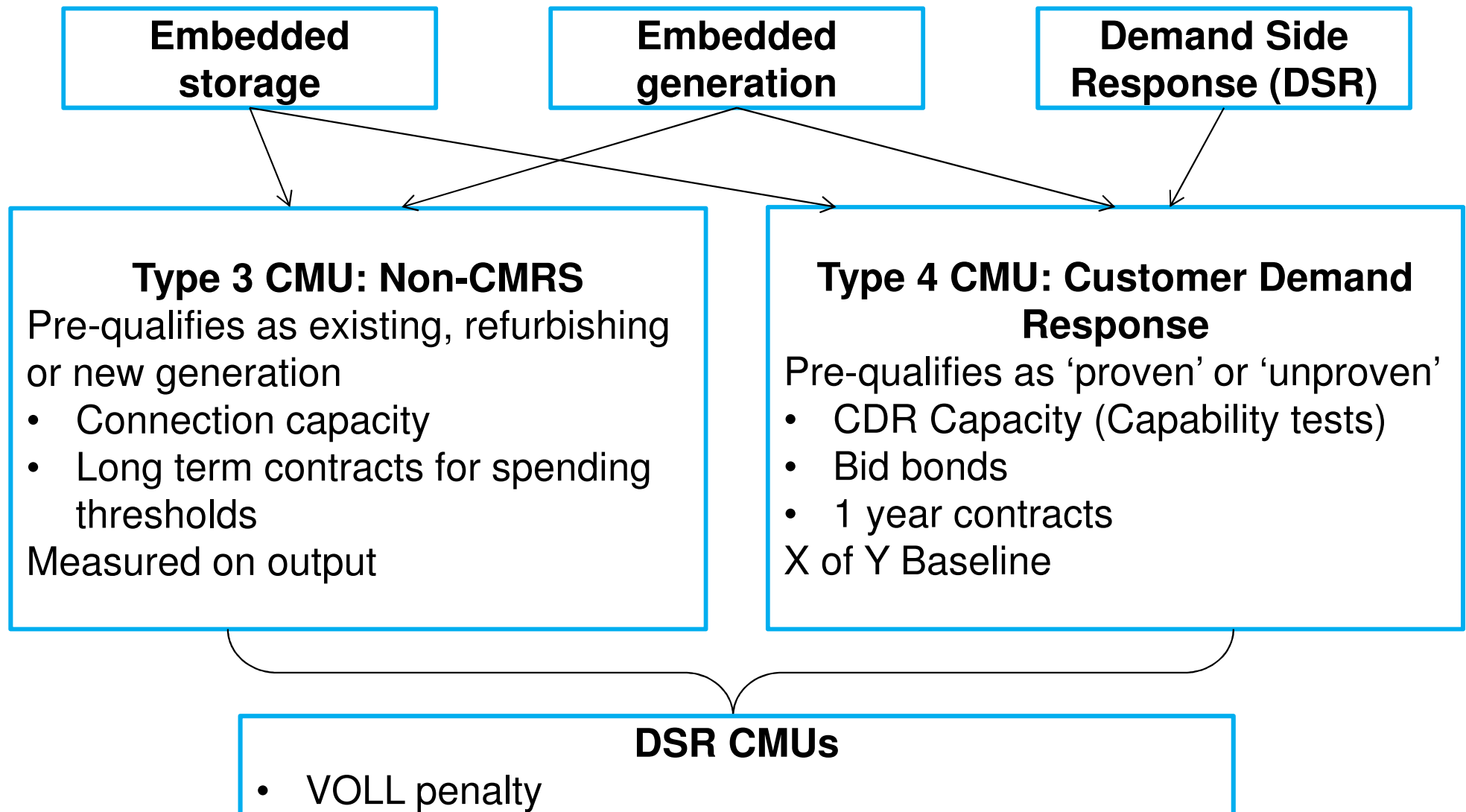
4 options

4. Penalties

VOLL – vs – VOLL minus Cash Out



Classifying non-conventional resources





Storage

- Generally follows the generation pathways (e.g. Performance measured on output rather than X of Y, eligible for long term contracts)
- Can participate as any one of the 4 CMU types (but type 4 CDR CMU less likely).
- Capacity obligation based on connection capacity (CMUs 1-3) or outcome of capability test (CMU 4)
- In addition, storage can receive overdelivery payments against an X of Y baseline



1. Pre-qualification

CDR CMUs pre-qualify as Proven or Unproven resources

- All resources must be proven before the delivery year
- Unproven resources post a bid bond (£4,420mw/h), returned once proven
- Resources become proven by taking a capability test

Two routes to demonstrating capacity

- Reduction from baseline over 1 settlement period shown through either
- Previous performance in a balancing service with permitted metering
 - Capability test (before pre-qualification or after auction)

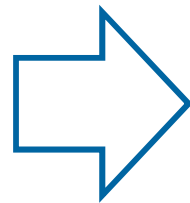
- Outcome of capability test sets 'nameplate capacity'
- Resource is then de-rated by Delivery Body



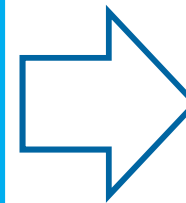
2. Measuring performance

Baselining and performance

CDR CMUs are
baselined according
to demand over
previous, similar
settlement periods



Stress event occurs
OR
Test is undertaken



CMU's demand
during stress event
or test is monitored
and compared to
baseline

Testing

Three instances of testing a resource in the CM.

All use same baseline and performance metrics.

1. Capability tests – carried out before the delivery year
2. Demonstrations – ex ante nomination by CMU 3 times over winter period
3. Spot test – ex ante dispatch by National Grid if CMU fails to demonstrate



3. Metering

4 options to meter DSR CMUs (type 3 and 4 CMUs)

- a) Direct transfer of required BSC meter data from metering companies to Elexon
- b) Bespoke metering
- c) Registering Additional BMUs
- d) Approved Balancing Services metering



4. Penalties

Cash out netted off penalties from CMRS Generation CMUs but not from DSR CMUs.

- DSR CMUs (i.e. type 3 and 4 CMUs) face penalties at VoLL (c£8,000/MWh);
- CMRS generation CMUs (i.e. type 1 and 2) face penalties at VoLL – cash out (c£2,000/MWh).
- Both have liabilities capped at c100% of capacity payments.
- We are inviting industry feedback on:
 - Whether it is better to net off the cash out price from the penalty rate or to just set a fixed administrative penalty
 - If cash out should be netted off the penalty rate, whether this should apply to DSR as well as for generation



Consultation Questions

Question CM27 Do you agree that the Government should introduce a guarantee to auction 50% of the capacity initially set aside for the year ahead auction? Could DSR capacity compete without the guarantee?

Question CM43 Do you agree that the specific rules for DSR (i.e. the proposals on bid bonds, eligibility, baselining, metering) are justified and provide DSR with a reasonable opportunity to participate? Are any other features needed (and if so why?)

Question CM44 Is the proposed level of the bid bond (£4,420/MW) for prospective DSR appropriate to sufficiently incentivise delivery without presenting an unacceptable barrier to entry?

Question CM45 What do you think of the proposal that failure to deliver the total capacity awarded in the auction should result in the forfeit of the total bid bond? Does this provide a comparable incentive for prospective DSR to deliver when compared to the incentives for new generation to deliver?



Additional Questions

Storage

1. Which 3 elements of Capacity Market design are most important to storage?
2. Which 3 changes to the design would improve storage's ability to participate?

Embedded Generation, inc. CHP

1. Which 3 elements of Capacity Market design are most important to embedded generation?
2. Which 3 changes to the design would improve embedded generation's ability to participate?



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Transitional Arrangements



Overview and Timeline

- **Design is similar to the main Capacity Market**
- **There are differences, including:**
 - Penalty cap
 - Bid bond amount
- Stage 1 2015 - 2017, Stage 2 (if any) 2017 - 2021

2014	2015	2016	2017	2018
1 st CM T-4 auction			1 st CM T-1 auction	1 st CM delivery year
	1 st TA auction	1 st TA delivery year		
		2 nd TA auction	2 nd TA delivery year	
Demand Side Balancing Reserve	Demand Side Balancing Reserve			



Transitional Arrangements and the Capacity Market – a snapshot

The Same

1. Annual cycle: summer-autumn pre-qual, autumn auction, delivery year
2. T-1 auction demand curve methodology
3. Prequalification, 2MW de minimus and bid bonds for new CDR CMUs (10% of main CM)
4. Auction format (one for each product)
5. Participation in the balancing services
6. New and existing resources permitted

Different

1. Target volume not set to meet system demand
2. Only non-CMRS and CDR CMUs, capped at 50MW for non-CMRS CMUs
3. Two products – load following and time banded
4. 1 year agreements for all resources
5. Simulated stress events
6. Penalties capped at 1x annual payments

Interactions

- Units can move from TA to enduring, but not vice versa
- If applicable, units can move from DSBR to TA and vice versa, but not participate in both together



Setting the volume and pre-qualification

1. Target volume not set to meet system demand

- T-1 Demand Curve methodology
- Target amount set based on analysis by National Grid and DECC on the amount of DSR that could come forward

2. Only non-CMRS and CDR CMUs, capped at 50MW for non-CMRS CMUs

- Participation limited to Type 3 and 4 CMUs, non-CMRS and CDR
- Non-CMRS CMUs limited to 50MW unit size



Auctions and agreements

3. Two products – load following and time banded

- 1st auction for a load following obligation
- 2nd auction for a time banded product
 - Winter weekdays
 - 9.00am-11am and 3pm-7pm
- Time banded resources still follow load, but only have an obligation to deliver within the window

4. 1 year agreements for all resources

- New and existing resources able to participate
- All resources receive one year agreements



Delivery and Penalties

5. Simulated stress events

- Resources dispatched by National Grid 4 hours ahead
- No capability testing or spot tests within delivery year
- Resources dispatched and penalised in the same way for 'simulated' stress events and actual stress events
- Limited number of simulated events (no more than 5 total simulated and stress events)

6. Penalties capped at 1x annual payments

- Penalties for individual events are the same as main Capacity
- Total annual penalties capped at level of annual payments



Consultation Questions

Question CM48 Do you agree with the necessity of transitional arrangements to help build the capability of the DSR sector?

Question CM49 What are your views on the proposed transitional arrangements and do you think they will prove effective i.e. over 2 time limited stages and with the parameters set out?

Question CM50 Do you agree that the level of the bid bond should be reduced by 90% for prospective DSR during the transition period?



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Back up slides

Unit type	Metering	Monitoring	Contract length	Pre-qualification route
Demand Reduction	BSC meters, including other meters on the site	X of Y	1 year	DSR
Generation acting as DSR	Choice BSC at site level, including other meters on the site	X of Y	1 year	DSR
	Separate meter isolating generation from site demand	Output	Multi-year	Generation
Generation running frequently	Separate meter isolating generation from site demand	Output	Multi-year	Generation
Sites delivering DSR and generation	Choice Separate out DSR and generation	Separate CMUs		
	Choice All capacity on the same meters or all designated DSR	X of Y		
Storage	Choice BSC meter, or separate meter if on site	Output Optional 'X of Y' for over-delivery payments	Multi-year	Generation, optional 'X of Y' monitoring
	Choice If storage used on site as a short term generator, (may prefer): BSC meter	X of Y	1 year	DSR