

GC0117 Improving transparency and consistency of access arrangements across GB by the creation of a pan-GB commonality of Power Station requirements

Send Back Workgroup meeting 1 – Friday 24 October 10am

Online Meeting via Teams

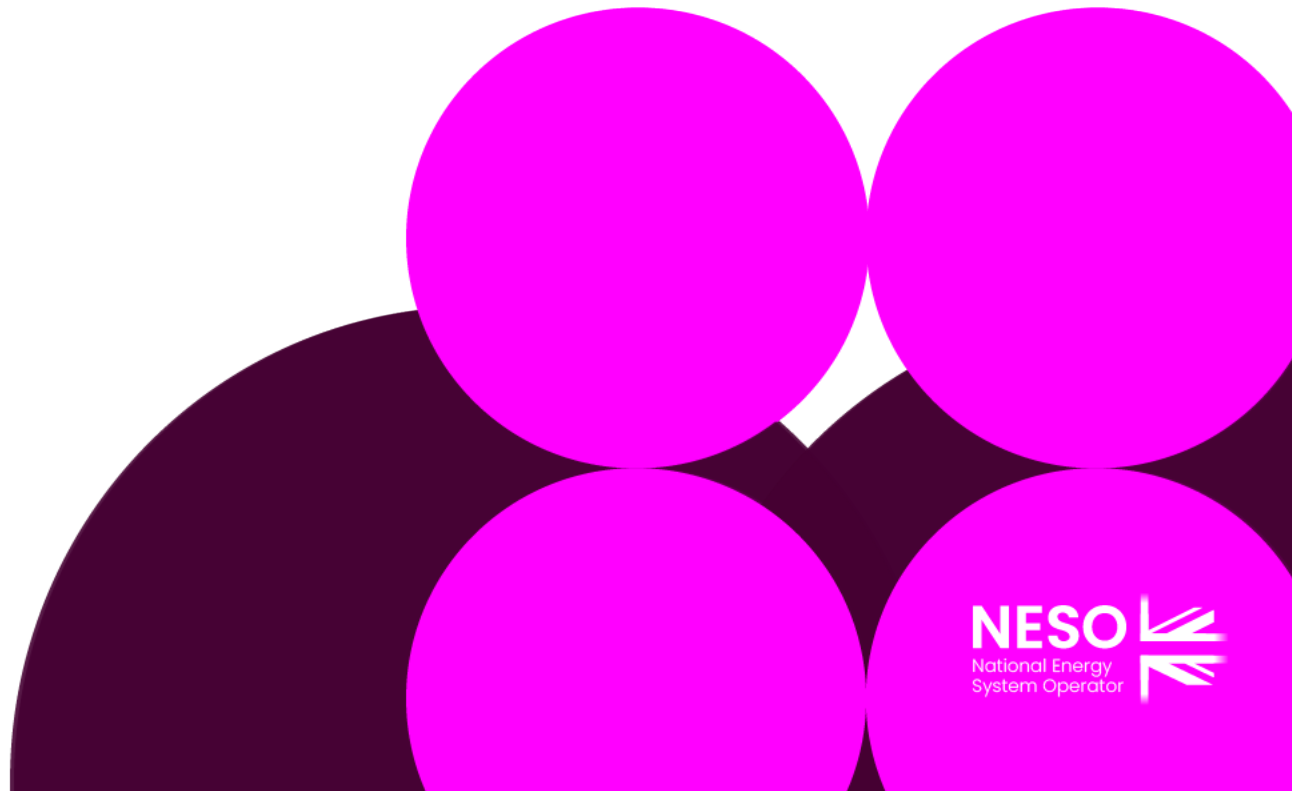
WELCOME

Agenda

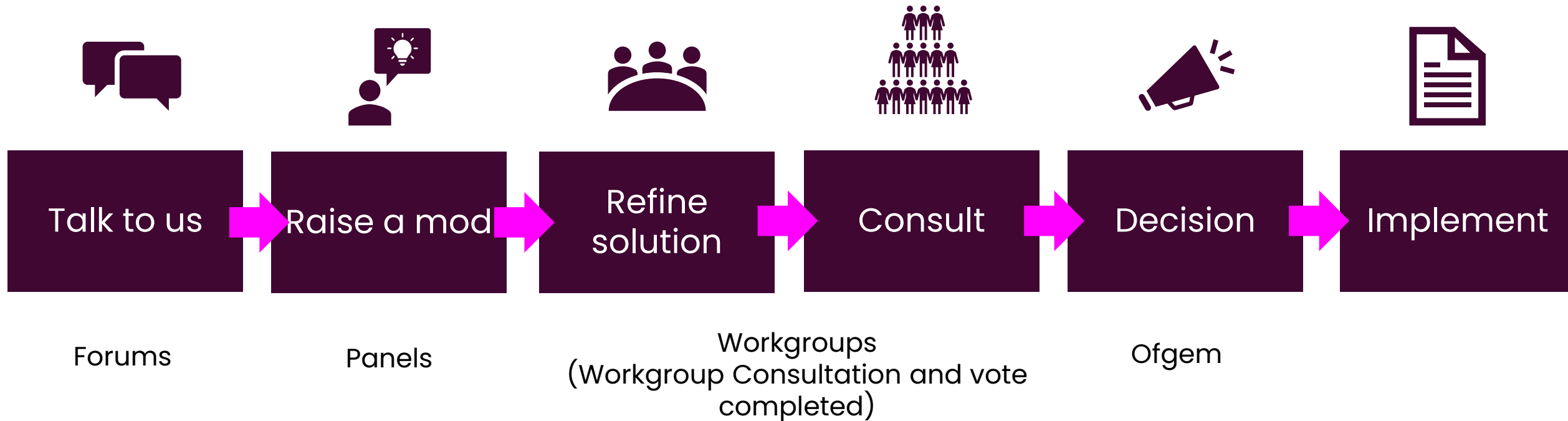
Topics to be discussed	Lead
Introductions	Chair
Modification Process Overview Workgroup Responsibilities and Membership Workgroup Vote Decision	Chair
Objectives and Timeline	Chair
NESO presentation	NESO Subject Matter Experts
Questions from Workgroup Members	All
Terms of Reference	All
Any Other Business	Chair
Next Steps	Chair

Modification Process

Claire Goult – NESO Code Administrator



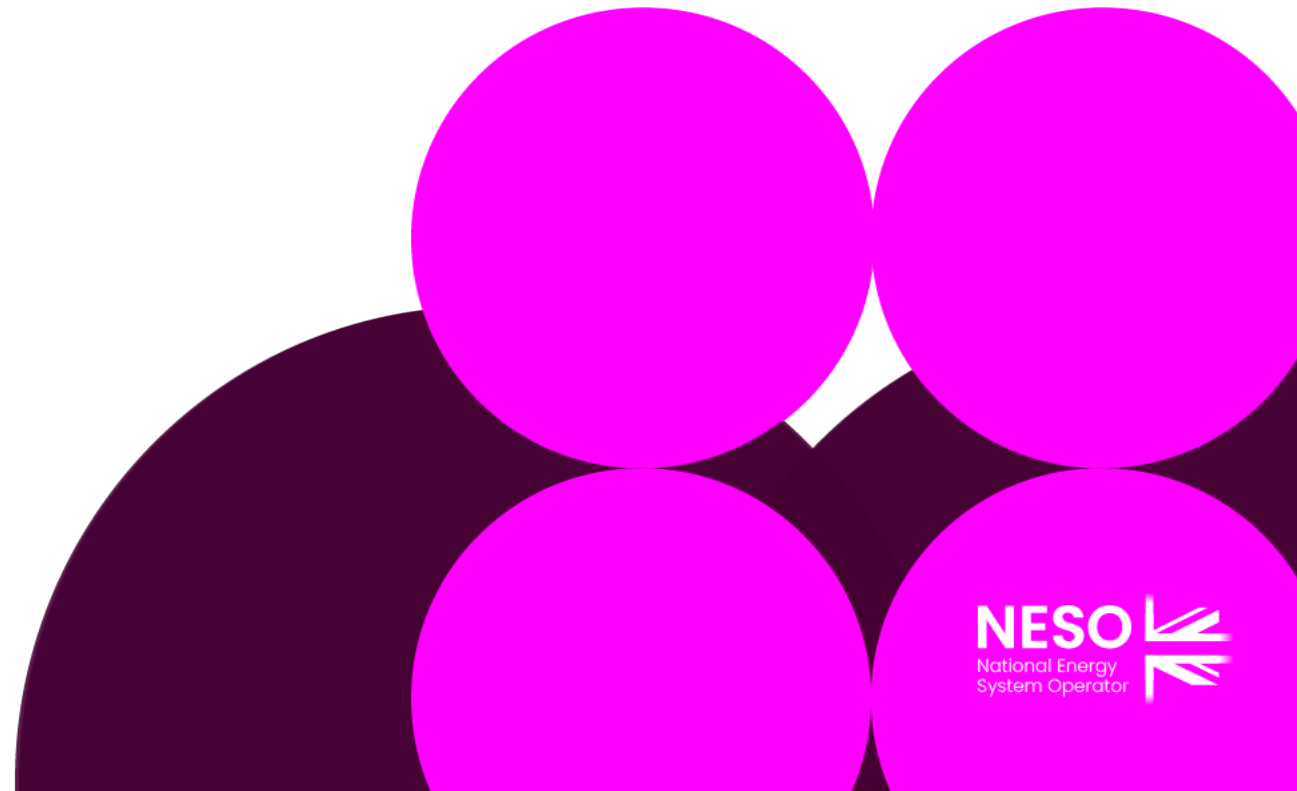
Code Modification Process Overview



GC0117 Send back will go through a Second Code Administrator Consultation (following panel agreement), Second Draft Modification Report, Second Final Modification Report

Workgroup Responsibilities and Membership

Claire Goult – NESO Code Administrator



Expectations of a Workgroup Member

Contribute to the discussion

Be respectful of each other's opinions

Language and Conduct to be consistent with the values of equality and diversity

Do not share commercially sensitive information

Be prepared – Review Papers and Reports ahead of meetings

Complete actions in a timely manner

Keep to agreed scope

Email communications to/cc'ing the .box email

Your Roles

Help refine/develop the solution(s)

Bring forward alternatives as early as possible

Vote on whether or not to proceed with requests for Alternatives

Vote on whether the solution(s) better facilitate the Code Objectives

Workgroup Membership

Role	Name	Company
Proposer	Garth Graham	SSE Generation
NESO Representative	Antony Johnson	NESO
Workgroup Member	Andrew Akani	National Grid Electricity [Distribution] [Transmission]
Workgroup Member	Alan Creighton	Northern Powergrid
Workgroup Member	Benchohra Sayah	National Grid Electricity Transmission
Workgroup Member	Chris Marsland	AMPS
Workgroup Member	Issac Guthrie	Scottish Power Renewables
Workgroup Member	Graeme Vincent	SP Energy Networks

Workgroup Membership

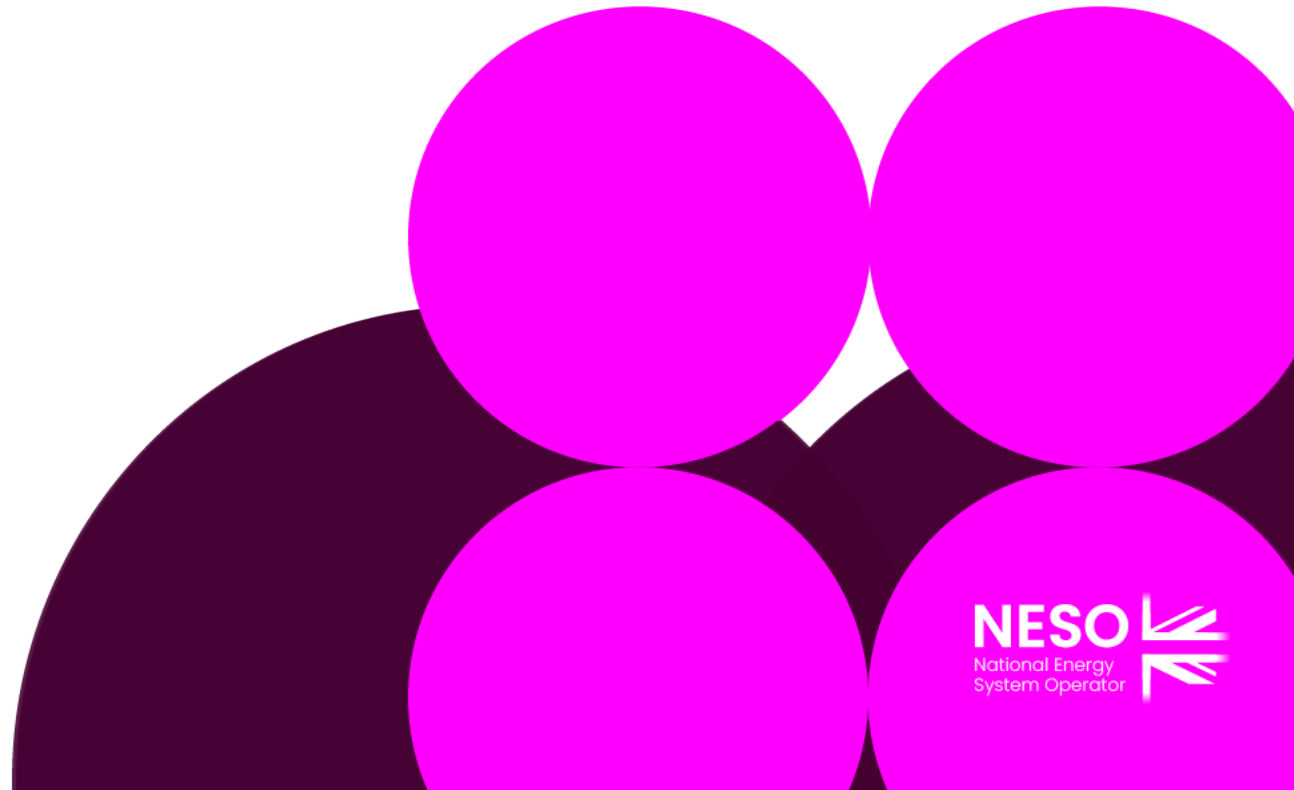
Role	Name	Company
Workgroup Member	Joe Colebrook	Innova
Workgroup Member	John Brereton	Enviromena
Workgroup Member	John Lucas	Elexon
Workgroup Member	Madhusudhan Srinivasan	SSEN
Workgroup Member	Maria Ebue	Voltalia UK Ltd
Workgroup Member	Paul Youngman	Drax
Workgroup Member	Peter Twomey	Electricity North West
Workgroup Member	Richard Wilson	UK Power Networks

Workgroup Membership

Role	Name	Company
Workgroup Member	Roddy Wilson	SHE Transmission
Workgroup Member	Tim Ellingham	RWE
Observer	William Maidment	Nadara
Authority Representative	Paul Drew	Ofgem

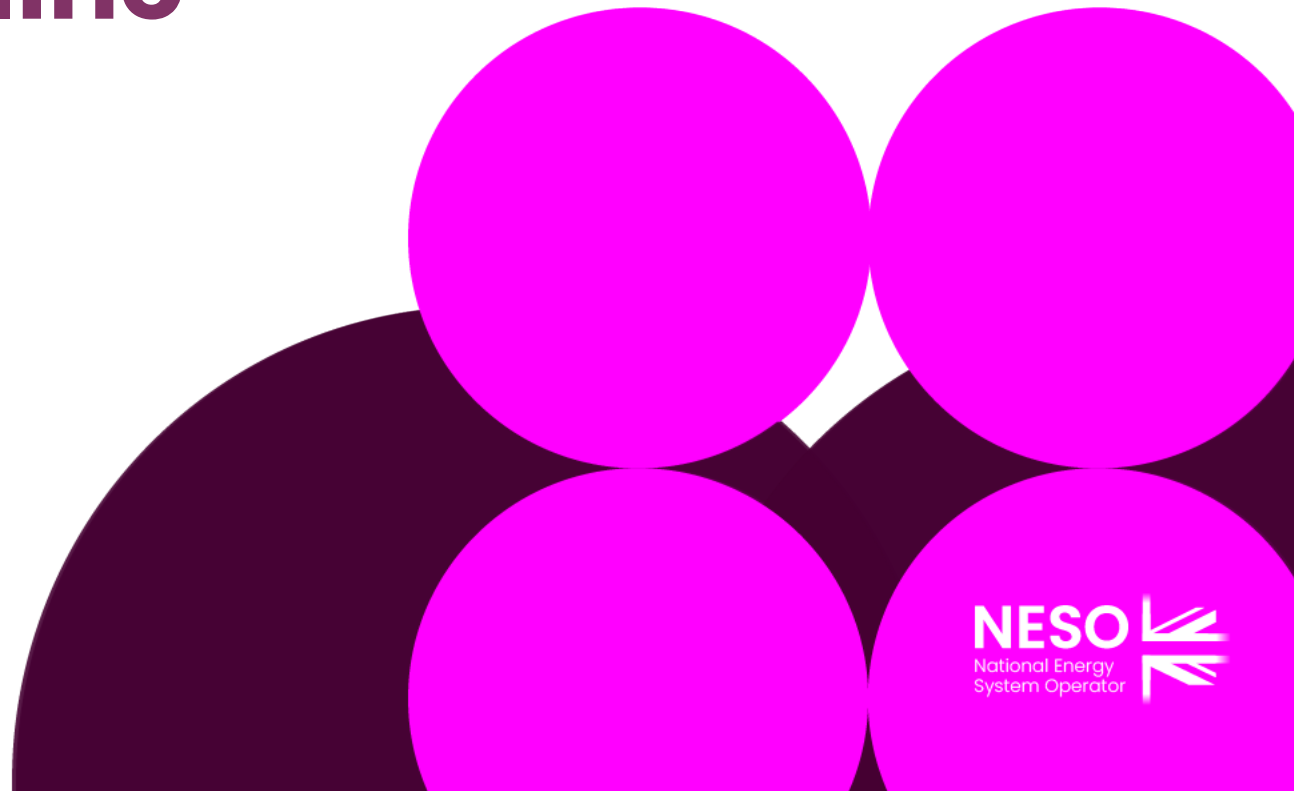
Workgroup Vote Decision

Claire Gault – NESO Code Administrator



Objectives and Timeline

Claire Goult – NESO Code Administrator



Timeline

Objectives

Consider send back details

Review Terms of Reference

Timeline for GC0117 as of October 2025

Workgroups		
Workgroup 1 (24)	24 October 2025	Discuss Send Back
Workgroup 2 (25)	13 November 2025	Progress Check
Workgroup 3 (26)	03 December 2025	Afternoon due to GDCF
Workgroup 4 (27)	21 January 2026	Progress Check
Workgroup 5 (28)	26 February 2026	Draft CAC
Workgroup 6 (29)	19 March 2026	Review Second CAC and confirm vote
Post Workgroups		
Present Second CAC to Panel	23 April 2026	Panel papers due 15 April
Second Code Administrator Consultation	13 May – 15 June 2026	1 month
Second Draft Final Modification Report to Panel	22 July 2026	Panel on 30 July 2026
Second Final Modification Report to Ofgem	07 August 2026	
Implementation Date	10 Business Days post Authority Decision	

NESO SME Presentation

Amanda Rooney and Tony Johnson

Summary of Presentation

- Recap of the GC0117 Modification
- Ofgem's Send back
- Issues going forward
- GC0117

Recap of Modification

- GC0117 Modification proposed by SSE Generation (20 June 2018) to harmonise Power Station Thresholds across GB; open governance means a solution will be progressed and submitted to Ofgem for a decision.
- Development by industry workgroup including NESO .

Current Thresholds

Generator Size	Embedded Connection		
	SHET	SPT	NGET
Small	<10MW	<30MW	<50MW
Medium			50-100MW
Large	10MW+	30MW+	100MW+

 Mandatory BM participation

- 'Large' embedded generators as defined in the Grid Code have to participate in the Balancing Mechanism in some form (e.g. BELLA (Scotland only) and or BEGA) and have a contract with the ESO
- BELLA – Bilateral Embedded Licence exempt Large Agreement, BEGA – Bilateral Embedded Generation Agreement
- Thresholds differ across GB TO areas for historical reasons

Current options to address Modification

- Original Proposal – Small/Large Threshold set at 10MW with the Medium Threshold removed
- Alternative Proposal raised by Northern Powergrid – England and Wales Small/Medium/Large Thresholds moved into Scotland

Current Options to Address Modification

Generator Size	Harmonised Proposal Across GB	
	Original Proposal	Alternative
Small	<10MW	<50MW
Medium		50-100MW
Large	10MW+	100MW+

 Mandatory BM participation

- Other options were presented and discussed within the Workgroup but were discounted due to not gaining enough Workgroup support or not being operationally possible after discussions with the ENCC.
- **It was noted that in respect of the original proposal, implementation could not take place until 1 June 2027, due to the Balancing Programme needing to deliver the necessary IT enhancements required to efficiently accommodate and instruct the additional numbers of BM participants going forwards.**

Forward looking or Retrospective (reflected in GC0117 workgroup report)

- The subject of whether the proposals should be retrospective was discussed at length with the workgroup with the conclusion that any form of retrospectivity **was not supported by NESO Workgroup members** due to:

Original Proposal

- Under the Original Proposal, this could result in some Generators not being able to comply with the additional obligations that would be placed on them as a “Large” Power Station, with these additional obligations not being commercially viable in some cases e.g., Fault Ride Through performance or Frequency Response could require major plant redesign – or even the ability to participate in the BM and the tools and facilities necessary to implement participation e.g. 24/7 control points etc.
- Even with the enhancements being delivered as part of the Balancing Programme, retrospective implementation of the original proposal would require additional capability in respect of efficient despatch of these additional BM participants. Even with the full functionality of the new systems in the Balancing Programme – these new systems would not be able to cope with the additional volume of data that retrospectivity would generate.

Alternative Proposal

- In respect of the alternative proposal, retrospectivity could impact the NESO’s ability to balance the system in Scotland going forward should current “Large” Generators no longer choose to participate in the BM.

The workgroup discussed at length a whole range of retrospectivity options from no retrospectivity to full retrospectivity including compliance with the full suite of technical requirements to submission of data alone to application to EU Compliant Plant only. The outcome of these discussions was that no retrospectivity would be the appropriate way forward.

Cost Benefit Analysis – Highlights

The NESO Modelling Team conducted a Cost Benefit Analysis in 2023 on the original and alternative proposals which was split into 3 Work Packages:

(1) Impact of BM Price Stack, (2) Impact on Constraint Costs, and (3) Impact on Demand Forecast Errors.

WP1: Impact on price stack available in the BM.

- The Original proposal could lead to a reduction in the marginal BM price resulting in annual cost savings of balancing the system of up to approximately **£70m¹**.

WP2: Impact on constraint costs:

- The increased visibility of Generators provided by the original proposal could lead to annual savings in constraint costs of up to approximately **£70m**.
- The reduced visibility as a result of the alternative proposal could lead to an increase in constraint costs of up to **£80m** per year.

WP3: Impact on demand forecast errors:

- The increased visibility of generators provided by the original proposal could lead to a reduction in demand forecast errors and therefore cost savings of up to approximately **£220m** per year.
- The reduced visibility of wind units in Scotland as a result of the alternative proposal could lead to a significant increase in demand forecast errors and therefore additional annual costs of up to approximately **£530m** per year.

Note:

All costs/savings based on modification implemented from 2022.

¹From 2029 in the “Leading the Way” FES scenario.

NOTE ALSO THAT FORECASTING ERROR COSTS ARE GOING TO APPEAR AS BM COST REDUCTIONS. THIS IS IMPORTANT BECAUSE NOT A SINGLE COST ASSOCIATED WITH FORECASTING IS REPORTED SEPERATELY

NESO Impacts

Compliance

- Discussions have taken place between NESO Compliance and DNOs in respect of DNO/NESO compliance responsibilities and changes that may need to be agreed should the Large Threshold be lowered to 10MW. It has been agreed that this issue would be picked up as a separate modification if the original proposal under GC0117 were approved..

Connections

- BEGA Agreements would increase in respect of the original proposal as each generator over 10MW would require a BEGA.
- Implications on Connections Reform.

Data Exchange between DNOs and NESO to facilitate Whole System Planning (Possible interaction with GC0139 Modification)

- Discussions taking place with the Data and Modelling Team in respect of NESO/DNO data coordination – e.g., provision of sub-transmission network models from the DNO and how the 10MW for Large Threshold could impact this.

Control Room (Balancing Programme)

- The original option would result in an increased number of BMUs over time and require the enhancements being delivered as part of the Balancing Programme in order to be able to efficiently instruct larger numbers of BMUs going forwards.

Code Impacts

- **Grid Code** – Amendments to the definition of Power Station Thresholds from the implementation date (with BEGAs required for all Large Power Stations as part of the original proposal).
- **CUSC/SQSS/BSC** – Consequential changes to reflect any changes to Power Station Thresholds in the Grid Code.
- Consequential Grid Code modification required in respect of Compliance if the modification is approved.

Current Timelines

- **Final Modification Report submitted to Ofgem for Decision – 14th May 2024**
- **Ofgem's minded to Consultation was issued on the 28th February 2025 and closed on the 11th April 2025**
- **Ofgem's decision / send back was issued on the 18th July 2025**

Ofgem Send Back (Part 1)

Require the GCRP to facilitate further engagement with relevant stakeholders to undertake an updated and comprehensive reassessment of the CBA. A more detailed cost and sensitivity analysis within the CBA should be included, reconsidering current or future BM exemptions including ANM schemes and Technical Limits, across the previously agreed work packages:

- *An updated and forecast BM price stack*
- *An updated and forward-looking constraint analysis*
- *A re-analysis of demand forecasting*

NESO have begun collecting data and developing a process for this which we wish to discuss with the workgroup

Ofgem Send Back (Part 2)

The timing of implementation and interaction with other industry developments requires further consideration as we have concerns with the OP's impact and possible duplication. With respect to the interactivity with recent industry developments, we require the GCRP to assess the OP's interactivity and revise the implementation date to be included in the revised FMR:

- *Connection Reform considerations for the connections process*
- *Delivery of CP2030 key objectives*
- *Potential interactivity with REMA proposals*
- *DSO functions focusing on primacy and potential duplication between DSO and NESO operations*

NESO have acquired the Ofgem CBA consultation responses and analysed these to aid answering these questions. Colleagues in each mentioned teams have been asked to provide inputs for Work Group to consider.

Revised GC0117 Terms of Reference

- Retain the original GC0117 Terms of Reference and include the additional items detailed in Ofgem's decision letter
 - Updated CBA based on latest position
 - Assess the interactivity of the GC0117 Original Proposal with Connections Reform, CP2030, REMA and the primacy issue between DSO and NESO operations.

Issues

- During the last ten years there has been a dramatic shift in generation and demand patterns
- Substantial volumed or large thermal generation have been replaced by renewable distributed energy resources, many falling outside the wholesale market
- This causes severe challenges in operating the system largely because of the shrinking volume of generation in the wholesale market when compared to the total volume of generation running.
- The NESO have an obligation to run a safe, secure and economic system. They also have a responsibility to control system frequency within statutory limits of the SQSS. These requirements mean visibility and control of the bulk generation
- The TIDE (Transformation to Integrate Distributed Energy) initiative is looking to address certainly visibility and control aspects of Embedded Generation
- The recent REMA announcement has stated “**Lower mandatory Balancing Mechanism (BM) participation threshold:** *This would allow smaller assets, such as small-scale batteries, to participate in the BM. This would mean NESO would have more assets available to ‘call on’ when it needs to balance the system. This is particularly helpful given the growing share of smaller, embedded generation flexible assets on the electricity system”*
- Connections is to enable parties to get a connection to address the issues of the Queue, but does not facilitate primacy or balancing in the most economic manner

Issues to Consider

- The system is balanced through the Wholesale Energy Market (the BM)
- The most accurate method of balancing is to have generating units in the BM.
- As part of the GC0117 Workgroup it was explained that there is no real alternative to the BM, you are either in the BM or not and for this reason it was proposed that for Embedded Generation of 10MW and above Bilateral Embedded Generation Agreements (BEGA) should be the agreement of choice as it mandates them in the BM
- BELLA Agreements are more crude in that they do not give the NESO full visibility of the full plant dynamics and prices – for example a Generator with a BELLA Agreement does not need to submit Bid Offer Data or Dynamic Parameters and hence limit an optimum despatch solution
- Virtual Lead Parties are an alternative option though they are quite crude and a bit more like BELLAs. In a VLP, an party will aggregate Non BM Generation and Demand into a Balancing Mechanism Unit. Although they are treated as a BM, the geographical spread of assets means that locational requirements such as voltage control or constraint management becomes much more complex thus an individual plant in the BM is more accurate from an operational perspective.
- Connections Reform has successfully delivered huge volumes of early connections, mainly through the use of Active Network Management Schemes (ANM). NESO can model ANMs and tech limits as constraints in NESO systems (eg SORT and OLTA like any other TO constraint). In this NESO ensure no counter actions are needed as they will not be dispatched unless NESO are certain that they won't activate an ANM.

GC0117

- Although rather cumbersome mandating Generating Plant in the BM is the most effective means of managing the system, certainly when compared to VLPs or BELLAs
- To operate the System under a CP30 scenario NESO will require visibility and control of generation which would also align with the REMA principles
- If nothing is done the system will be inoperable
- There should be no reason why the sharing of data between DNOs and NESO for constraint and operational purposes should not be possible and there should be no reason why Technical Limits and GC0117 cannot run side by side
- The CBA run in 2023 is now hugely out of date, but it is not difficult to see that with the very high increase in Embedded Generation over the last few years that the costs will be a lot higher if the analysis is re-run., This will be re-evaluated in the coming months
- One option is to retain the proposal of a 10MW threshold for Large Power Stations and use VLPs for plants of less than 10MW.
- To achieve the benefits of GC0117, some retrospectivity will be required though in reality the implementation of GC0117 should not be delayed any further.
- NESO requires visibility and control to manage the increasing volume of Embedded Generation going forward to manage an operable system.
- It is important to note ANM schemes are not active 24/7 whereas visibility and control are benefits year round. As not all BM Actions will not conflict with ANM schemes, the benefits of which should not be discounted in discussions on primacy and ANM schemes.

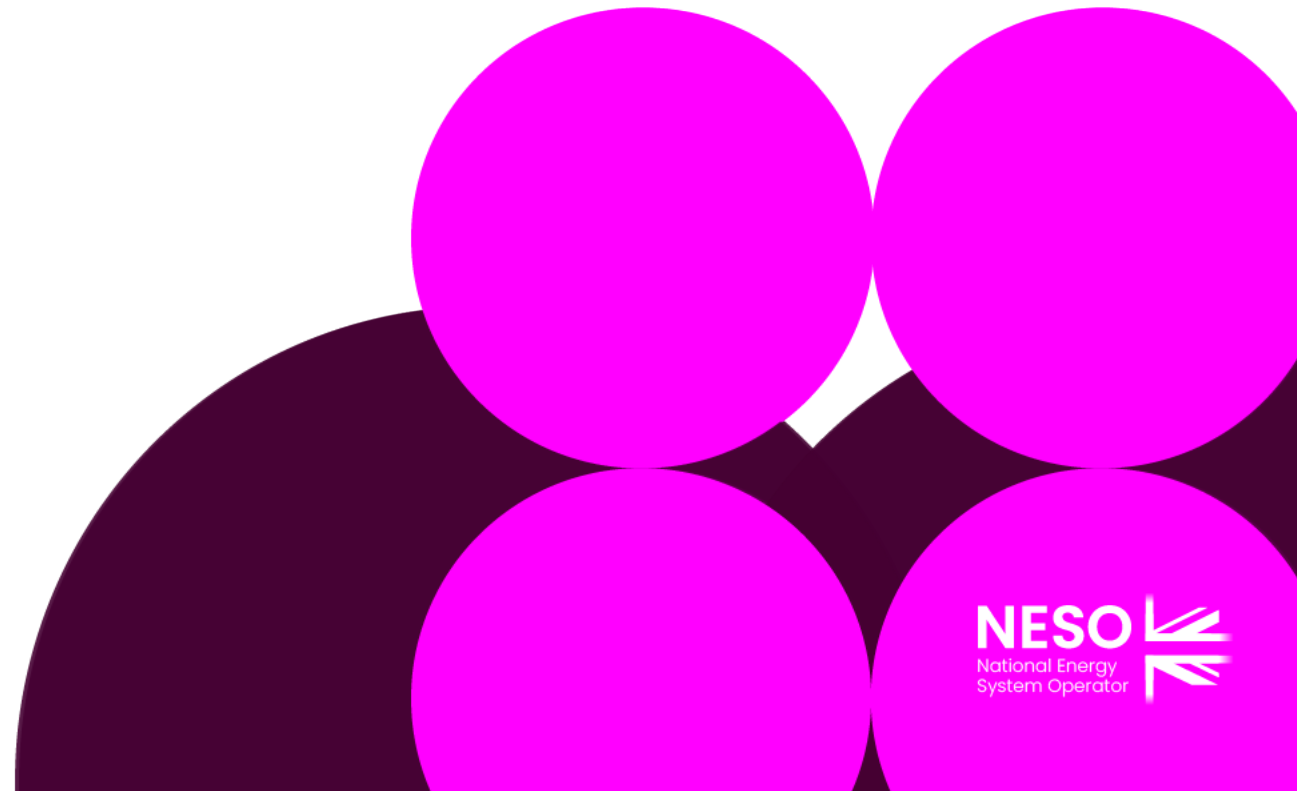
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GC0117 – Additional Comments

- NESO believes that ANMs/DERMS are constraints like any other constraint in the TO network. These can be modelled and treated transparently in NESO systems and tools like any other constraint we have today. The position that Generators must be taken out of ANMs or flexible connection to be in the BM represents historic choices and not actual limitations on what is feasible using today's capabilities. Technical limits are constraints NESO put on DNO GSPs.
- In Ofgem's send back letter (see slide 9) there is a suggestion of a Re-Analysis of Demand Forecasting and the NESO are not sure on how this can be improved.
- Based on a quick analysis we had embedded generation $>1/3$ of the demand in GB in at least in one settlement period. In 2024, this occurred 56 days, in 2025 so far, 107 days. For quarter of the settlement periods in 2024, we had embedded generation $>15\%$ of GB demand. In 2025 so far, a quarter of the time embedded generation is $>21\%$ of GB demand. A 6 percentage points increase in a year, and 2025 is not finished yet
- There is little duplication between GC0117 and the listed initiatives on the Ofgem Send back letter. The current Primacy roadmap lists the potentials of conflicts in dispatch between NESO and DNOs, it will then create a CBA to motivate progressing the work towards finding a solution to these conflicts. NESO have already engaged on Connection Reform and REMA.
- CP2030 is important, but we cannot deliver CP2030 goals with secure network operations and with reasonable balancing costs without GC0117. It is really important to note that GC0117 is a key catalyst in meeting the requirements of CP2030 and REMA but against the background of operating safe, secure, economic and clean system.

Workgroup Member Questions

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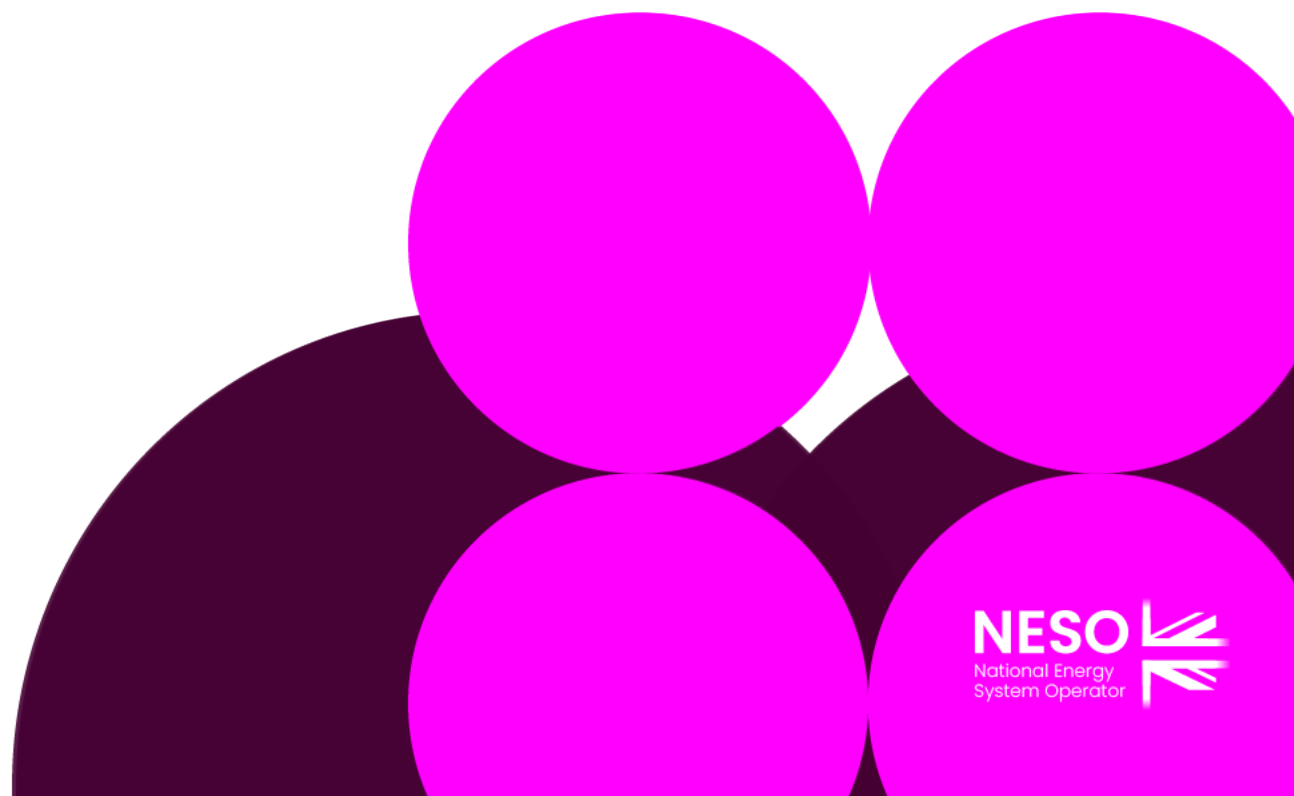


Questions

1. Is there any reason why data sharing between DNOs and NESO for constraint and operational purposes should not be permitted?
2. Do we recognise potential challenges for existing projects within an ANM scheme, particularly where such projects may need to be withdrawn from the ANM scheme to participate in the BM?
3. Is there any reason why Technical Limits, Connections Reform and GC0117 cannot proceed concurrently?
4. Do you agree there is no overlap between the Grid Code and G99 progress of this modification?
5. Do you believe retrospectivity should be applied?
6. How do you think visibility and control should be addressed going forwards, noting the high balancing costs currently seen?

Terms of Reference

ALL



Terms of Reference

Workgroup Term of Reference

a) Implementation and costs;

b) Review draft legal text should it have been provided. If legal text is not submitted within the Grid Code Modification Proposal the Workgroup should be instructed to assist in the developing of the legal text;

c) Consider whether any further Industry experts or stakeholders should be invited to participate within the Workgroup to ensure that all potentially affected stakeholders have the opportunity to be represented in the Workgroup. Demonstrate what has been done to cover this clearly in the report

d) Consider EBR implications

e) The current transmission and generation characteristics in Scotland compared to those in England and Wales and whether the rationale for the thresholds being set at the current levels still applies given the current and projected generation composition and transmission infrastructure;

Cross code impacts (BSC, CUSC and DCode) and impact on EBR;

Terms of Reference

Workgroup Term of Reference

Consider any emerging thinking from the Open Network project;

Any interaction with generator licencing thresholds or requirements;

The impacts for stakeholders including NGESO, IDNOs, TOs, DNOs and generators;

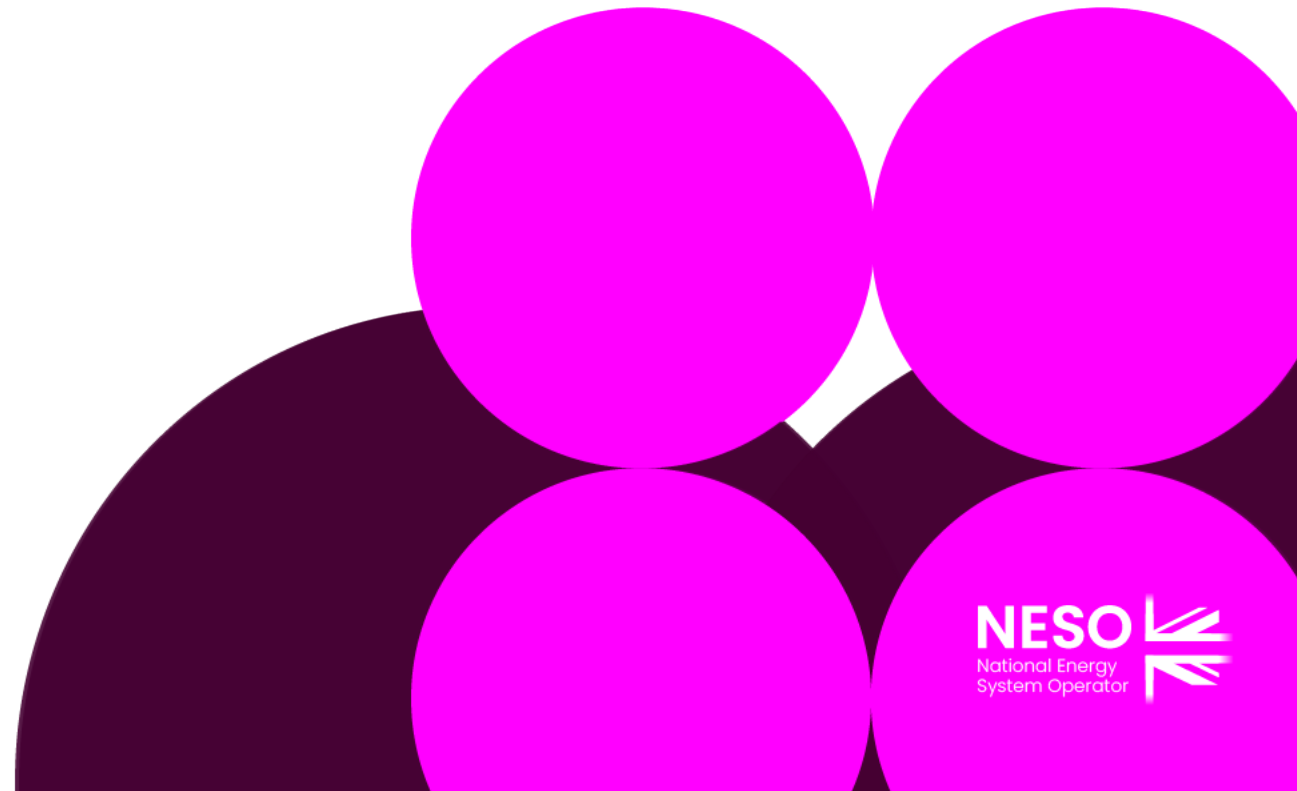
Implications for new connectees in relation to data exchange, planning, market engagement and any other areas of change;

The implications associated with implementing any changes retrospectively so that they apply to existing connectees rather than just for new connectees; and

The implementation options together with the associated costs and benefits.

Any Other Business

Claire Goult – NESO Code Administrator



Next Steps

Claire Goult – NESO Code Administrator

