


Stage 2. Code Administrator Consultation	At what stage is this document in the process?
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CMP314:

Updating the CUSC to align Power Available with the Grid Code definition for Power Park Modules

- | | |
|----|---------------------------------|
| 01 | Proposal Form |
| 02 | Code Administrator Consultation |
| 03 | Draft CUSC Modification Report |
| 04 | Final CUSC Modification Report |

Purpose of Modification: To align the CUSC with the Grid Code on the use of Power Available in ESO headroom calculations for Power Park Modules. The definition of Maximum Export Limit (MEL) was changed in the Grid Code for Power Park Modules under GC0063 to be registered capacity less unavailable units and the Power Available signal introduced to replace MEL in ESO headroom calculations. This has not been reflected in the CUSC, which uses MEL in the De-load calculation



The purpose of this document is to consult on CMP314 with CUSC Parties and other interested Industry members. Parties are requested to respond by 5pm on 12 June 2019 to cusc.team@nationalgrideso.com using the Code Administrator Consultation Response Pro-forma which can be found via the following link:

<https://www.nationalgrideso.com/codes/connection-and-use-system-code-cusc/modifications/cmp314-updating-cusc-align-power-available>


Published on: 21 May 2019
 Length of Consultation: 15 Working days
 Responses by: 12 June 2019



High Impact: N/A








Medium Impact N/A



Low Impact

Positive impact for Power Park Modules – e.g. intermittent generators. It helps enable participation in MFR (Mandatory Frequency Responses) in a way that is

equitable to controllable generation types.

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Timetable		 telephone												
The Code Administrator recommends the following timetable:		Proposer: Will Goldsmith												
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Proposer Details

Details of Proposer: (Organisation Name)	National Grid ESO
Capacity in which the CUSC Modification Proposal is being proposed: (i.e. CUSC Party, BSC Party or "National Consumer Council")	CUSC Party
Details of Proposer's Representative: Name: Organisation: Telephone Number: Email Address:	William Goldsmith National Grid ESO 07892799381 William.Goldsmith@nationalgrideso.com
Details of Representative's Alternate: Name: Organisation: Telephone Number: Email Address:	Simon Sheridan National Grid ESO 07967765889 Simon.Sheridan@nationalgrideso.com
Attachments (Yes/No): If Yes, Title and No. of pages of each Attachment:	

Impact on Core Industry Documentation.
Please mark the relevant boxes with an "x" and provide any supporting information

BSC	<input type="checkbox"/>
Grid Code	<input type="checkbox"/>
STC	<input type="checkbox"/>
Other	<input type="checkbox"/>

(Please specify)

N/A.

1 About this Document

CMP314 was proposed by National Grid ESO and was submitted to the CUSC Modifications Panel for its consideration on 29 March 2019. The CUSC Panel requested further clarity on the Modification proposal before they could determine which Governance route CMP314 should follow. Please note, the questions Panel presented to the Proposer and the responses can be found within Annex 1 of this Consultation document.

At the CUSC Panel on 26 April 2019, the Panel unanimously decided to send CMP314 straight to Code Administrator Consultation for 15 Working days.

CMP314 aims to align the CUSC with the Grid Code on the use of Power Available in ESO headroom calculations for Power Park Modules. The definition of Maximum Export Limit (MEL) was changed in the Grid Code for Power Park Modules under GC0063 to be registered capacity less unavailable units and the Power Available signal introduced to replace MEL in ESO headroom calculations. This has not been reflected in the CUSC, which uses MEL in the De-load calculation.

This Code Administrator Consultation has been prepared in accordance with the terms of the CUSC. An electronic copy can be found on the National Grid ESO website <https://www.nationalgrideso.com/codes/connection-and-use-system-code-cusc/modifications/cmp314-updating-cusc-align-power-available> along with the CUSC Modification proposal form.

2 Original Proposal

Defect

The definition of Maximum Export Limit (MEL) was changed in the Grid Code for Power Park Modules* under GC0063 to be registered capacity less unavailable units and the Power Available signal introduced to replace MEL in ESO headroom calculations.

This has not been reflected in the CUSC, which uses MEL in the De-load calculation.

Thus, the current De-load calculation is no longer a correct measure of headroom for Power Park Modules and leads to incorrect response holding calculations that exaggerate Primary and Secondary response capability whenever the plant is operating below its registered capacity or MEL. *Power Park Module: "A collection of Non-Synchronous Generating Units (registered as a Power Park Module under the PC) that are powered by an Intermittent Power Source" (predominantly wind generation)

What

The De-load calculation in the CUSC needs to be changed for Power Park Modules so it aligns with the Grid Code. This will enable accurate settlement of Power Park Modules for Mandatory Frequency Response when participation in the market increases as an outcome of Power Available integration.

Why

To align the CUSC with the Grid Code to reflect the introduction for Power Available and redefinition of Maximum Export Limit for Power Park Modules in the Grid Code under GC0063.

The definition of Maximum Export Limit (MEL) was changed in the Grid Code for Power Park Modules under GC0063 to be registered capacity less unavailable units and the Power Available signal introduced to replace MEL in ESO headroom calculations.

This has not been reflected in the CUSC, which uses MEL in the De-load calculation. De-load is a headroom calculation used to establish the available frequency response capability of a unit at any given time, by cross referencing the De-load value against the unit's response matrix capability table included in the Mandatory Services Agreement.

The De-Load methodology is: maximum available output less actual output. For all generators in the CUSC, this is currently calculated as $\text{De-load} = \text{MEL} - \text{PN}$. As MEL is no longer defined as maximum available output for Power Park modules, the response capability is distorted if the maximum available output based on current weather conditions (Power Available) is less than the registered capacity. Thus, the current De-load calculation is no longer an accurate measure of headroom for Power Park Modules.

Positive impact for Power Park Modules – e.g. intermittent generators. It helps enable participation in MFR (Mandatory Frequency Responses)

How

The intention of GC0063 was for Power Available to replace MEL in headroom calculation for Power Park Modules. As De-load is a headroom calculation defined in the CUSC, it should be changed from: $\text{De-load} = (\text{MEL} - \text{PN})$ to: $\text{De-load} = (\text{PA} - \text{PN})$ for Power Park Modules but remain the same for all other types of generation. The definition of Power Available should directly reference the appropriate element of the Grid Code.

So, we need to change the calculation as defined in the CUSC section 11.3 to match the Grid Code.

3 Why Change?

This modification is proposed to better align the CUSC with the Grid Code and improve the accuracy for De-load calculations for Power Park Modules.

The defect should be rectified to increase the alignment of technical and commercial codes and improve the accuracy of the De-load calculation for Power Park Modules, which is used as in input for response holding payments and response energy calculations.

MEL will be used for the same purpose for Power Park Modules and all other types of generation in the CUSC, despite having different definitions in the Grid Code.

The existing De-load calculation will be distorted if the maximum available output based on current weather conditions (Power Available) is less than the registered capacity.

Power Park Modules are a sub-set of intermittent generation, defined as having a primary power source that is considered non-controllable (i.e. dependant of weather). As a result, they have not been able to actively participate in response services due to uncertainty of their maximum available output. Once Power Available signals are integrated into ESO processes and systems, the ESO control room will have better visibility of these generators, enabling them to actively participate in the Mandatory Frequency Response market. These changes are planned to be implemented by the Power Available integration project by March 2020, with this code modification necessary for the go-live of the settlement system changes. Implementing this modification by this date will result in more accurate response holding payments and response energy calculations for Power Park Modules when they begin participating more actively in Mandatory Frequency Response.

The parties impacted by this modification proposal have been consulted through the Wind Advisory Group for Balancing Services run by RenewableUK and National Grid ESO. There was unanimous support for the modification and agreement that it is not a material change and therefore does not need to be assessed by a working group. Written evidence of this support is attached.

4 Code Specific Matters

Technical Skillsets

General understanding of the CUSC

Understanding of Power Available and the differences between Power Park Modules and conventional generation

5 Solution

For Power Park Modules, the De-load calculation in the CUSC should be changed from:

$$\text{De-load} = (\text{MEL} - \text{PN})$$

to

$$\text{De-load} = (\text{PA} - \text{PN})$$

but remain the same for all other types of generation. Replacing MEL with PA for Power Park Module headroom calculations will align the CUSC with the intention of GC0063. The CUSC should reference the Grid Code definition of Power Available.

See relevant definitions from the Grid Code:

Headroom	The Power Available (in MW) less the actual Active Power exported from the Power Park Module (in MW).
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<p>Power Available</p>	<p>A signal prepared in accordance with good industry practice, representing the instantaneous sum of the potential Active Power available from each individual Power Park Unit within the Power Park Module calculated using any applicable combination of meteorological (including wind speed), electrical or mechanical data measured at each Power Park Unit at a specified time. Power Available shall be a value between 0MW and Registered Capacity or Maximum Capacity which is the sum of the potential Active Power available of each Power Park Unit within the Power Park Module. A turbine that is not generating will be considered as not available. For the avoidance of doubt, the Power Available signal would be the Active Power output that a Power Park Module could reasonably be expected to export at the Grid Entry Point or User System Entry Point taking all the above criteria into account including Power Park Unit constraints such as optimisation modes but would exclude a reduction in the Active Power export of the Power Park Module instructed by The Company (for example) for the purposes selecting a Power Park Module to operate in Frequency Sensitive Mode or when an Emergency Instruction has been issued.</p>
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6 Impacts & Other Considerations

The modification will help to facilitate the participation of Power Park Modules in Mandatory Frequency Response (MFR) as committed to in the ESO Forward Plan 2019-21 by enabling accurate settlement of these generators. There is no impact for other generators who participate in MFR. This modification will better align the CUSC with the Grid Code and not impact any other industry codes.

Improving the accuracy of the De-load calculation for Power Park modules will result in more accurate Response Holding Payments and Response Energy calculations.

National Grid ESO settlements system is the only affected system.

Does this modification impact a Significant Code Review (SCR) or other significant industry change projects, if so, how?

No.

Consumer Impacts

It will not affect consumers as Power Park Modules are not currently active participants in MFR. There is the possibility of future savings from more accurate settlement of Power Park Modules.

7 Relevant Objectives

Impact of the modification on the Applicable CUSC Objectives (Standard):

Relevant Objective	Identified impact
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(a) The efficient discharge by the Licensee of the obligations imposed on it by the Act and the Transmission Licence;	Positive
(b) Facilitating effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the sale, distribution and purchase of electricity;	Positive
(c) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency *; and	None
(d) Promoting efficiency in the implementation and administration of the CUSC arrangements.	None
*Objective (c) refers specifically to European Regulation 2009/714/EC. Reference to the Agency is to the Agency for the Cooperation of Energy Regulators (ACER).	

This modification will align the Grid Code with CUSC as the most immediate benefit. Longer term it will help to facilitate the participation of Power Park Modules in Mandatory Frequency Response (MFR) as committed to in the ESO Forward Plan 2019-21 by enabling accurate settlement of these generators.

8 Implementation

Once Power Available signals are integrated into ESO processes and systems, the ESO control room will have better visibility of these generators, enabling them to actively participate in the Mandatory Frequency Response Service. These changes are planned to be implemented by the Power Available integration project by March 2020. Implementing this modification by March 2020 will result in more accurate response holding payments and response energy calculations for Power Park Modules when they begin participating more actively in Mandatory Frequency Response.

A small change to the ESO settlements system will be required to reflect the modified De-load calculation for Power Park Modules, which will be delivered as part of the Power Available integration project.

9 Code Administrator Consultation: How to respond

If you wish to respond to this Code Administrator Consultation, please use the response pro-forma which can be found under the 'Industry Consultation' tab via the following link;

<https://www.nationalgrideso.com/codes/connection-and-use-system-code-cusc/modifications/cmp314-updating-cusc-align-power-available>

Responses are invited to the following questions;

1. Do you believe that CMP314 better facilitates the Applicable CUSC Objectives? Please include your reasoning.
2. Do you support the proposed implementation approach?

3. Do you have any other comments?

Views are invited on the proposals outlined in this consultation, which should be received by **5pm on 12 June 2019**. Please email your formal response to cusc.team@nationalgrideso.com

If you wish to submit a confidential response, please note the following;

Information provided in response to this consultation will be published on National Grid's website unless the response is clearly marked 'Private & Confidential', we will contact you to establish the extent of this confidentiality. A response marked 'Private & Confidential' will be disclosed to the Authority in full by, unless agreed otherwise, will not be shared with the CUSC Modifications Panel or the industry and may therefore not influence the debate to the same extent as a non-confidential response.

Please note an automatic confidentiality disclaimer generated by your IT System will not in itself, mean that your response is treated as if it had been marked 'Private & Confidential'

10 Legal Text

Text Commentary

Current "De-load" definition – Section (11.3) DEFINITIONS pg. 19/97:

"De-load":

*the difference (expressed in MW) between the **Maximum Export Limit** and **Final Physical Notification Data** as adjusted by the **Acceptance Volume** in respect of a **Bid-Offer Acceptance** (if any), and "**De-Loaded**" shall be construed accordingly;*

A proposed draft of additional legal text is outlined below.

*...except in the case of a **Power Park Module**, where **De-Load** is the difference (expressed in MW) between Power Available and the **Final Physical Notification Data** as adjusted by the **Acceptance Volume** in respect of a **Bid-Offer Acceptance** (if any), and "**De-Loaded**" shall be construed accordingly;*

11 Annex 1: CUSC Panel Questions on CMP314

CUSC PANEL Q and A ON CMP314

1) Paul Jones, Uniper:

- a. I know the Power Available modification has been introduced already, but I was interested in understanding the significance of the April 2020 target date that had been mentioned at the Panel and how that interacted with the implementation date for CMP314. Is the Power Available measure being actively used at the moment?

Since GC0063 introduced the requirement for new Power Park Modules from April 2016 to provide a Power Available signal, the ESO is now receiving the signal from approximately 60 wind generators. As part of the next steps the ESO is working with industry to improve signal accuracy (only about 11 Power Available signals are currently of usable quality). This is running in parallel to the Power Available integration project to integrate the signal into ESO control room & settlements systems and processes that will increase visibility of intermittent generation, improving transmission constraint management and effective use of Power Park Modules for Mandatory Frequency Response.

CMP314 interacts with the settlement system changes that will be delivered as part of Phase 2a of the project (Jan-Mar 2020), described on page 38 of the [ESO Forward Plan 2019-21](#). We request that CMP314 be implemented to enable these changes that ensure that Response Holding Payments for Power Park Modules are reflective of the service delivered.

2) Cem Suleyman, Drax:

- a. The Proposer's stating that CMP314 will better enable participation from Power Park Modules in MFR. Therefore, I'd like to know how participation is enabled currently so I can better assess the benefits of the modification.

Currently Power Park Modules can only be used in MFR as a manual workaround as the control room do not have visibility of the true response capability of these units. The average monthly High frequency response currently held on Power Park Modules is 0.2% of the total requirement. Values of Primary and Secondary response are not accurate and provide an inflated view of headroom as they are based on the Maximum Export Limit (MEL). Once valid Power Available signals are received and integrated into Control Room systems, commercial codes and settlement systems, the Control Room will have adequate automated modelling capability of the response provision from wind resources without excessive manual intervention. CMP314 will enable the settlements systems to calculate correct response capabilities using Power Available, enabling correct settlement of Power Park Modules for MFR.

3) Damien Clough, Elexon:

- a. In terms of Power Available. The control room gets this information. However, I don't think it's publicly available data. If you were to start settling them on Power Available, how will the data get from the control room to the team which does the settlement and is the data auditable? Have a think about this. Don't commit to doing something then realise at a later date you can't actually bill for it?

Power Available is an analog signal received continuously by the ESO through the SCADA critical national infrastructure system. This data will get from the control room to the settlements system via the National Economic Database (NED) which is fully auditable.

- b. Which then leads on to the next question. Should Power Available data be reported as is done currently for MIL/MELS and FPN's which are reported on BMRS. FPN's feed into the Bids and offers Settlements and are adjusted by MIL/MEL. If you are using Power available in anger should it be reported. When GC0063 was approved it was mentioned that at some time BSc systems should be changed. There's no incentive on windfarms to do anything different. They can submit a high FPN. Offer to reduce its output. If it's FPN was 100 and its output was 20. Then they could nothing and get paid for reducing to 20? Mind you, you wouldn't dispatch them probably because there operational metering didn't match the FPN.

Not directly linked to this mod - Power Available is an analog signal indicating operational capability, that is sent continuously to the ESO via an operational metering feed. This is different to MELs and FPNs which are submitted commercial parameters and therefore the data does not need reporting on BMRS. It was decided by Ofgem in the G0063 approval, not to use Power Available in the settlement of bids and offers, but to continue using FPNs. FPN accuracy is a separate issue.

4) Simon Lord, Engie:

- a. So, the area that I was interested in were checking that the end to end process works. For conventional generation response tables in MSA are all based on de-load from MEL and these tables are verified by testing at max MEL see Ffestiniog example below. At Ffestiniog if we drop our MEL from 90 to 55 MW say the tables will not reflect our capability as the tables are only OK for a MEL of 90MW. The non-linearity and minimum load points are more apparent for thermal, but I have no idea of how non-linear/minimum load points work on wind units. So just looking for confirmation that if a wind unit has its MEL replaced by power available the tables are reflective of the actual response capability and a sample have been tested to reflect this. If this is the case, then the payment should follow through and work OK.

The physical testing of wind units is something we do when they first come on line, but the issues referred to in your example will still be present with wind farms. This mod is not looking to address and resolve that, this mod is simply using a better parameter in the calculation.

Using MEL for a wind unit alongside the response tables results in a calculation that is based on a theoretical number that may not be achievable depending on prevailing weather conditions. Replacing MEL with Power Available results in using a number that is more accurately reflective of the actual output of the wind unit and so will result in a calculation output that is more accurate (than MEL) for the current methodology. The limitation with the response tables is an issue outside this modification which seeks to use a more accurate value for wind calculations.

5) Garth Graham, SSE (see separate email for context):

- a. In Section 2 of CMP314, it is stated that: "We believe that this is a consequential change to align the CUSC with the Grid Code definition of MEL agreed in GC0063".

Where was this consequential change identified (in terms of which industry groups, code workgroups, Panels, NGENSO published documents etc., etc.)?

- b. Related to (1), when over the past four years (from January 2015, Ofgem's decision letter for GC0063, to March 2019) or indeed nearly seven years (from July 2012, the GCRP paper, to March 2019) was the need for a consequential change to the CUSC, to align with the Grid Code definition of MEL agreed in GC0063, first identified?
- c. Whilst urgency is not being asked for with CMP314, nevertheless should the Panel be cognisant of the Authority's decision letter of 23rd August 2016 (for CMP268) around "We expect proposers who are seeking urgent status for CUSC Modification Proposals to raise their modifications more promptly and will take any delay into account when considering, under our Urgency Criteria, whether the matter is truly urgent." when considering if a greater than four year delay in raising CMP314 could be considered as acting promptly when an accelerated timetabling / prioritisation approach is now being requested?

https://www.ofgem.gov.uk/system/files/docs/2016/08/cmp268_urgency_decision_letter.pdf

(a,b,c): We acknowledge that this change has taken longer to raise than NGENSO would have liked. This mod is being raised now (rather than directly after the implementation of GC0063) as the application of Power Available was not applied retrospectively. It has taken several years to receive a significant volume of Power Available signals, with accuracy of this data still being worked on by the wind industry with support from National Grid ESO. This mod supports the Forward Plan commitment on Intermittent Generation under Principle 3 and should be implemented in conjunction with the system changes planned by Q4 2019/20. To clarify NGENSO are not asking for urgency just that this mod does not need to go to workgroup.

- d. Given that according to this proposal "MEL will be used for the same purpose for Power Park Modules and all other types of generation in the CUSC, despite having different definitions in the Grid Code" why should the effects / impacts of such a change in the CUSC on other types of generation (than just PPMs) not also be evaluated by a CUSC Workgroup (as this was not done as part of the GC0063 assessment) to determine, for example, if there are any consequential changes, or unintended effects or impacts, for those other types of generation from the proposed change?

This modification will only affect Power Park Modules (a positive effect of more accurate settlement). No other generators will be affected by the change in this calculation.