

Consultation

GC0117: Improving Transparency and Consistency of Access Arrangements Across GB by the Creation of a pan-GB commonality of Power Station Requirements

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We are consulting on our minded-to decision to approve the Original Proposal presented in GC0117 Grid Code Final Modification Report. We would like views from individuals with an interest in electricity generation, industry associations, Transmission Owners, Distribution Network Operators, Independent Distribution Network Operators and the National Energy System Operator. We would also welcome responses from wider industry stakeholders and the public.

This document outlines the scope, purpose and questions of the consultation and how you can get involved. Once the consultation is closed, we will consider all responses whilst finalising our decision on GC0117 Final Modification Report. If you want your response – in whole or in part – to be considered confidential, please tell us in your response and explain why. Please clearly mark the parts of your response that you consider to be confidential, and if possible, put the confidential material in separate appendices to your response.

Consultation



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Contents

GC0117: Improving Transparency and Consistency of Access Arrangements Across GB by the Creation of a pan-GB commonality of Power Station Requirements	1
Executive Summary	4
1. Introduction	7
2. The Modification Proposal	9
3. Development of the Modification Proposal	11
4. Our Assessment and Minded-to Decision	14
Assessment against Applicable GC Objectives	17
Minded-to conclusion.....	20
5. Why are we Consulting	22
6. Consultation Questions	24
7. Your response, data and confidentiality	27
Consultation stages	27
How to respond	27
Your response, your data and confidentiality	27
General feedback	28
How to track the progress of the consultation.....	29
Appendices	30
Appendix 1 – Privacy notice on consultations	31
Personal data	31

Executive Summary

This document outlines Ofgem's consultation on the minded-to decision to approve the Original Proposal (OP) for the Grid Code (GC) Modification GC0117 Final Modification Report (FMR).¹ The Proposal² aims to improve transparency and consistency of access arrangements for Power Station³ connections across Great Britain (GB) by creating a common set of requirements.

The purpose of the consultation is to provide stakeholders with an overview of the Proposal, its implementation, its benefits and the reasoning which has influenced our minded-to decision.

Currently, three Power Station thresholds Small, Medium, and Large, apply to Generator connections in GB, with varying contractual obligations and technical requirements based on size and location. The Proposal, raised by Scottish and Southern Energy Generation Ltd (the Proposer) in June 2018, seeks to simplify these arrangements by reducing the number of thresholds from three to two, defining Large Power Stations as those with a Registered Capacity⁴ of 10MW and above, and Small Power Stations as those below 10MW.

The Proposal aims to harmonise the connection process and operational requirements across all Transmission Owner (TO) licence areas, ensuring a consistent approach for new Power Station connections. The Proposer contends, this modification will set out within the GC a consistent connection process and enduring operational requirements across GB.

The GC sets out technical requirements for users connecting to the electricity system and its provisions interact with other industry codes that apply to the electricity sector. This minded-to decision is first and foremost an engineering proposal, but we consider there to be the potential for impacts on market and commercial arrangements as a consequence of changes to GC. We invite stakeholder views on any potential impacts and will consider before any final decision is made on this modification.

¹ [GC0117 Final Modification Report and Annexes](#)

² [Modification Proposal](#)

³ An installation comprising one or more Generating Units or Power Park Modules (even where sited separately) owned and/or controlled by the same Generator, which may reasonably be considered as being managed as one Power Station.

⁴ Registered Capacity should be based on the Rated MW output of each Generating Unit within that Power Station, less any Demand used for running the Generating Units alone and should not consider any Demand used for separate purposes such as an industrial process.

Development Process

The Grid Code Review Panel (the Panel) agreed that the Proposal should be assessed by a Workgroup.⁵ The Workgroup, consisting of industry experts and stakeholders, had the task to review the Proposal, identify potential solutions and evaluate the impacts against the Applicable GC Objectives.

Throughout the development process the Workgroup met 23 times, where five alternative solutions were considered in addition to the OP. The Workgroup agreed to take forward the OP and a Workgroup Alternative Grid Code Modification 1 (WAGCM1)⁶ for further development.

A Cost Benefit Analysis (CBA) was conducted to assess the feasibility and efficiency of the OP and WAGCM1. The results indicated that the OP would provide significant consumer benefits, while WAGCM1 could lead to increased system costs. The Workgroup conducted an open industry consultation and submitted its report to the Panel.

The Panel considered the Workgroup report and a further Code Administrator Consultation (CAC) was carried out as part of the process which sought to gather additional feedback on the OP and WAGCM1 and their assessment against the Applicable GC Objectives.

The Panel was unable to reach a consensus on whether the OP or WAGCM1 better facilitated the Applicable GC Objectives compared to the existing arrangements. The Panel submitted the FMR to the Authority⁷ on 14 May 2024 for our consideration and review before making the decision. From the FMR we note that the benefits of approving the OP include:

- Monitor and Control - the OP is expected to provide the National Energy System Operator (NESO) with greater visibility and control over Embedded⁸ Power Stations, reducing future system operational costs and increasing competition
- Efficiency - a single, harmonised set of requirements across GB will improve the efficiency of the GC arrangements, avoiding the costs and inefficiencies associated with the current three-threshold arrangements

⁵ The Workgroup is responsible for assisting the Grid Code Review Panel in the evaluation of a Grid Code Modification Proposal

⁶ Applying the present England & Wales level threshold for Large, Medium and Small Power Stations in the South of Scotland and the North of Scotland

⁷ The Authority established by section 1 (1) of the Utilities Act 2000.

⁸ Having a direct connection to a User System or the System of any other User to which Customers and/or Power Stations are connected, such connection being either a direct connection or a connection via a busbar of another User or of a Transmission Licensee (but with no other connection to the National Electricity Transmission System (NETS)).

Consultation - GC0117: Improving Transparency and Consistency of Access Arrangements Across GB by the Creation of a pan-GB commonality of Power Station Requirements

- Consumer Benefit - the OP is anticipated to deliver significant consumer benefits by a reduction in Demand forecast errors and a reduction in Constraint costs

Our minded-to position

We have assessed the OP and WAGCM1 against the Applicable GC Objectives, as detailed in this document and our minded-to position is to approve the OP.

Consultation Purpose

Given the materiality, complexity and wide-ranging impact of the changes set out in the Proposal, we are seeking views from stakeholders as part of this consultation. The consultation aims to gather feedback on the minded-to decision through the five questions outlined later in this document, so as to ensure a comprehensive understanding of the potential impacts before we finalise the decision.

The industry is undergoing significant transformations with numerous parallel initiatives aimed at modernising the electricity system, enhancing sustainability and improving efficiency. It is crucial to ensure that the OP aligns or is cognisant of the other ongoing developments.

We appreciate that while this minded-to decision is well-justified from an engineering perspective, there may be implications for other workstreams. We acknowledge the significance of this decision as far as the impacts it may have on the future of Generators⁹ in terms of size and location across the GB. This consultation seeks to supplement the information provided in the FMR, so that additional consideration can be made about impacts before a final decision, as well as on timelines for any potential consequential work or issues identified.

The Proposal is not retrospective and would apply from 1 June 2027, subject to the outcome of this consultation. Feedback is welcomed both on the non-retrospective nature of the Proposal and the proposed implementation date.

Conclusion

Our minded-to decision is to approve the OP, as it better facilitates the achievement of the Applicable GC Objectives compared to the WAGCM1 and the current arrangements. The OP is seen as a significant step towards harmonising Power Station connections, improving system operability, enhancing market liquidity and supporting the transition to a low-carbon energy system.

⁹ A person who generates electricity under licence or exemption under the Act acting in its capacity as a generator in Great Britain or Offshore

We are keen to understand other potential impacts and interactions. Stakeholders are encouraged to provide their feedback by 11 April 2025, to ensure all perspectives are considered before making a final decision.

1. Introduction

- 1.1 Ofgem, the Office of Gas and Electricity Markets, is the regulator for the electricity and gas markets in GB. We work to protect the interests of current and future consumers by promoting competition, ensuring fair pricing, and maintaining reliable and secure energy supplies. We also ensure that the energy market operates efficiently and transparently. In this context, we have the responsibility for assessing and approving modifications to various industry codes.
- 1.2 The energy sector in GB is undergoing significant transformation as we make the transition to Net Zero. The current GC does not apply uniform access and connection arrangements across GB. This leads to disparities and inefficiencies that hinder the creation of a pan-GB market for Power Stations and Power Generating Module (PGM) technology. This inconsistency results in different requirements for Power Stations depending on their location, which can lead to higher costs and operational challenges.
- 1.3 In response to these challenges, the Proposal was raised on 20 June 2018. The Proposal aims to harmonise the access arrangements for Power Station connections across GB by creating a single, common set of requirements. The modification is intended to improve transparency, efficiency, and competition in the electricity market, ultimately benefiting consumers and the overall energy system.

History and existing arrangements

- 1.4 The GB electricity industry, in the early 1990's, set the thresholds for Power Stations as Small, Medium and Large. These thresholds define the connection process, technical and contractual requirements and the charges for the use of networks. The definitions of Power Stations (Small, Medium and Large) are different in Scotland compared to England and Wales. The technical and contractual obligations and connection processes for these Power Stations also vary. The three threshold classifications for Power Stations are based upon their Registered Capacity and the location of the connection.

Consultation - GC0117: Improving Transparency and Consistency of Access Arrangements Across GB by the Creation of a pan-GB commonality of Power Station Requirements

1.5 Table 1 details the current arrangements across GB for the connection of new Power Stations based upon Registered Capacity MW thresholds in each of the three GB TO regions.

Table 1. – MW thresholds by region

TO and Region	Thresholds		
	Small	Medium	Large
National Grid Electricity Transmission (NGET) England & Wales	less than 50MW	50MW to less than 100MW	100MW and above
Scottish Power Transmission (SPT) Southern Scotland	less than 30MW	N/A	30MW and above
Scottish and Southern Electricity Networks Transmission (SSEN-T) Northern Scotland	less than 10MW	N/A	10MW and above

1.6 The existing arrangements define the technical and contractual requirements for the Generator depending on which of the three thresholds is applicable and where the connection is.

1.7 Embedded Small Power Station connections:

- must have a connection agreement with the relevant DNO/IDNO
- must adhere to the Distribution Connection and Use of System Agreement (DCUSA) and Distribution Code (DC)
- have the option to join the Balancing Mechanism (BM) and be subject to the Large Power Station requirements

1.8 Embedded Medium Power Station connections only applicable in England and Wales:

- must have a connection agreement with the relevant DNO/IDNO
- must adhere to DCUSA and DC
- have the option to join the BM and be subject to the Large Power Station requirements

1.9 Embedded Large Power Station connections must:

Consultation - GC0117: Improving Transparency and Consistency of Access Arrangements Across GB by the Creation of a pan-GB commonality of Power Station Requirements

- have a connection agreement with the relevant DNO/IDNO
- be in the BM
- have a connection agreement with NESO
- adhere to Connection and Use of System Code (CUSC), DCUSA, GC and DC

- 1.10 For example, an Embedded Power Station of 10MW or more connecting in to SSEN-T's¹⁰ area in the north of Scotland would be treated as a Large Power Station and hence would have to meet the requirements of CUSC, GC and be in the BM. In contrast, the same size Embedded Power Station connecting in either NGET's¹¹ or SPT's¹² area would not.
- 1.11 The Proposer further contends the existing arrangements can lead to the unintended consequence of deliberate under-sizing of Power Stations to fit below an arbitrary MW threshold which varies depending on where in GB the Generator is located. This can lead to a loss of economies of scale, particularly for renewable generation, a reduced ability to efficiently exploit the available energy resource, which ultimately is reflected in a higher cost of production and a greater cost to end consumers.
- 1.12 The existing arrangements for Power Stations, as currently defined in the GC will be referred to as the Baseline for the purpose of this document.

2. The Modification Proposal

- 2.1 The Proposer raised the Proposal on 20 June 2018 and it was presented to the to the Panel on 28 June 2018. The Panel agreed the modification should be developed further by a Workgroup.
- 2.2 The Proposer contends the current GC does not apply consistency of access or connection arrangements across GB. As such, current governance does not assist in the creation of a pan-GB market for Power Stations and Power Generating Module (PGM) technologies.
- 2.3 The Proposal aims to develop a single, common, harmonised solution by removing the need for multiple categories of Power Stations, see Table 2. This would apply across the whole of GB by:

¹⁰ Scottish and Southern Electricity Networks Transmission

¹¹ National Grid Electricity Transmission

¹² Scottish Power Transmission

Consultation - GC0117: Improving Transparency and Consistency of Access Arrangements Across GB by the Creation of a pan-GB commonality of Power Station Requirements

- amending the definition of Small Power Station to one with a Registered Capacity of less than 10MW
- removing the definition of Medium Power Station
- amending definition of Large Power Station to one with a Registered Capacity of 10MW or more

Table 2. – Proposed MW thresholds by region

TO and Region	Thresholds		
	Small	Medium	Large
National Grid Electricity Transmission (NGET) England & Wales	less than 10MW	N/A	10MW and above
Scottish Power Transmission (SPT) Southern Scotland	less than 10MW	N/A	10MW and above
Scottish and Southern Electricity Networks Transmission (SSEN-T) Northern Scotland	less than 10MW	N/A	10MW and above

2.4 The Proposer contends the Proposal will have a positive impact on all Applicable GC Objectives. Furthermore, the Proposer’s view is that the Proposal should be implemented as soon as is practicable.

2.5 It is not intended for the Proposal to be implemented retrospectively. If the Proposal is approved, Generators would only be affected if they are Embedded Power Stations with a Registered Capacity of 10MW and above and which:

- applied for a Connection Agreement¹³ or a Modification Application¹⁴ on or after the implementation date
- concluded purchase contracts for their main plant and apparatus on or after 1 June 2027

¹³ The Connection and Use of System Code given contractual force by the CUSC Framework Agreement entered into by, amongst others, the User regarding, amongst other things, the connection of User’s Plant and Apparatus to the National Electricity Transmission System and the use by the User of such system

¹⁴ A formal CUSC request to make changes to your existing agreement.

3. Development of the Modification Proposal

- 3.1 The Panel agreed that the Proposal should be assessed by a Workgroup. The Workgroup, consisting of industry experts and stakeholders, convened 23 times to discuss the Proposal, identify potential solutions, and evaluate the impacts against the Applicable GC Objectives.
- 3.2 The Workgroup conducted a consultation from 7 July to 5 August 2022, receiving 14 non-confidential responses. An industry webinar was held on 14 July 2022 to provide an overview of the modification and address any questions from stakeholders.
- 3.3 During the Workgroup process, in addition to the OP, five alternative proposals were raised and considered by members of the Workgroup. The six proposals identified for consideration included:
1. The OP – Applying the present North of Scotland threshold for Large Power Stations of greater than 10MW in the South of Scotland and England & Wales
 2. Workgroup Alternative GC Modification 1 (WAGCM1) – Applying the present England & Wales level threshold for Large, Medium and Small Power Stations in the South of Scotland and the North of Scotland
 3. Alternative 1 – Large and Small Power Station threshold changed to 100MW
 4. Alternative 2 – LEEMPS¹⁵ Plus, Medium Station threshold changed to 10MW – 100MW across GB. Applies LEEMPS arrangements with a balancing mechanism component and hence becomes a hybrid of LEEMPS and BELLAs¹⁶ or BEGAs¹⁷
 5. Alternative 3 – Apply Large, Medium and Small, Power Station thresholds in England & Wales and Scotland as per WAGCM1, but all Embedded plant between 10MW and 100MW would be required to participate in the BM and provide Ancillary Services through a control system which would

¹⁵ Licence Exemptible Embedded Medium Power Station is a classification of embedded generators that are 'medium' (between 50-99 MW) and are therefore only applicable in England and Wales. LEEMPS generators do not have to have an agreement with NESO, but the relevant DNO company must have additional technical conditions and parameters added to their BCA.

¹⁶ Bilateral Embedded License exemptible Large Power Station Agreement is a generator agreement in relation to an embedded connection to one of the Distribution networks in Scotland. The connection must be over a certain size in order to be eligible (10MW Northern Scotland or 30MW Southern Scotland). The agreement sets out requirements under relevant codes.

¹⁷ Bilateral Embedded Generation Agreement sets out requirements under the Grid Code, Connection and Use of System (CUSC) and Balancing and Settlement Code (BSC). A BEGA will also provide you with Transmission Entry Capacity (TEC) and the right to operate in the electricity balancing market and export onto the NETS.

take the Appendix G¹⁸ and Active Network Management (ANM) processes behind each Grid Supply Point (GSP) into account

6. Alternative 4 – A hybrid solution of alternatives 2 and 3. Regional Development Plan (RDP) solution for Small Power Stations between 10MW and 49.9MW and LEEMPS Plus solution for Medium Power Stations between 50MW and 100MW

- 3.4 In addition to the OP and the five alternatives for consideration was a do-nothing option making no change to current thresholds, the Baseline.
- 3.5 The Baseline option maintains the status quo, without implementing any changes to the current governance. Furthermore, the Baseline provides the reference point against which any proposed modifications are compared against.
- 3.6 All proposals submitted other than the Baseline, would change the existing Small, Medium and Large Power Station thresholds to varying degrees. After several iterations, the Workgroup agreed that two options, the OP and WAGCM1 should be taken forward for increased analysis against the Baseline.
- 3.7 Additionally, the Workgroup agreed that WAGCM1, if approved, like the OP, would not be implemented retrospectively.
- 3.8 The Workgroup agreed that a CBA was required to evaluate the feasibility and efficiency of both proposals (OP and WAGCM1) to inform the Workgroup recommendations. The Workgroup discussed the overview of the CBA, in particular the requirement to gain insight on potential NESO costs and savings from the assessment.
- 3.9 Three Work Packages (WP) were identified by the Workgroup. These would form the basis of the CBA to enable NESO to conduct the assessment. The analysis compared the OP and WACGM1 against the Baseline. The three WPs included:
- WP1 – Balancing Mechanism (BM) price stack
 - WP2 – Constraint analysis
 - WP3 – Demand forecast errors
- 3.10 The Future Energy Scenarios (FES¹⁹) were used as the background for the WP analysis. The FES scenarios outline various credible pathways to achieve GB's decarbonisation goals by 2050. These scenarios explore alternative ways to

¹⁸ Appendix G is an Appendix to the Bilateral Connection Agreement of a Distribution Network Owner. The Appendix G gives visibility to the DNO, TO and NESO of the capability of their connection sites, available GSP capacity and an increased view of Embedded generation levels.

¹⁹ [Future Energy Scenarios \(FES\) 2024: NESO Pathways to Net Zero](#)

transition to a Net Zero energy system, considering factors such as energy demand, supply, and technological advancements.

- 3.11 The results of the WP analysis can be found in Annex 19 of the FMR. The Workgroup also agreed that NESO would complete an industry Cost Impact Assessment to identify any additional costs on Generators due to the approval of the OP. This assessment can be found in Annex 20 of the FMR.
- 3.12 Further analysis was undertaken by NESO using case studies to understand the requirement for controllability of Power Stations in the BM, which can be found in Annex 22 of the FMR.
- 3.13 The Workgroup met on 8 January 2024, to conduct their vote to determine which of the proposals, if any, was better than the Baseline. Of the ten individuals in the Workgroup, two members voted the OP was better than the Baseline, four indicated WAGCM1 to be better than the Baseline, with the remaining four believing neither option to be an improvement over the Baseline.
- 3.14 In addition, a second vote was conducted, this time assessing the two available proposals against the Applicable GC Objectives in comparison to the Baseline. The Workgroup concluded by majority that neither the OP nor WAGCM1 better facilitated the Applicable GC Objectives than the Baseline. Details of the full Workgroup vote and statements can be found in Annex 18 of the FMR.
- 3.15 The Workgroups draft final report was submitted to the Panel for review. It was determined the Terms of Reference had been met.
- 3.16 The Code Administrator Consultation (CAC) was issued on 19 February 2024 and closed on 26 March 2024. Industry stakeholders were invited to respond to several specific questions in relation to the proposed solutions with reference to the Applicable GC Objectives and indicate which of the options they supported.
- 3.17 The four solutions proposed to stakeholders included OP, WAGCM1, Baseline and no preference. Over the five-week period 13 non-confidential responses were received, the details of which can be found in Annex 28 of the FMR.
- 3.18 The Panel met on 25 April 2024, to conduct their recommendation vote. They assessed whether a change should be made to the GC by assessing the OP and WAGCM1 against the Applicable GC Objectives.
- 3.19 Of the eight Panel members who voted, four members voted for the OP, which, in their view better facilitated the Applicable GC Objectives. Two Panel members voted in support of WAGCM1. The final two members did not believe that either

the OP or WAGCM1 better facilitated the Applicable GC Objectives. A single member opted to abstain from the vote entirely.

- 3.20 The full details of the Panel's voting statements can be found within the GC0117 FMR document online.
- 3.21 Following the Panels vote, FMR was submitted the Authority for a decision on 14 May 2024.

4. Our Assessment and Minded-to Decision

- 4.1 We have considered the issues raised in the Proposal and the FMR, as well as the responses to the consultations throughout the process. The votes of the Workgroup and the Panel, which are included in the FMR and its annexes, have also been noted.
- 4.2 Our conclusion is that the OP will a positive impact on four of the Applicable GC Objectives and is consistent with our principal objective and statutory duties.²⁰ The reasons for our minded-to decision are outlined in the sections below.
- 4.3 We consider the Proposer's statement that "the current GC does not apply consistency of access or connection arrangements across GB and as such, does not assist in the creation of a pan-GB market for Power Stations and PGM technology's," to be a valid observation.
- 4.4 Furthermore, by introducing a common, clear set of requirements which every new connection to the electricity network will need to meet across GB, should help make it easier and more efficient to operate the electricity system.
- 4.5 A key observation taken from the FMR, is NESO's diminishing visibility of new connections as increasingly smaller Power Stations are connected at distribution voltages, managed by the individual DNO/IDNOs. This limits NESO's ability to monitor, control and manage these Power Stations, reducing the efficient operation of the system overall.
- 4.6 Operational challenges in maintaining GB grid stability and system security have increased. The limited visibility, control and integration of more distributed and intermittent renewable energy sources, such as wind and solar, increase the complexity of balancing the grid. As a result, NESO must use additional

²⁰ The Authority's statutory duties in this context are detailed mainly in the Electricity Act 1989 (in particular but not limited to section 3A) as amended.

- balancing services and mechanisms to manage the variability to ensure security of supply. This can lead to higher balancing costs, which are ultimately passed on to consumers.
- 4.7 Although there is not an agreed industry or GC definition of visibility, for the purposes of this document, visibility infers NESO's ability to monitor Power Stations in GB. The existing requirements for participation within the BM, applicable to Large Power Stations provides NESO with said visibility.
- 4.8 The BM, alongside Generator participation, significantly enhances NESO's visibility in a number of ways. The BM operates as a real-time market, using real-time data giving NESO the ability to monitor and manage electricity supply and demand continuously. This real-time data allows NESO to have a clear and immediate view of the system's status.
- 4.9 By using a wide range of market participants, including Small Power Stations, the BM increases the scope of data available to NESO. This broader participation helps NESO understand different market dynamics and potential system issues.
- 4.10 The BM requires NESO to make decisions based on the technical capabilities and cost-efficiency of various participants. This process enhances NESO's understanding of the operational and economic aspects of the electricity market.
- 4.11 Furthermore, overall transparency is improved in demonstrating how electricity supply and demand are balanced, enabling more informed and effective management of the system.
- 4.12 We note the non-retrospective nature of the OP means that, if the Proposal is accepted, two classes of connections will exist, relating to the legacy arrangements and the new, harmonised arrangements. This has the potential to lead to competition impacts; while the new arrangements will be consistent across GB, a new inconsistency will be present between some connected Power Stations based on their date of connection.
- 4.13 As the industry transitions to achieve Net Zero, strategic adjustments and investments are needed to ensure NESO can continue to operate the grid safely, effectively and reliably. In our view, the OP will provide NESO with increased visibility of Embedded Power Stations compared to both WACGM1 and the Baseline.
- 4.14 The Applicable GC Objectives are used to assess each proposal and inform our decision-making when considering the options. The objectives seek:
-

Consultation - GC0117: Improving Transparency and Consistency of Access Arrangements Across GB by the Creation of a pan-GB commonality of Power Station Requirements

- i. to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity
- ii. to facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the NETS being made available to persons authorised to supply or generate electricity on terms, which neither prevents nor restricts competition in the supply of generation of electricity)
- iii. to promote the security and efficiency of the electricity generation, transmission and Distribution Systems in the National Electricity Transmission System Operator Area taken as a whole
- iv. to efficiently discharge the obligations imposed upon the licensee by this licence and to comply with the Electricity Regulation and any Relevant Legally Binding Decisions of the European Commission and/or the Agency
- v. to promote efficiency in the implementation and administration of the Grid Code arrangements

4.15 Our assessment of how OP and WAGCM1 impacts the Applicable GC Objectives is summarised below. Table 3 shows our comparison of OP and WAGCM1 to facilitate the achievement of the Applicable GC Objectives.

Table 3. – Ofgem’s view against each Applicable GC Objectives

Grid Code Objective	Ofgem’s view	
	OP	WAGCM1
i)	positive	negative
ii)	positive	positive
iii)	positive	negative
iv)	neutral	neutral
v)	positive	positive

Assessment against Applicable GC Objectives

Applicable GC Objective i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity

- 4.16 The CBA performed by NESO demonstrated a positive outcome to the consumer for the OP relative to the Baseline. This was due to increased competition leading to a reduction in the marginal BM price, resulting in lower costs for system operation. In contrast WAGCM1, due to the perceived reduction of visibility of new wind Generators, less than 50MW, connecting in Scotland, resulted in an increase in system balancing costs against some FES scenarios.
- 4.17 The recent industry developments, as GB transitions to meet its Net Zero ambitions has resulted in a shift away from Large traditional fossil fuel synchronous type Power Stations connected to the Transmission network. Now, there are smaller, more numerous, renewable Power Stations that are non-synchronous and intermittent, connected to the distribution networks. This shift has reduced NESO's visibility of the resources available on the network. Maintaining system security and balancing the network in real time is a constant challenge for the control room. The diminishing visibility continues to reduce NESO's efficient operation, co-ordination and controllability of the network.
- 4.18 As the complexity of the system continues to increase both operationally and technically, Power Stations which are not part of the BM and connected to the DNO/IDNO network via GSPs, are not visible to NESO. The cumulative effect of these numerous connections act to suppress National Demand²¹ as seen by NESO. By improving the visibility of metering of the non-BM units, this should enable NESO to produce more accurate forecasts of National Demand reducing the risk of unnecessary actions taken in the BM.
- 4.19 We consider the increased visibility and transparency of future Embedded connections across the system, which the OP provides, to be essential for future system requirements. WAGCM1 will have the opposite effect, by potentially reducing the visibility of Power Stations when aligning GB to a less than 50MW Small Power Station threshold.

²¹ The amount of electricity supplied from the Grid Supply Points plus: - that supplied by Embedded Large Power Stations, and National Electricity Transmission System Losses, minus: - the Demand taken by Station Transformers and Pumped Storage Units and, for the purposes of this definition, does not include: -any exports from the National Electricity Transmission System across External Interconnections.

Applicable GC Objective ii) to facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the NETS being made available to persons authorised to supply or generate electricity on terms, which neither prevents nor restricts competition in the supply of generation of electricity)

- 4.20 We believe this objective is central to all proposals within. By increasing competition in the generation and supply of electricity through the BM, as promoted by the OP, there is potential to reduce the annual cost of balancing the system compared to the Baseline.
- 4.21 We note that WAGCM1, by reducing regulation, has the potential to increase the number of participants and competition in the supply of electricity in Scotland, due to the Small Power Station threshold being increased to less than 50MW. However, the increased electricity supply from Power Stations not visible to NESO and not in the BM may raise operational costs when compared to the OP.
- 4.22 By standardising the technical requirements across GB, competition within the supply chain for Power Station equipment will increase. This will potentially reduce the cost for Generators, resulting in lower electricity costs for consumers.
- 4.23 That said, the creation of two distinct groups of Power Stations due to the non-retrospective nature of the Proposal has the potential to introduce some new competitive distortions if existing Power Stations have different rights and obligations to new Power Stations. In addition, more comprehensive requirements on Power Stations, such as the requirement to enter into a contract with NESO may also have competition effects if they change the existing barriers to entry.
- 4.24 In our view both WAGCM1 and OP promote competition albeit for different reasons. WAGCM1 achieves this as a result of increasing the Small Power Station threshold in Scotland to less than 50MW. The reduction of technical and contractual requirements when compared to the existing 10MW and 30MW Small thresholds, can reduce the entry burden for new Generator connections in Scotland. In contrast, the OP facilitates competition through regulation, by reducing the Large Power Station threshold mandating BM participation. With respect to objective (ii), both the OP and WAGCM1 positively increase competition compared to the Baseline.

Applicable GC Objective iii) to promote the security and efficiency of the electricity generation, Transmission and Distribution Systems in the National Electricity Transmission System Operator Area taken as a whole

- 4.25 We consider the OP facilitates objective (iii) by promoting the future security and efficiency of the distribution and transmission systems. The system and its operation need to adapt to significant developments in the industry and the generation landscape. Increasing numbers of small, lower-voltage renewable generation connections, not visible to NESO, affect the cost of electricity and network balancing. This reduces the NESO's ability to operate the system efficiently.
- 4.26 The generation landscape has changed dramatically in recent years. Governance and system requirements must also evolve to prevent unintended consequences. The OP and WAGCM1 can be viewed as a positive step towards improving transparency as both proposals align Power Station classifications for GB. However, the lower Small Power Station threshold proposed by the OP will facilitate better security and efficiency of the electricity generation, transmission and distribution systems compared to WAGCM1 and the Baseline.
- 4.27 We believe that increasing NESO's visibility will help promote the economic and efficient operation of the GB system while maintaining security of supply. The future network operation requires increased agility.

Applicable GC Objective iv) to efficiently discharge the obligations imposed upon the licensee by this licence and to comply with the Electricity Regulation and any Relevant Legally Binding Decisions of the European Commission and/or the Agency

- 4.28 Ofgem and the Workgroup agreed, sharing a neutral view for both the OP and WAGCM1, to facilitate the achievement of this Applicable GC Objective.

Applicable GC Objective v) to promote efficiency in the implementation and administration of the Grid Code arrangements

- 4.29 This modification is seeking to ensure consistency between Power Station requirements across GB. We believe that aligning the Power Station thresholds across the GB is a positive step towards improving transparency.
- 4.30 The application of a single, harmonised, common minimum requirement across the whole GB system will produce efficiency in the implementation and

administration of the GC arrangements as it avoids the costs, risks and inefficiencies associated with operating to three separate arrangements today.

4.31 In our view both the OP and WAGCM1 produce efficiencies by creating a harmonised and standardised GB wide connection requirement, promoting clearer rules and governance for industry.

4.32 The Workgroups view with reference to objective (v) was neutral.

Minded-to conclusion

4.33 We consider the OP better facilitates the Applicable GC Objectives overall when compared to WAGCM1 and Baseline. In our view, approving the OP would meet Ofgem's Principal Objective.

4.34 Our view does align with the Panels view that WAGCM1 does not better facilitate the Applicable GC Objectives than the Baseline.

4.35 Furthermore, in our opinion, WAGCM1 should be discounted as an alternative solution for the following reasons:

- WAGCM1 could potentially reduce NESO's visibility and controllability for new Power Stations connecting in SPT's and SSEN-T's regions in Scotland after adoption, compared to the OP. This contrasts directly with NESO's concerns about requiring increased visibility and control of Embedded Power Stations across all of GB
- NESO's economic analysis indicated that against certain scenarios adopting WAGCM1 would be detrimental to the consumer by increasing operational costs when compared to the OP

4.36 The result of the analysis in our view indicates there are two options for consideration, the OP and the Baseline. Implementing OP would provide the greatest consumer benefit over the Baseline.

4.37 In our view, implementing the OP would be a significant step towards modernising Power Station connections and system operability. Additionally, mandating BM participation would increase market liquidity, enhancing the security of supply and competition.

4.38 The key areas supporting the introduction of the OP are:

- Consistency – Currently access arrangements differ by region, which can create additional layers of complexity and inefficiency. By standardising

the connection requirements nationally, the OP simplifies the application process for Power Stations. Furthermore, the CBA demonstrates the OP to be beneficial to the consumer, which is vital as the energy landscape diversifies with increasing renewable sources of generation

- **Transparency** – The OP aims to ensure that all Power Stations, regardless of their connection location, are subject to the same governance and obligations. By making the rules clearer and more predictable for Generator participants, the modification will foster increased competition and ensure no Generator is disadvantaged due to regional differences
- **Net Zero** – The OP supports the Government's broader decarbonisation efforts by simplifying the connection process for renewable distributed generation through the introduction of generic GB requirements and obligations. This modification is integral to future system development, ensuring the network can evolve and become more dynamic to meet the UK's 2050 targets
- **Reduced Complexity** – By standardising GC requirements, the OP will reduce connection complexity for future stakeholders. It will also increase competition among equipment manufacturers, leading to reduced development costs. This will lower costs for consumers
- **Market Participation** – Implementing the OP will mean that all Power Station connections larger than 10MW will be part of the BM. The analysis indicates that increased liquidity will help reduce future energy supply costs by increasing market participation from Generators

4.39 While we acknowledge the perceived benefits of implementing the OP, we are also aware of the potential challenges and adverse outcomes that may arise through adopting this modification. Factors include:

- **Costs** – Adopting the OP will increase the cost for some Generators wishing to connect to the system. Small Power Station connection applicants, classified as Large under the OP with Registered Capacities of 10MW and above, will face higher connection costs due to increased technical requirements. This is especially true compared to the existing governance in England and Wales. However, Embedded Generator connections with capacities near the technical limits of the distribution network will find this less of a deterrent to entry and development
- **Future Connections** – The new 10MW threshold between Small and Large Power Stations may encourage more applications for connections <10MW

(eg 9.9MW) to avoid additional technical requirements and increased connection costs. If adopting the OP leads to a significant increase in applications for connections under 10MW, it would undermine the intention of the modification. If such phenomena were to be observed we would expect industry to be aware of it and raise appropriate code modifications to address such a situation

- Regional Location - While the modification aims to standardise connection requirements across GB, a technical concern with the OP is the many regional-specific requirements and nuances of existing DNO/IDNO networks. Although the industry follows the same standards, there are significant regional differences in network design and operation
- Complexity – During the potential implementation of the OP, there is a likelihood of some disruption from a development and operational perspective in the transition phase

5. Why are we Consulting

- 5.1 The purpose of this consultation is to provide industry and all stakeholders the opportunity to respond and provide feedback to our minded-to decision with reference to the OP, prior to making a final decision.
- 5.2 Our minded-to decision is to approve the OP. We are satisfied the governance process has been followed and Terms of Reference²² have been met. We have considered the responses to the industry consultations and sought and obtained certain clarifications from NESO where necessary.
- 5.3 We have decided to issue this consultation for the following reasons:
- Lack of consensus - we note the difference in opinions expressed throughout the process from within the industry. The Workgroup and the Panel have been unable to reach a clear consensus
 - Limited industry engagement - throughout the modification process several industry consultations were undertaken. Despite the Code Administrators' efforts, the expected level of industry engagement was not witnessed
 - Interactivity - concerns with other ongoing industry developments and reforms were raised during the Workgroup review. In addition, a discussion took place between NESO and Ofgem on 16 August 2023 to

²² [Workgroup Consultation](#)

give an overview of the potential changes required in other codes. It was agreed that these could follow after a decision has been made. However, we acknowledge the development of this modification has taken a considerable amount of time. This combined with the rapid pace of change in the industry, may have given rise to other developments not acknowledged which require consideration

- 5.4 The Review of Electricity Market Arrangements is another potential area of interactivity for consideration. This interaction was not discussed with the Workgroup.
- 5.5 Network Access and Charging Reforms Significant Code Review (SCR) is an additional policy area which may impact on the OP. The Workgroups conclusion was it did not foresee any implications from the Access SCR, which would curtail development of the OP.
- 5.6 The ongoing Access SCR led by Ofgem seeks to reform the way both network access and charging arrangements currently work within GB. GC0117 which aims to facilitate the implementation of consistent technical standards for the connection of new generation, may well complement the ongoing reforms in this area. However, the implementation of GC0117 could potentially create tension where regional flexibility in access charging is needed. This could potentially impact smaller renewable generation developers. The commercial impact may arise from adjustments in how future charges are calculated based on the new standardised approach GC0117 OP introduces.
- 5.7 Further clarity is potentially needed in relation to the interactivity with regards to ANM schemes, RDPs and how, if adopted, the modification would affect the existing connection queue and queue management going forward. The increased cost burden and additional technical requirements for compliance on the developers may well be detrimental to new future participants entering into the market.
- 5.8 Concerns with interactivity with other ongoing industry developments are valid such as Open Networks Project and NESO Distributed Energy Resources (DER) Visibility Programme. However, this modification predates other existing workstreams. In our view the other industry developments should have been cognisant of GC0117 FMR and not visa-versa.
- 5.9 The OP is aimed at addressing the existing and emerging generation landscape which has developed during the modification process period. Increased visibility

for the operator is key to maintaining a secure and reliable network. There will be technical and commercial challenges because of this modification, however the benefit to the consumer, in our view, at this stage, outweighs the known repercussions the OP might generate.

- 5.10 However, there needs to be a level of pragmatism employed with this modification to ensure the correct decision is reached. The wider policy and other initiatives, interactivities and implications require additional reflection.

6. Consultation Questions

- 6.1 In our opinion the OP should be approved. However, we are aware of the unprecedented and significant industry developments over recent years since the Proposal was first proposed.
- 6.2 Stakeholders not in favour of the OP were concerned, that because of the extended time this modification has been in development, the industry and Power Station topology has changed significantly. The OP cuts across many of the industry discussions such as those in the Open Networks Project and NESO's DER Visibility Programme.
- 6.3 We wish to be transparent in our decision making. From a technical perspective we believe the OP should be approved. We wish to ensure we have a comprehensive understanding all known interactivities and possible impacts before making a decision. The Proposed changes are significant. It is vital we engage with industry and stakeholders one final time.
- 6.4 We have therefore developed five questions for consultation to provide Ofgem additional information before making a decision.

Question 1) Do you agree with our assessment against the Applicable GC Objectives? Please elaborate on why or why not.

- 6.5 As part of the modification process, the Applicable GC Objectives, are used to evaluate and review each alternative against certain criteria.
- 6.6 We have conducted our detailed assessment against the Applicable GC Objectives. Our conclusion is the OP positively fulfils the majority of Applicable GC Objectives, whereas WAGCM1, in contrast does not. The CBA analysis showed WAGCM1, if adopted would be detrimental to the consumer and so in our view should be discounted.

Question 2) Are there additional policy dependencies beyond those identified during the development of this modification that interact with the OP? Please provide details of these policy matters describing the nature and extent of their interactions.

- 6.7 As part of this GC modification, the Workgroup identified several interactions with other codes, policy and industry working groups. These include the BSC, the CUSC, the DC, and the SQSS. They also received a presentation from the Energy Networks Association on operational DER visibility and monitoring. All these interactions highlight the wider potential impacts of adopting the OP.
- 6.8 The concerns of interactivity with other ongoing industry developments are valid and were discussed within the Workgroup. Although this modification has taken an extended number of years to reach this point, The Proposal predates all other existing work streams, many of which seek to address the same issues. In our view the other industry developments should be cognisant of the possible outcomes of a future decision.
- 6.9 It is possible that changes to the definition of Small Power Stations will lead to consequential impacts. We welcome industry views on these impacts, as well as options for managing or mitigating any expected detrimental impacts.

Question 3) If the OP is approved, do you think that it should be implemented on 1 June 2027? Do you consider a specific alternative date to be more appropriate? And if so, why? Please provide supporting rationale.

- 6.10 As part of the review, NESO and Ofgem discussed the potential changes required in other codes. They agreed that these changes could be addressed after a decision. As most changes relate to the OP, which has an implementation date of 1 June 2027, the advice was this future date should allow sufficient time for the necessary changes to be raised. The Workgroup identified interactions with the BSC, DC, CUSC, SQSS, and STC, all detailed within the FMR.
- 6.11 At this stage of the governance process and dependent on consultation feedback, our view is the OP should be implemented. The date of 1 June 2027 should provide NESO adequate time to make the required changes to the impacted IT systems to cater for the increase in future BM participants.
- 6.12 However, given the benefits to the consumer of approving the OP in our opinion and given this governance already applies SSEN-T's region in the north of

Consultation - GC0117: Improving Transparency and Consistency of Access Arrangements Across GB by the Creation of a pan-GB commonality of Power Station Requirements

Scotland, is there a possibility the implementation date could be brought forward prior to 1 June 2027?

- 6.13 As the OP modification is non-retrospective, the new requirements would not apply to any Power Station who has submitted a Connection Application to the DNO/IDNO prior to the implementation of the modification. There may be a surge of connection applications before the implementation date from participants wanting to avoid the new rules. This may be an unavoidable outcome in this instance. We would also note that the non-retrospective nature of the OP may lead to competition impacts, which could impact wholesale and other markets. Feedback is also welcomed on these potential effects and their interactions.

Question 4) This Proposal is not retrospective, and the changes set out in the OP will not affect existing Generators. Do you consider this to be appropriate, and do you consider there to be any specific impacts from this non-retrospectivity that require further consideration?

- 6.14 We are also interested to hear any additional feedback on our assessment or other possible assessments that may be required.

Question 5) Are there any other material considerations, not covered by the FMR or this consultation that you wish to raise.

7. Your response, data and confidentiality

Consultation stages

- 7.1 The consultation will be open from 28 February 2025, for a six-week period closing on 11 April 2025. Responses will be reviewed with a view to publishing a decision on 09 May 2025.

How to respond

- 7.2 We want to hear from anyone interested in this consultation. Please send your response to engineers@ofgem.gov.uk
- 7.3 We've asked for your feedback in each of the questions throughout. Please respond to each one as fully as you can.
- 7.4 We will publish non-confidential responses on our website at www.ofgem.gov.uk/consultations.

Your response, your data and confidentiality

- 7.5 You can ask us to keep your response, or parts of your response, confidential. We'll respect this, subject to obligations to disclose information, for example, under the Freedom of Information Act 2000, the Environmental Information Regulations 2004, statutory directions, court orders, government regulations or where you give us explicit permission to disclose. If you do want us to keep your response confidential, please clearly mark this on your response and explain why.
- 7.6 If you wish us to keep part of your response confidential, please clearly mark those parts of your response that you *do* wish to be kept confidential and those that you *do not* wish to be kept confidential. Please put the confidential material in a separate appendix to your response. If necessary, we'll get in touch with you to discuss which parts of the information in your response should be kept confidential, and which can be published. We might ask for reasons why.
- 7.7 If the information you give in your response contains personal data under the General Data Protection Regulation (Regulation (EU) 2016/679) as retained in domestic law following the UK's withdrawal from the European Union ("UK GDPR"), the Gas and Electricity Markets Authority will be the data controller for the purposes of GDPR. Ofgem uses the information in responses in performing its statutory functions and in accordance with section 105 of the Utilities Act 2000. Please refer to our Privacy Notice on consultations, see Appendix 4.

Consultation - GC0117: Improving Transparency and Consistency of Access Arrangements Across GB by the Creation of a pan-GB commonality of Power Station Requirements

7.8 If you wish to respond confidentially, we'll keep your response itself confidential, but we will publish the number (but not the names) of confidential responses we receive. We won't link responses to respondents if we publish a summary of responses, and we will evaluate each response on its own merits without undermining your right to confidentiality.

General feedback

7.9 We believe that consultation is at the heart of good policy development. We welcome any comments about how we've run this consultation. We'd also like to get your answers to these questions:

1. Do you have any comments about the overall process of this consultation?
2. Do you have any comments about its tone and content?
3. Was it easy to read and understand? Or could it have been better written?
4. Were its conclusions balanced?
5. Did it make reasoned recommendations for improvement?
6. Any further comments?

Please send any general feedback comments to stakeholders@ofgem.gov.uk

How to track the progress of the consultation

You can track the progress of a consultation from upcoming to decision status using the 'notify me' function on a consultation page when published on our website. Choose the notify me button and enter your email address into the pop-up window and submit.

[ofgem.gov.uk/consultations](https://www.ofgem.gov.uk/consultations)

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Would you like to be kept up to date with *Consultation name will appear here*? subscribe to notifications:

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Once subscribed to the notifications for a particular consultation, you will receive an email to notify you when it has changed status. Our consultation stages are:

Upcoming > **Open** > **Closed** (awaiting decision) > **Closed** (with decision)

Appendices

Index

Appendix	Name of appendix	Page no.
1	Privacy notice on consultations	31

Appendix 1 – Privacy notice on consultations

Personal data

The following explains your rights and gives you the information you are entitled to under the General Data Protection Regulation (GDPR).

Note that this section only refers to your personal data (your name address and anything that could be used to identify you personally) not the content of your response to the consultation.

1. The identity of the controller and contact details of our Data Protection Officer

The Gas and Electricity Markets Authority is the controller, (for ease of reference, “Ofgem”). The Data Protection Officer can be contacted at dpo@ofgem.gov.uk

2. Why we are collecting your personal data

Your personal data is being collected as an essential part of the consultation process, so that we can contact you regarding your response and for statistical purposes. We may also use it to contact you about related matters.

3. Our legal basis for processing your personal data

As a public authority, the GDPR makes provision for Ofgem to process personal data as necessary for the effective performance of a task carried out in the public interest, ie a consultation.

4. With whom we will be sharing your personal data

(Include here all organisations outside Ofgem who will be given all or some of the data. There is no need to include organisations that will only receive anonymised data. If different organisations see different set of data then make this clear. Be as specific as possible.)

5. For how long we will keep your personal data, or criteria used to determine the retention period.

Your personal data will be held for (be as clear as possible but allow room for changes to programmes or policy. It is acceptable to give a relative time, eg ‘six months after the project is closed’)

6. Your rights

The data we are collecting is your personal data, and you have considerable say over what happens to it. You have the right to:

Consultation - GC0117: Improving Transparency and Consistency of Access Arrangements Across GB by the Creation of a pan-GB commonality of Power Station Requirements

- know how we use your personal data
- access your personal data
- have personal data corrected if it is inaccurate or incomplete
- ask us to delete personal data when we no longer need it
- ask us to restrict how we process your data
- get your data from us and re-use it across other services
- object to certain ways we use your data
- be safeguarded against risks where decisions based on your data are taken entirely automatically
- tell us if we can share your information with 3rd parties
- tell us your preferred frequency, content and format of our communications with you
- to lodge a complaint with the independent Information Commissioner (ICO) if you think we are not handling your data fairly or in accordance with the law. You can contact the ICO at <https://ico.org.uk/>, or telephone 0303 123 1113.

7. Your personal data will not be sent overseas (Note that this cannot be claimed if using Survey Monkey for the consultation as their servers are in the US. In that case use “the Data you provide directly will be stored by Survey Monkey on their servers in the United States. We have taken all necessary precautions to ensure that your rights in term of data protection will not be compromised by this.”

8. Your personal data will not be used for any automated decision making.

9. Your personal data will be stored in a secure government IT system. (If using a third party system such as Survey Monkey to gather the data, you will need to state clearly at which point the data will be moved from there to our internal systems.)

10. More information For more information on how Ofgem processes your data, click on the link to our “[ofgem privacy promise](#)”.