

Workgroup Consultation			
<h2>CMP304:</h2> <h3>Improving the Enhanced Reactive Power Service by making it fit for purpose</h3> <p>Overview: This modification seeks to enable reforms to commercial Reactive Power services that, in the Proposer's view would create new opportunities for providers.</p>	<h4>Modification process & timetable</h4> <ol style="list-style-type: none"> 1 Proposal Form 23 August 2018 2 Workgroup Consultation 17 February 2022 – 10 March 2022 3 Workgroup Report 20 April 2022 4 Code Administrator Consultation 09 May 2022 – 30 May 2022 5 Draft Final Modification Report 16 June 2022 6 Final Modification Report 06 July 2022 7 Implementation 10 Working days following Authority Decision 		
<p>Have 5 minutes? Read our Executive summary</p> <p>Have 20 minutes? Read the full Workgroup Consultation</p> <p>Have 30 minutes? Read the full Workgroup Consultation and Annexes.</p>			
<p>Status summary: The Workgroup are seeking your views on the work completed to date to form the final solution(s) to the issue raised.</p>			
<p>This modification is expected to have a: Medium impact on National Grid ESO and providers of reactive power.</p>			
Governance route	This modification has been assessed by a Workgroup and Ofgem will make the decision on whether it should be implemented.		
Who can I talk to about the change?	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Proposer: Garth Graham, SSE Generation Ltd Garth.graham@sse.com Phone: 01738 456000</p> </td> <td style="width: 50%; vertical-align: top;"> <p>Code Administrator Chair: Lurrentia Walker Lurrentia.walker@nationalgrideso.com Phone: 07976 940855</p> </td> </tr> </table>	<p>Proposer: Garth Graham, SSE Generation Ltd Garth.graham@sse.com Phone: 01738 456000</p>	<p>Code Administrator Chair: Lurrentia Walker Lurrentia.walker@nationalgrideso.com Phone: 07976 940855</p>
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How do I respond?	Send your response proforma to cusc.team@nationalgrideso.com by 5pm on 10 March 2022		

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Executive summary

This modification seeks to enable reforms to commercial Reactive Power services that, in the Proposer's view would create new opportunities for providers.

What is the issue?

Information provided by the ESO identified that in its current form the Enhanced Reactive Power Service (ERPS) has resulted in no tenders being accepted by the ESO since 2009 and no tenders being received from market participants since 2011.

What is the solution and when will it come into effect?

Proposer's solution:

The current arrangements are based around a twelve-month minimum ERPS product; however, this solution is looking to reduce the period of the product from twelve months, including having the possibility of multiple period products for ERPS, which range from within day, through day ahead, weekly, monthly etc., to six monthly.

At this stage, the Proposer does not wish to preclude options as to which of the timing for the products will be developed further by the Workgroup and will seek industry views as part of the Workgroup Consultation as to which of these timeframes will be taken forward.

Implementation date: 10 Working days following an Authority decision. However, a transition period for IT systems for the ESO and participants for tender participation will be required. This will be of a number of months duration, which the Workgroup will examine in due course.

Summary of potential alternative solution(s) and implementation date(s):

None identified as yet.

What is the impact if this change is made?

The Proposer and some other Workgroup members argue that this will provide greater choice and flexibility for market participants. This should then incentivise more providers of non-obligatory Reactive Power Services to come forward which could increase competition, leading to lower costs (in terms of reactive power) for end consumers. However, the ESO no longer see ERPS as a sustainable service and raised CMP305 'Removal of the Enhanced Reactive Power Service (ERPS) to remove ERPS from CUSC.

Interactions

This modification has interactions with CMP305 'Removal of the Enhanced Reactive Power Service (ERPS)'. CMP305 was sent back by the Authority on 1 February 2019. The Authority outlined the reason for the send back was due to not being able to form an opinion on the modification. The Authority also note that as CMP304 and CMP305 are two different options related to treatment of the same service, the Authority feel it would

be appropriate that they assess and make their decisions on these related proposals at the same time.

The Final Modification Report for CMP305 will be resubmitted to the Authority alongside the Final Modification Report for CMP304.

Currently this modification is believed to have no interactions with EBR¹ Article 18 Terms and Conditions. However, the Workgroup will keep this under review as the solution develops following this consultation.

¹ If your modification amends any of the clauses mapped out in Exhibit Y to the CUSC, it will change the Terms & Conditions relating to Balancing Service Providers. The modification will need to follow the process set out in Article 18 of the European Electricity Balancing Guideline (EBR – EU Regulation 2017/2195) – the main aspect of this is that the modification will need to be consulted on for 1 month in the Code Administrator Consultation phase. N.B. This will also satisfy the requirements of the NCER process.

What is the issue?

Information provided by the ESO identified that in its current form the Enhanced Reactive Power Service (ERPS) has resulted in no tenders being accepted by the ESO since 2009 and no tenders being received from market participants since 2011.

The ERPS has required long-term commitment, which exposed providers of the service on that basis to risk. The current arrangements have not been reviewed since their original design in the early 1990s and are designed based on performance and operating costs of thermal plant. The requirement for Reactive Power absorption has consistently increased for the last 10 years and the ESO forecasts² show this will continue.

Therefore, the Proposer argues there is a need for an ERPS product that considers shorter durations and takes account of market practicalities.

Why change?

The view of the Proposer is that the current ERPS product is of limited use to the ESO or market participants. The existing tender requirement of a minimum 12-month commitment period is believed by the Proposer to not provide an incentive for market participants to tender for ERPS. This may expose providers to risk as it offers very little flexibility for all potential providers.

Addressing this defect should help towards making the ERPS a more fit for purpose product that the ESO can utilise to meet their increasing need for Reactive Power. The ESO is expected to be able to procure this service in an economically efficient and proportionate way whilst ensuring that this product also remains a viable option. This is key in order to adequately incentivise potential market participants wishing to compete to provide this service.

What is the solution?

Proposer's solution

- Current arrangements for non-obligatory Reactive Power Services are based around a twelve-month minimum ERPS product; however, the CMP304 solution is looking to reduce the period of the product from twelve months, including having the possibility of multiple period products for ERPS, which range from within day, through day ahead, weekly, monthly etc., to six monthly.

At this stage, the Proposer does not wish to preclude options as to which of the timing for the product(s) will be developed further by the Workgroup and will seek industry views as part of the Workgroup Consultation as to which of these timeframes will be taken forward.

² <https://www.nationalgrideso.com/news/operability-strategy-report-2022> (ESO Operability Strategy - pages 47 - 48)

Workgroup considerations

The Workgroup convened eight times to discuss the perceived issue, detail the scope of the proposed defect, devise potential solutions and assess the proposal in terms of the Applicable Code Objectives.

Consideration of the Proposer's solution

By offering products for ERPS over shorter timeframes than the current 12 month minimum period, the Proposer believes this will enable:

- delivery of transparency and clear information to the market;
- facilitate greater competition in the provision of services; and
- meet the changing needs of balancing services providers and operational requirements of the ESO.

What is Enhanced Reactive Power Services (ERPS)

The Workgroup reviewed the definitions of 'Reactive Power' within the Grid Code³ and the CUSC⁴. The Workgroup noted that these were identical and concluded these did not need to be changed.

The Workgroup also reviewed the definitions for 'Obligatory Reactive Power Services' (ORPS) and 'Enhanced Reactive Power Services' (ERPS) which are defined in paragraphs 1.1 and 1.2 of Schedule 3, Part 1 of the CUSC⁵. The Proposer's interpretation of these paragraphs along with paragraphs 1.2.1 to 1.2.4 of the ESO guidelines for the completion of tenders for reactive power market agreements⁶ was that ERPS is the procurement by the ESO of and the provision by market participants of any Reactive Power Services that is not captured under ORPS. According to the Proposer this, legally, is regardless of whether this is done through the 12-month tender process or not and can be provided by any person, including non CUSC parties.

The ESO Workgroup Member's view was that a market agreement would be issued after the tender process to state that it is ERPS. Anything contracted outside of that by ESO would not be classified as ERPS and this was supported by their legal team, whose advice was:

- The definition of ERPS in CUSC is generic. This means that any providers of reactive power to ESO, in addition to ORPS, who are subject to bilateral agreements, technically are providers of ERPS within the CUSC meaning. However, ERPS is only relevant in the CUSC to the extent that you have a Market Agreement. The drafting of the CUSC provides that if you are a provider of ERPS this does not mean that you automatically have a Market Agreement. This is because (under

³ Page 52 - https://www.nationalgrideso.com/sites/eso/files/documents/04_GLOSSARY_DEFINITIONS_I5R28.pdf

⁴ Pages 26, 56-57

https://www.nationalgrideso.com/sites/eso/files/documents/CUSC%20Section%2011_v1.%2073_%20CMP270%201%20April%202018.pdf

⁵ Pages 1-2

<https://www.nationalgrideso.com/sites/eso/files/documents/Schedule%203%20Part%201%20-%20Balancing%20Services%20Market%20Mechanisms%20-%20Reactive%20Power%20-%20v1.7.pdf>

⁶ Pages 5-6 https://www.nationalgrid.com/sites/default/files/documents/3_Guidance%20Notes%20V2%20TR40.pdf

CUSC Schedule 3 paragraph 3.1) a Market Agreement is an Ancillary Services Agreement for ERPS (or ORPS) which has been entered into pursuant to the tender procedure in CUSC Schedule 3 paragraph 3.3.

- The deletion of the definition of ERPS in the CMP305 legal text does not mean that the concept is no longer relevant for the ESO. The ESO will be able to and intends to procure ERPS in a competitive manner going forward via the Procurement Guidelines. In addition, any current providers of ERPS via bilateral agreements will not be affected – these providers were not holders of Market Agreements within the CUSC meaning and so any arrangements applying to them will be unchanged.
- The Proposer believes there are some bilateral agreements that have been labelled (by the ESO) “Market Agreement”. However, the CUSC is clear that these agreements do not fall within the definition of “Market Agreement” and so will not be impacted by CMP305 (removal of ERPS from the CUSC) or stop the ESO procuring enhanced reactive power through other routes. ESO are aware of the drafting error and will take account of this in bilateral arrangements going forward.
- Contracts outside of the CUSC define the ERPS that the ESO have available. These can be tendered or bilateral contracts. Bilateral contracts are entered in to when there is a specific need.
- Any Reactive Power provision which is ERPS (and is therefore actually not a mandated system ancillary service) will be procured as a commercial ancillary service. The proposed removal of the definition of ERPS in the CUSC and the proposed related changes to the C16 Procurement Guidelines mean this commercial ancillary service is not badged specifically as ERPS going forward.

The ESO Workgroup Member also confirmed that that they were not aware of any current providers of Reactive Power that were not being paid by ORPS. That is anything that is being contracted on, traded on, or invested in the Balancing Mechanism for voltage reasons.

The Proposer did not feel that this legal response had answered the questions that he had originally raised. The Proposer re-iterated the points he had made earlier and questioned again whether there were any parties currently providing to the ESO Reactive Power that was not part of ORPS; i.e. ERPS or an ancillary service agreement. The Workgroup also requested clarification, from the ESO, on whether the legal contracts for certain providers pertaining to Reactive Power were ERPS or ORPS or anything else.

The ESO representative sought further internal legal advice on the definition of ERPS and confirmed further details summarised below:

- Anything not a Mandatory Ancillary Service is a Commercial Ancillary Service⁷.
- ORPS is a Mandatory Ancillary Service so any service offered over and above this is a Commercial Ancillary Service.

⁷ CUSC definitions of “Mandatory Ancillary Services” and “Commercial Ancillary Services” reference the Grid Code. “Mandatory Ancillary Services” are “Part 1 System Ancillary Services” as defined in Grid Code CC.8.1 https://www.nationalgrideso.com/document/33846/download_page_53. Commercial Ancillary Services are defined in the Grid Code Glossary https://www.nationalgrideso.com/document/33836/download_page_8

- Commercial Ancillary Services, when and what is needed and how procured, are governed by C16 and C26 of the Electricity Transmission Licence⁸ and the methodology and statements etc issued under these
- ERPS is defined in CUSC as a type of Commercial Ancillary Service (Schedule 3 Part 1 paragraph 1.2 of the CUSC)
- It is only defined in CUSC for the purposes of CUSC Schedule 3 and because Schedule 3 has set out a particular process through which agreements for ERPS (and differences in the default ORPS services) can be agreed. Where this process is followed the Commercial Services Agreement is referred to in CUSC as a Market Agreement.
- It does not follow that all Commercial Services Agreements providing for the enhanced reactive service are or have to be Market Agreements or that you can only contract for an enhanced service through the process set out in CUSC and have a Market Agreement.
- The CUSC process is not intended to be the only mechanism of procuring enhanced reactive services or prevent or restrict (or so limit how and the terms of) parties entering Commercial Services Agreements (CUSC Schedule 3 Paragraph 3.1(b) (wrongly numbered as a duplicated 3.1(a)) but sets out a process to do so and the principles for this (and reference to Market Agreements) when it is used.

The ESO representative provided further information on current number of providers of reactive power services to the ESO. The table below excludes services provided under the Pathfinder approach, services provided via ORPS and those provided by Transmission Owners (TOs).

Procurement mechanism used for entering into Contract	CUSC Party	Non-CUSC Party
Via process in CUSC Schedule 3	0	0
Via process outside of CUSC Schedule 3	3	0

Period of the product (or contract duration)

The Workgroup's understanding is that currently ERPS requires a minimum 12-month commitment which exposes providers to significant risk and offers insufficient flexibility for all parties. With the CMP304 solution it is proposed that there should be a reduction of the time period of the product and replacing it with, potentially, some of the following multiple time period products, which could be procured ahead of the service from multiple parties (including non-CUSC parties).

⁸

<https://epr.ofgem.gov.uk/Content/Documents/Electricity%20transmission%20full%20set%20of%20consolidated%20standard%20licence%20conditions%20-%20Current%20Version.pdf>

- Part day (as in South Wales pathfinder), possibly by EFA Block as is the norm for Firm Frequency Response (FFR)
- Day (24-hour period)
- Weekdays
- Weekends
- Full week
- Fortnightly
- Monthly
- 12 weeks⁹
- Quarterly
- Six monthly and
- Seasonal.

Pros and Cons of reducing the Period of the Product

- Administrative burden and Impact on non CUSC Parties:

Pros	Cons
Reducing the 12 months will allow users to reduce the risk of providing ERPS which, in turn, will bring more providers into the market for reactive services leading to greater competition / lower costs to consumers.	Might not allow ESO to fully hedge their position.
Reducing the 12 months will allow the ESO to procure more short-term capability to match the short-term operational needs of the NETS.	Risk of discouraging investment from providers with the short - term products
If there was a mixture of long term and short term periods of products this would negate any potential disadvantages for stakeholders or the ESO.	

The Proposer explained that the intention of CMP304 is to make sure Reactive Power services are provided by all parties on the same basis (a 'level playing field') to maximise competition and increase participation in the market which, in turn, also could improve market liquidity and lead to lower prices to end consumers.

All parties (CUSC or non CUSC) will have to follow the same administrative process, whether this be the current process or a process similar to that being used for the ESO's Power Responsive trials – there would be a migration of those on the current process over to the Power Responsive process or vice versa for providing (non ORPS) Reactive Power to the ESO. This will minimise the administrative burden on all parties and enable them to compete on a level playing field; enabling, for example, the ESO to save on the cost of running both processes and making it easier for the ESO to compare prices between providers.

⁹ Similar, in principle to the 'quarterly' time period product except it might run over different start/end points.

The ESO representative agreed with the Proposer and confirmed that they were also looking to make the process as fair and simple as possible with the key aim of creating a more competitive market.

A Workgroup member noted the Proposer's concerns in relation to a 12-month product. The Workgroup member suggested that a longer-term product should also be considered, especially in relation to the capacity market. This would mean that Market participants could then take part in the capacity auctions before deciding how long they would prefer their ERPS contract to be.

The Proposer stated that he would be happy to incorporate this greater than 12-month timescale into the ERPS timing products and offer market participants and the ESO the opportunity to procure on a long-term basis (as well as a short-term basis) should they wish to do so. This is provided that it reconciles against Article 16(6)¹⁰ of the European Balancing Regulation (EBR). Which states, in summary, that a market price must be used rather than a predetermined price in their contract(s) and does not differentiate between availability price and utilisation price.

The ESO representative confirmed that following a legal opinion, Article 16(6) EBR does not preclude the ESO from using availability prices in the contracts for ERPS, the reasoning behind this was as follows:

- The absence of equivalent wording in Article 16(6) applicable to balancing capacity suggests that predetermined balancing capacity prices are not excluded. If this were the case, the ESO would expect that the first sentence of Art 16(6) would apply to both balancing capacity and balancing energy, with the possible exemption relevant only to balancing energy.
- Article 16(3) also specifies that balancing capacity bids shall be made by each "balancing provider participating in the procurement process", suggesting that it is possible to be a balancing service provider without participating in the procurement process and being paid a specified availability price.
- The definition of "balancing capacity" also refers to the provider "agreeing to hold" a "volume of reserve capacity" suggesting that an agreed price for availability is possible.

The Proposer stated that given the wording in Article 2 (definitions) and Article 16 of EBR, that he struggled to understand the point being made by the ESO's legal team and felt that this response contained serious legal flaws which rendered it incorrect in terms of Article 16(6). The ESO representative sought a further legal view on this [and confirmed the following:

¹⁰ "The price of the balancing energy bids or integrated scheduling process bids from standard and specific products pursuant to [Article 16] paragraph 4 shall not be predetermined in a contract for balancing capacity. A TSO may propose an exemption to this rule in the proposal for the terms and conditions related to balancing set-up pursuant to Article 18. Such an exemption shall only apply to specific products pursuant to Article 26(3)(b) and be accompanied with a justification demonstrating higher economic efficiency."

- Balancing capacity and balancing energy are different. A party provides bids for balancing capacity (Article 16(2) of EBR¹¹) that it agrees to hold and bids for corresponding balancing energy (Article 16(4) of EBR¹²).
- There is a general distinction in Article 16 between balancing capacity bids and balancing energy bids and Article 16(6) specifically and clearly refers to the price of the balancing energy bids.

Following review of Workgroup consultation responses and further development of the solution, the Workgroup will again consider interactions with Article 16(6).

Tender Schedule

The Workgroup discussed the Tender Schedule. The current Tender Schedule process outlined in CUSC Schedule 3 Part 1 outlines the following process:

- **Contract Start Date** on either 1 April or 1 October
- **Market Day** (tender submission day) shall be a date not earlier than twelve weeks and not later than eight weeks prior to a Contract Start Day
- A **Tender Period** shall be a period of at least four consecutive weeks commencing on a date nominated by The ESO and ending on a Market Day
- The ESO shall use reasonable endeavours to evaluate Tenders within five weeks from each Market Day
- Successful tenderers should enter into a contract no later than two weeks before contract start date. After this point either party can pull out.

For comparison, see the schedule for the last tender round:

Tender Round (48)

- 30 July 2021 – Tender opens
- 13 August 2021 – Tender closes (Market Day)
- Tender results by 17 September 2021
- 1 October 2021 – Contract start date

Depending on the period of the product chosen (such as 24 hour day, EFA Block, Season etc.), there will likely need to be a change made to the tender schedule. This could include:

- More frequent tenders i.e. more than two per year
- Quicker assessment of tenders
- Shorter timescales between the market opening and 'Market Day'

¹¹ "Each balancing service provider shall submit to the connecting TSO its balancing capacity bids that affect one or more balance responsible parties."

¹² "Each balancing service provider with a contract for balancing capacity shall submit to its connecting TSO the balancing energy bids or integrated scheduling process bids corresponding to the volume, products, and other requirements set out in the balancing capacity contract."

An obvious option could include the introduction of daily tendering via auction at the day ahead stage for daily contracts by EFA Block. See the table below outlining some of the potential options:

Tender Schedule	Open	Close
Intra Day	Open sufficient number of days before the close. Day ahead STOR opens a week before the auction close. As a general rule, the longer the contract duration, the earlier the tender process should open	X hours before contract start
Day Ahead		Day ahead of contract start date
Weekly		Day ahead of contract start date or earlier
Monthly		Day ahead of contract start date or earlier
Quarterly		Day ahead of contract start date or earlier
Twice yearly (Current process)		Day ahead of contract start date or earlier
Anything in between		

Specific Workgroup Consultation Question: The Workgroup have suggested a number of period of product and tender schedules for ERPS going forward. Do you agree or disagree with any of these options, if so why? Or do you have any further timing suggestions (if so, what is your rationale for them).

Payment Methods

The default payment for ORPS is utilisation only. For ERPS, under the market mechanism, there are up to three pricing methods for both Leading and Lagging Mvars for up to three “Capability Breakpoints”. The three payment methods are:

- Utilisation (£/Mvarh)
- Available Capability (£/Mvar/h)
- Synchronised Capability (£/Mvar/h)

A provider can choose to receive any combination of these three options. All prices capped at ~£1,000 per unit.

The provisions of an ERPS market agreement can “suspend and replace” the default ORPS payments (Schedule 3 paragraph 3.2) for the duration of this market agreement. If the duration of the ERPS tender exceeds 12 months, the tender can include a mechanism for calculating an indexation to apply to all prices submitted.

The Workgroup questioned what payment methods were being proposed by CMP304 and if it would use availability payments and/or utilisation payments. The Proposer explained that they would like to remain with the current payment arrangements if these are still legally permissible under Article 16(6) EBR.

Specific Workgroup Consultation Question: What payment method would stakeholders prefer subject to any restrictions imposed by this regulation?

Re-positioning costs

The Workgroup discussed whether market participants or the ESO should take on the financial risk associated with re-positioning costs. Most Balancing Mechanism Units (BMUs) need to be generating or consuming power to enable the provision of reactive capability. Where a BMU is profitable in the wholesale power market (“in the money”) it is economic to generate or consume power and the BMU will produce and consume Mvars which are paid at the ORPS Default Payment rate. As it is economic for the BMU to generate or consume there is no repositioning cost. However, where the ESO needs to access a BMU’s reactive capability, and it is uneconomic for the BMU to generate or consume power in the wholesale power market, the ESO will need to instruct the BMU to generate or consume in the Balancing Mechanism by issuing a Bid or an Offer. The cost of the Bid or Offer represents the repositioning cost.

For ERPS, any repositioning costs are borne by the provider. If a BMU is not expected to be generating or consuming during at least some portion of the ERPS contract duration it will need to generate or consume power for some period at a loss. The cost associated with this will need to be built into the price submitted as part of the ERPS tender.

The longer the tender (such as 12 months with the existing ERPS product) the greater the risk (for the BMU) associated with the repositioning cost as the BMU is much less certain to know its operating regime that far out.

The view of the ESO was that they would not support any additional financial risk being put on the ESO.

There were views from the Workgroup that the risk to the ESO was much lower than other market participants given, for example, the informational differences. The ESO representative disputed these claims and stated that the risk was the same on both sides. The Workgroup decided that whatever arrangements were agreed, they should not prevent market participants (including TSOs and DSOs) from offering to provide that service as long as all did so on the same contractual terms in a harmonised way.

The Proposer concluded that their view was that with CMP304 ‘Original’ the risk should sit with the market participants and not ESO. However, the Proposer recognised that there were benefits to both approaches and there may be merit in an alternative being raised.

Specific Workgroup Consultation Question: Should the risk of repositioning costs be put on market participants or the ESO?

The future of ERPS

The ESO Workgroup Member confirmed that they no longer see ERPS as a sustainable service. They have raised CMP305 (“Removal of the Enhance Reactive Power Service (ERPS)”) and stated that this is the ESO’s recommended approach.

Some Workgroup members, including the Proposer, believed that CMP304 would address everything that the ESO was trying to achieve under SNAPs and Principle 3¹³ of the ESO forward plan, such as increasing competition, removing barriers, levelling the playing field and developing new markets, but through an open governance approach.

The counterview raised to this by the ESO representative was that this work on Reactive Power is part of a wider work-stream (the 'Future of Balancing Services') initiated by the ESO, with a specific project looking at the Future of Reactive Power¹⁴. The Future of Reactive Power project is exploring potential solutions that could enable more participants across technologies and connection types to provide reactive power services in the right locations to maintain system voltage security and drive down the overall reactive costs to maximise consumer benefits. The ESO project has included a market survey and a number of interactive webinars to seek industry input. The ESO's recommendations will be shared with industry in March 2022¹⁵. Workgroup members noted that this work was running some three years late compared to the ESO's original timetable.

ESO Relationship with Transmission Owners

A Workgroup member noted that Reactive Power can be sourced from Transmission Owner (TO) assets (such as STATCOMs, SVCs, switched capacitor or reactors) or from market participants with the capability of providing the service. There needs to be a transparent process which allows TO Reactive Power providable asset(s) to compete on a level playing field with market participants. If the ESO has identified a need for Reactive Power capability at a particular location and is considering, for example, a TO solution based on a STATCOM to provide this, then what are the stages in the procurement process to confirm that this is the most economic choice (including costs of losses, penalties for unavailability, risk of asset not being fully utilised in the future with possible generator / demand changes and / or network changes¹⁶ etc.)? Market participants should be allowed the same opportunity to offer to the ESO a bid price, in advance of bidding, that they would need to beat in order to be preferred over a TO asset (if this is compatible with the Article 16(6) aspects of EBR noted above).

A Workgroup member also highlighted that where a plant has to be modified or to make modifications to its current operating procedures in order to provide any form of Enhanced Reactive Power Service (or where developers are offering to provide a service from new plant), plant owners need to be able to develop a view of future revenues with a degree of confidence. It is important the ESO's investment decisions on new reactive plant procurement are published well in advance to maintain this confidence in investment decisions.

¹³ Principle 3 ESO Forward Plan - Ensure the rules and processes for procuring balancing services and maximise competition where possible and are simple, fair and transparent. Promote competition and develop new markets in balancing services. Grow participation and promote fair access in provision of balancing services.

¹⁴ NGENO Reactive Reform – market design home page <https://www.nationalgrideso.com/uk/electricity-transmission/balancing-services/reactive-power-services/reactive-reform-market-design>

¹⁵ Updates can be found on the NGENO website, including the following:

- Future of Reactive Power update webinar, including summary of market survey results <https://www.nationalgrideso.com/document/214411/download>
- Strawman Design workshop slides <https://www.nationalgrideso.com/document/224326/download> and workshop recording https://players.brightcove.net/867903724001/default_index.html?videoid=6285801592001
- Market Analysis Case Study workshop slides <https://www.nationalgrideso.com/document/228931/download>

¹⁶ including the costs of non-payment of those network charges by network assets providing this service.

The ESO confirmed that the Reactive Power Services provided by the TOs are managed through their price controls. The TOs include plans to build reactive capability to meet system needs in their business plans. There is also a process whereby the ESO can trigger investment in assets that provide Reactive Power Services through an STC planning request. Payment is via the assets' inclusion in the Regulated Asset Base (RAB) – it forms part of TNUoS charges that are recovered by the ESO on behalf of the TO. There are no additional payments made.

Funding Mechanisms

The Workgroup held a discussion on Power Potential and sought clarification on the funding mechanisms for this. The ESO representative confirmed the following:

- Power Potential was an innovation funded project (recovered via TNUoS charges) which trialled the use of Reactive Power from DER via Distribution Network Operators (DNO). The ESO trialled this in partnership with UKPN as part of a Network Innovation Competition (NIC) project.

This trial aimed to understand if the ESO could procure reactive power support directly from Distributed Energy Resources (DER) via a DNO. The trial closed in July 2021 and the [Project Close Down Report](#) was issued in August 2021. Power Potential learnings are feeding into current and future work by the ESO. The Proposer suggested that absent an express derogation granted by GEMA to the ESO that puts aside the express CUSC obligations on the ESO, that the logical conclusion is that the approval by GEMA (of the Power Potential project) could only be read as being on the basis that GEMA expected that the ESO would do so fully in compliance with the existing regulatory framework, including compliance with CUSC (and other) reactive power obligations; i.e. ERPS if not ORPS.

The ESO representative's view was that under current arrangements, the ERPS market mechanism process is one approach to procure reactive power services, but the ESO is not obligated to only use this approach. In the case of Power Potential, the contractual arrangement sat outside of the CUSC.

- There was an Inter - Operator Agreement (IOA) contract (which is not visible to stakeholders. between UKPN and the ESO governing the trial operations to include interactions with the DER and the payment process. The project was undertaken with full Ofgem visibility and approval of the bid document. The IOA set out a 'back-to-back' arrangement whereby the ESO paid UKPN and then UKPN paid the provider, for Reactive Power services provided, but it was purely pass-through; i.e. no uplifts are applied to the payments. These payments for Reactive Power were funded through the innovation pot of funding provided by the NIC during the first two waves of the trial, as these phases test the technical capability and market processes.
- The volumes procured are not used by the ESO to secure the system. During the third and final wave of the project the Reactive Power services will be funded through BAU, namely BSUoS, as the technical capability would have been established and volumes procured will be used by the ESO to secure the system. If this service

becomes BAU, the ESO will only use it if it is the most economic and efficient action to take hence it could displace other actions and the cost passed through to BSUs.

Authority Decision on CMP305 – Removal of Enhanced Reactive Power Services

The Workgroup initially considered the responses to the CMP305¹⁷ Code Administrator Consultation. The Proposer suggested that the CMP304 Workgroup should take on board any information provided by the Authority in its final decision letter on CMP305, if it was forthcoming ahead of the Workgroup concluding its work but highlighted that CMP304 is not dependent on CMP305 and should be considered in its own right.

The Workgroup subsequently noted that on 1 February 2019 the Authority had issued a CMP305 send back decision letter¹⁸. This letter outlined that additional information was required and requested that CMP305 be re-submitted to the Authority for a decision alongside CMP304.

Other Workgroup discussion points not in scope of CMP304

Obligatory Reactive Power Service (ORPS)

The Workgroup considered whether they could rectify issues with ORPS (the mandated service as per detailed in a Mandatory Service Agreement (MSA)) alongside ERPS (the optional commercial service). The Workgroup concluded that this was out of scope for CMP304, as the defect only referred to ERPS.

In the view of the ESO, an ORPS CUSC modification could be needed once a solution has been more fully explored, the scale of that change would be shaped by the engagement that ESO will do with industry.

What regions should be used?

The Workgroup discussed whether they would need to define regions for ERPS. ERPS tenders refer to a “Reactive Power Capability Requirement Index” but it wasn’t entirely clear how meaningful this was to the tender process. One Workgroup member thought that as it was a regional service and as these regions are not defined it could lead to multiple parties submitting low offers which are then rejected for higher bids because they were not located within the vicinity of the required service.

The ESO would also need to make sure they had more than one party within a region to run a truly competitive tender service. The ‘maps’ used for the tenders recently held by the ESO

¹⁷ <https://www.nationalgrideso.com/codes/connection-and-use-system-code-cusc/modifications/removal-enhanced-reactive-power-service>

¹⁸ The CMP305 Authority send back letter can be found using the following link: <https://www.nationalgrideso.com/codes/connection-and-use-system-code-cusc/modifications/removal-enhanced-reactive-power-service>

in South Wales, Mersey and Scotland (which was also accompanied by 'effectiveness' factors) would be a useful starting point.

It was noted that the ESO had tendered for Enhanced Reactive Power Services in South Wales, Scotland and Merseyside region in 2019 and, as part of the tender assessment, the ESO brought forward the concept of effectiveness. In the Scotland tender, a geographical heat map was included in the information for tenders to show where the greatest need, for reactive power, was.

For the South Wales tender, the effectiveness of plant connected at a different electrical locations, both in terms of connection arrangement and voltage level, was included; specifically, plant connected at 132kV (distribution) was judged 50% as effective as plant connected at 400kV (transmission). This could be interpreted to mean Bidder A connecting at 132kV must offer a utilisation price (£/MVarh) of half (50%) that of Bidder B's utilisation price if Bidder B connects at 400kV, for the same availability payment. It is understood from the ESO that this reduction in effectiveness at lower voltages represents the difficulty in getting MVar from where plant is connected to where its Reactive Power capability is required.

The Workgroup agreed that in advance of any new tender process, it is important that the ESO provides a transparent process for ascribing effectiveness factors, covering geographical locations, connection arrangements and voltage levels.

The Workgroup discussed whether they could have overlapping regions or if the borders would need to be set in stone. A Workgroup member highlighted that Reactive Power is dependent on the configuration of the transmission system and its daily flows. As this is continuously moving and changing, they will not be able to embed a lasting solution within either the CUSC or the non CUSC approach. All that they could state is that within certain parameters that power stations will not currently be able to provide Reactive Power to that part of the network. The Workgroup highlighted the importance of forward - looking programmes to encourage new assets / market providers to fill in any gaps on the network to facilitate competition.

The Workgroup questioned whether the Proposer concluded that the regions should be as flexible as the ESO requires them to be, but they should be applied on the same basis to all market participants, to facilitate competition.

Due to the regional requirements of the product and the additional complexities associated with it, the ESO is looking to get the most efficient and competitive solution possible by answering these questions through engagement with industry through its roadmap. The Technical Analysis workstream of the Future of Reactive Power project is considering zoning methodologies and effectiveness ratings as part of its scope. The ESO representative agreed with the Workgroup that any methodology and ratings system needs to be transparent to all parties.

Reactive Power roadmap

The Proposer noted that the intention with CMP304 was to develop a solution based on the ESO's Reactive Power roadmap and related initiatives such as the Power Responsive innovation trail (but applying an open governance approach). However, it was noted that as of early 2022 the Reactive Power Roadmap had still not been produced by the ESO (it having stated previously that it would do so by spring 2019). The ESO's Future of Reactive Power project is due to deliver recommendations by the end of March 2022.

Draft legal text

Legal text will be drafted after the Workgroup Consultation has been completed.

What is the impact of this change?

Proposer's assessment against Code Objectives

Proposer's assessment against CUSC Non-Charging Objectives	
Relevant Objective	Identified impact
(a) The efficient discharge by the Licensee of the obligations imposed on it by the Act and the Transmission Licence;	Neutral [Please provide your rationale]
(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 (see below)
(c) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency *; and	Neutral [Please provide your rationale]
(d) Promoting efficiency in the implementation and administration of the CUSC arrangements.	Positive (see below)
*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).	

Making ERPS a fit for purpose product that the System Operator can utilise to meet their increasing need for reactive power in a reasonable, efficient and proportionate way and ensuring that it is a product that existing and potential market participants wish to compete to provide will facilitate competition in the generation and supply of electricity, which better facilitates Applicable Objective (b).

Reviewing, refreshing and modernising the current ERPS arrangements in the CUSC will make them fit for purpose (and lead to more providers coming forward which will maximise competition in the provision of reactive power, so better facilitates Applicable Objective (b)) which will promote efficiency in the implementation and administration of the CUSC arrangements which better facilitates Applicable Objective (d).

Standard Workgroup consultation question: Do you believe that CMP304 Original proposal better facilitates the Applicable Objectives?

Workgroup Assessment of Impacts

The Workgroup identified the following impacts as a result of CMP304:

ESO

This modification will impact the ESO in relation to running the Tender process and managing reactive power products of differing durations.

Market Participants

Tendering activity will be affected and how they optimise value for their assets.

When will this change take place?

Implementation date

10 working days after Authority Decision. However, a transition period for IT systems for the ESO and participants for tender participation will be required. This will be of a number of months duration, which the Workgroup will examine in due course.

Date decision required by

As soon as possible.

Implementation approach

Dependant on the Proposer's final solution, there could be IT and operational impacts for the ESO. However, as the Workgroup further re-fine the solution, more details on this will be known and it is likely to involve a transition period between implementation into the CUSC and the tendering process going live.

Note: CMP304 and CMP305 cannot both be approved given that they are mutually exclusive.

Standard Workgroup consultation question: Do you support the implementation approach?

Interactions

- | | | | |
|---|--|---|--------------------------------|
| <input type="checkbox"/> Grid Code | <input type="checkbox"/> BSC | <input type="checkbox"/> STC | <input type="checkbox"/> SQSS |
| <input type="checkbox"/> European Network Codes | <input type="checkbox"/> EBR Article 18 T&Cs ¹⁹ | <input checked="" type="checkbox"/> Other modifications | <input type="checkbox"/> Other |

This modification has interactions with [CMP305 'Removal of the Enhanced Reactive Power Service \(ERPS\)'](#). CMP305 was [sent back](#) by the Authority on 1 February 2019. The Final Modification Report for CMP305 will be resubmitted to the Authority alongside the Final Modification Report for CMP304.

¹⁹ If the modification has an impact on Article 18 T&Cs, it will need to follow the process set out in Article 18 of the Electricity Balancing Regulation (EBR – EU Regulation 2017/2195) – the main aspect of this is that the modification will need to be consulted on for 1 month in the Code Administrator Consultation phase. N.B. This will also satisfy the requirements of the NCER process.

How to respond

Standard Workgroup consultation questions

1. Do you believe that CMP304 Original proposal better facilitates the Applicable Objectives?
2. Do you support the proposed implementation approach?
3. Do you have any other comments?
4. Do you wish to raise a Workgroup Consultation Alternative request for the Workgroup to consider?
5. Do you agree with the Workgroup's assessment that CMP304 does not impact the European Electricity Balancing Regulation (EBR) Article 18 terms and conditions held within the CUSC?
6. Do you have any comments on the impact of CMP304 on the EBR Objectives?

Specific Workgroup consultations questions:

7. The Workgroup have suggested a number of period of product and tender schedules for ERPS going forward. Do you agree or disagree with any of these options, if so why? Or do you have any further timing suggestions (if so, what is your rationale for them).
8. What payment method would stakeholders prefer subject to any restrictions imposed by this regulation?
9. Should the risk of repositioning costs be put on market participants or the ESO?

The Workgroup is seeking the views of CUSC Users and other interested parties in relation to the issues noted in this document and specifically in response to the questions above.

Please send your response to cusc.team@nationalgrideso.com by 5pm on 10 March 2022 using the response pro-forma which can be found on the [CMP304 modification page](#).

In accordance with Governance Rules if you wish to raise a Workgroup Consultation Alternative Request please fill in the form which you can find at the above link.

If you wish to submit a confidential response, mark the relevant box on your consultation proforma. Confidential responses will be disclosed to the Authority in full but, unless agreed otherwise, will not be shared with the Panel, Workgroup or the industry and may therefore not influence the debate to the same extent as a non-confidential response.

Acronyms, key terms and reference material

Acronym / key term	Meaning
BSC	Balancing and Settlement Code
CMP	CUSC Modification Proposal
CUSC	Connection and Use of System Code
EBR	Electricity Balancing Guideline
ERPS	Enhanced Reactive Power Service

MSA	Mandatory Service Agreement
ORPS	Obligatory Reactive Power Service
STC	System Operator Transmission Owner Code
SQSS	Security and Quality of Supply Standards
T&Cs	Terms and Conditions

Reference material

- CMP305 Code Administrator Consultation Responses
- Authority Decision on CMP305

Annexes

Annex	Information
Annex 1	Proposal form
Annex 2	Terms of reference