

Proposal for a Capacity Market Rules Change



Making a positive difference
for energy consumers

Reference number (to be completed by
Ofgem): **CP176**

Name of Organisation(s) / individual(s):

EDF Energy

Date Submitted:

11/11/2016

Type of Change:

- Amendment
- Addition
- Revoke
- Substitution

If applicable, whether you are aware of an alternative proposal already submitted which this proposal relates to:

CP163
CP164

Proposal summary (short summary, suitable for published description on our website)

Amending the de-rating factors to ensure procured de-rated capacity is appropriately scaled to account for a technology's ability to meet different duration stress events.

What the proposal relates to and if applicable, what current provision of Rules the proposal relates to (please state provision number):

This amendment will ensure that a MW of de-rated capacity which is only able to continuously generate for a limited duration, contributes to security of supply in an equal way to a MW of de-rated capacity which is able to generate for a long period of time. Failing to do so will mean that BEIS would under-procure the required capacity to meet the reliability standard, which will detriment customers.

This rule change seeks to amend the calculation of de-rating factors of Capacity Market Units (CMUs) that can deliver energy for only a limited duration, hence providing less towards security of supply, due to forecast stress events likely to last multiple settlement periods.

At this time, we believe that this should apply to limited duration storage assets; i.e. assets with a small amount of energy (MWh) compared to its capacity (MW).

Description of the issue that the change proposal seeks to address:

EDF Energy has identified there is a potential security of supply issue if a large amount of capacity provided by short duration storage is procured in the Capacity Market, rather than capacity that is able to deliver energy for a longer duration, such as conventional thermal generation, or longer duration storage.

EDF Energy analysis suggests that more than 50% of future modelled stress events will last in excess of 1 hour, with 10% of all stress events lasting longer than 3 hours. This poses a potential problem for technologies with short storage durations - for example one hour duration - as they will be

unable to sustain their output for the entire duration of many stress events. Increases in both magnitude and duration of system stress events will occur, if the procured capacity's ability to deliver its de-rated capacity during stress events is not appropriately considered through the capacity auctions.

At present, the testing regime requires output to be maintained over a single settlement period and the de-rating factor does not currently account for the duration that capacity can continuously generate to its de-rated capacity.

EDF Energy believes that the de-rating factor should be amended to take in to account the impact of shorter duration capacity on the security of supply of the UK system, in comparison to capacity that can generate at its de-rated capacity regardless of the length of the stress event. Amending the de-rating factor ensures that the contribution that an asset with a limited duration ability to contribute to security of supply during longer stress events is accurately reflected in its Capacity Obligation. This will ensure that all assets in the Capacity Market contribute the same to security of supply. EDF Energy has performed some analysis that we are happy to share, but we suggest that BEIS and National Grid perform in depth analysis to understand the potential length of stress events and the impact of short-duration batteries on meeting these stress events.

Our analysis indicates that as the amount of short-duration capacity providing security of supply increases, the marginal contribution of incremental short duration batteries to security of supply falls, meaning the de-rating factors applied to similar future projects will decrease. The adjustments to de-rating factors should therefore account for this effect and should not over-reward the earlier storage projects in the Capacity Market and hence under-reward later storage projects. EDF Energy is not yet clear at this time how the future penetration of short-duration storage projects should be accounted for in the de-rating factors; National Grid and Ofgem should consider different options how this can be accounted for.

We believe that a balance will need to be struck between accuracy and simplicity for participants. Our proposal is that the generating classes of the affected technologies should be divided in to five hourly duration categories. We suggest that the categories for storage assets should be for 0-1 hour duration storage, 1-2 hours duration storage, 2-3 hours duration storage, 3-4 hours duration storage and 4+ hours duration storage. We have suggested these categories, as the length of stress events is forecast to rarely be larger than 4 hours and hence for storage technologies above this capacity duration we suggest that these are not de-rated according to their duration (and therefore just on availability as currently calculated) as the adjustment would be negligible. However, we believe that analysis is required from National Grid to ensure that the most appropriate categories are determined.

The relevant categories may change for future auctions with a greater penetration of short-duration storage assets in the Capacity Market.

We note that Engie has raised two alternative proposals, by adjusting the testing regime to ensure that all capacity is able to meet its de-rated capacity for two hours. We believe that Ofgem should consider the approaches in CP 163 and CP 164, alongside our amendment of the de-rating factor methodology, to determine the best approach to appropriately value the capacity's contribution from short-duration assets in the Capacity Market to security of supply. We believe that the 2 hours testing requirement within the Engie proposals may not be fit for purpose if the amount of short-duration batteries introduced into the energy mix increases. This proposal implies that storage with a duration greater than two hours is equivalent in security of supply to conventional assets such as OCGTs, and that storage with a duration of less than two hours does not contribute at all to security of supply, which our analysis does not support, hence the decision to put forward this rule change

proposal to ensure that all options are carefully considered.

If applicable, please state the proposed revised drafting (*please highlight the change*):

[Text in red is the proposed amendments to the Rules; text in square brackets provides commentary, not drafting]

Definitions:

Capacity Duration - the maximum length of time (in hours) over which a CMU could continuously deliver energy to meet its Connection Capacity. This is calculated by dividing the Duration Volume by its Connection Capacity.

Duration Value Scalar – A number between 0 and 1 that will de-rate a Limited Duration asset, according to its ability to deliver its connection capacity for stress events. This is determined by the Secretary of State in accordance with the methodology in Schedule 3B.

Duration Volume – The volume of electricity that a Limited Duration asset can provide continuously, as defined by the asset’s technical specification.

2.3.4 a) for CMUs in a Generating Technology Class, the Technology Class Weighted Average Availability (“TCWAA”) of that Generating Technology Class; multiplied by the Duration Value Scalar for those technologies classified as Limited Duration in Schedule 3.

3.4.5B: If the technology class of the CMU, as specified in rule 3.4.5 (b), is defined as Limited Duration within Schedule 3, the asset must specify its Duration Volume and Capacity Duration. [This may require the pre-qualification requirements to be changed as well]

Schedule 3

[Split the Storage row in to 5 rows in the table]

Storage (1 hour or less Capacity Duration)

Storage (1 - 2 hours Capacity Duration)

Storage (2 - 3 hours Capacity Duration)

Storage (3 - 4 hours Capacity Duration)

Storage (greater than 4 hours Capacity Duration)

1.2

The ‘Storage’ category is considered to be limited duration and the methodology in Schedule 3B applies to this category. [The Delivery Body should include additional categories for other technologies if it believes that there are additional technology classes that are considered to be limited duration]

Schedule 3B:

This schedule sets out the methodology for the definition of the ‘Duration Value Scalar’.

The likely length of stress events should be calculated and for each Generating Technology Class that is considered to be limited duration, the contribution of this asset type to deliver the required energy to meet obligations during stress event should be considered. Availability will not be considered at this stage of the calculation.

For each technology class of CMU that is considered to be Limited Duration by the Delivery Body, the Delivery Body should forecast the volume of CMUs in the Delivery Years that the Capacity Auction is procuring capacity. The Delivery Body will model the (x MW) capacity, that is not defined as Limited Duration, required to provide the same contribution towards the achievement of the Reliability Standard as the forecast amount of Limited Duration capacity (y MW) of that Generation Technology Class;

The Duration Value Scalar is calculated by dividing the amount of forecast 'limited duration' capacity for that technology class (x) by the equivalent capacity required to ensure the same reliability standard (y).

[We believe it is relatively straightforward to perform this calculation for the Delivery Year. However, given that new battery storage capacity may secure multi-year agreements, it is for consideration whether the calculation should also take into account the possible increase in limited duration battery storage assets during the life of these agreements.]

[We encourage the Delivery Body to expand on this methodology]

Analysis and evidence on the impact on industry and/or consumers including any risks to note when making the revision - including, any potential implications for industry codes:

EDF Energy's analysis shows that an increasing amount of short-duration capacity, such as battery storage, will be less effective at ensuring security of supply than longer-duration capacity, such as conventional generation and longer-duration batteries.

We believe that a change is required to the de-rating methodology to ensure that its contribution (which is currently over-stated with the current de-rating methodology) is appropriately reflected in the Capacity Market.

This will ensure that the Capacity Market is able to procure sufficient and appropriate capacity to meet the reliability standard. This change will reward short duration capacity appropriately for its contribution so as to ensure that the right amount of capacity is in place to deliver the required security of supply standard at the lowest cost to customers and that it also protects providers of short duration capacity from excessive risk of under-delivery penalties

We have attached an EDF Energy analysis presentation on this topic, which we are happy to share publicly to demonstrate the need for this change.

Details of Proposer *(please include name, telephone number, email and organisation):*

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