

Workgroup Consultation

GC0181: Enhance the Effectiveness of System Incidents Reporting

Overview: Under OC3, [System Performance Reports](#) are available for industry and the Grid Code Review Panel to better understand trends and issues emerging on the NETS, resulting in more efficient development of the NETS. The data and the reports can be improved and updated to more effectively serve their purpose.

Modification process & timetable



Have 5 minutes? Read our [Executive summary](#)

Have 60 minutes? Read the full [Workgroup Consultation](#)

Have 120 minutes? Read the full Workgroup Consultation and Annexes

Status summary: The Workgroup are seeking your views on the work completed to date to form the final solution to the issue raised.

This modification is expected to have a: **Low impact** on Transmission Owners (TOs) and Users with Dynamic System Monitoring and Power Quality Monitoring, **Medium impact** on the Transmission System Operator (NESO)

Modification drivers: System Operability, System Security, Transparency

Governance route Standard Governance modification with assessment by a Workgroup

Who can I talk to about the change?

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How do I respond?

Send your response proforma to grid.code@neso.energy by **5pm** on **22 October 2026**

Contents

Executive Summary	3
What is the issue?	5
What is the defect the Proposer believes this modification will address?	5
Why change?	6
What is the solution?	9
Proposer's (initial) Original Solution	9
Proposer's (updated) Original Solution	10
Draft Legal Text	11
Workgroup considerations	11
1. Generic Considerations	12
2. Element Specific Considerations	26
Alternative Requests	41
What is the impact of this change?	42
Proposer's assessment against Grid Code Objectives	42
Proposer's assessment of the impact of the modification on the stakeholder / consumer benefit categories	43
When will this change take place?	44
Interactions	45
How to respond	45
Acronyms, key terms and reference material	48
Annexes	51

Executive Summary

GC0181 proposes changes to the Grid Code Operating Code 3 (OC3) to improve reporting of Significant Events, including the availability of data for analysis of Significant Events and the specification of Significant Events which trigger a report where aspects of the System state exceed normal operational limits, but may still be within statutory limits. The improved availability of data aims to provide early warnings of System conditions which could propagate or indicate a new or growing risk to the System, including cascade events, so that disruptions, such as that which occurred in 2019¹ or in Iberia in April 2025 might be able to be prevented.

The Modification builds upon previous Grid Code Modifications GC0105 'System Incidents Reporting' and GC0151 'Grid Code Compliance with Fault Ride Through Requirements' which have key interactions with the Security and Quality of Supply Standard (SQSS) and Frequency Risk and Control Report (FRCR).

What is the issue?

In May 2020, Ofgem published their decision to approve GC0105², which noted that, *"Prior to 2017, the Electricity System Operator ("the ESO") produced a system incident report for submission to the Grid Code Review Panel ("GCRP"). The system incident report helped industry and the GCRP to monitor the effectiveness of the technical requirements in the Grid Code. In 2017, under the new governance arrangements the ESO stopped providing this report to the GCRP. Grid Code GC0105: System Incidents Reporting was made to codify the requirement for the ESO to produce and publish a System Incidents Report, submitting it to the GCRP."*

The Proposer considers the current System Incidents Report process OC3 (as set out within the Grid Code) can be significantly improved so that, for example, incident reports are published more frequently, and closer to real time, with data from several regions of Great Britain (GB) and with more granular data. Additionally, the Proposer believes the inconsistent use and lack of clearly defined naming conventions included within the current reporting prevents automated analysis. As a result, industry parties may be less able to investigate disturbances promptly or accurately, limiting understanding of the causes of System events and reducing the value of the reports for monitoring System performance and stability.

¹ GB power system disruption on 9 August 2019: Final report

² See 'Background', Page 1

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

Proposer's solution: GC0181 proposes a comprehensive update to Grid Code OC3 to change the timeliness, quality, consistency and scope of Significant Event reporting produced by the National Energy System Operator (NESO) to industry. The solution includes moving from monthly to weekly reporting and reducing reporting timescales after an event, while allowing additional flexibility for NESO in exceptional circumstances. It introduces enhanced data requirements, including higher-resolution regional frequency data and additional inertia information, and seeks to enable potential benefits that new Phasor Measurement Units (PMUs) being installed in grids worldwide, can bring to OC3. The solution seeks to expand the range of reportable events and proposes a NESO annual report to support trend analysis and proactive identification of emerging System issues by industry.

Implementation date: 10 Business Days after Authority decision noting that the proposed drafting allows NESO to implement and improve the changes over time, as and when data availability and automatic data processing improves.

Summary of potential alternative solution and implementation date: The Workgroup member representing NESO has suggested a different solution approach, but there have been no alternatives raised to date.

What is the impact if this change is made?

The Proposer, taking account of the Workgroup's knowledge, research and views, believes this modification is likely to have a positive impact on system operability, security, and transparency by enabling more timely and detailed analysis of system incidents, helping industry parties better understand trends in system stability, with the aim of identifying and mitigating potential risks to the system before such events become significant and before they impact consumers (e.g. a full or partial blackout). The GC0181 proposal is intended to improve the safety and reliability of the electricity System and deliver wider societal benefits through a more secure and resilient National Electricity Transmission System (NETS).

Interactions

The proposed GC0181 solution includes the approach to allow system incident reporting to improve, as and when data and processes become available. On that basis, it is considered that GC0181 is not dependent on the progression of other code modifications. System Operator Transmission Owner Code Procedure (STCP) 27-01 may benefit from amendment to keep references to standards neutral as technology evolves. This is not considered a dependency for GC0181.

A further STC change may help clarify Transmission Owner (TO) data provision to NESO, but this is not a dependency for GC0181.

Note

For the avoidance of doubt, whilst the Workgroup is aware that Ofgem has commissioned a *'Post-event regulatory review of the operation and management of the [GB] electricity system during the June [2026] heat event'* which, from its Terms of Reference³, may (or may not) have some relevance to GC0181, the Workgroup has not seen (or, therefore, discussed and taken into consideration) the initial report from the review which may (or may not) be published around the same time as this Workgroup Consultation.

What is the issue?

What is the defect the Proposer believes this modification will address?

The existing system incident reporting process; as set out within the Grid Code; has three defects that need to be resolved to improve efficient and effective industry analysis of incidents/trips. The defects include late reporting of incidents with insufficiently low data sampling rate and lack of regional data from the place of incident. Due to these defects, the industry and relevant parties may have some difficulty in being able to carry out effective analysis in a timely manner which further prevents their understanding of the cause of grid disturbance events.

The existing reporting process has room for improvement to increase its effectiveness. Some key areas the Proposer believes need improvement:

1. Reports are made available to the industry quite late, between two and three months after the events have occurred.
2. The data sampling rate is insufficient for thorough analysis.
3. Reports do not incorporate data from various locations across GB.

³ Post-event regulatory review of the operation and management of the electricity system during the June heat event. Terms of Reference

Why change?

This situation hinders timely analysis, and the lack of information leads to doubt and confusion regarding the background of the incident. The Iberian blackout serves as a prime example of the consequences of not having timely data. When the Iberian blackout happened on 28 April 2025, industry, society and other bodies wanted to know the details of the incident the day after its occurrence and not three months later. Since the data is published long after the event, it becomes less useful, as industry are not receiving up-to-date information. The Iberian Report⁴ made a recommendation on improving information exchange between power-system actors. The report says its recommendations are to '*enhance operational robustness*' and improve '*cross-stakeholder information exchange*'.

Moreover, the additional data that Users may have from their sites that would support the investigation of the incident, is not stored indefinitely as it requires a lot of storage. Thus, this data is less likely to be available. Hence, the sooner the industry gets to know about an incident, the easier it is to find the data from the sites and investigate it. Referring again to the Iberian blackout, when industry see the reports, it is easy to see that there was a voltage control problem. If this data had been published before the event, then there is a good chance that these issues would have been spotted and corrected before a blackout. The same principle applies here to GC0105 'System Incidents Reporting' and GC0181. On 22 December 2023, an event⁵ occurred where one of the Interconnectors between France and the United Kingdom (UK) tripped, causing a 49.2Hz frequency event and leading to a loss of 2GW on the UK grid. NESO was able to publish the incident data on 17 January 2024, during the Operational Transparency Forum (OTF)⁶.

This happened in less than a month's time, despite the Christmas and New Year holiday period. This demonstrates that NESO can release data in under a month. If they were routinely publishing data, they should be well-equipped to do so.

⁴ <https://www.entsoe.eu/publications/blackout/28-april-2025-iberian-blackout/>

⁵ <https://www.solarpowerportal.co.uk/energy-storage/ifa-interconnector-fault-causes-49-2hz-frequency-event>

⁶ ESO Operational Transparency Forum, 17 January 2024, see slide 11

Learnings from 22 December 2023

1. The frequency data that Users are receiving is not sufficiently granular. The sampling rate of the frequency data published by NESO on the System Performance Reports is 1 second which is relatively slow. For the 22 December 2023 event, the Proposer has calculated Rate of Change of Frequency (ROCOF) calculations in two ways to illustrate the issue.
2. In a presentation to the Grid Code Development Forum⁷ (GCDF) in November 2024, prior to GC0181 being raised, the Proposer analysed the 22 December 2023 event which was reported under OC3 and also at NESO's Operational Transparency Forum (OTF). An extract showing the annotated frequency trace is shown in Figure 01.

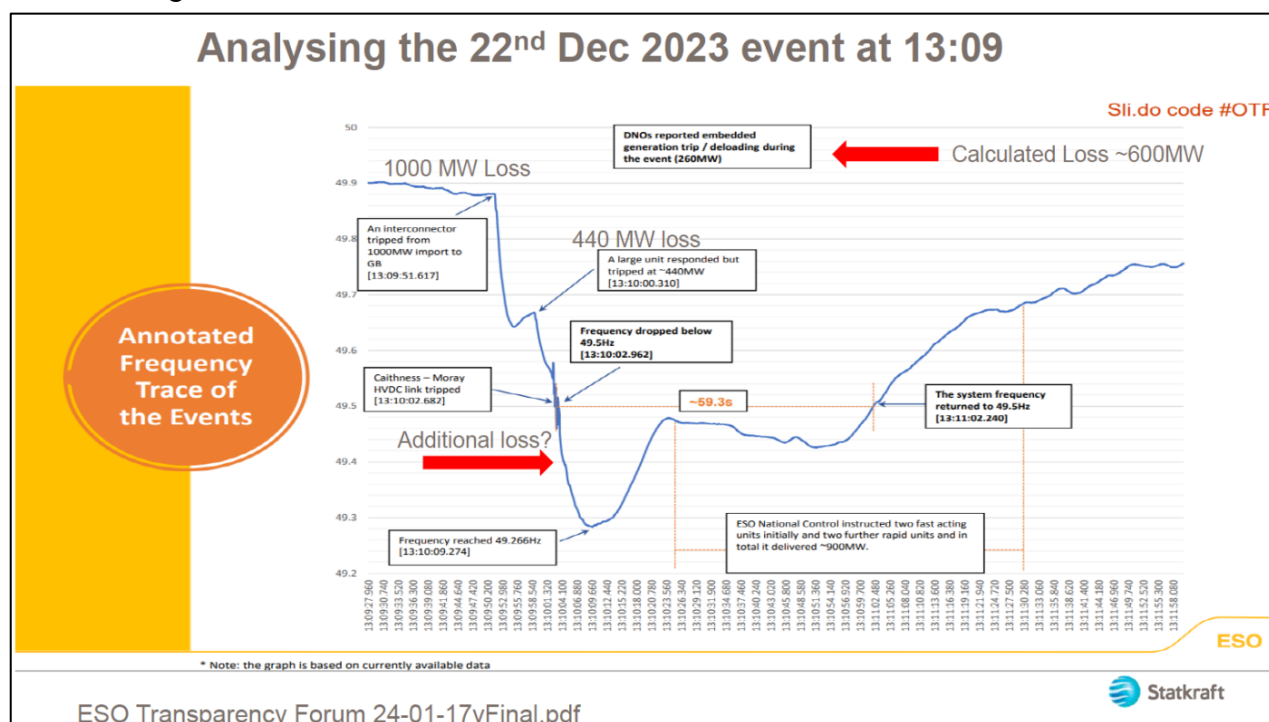


Figure 01: GCDF, 06 November 2024, Slide 29

3. The Proposer calculated the ROCOF (Hz/s) from the losses (MW) and the published inertia (MW.s) for the first two events (infeed losses of 1000MW and 440MW). These ROCOFs were 0.155 and 0.068Hz/s respectively. The ROCOF figures published by NESO at the OTF and under OC3 were about 40% lower at 0.102 and

⁷ Grid Code Development Forum, 06 November 2024, see slides 13-31

0.051 Hz/s. These NESO published ROCOFs are lower than actual because they are based on relatively slow data sampling. If 100ms frequency samples were used with a sliding 500ms window to measure ROCOF, a much closer match between the ROCOF estimation methods would be anticipated and higher ROCOFs would be expected to be reported.

4. This data sampling rate is much more important in relation to the third part of the 22 December event. This third part was due to the maloperation and subsequent tripping of an HVDC link. This event distorted voltage waveforms, making frequency measurements very difficult. Hence the “noise” on the frequency trace on the chart (Figure 01) around 13:10:02. This loss of a High Voltage Direct Current (HVDC) link did not disconnect any generation itself, as power is re-routed on Alternating Current (AC) circuits for an HVDC fault. However, the waveform distortions resulted in the tripping of other plant. NESO reported a loss of 260MW (Figure 01). However, the ROCOF measured from one second data was 0.066Hz/s which has been shown to underestimate the actual ROCOF by about 40%, therefore the actual ROCOF was about 0.9Hz/s. Using this figure and the system inertia, the Proposer estimated that the infeed loss for this third event must have been about 600MW (not the 260MW NESO stated).
5. In addition, looking at the frequency trace, additional ROCOF(s) can be seen after the frequency falls below 49.4Hz indicating that there were further additional generation/infeed losses.
6. In conclusion, making frequency data available at 100ms (and in multiple regions) will help provide more accurate estimates of ROCOF in system incidents and events. This data is important to estimate total aggregated losses of embedded generation (e.g. domestic solar Photovoltaic (PV)) which are invisible to Distribution Network Operators (DNOs), TOs and NESO.
7. The frequency in a synchronous grid is generally treated as a parameter consistent across the entire System. However, over short durations, phase differences throughout the grid can cause minor variations in the actual frequency at different points.
8. For a large infeed change or system disturbance, some areas of GB might experience ROCOF values significantly higher than the national average. This results in differing rates of ROCOF across the network which have been identified in the ‘Project Resilient Electric Vehicle Charging (REV) Report’ for reference.

Moreover, the Spanish investigations into the Iberian blackout show that there are regional variations and oscillations in frequency, which can be found in the European Network of Transmission System Operators for Electricity (ENTSO-E Iberian blackout report). This further proves the need and significance of regional data in analysing incidents.

The Original GC0181 Proposal form can be found in **Annex 01**.

What is the solution?

Proposer's (initial) Original Solution

The initial proposal was formally presented to the members of the Workgroup during the first Workgroup meeting on 04 November 2025.

NESO should analyse the System data and publish an annual report to track trends in System stability compared to previous years. This is essential for monitoring any adverse trends in System stability. The report should contain generic analysis that aggregates all incident data occurring in that year. The analysis should be done across several categories including:

- time of day analysis;
- days of the week analysis;
- quarterly analysis;
- the type of Balancing Mechanism Units (BMU) responsible for causing each trip/incident;
- the extent of the trips, such as the total number of trips caused by the BMUs;
- the total MW loss associated with the trips; and
- the average loss (MW) per event.

The Proposer intends the following requirements for NESO in its capacity as the GB System Operator in the Grid Code OC3.4:

- OC3.4.3 - Reduce the reporting time from the current three months to one week.
- OC3.4.1(b)(iii) - Increase the sampling rate from the existing 1 second to 100 milliseconds.
- Gather frequency measurements from at least five different regions across GB.

Additionally, the Proposer is keen to receive feedback from the Workgroup regarding other potential improvements and solutions.

Proposer's (updated) Original Solution

Subsequent to comprehensive discussions within the Workgroup, the Proposer refined their Original solution, resulting in the updated version outlined below:

The Proposer's Solution contains the following elements:

1. **Move from Monthly to Weekly reporting** (to move the availability of data closer to real time).
2. **Move from reporting 2–3 months after the event to reporting [5–10] Business Days after the event** (to move availability of data closer to real time).
3. **Allow NESO extra time in exceptional circumstances** (e.g. to allow for holiday periods or intense control room activities e.g. during storms etc).
4. **Improve the data reporting format(s), consistency and quality** (to better enable automated analysis of both single events and overall trends).
5. **Include a duty to report known data only** (given that NESO may not always have data or the capability to analyse and track data, and to allow NESO to improve reporting over time as technology and data processing and automation evolves).
6. **Including frequency data in reports at 100ms (vs 1s now) and from 7 different regions** (to improve accuracy of ROCOF calculations and have regional ROCOF, improving the analysis of events).
7. **Update frequency reporting from a single GB region, 1s data set, provided monthly to 7 new regional frequency measurements at 100ms provided 1 hour after real time** (improving data availability to industry to analyse events closer to real time).
8. **Include data from PMUs in reporting** (PMUs have been installed on the NETS and have proved to be vital overseas e.g. in analysing events such as the Iberian Blackout in April 2025).
9. **Improve OC3 by updating and coordinating previous changes made in GC0105 and GC0151** (e.g. to rationalise reporting under OC3.4.1(c) and OC3.5.1).
10. **Change the triggers for reporting requirements for voltage events** (as no voltage events have been reported, and voltage control was the cause of the Iberian blackout of April 2025).
11. **Add reporting when there is a significant change in phase angle** (i.e. a phase angle jump / vector shift).
12. **Add reporting whenever there is a ROCOF exceeding [0.1–0.25]Hz/s** (to report events when infeed/exfeed losses may be unknown, or uncertain in whole or in part).

13. **Add reporting of sub-synchronous oscillations** (noting these were implicated in the Iberian Blackout April 2025).
14. **Update the duration of data reported before and after events** (to increase efficiency of reporting and the focus on relevant data).
15. **Improve the detail of reported of inertia data** (to aid a clearer understanding of the different sources of inertia on the system at specific events).
16. **Include Dynamic System Monitoring (DSM) and Power Quality Monitoring (PQM) from plants that have tripped** (to provide more detailed and pertinent information relevant to Significant Events).
17. **Include the tripping of HVDC transmission links** (which NESO are not currently reporting, and which were a key factor in the 22 December 2023 event and will play a much bigger part in the future NETS).
18. **Require bespoke NESO analysis of events where there may have been cascade failures** (e.g. events occurring within a certain time of each other).
19. **Include an annual report** (so that NESO is tracking and reporting trends with the aim of identifying issues before they become critical and present report to SQSS and GCRP).

Draft Legal Text

The draft Legal Text can be found in **Annex 03**.

A table which maps the solution Elements to the draft Legal Text can be found in **Annex 08**.

Workgroup considerations

The Workgroup convened 11 times prior to this Workgroup Consultation to discuss the issue as identified by the Proposer within the scope of the defect, develop potential solutions, and evaluate the proposal in relation to the Applicable Code Objectives.

Workgroup Discussion ahead of the Workgroup Consultation

The Workgroup discussion below has been set out in two overarching sections. These are:

1. Generic Considerations – relevant information relating to the overall solution development
2. Element Specific Considerations – relevant information for each of the ‘elements’ incorporated into the solution, including proposed parameters

1. Generic Considerations

a. Current System Incidents Report

NESO currently provides System Incidents Reports. These are published on the '[System Performance Reports](#)'⁸ area of the NESO website.

The below show extracts of System Incidents Reports currently available:

Location	Network Operator	Date Time	Voltage (Relative)
Sundon 400/132kV SGT8	NGET	03/06/2026 12:07:46	
Kemsley 400/132kV SGT1/ 13/33kV T1	NGET	05/06/2026 02:36:45	
Lock Buidhe - Dalchork 2 (DLB2) 132kV circuit	SHETL	06/06/2026 06:51:48	
Eaton Socon - Ryhall - Wymondley 400kV circuit	NGET	09/06/2026 15:01:49	
Blyth 275kV Reserve Bus Section 1	NGET	11/06/2026 14:47:51	
Aberthaw 132kV Reserve busbar 1/2	NGET	12/06/2026 10:00:00	
Killingholme Sync Comp 2	NGET	13/06/2026 05:15:18	
Coryton South - Rayleigh Main 400kV circuit	NGET	23/06/2026 05:47:57	
Rayleigh Main - Tilbury - Tilbury SGT6 400kV circuit	NGET	23/06/2026 05:54:59	
Fort Augustus - Quoich Tee 132kV circuit	SHETL	25/06/2026 20:10:40	
Dunbeath - Mybster 132kV circuit	SHETL	25/06/2026 20:20:35	
Beauly - Knocknagael 132kV Bus Coupler 4	SHETL	26/06/2026 00:03:37	
Fort Augustus - Quoich Tee 132kV circuit	SHETL	26/06/2026 00:33:54	
Rainhill 275kV Mesh corner 1 and SGT1	NGET	26/06/2026 01:43:31	
Blyth-Eccles-Stella West 400kV circuit & Eccles 400kV SC1	SPT	26/06/2026 16:35:15	
Killin - ST Fillans (LSS) 132kV circuit	SHETL	26/06/2026 21:01:58	
Charlotte Street 275/33kV SGT1	SPT	30/06/2026 00:09:00	

Figure 02: GC0151 and GC0105 System Incidents Report June 2026, 'Transmission Faults (GC0151)' Tab

Reference	Name	Notes	Date Time	System Frequency (Refer to sheet)	Pre-Event Frequency (Hz)	Post-Event Frequency (Hz)	RoCoF (Hz/s)	System Inertia (GVAs)	Generation/Interconnection (MW)
20260602-1	Trip of IFA2	Importing from FR to GB	02/06/2026 11:29:21	20260602-1	50.11	49.86	-0.159	167	IFA2 991.18
20260610-1	Trip of CARR-1		10/06/2026 18:48:34	20260610-1	50.02	49.93	-0.018	157	CARR-1 403.66
20260612-1	Trip of KEAD-2		12/06/2026 18:24:40	20260612-1	49.90	49.79	-0.087	161	KEAD-2 782.75
20260615-1	Trip of IFA BP2	Importing from FR to GB	15/06/2026 20:55:59	20260615-1	50.04	49.87	-0.07	139	IFA BP2 605.12
20260618-1	Trip of IFA BP2	Importing from FR to GB	18/06/2026 15:59:04	20260618-1	49.99	49.82	-0.150	94	IFA BP2 995.61
20260627-1	Trip of TSREP-1		27/06/2026 18:50:21	20260627-1	50.03	49.94	-0.04	159	TSREP-1 252.38

Figure 03: GC0151 and GC0105 System Incidents Report June 2026, 'System Incidents (GC0105)' Tab

⁸ Navigate to 'GC0105 & GC0151 System Incidents Reports'



Figure 04: GC0151 and GC0105 System Incidents Report June 2026, '20260602-1' Tab, displaying System frequency trace (1-second interval) for a specific incident which occurred on 2 June 2026.

	A	B	C	D	
	Location	Network Operator	Date Time	Voltage Trace (Refer to sheet)	Notes
4	Richborough DRC5	NGET	14/07/2025 07:00		
5	Hurst - Eltham 132kV circuit SGT2, Hurst - Littlebrook 1 circuit SGT3	NGET	20/07/2025 12:49		
6	Dunoon – Whistlefield – Windyhill 1 (SWE1/GL1) 132kV circuit	SHTL/SPT	21/07/2025 20:02		
7	Canterbury North - Kemsley 400kV circuit	NGET	25/07/2025 13:24	V20250725-1	
8	Canterbury North - Cleve Hill 400kV circuit	NGET	25/07/2025 13:38	V20250725-2	
9	Mybster 132/33kV GT2	SHTL	31/07/2025 16:20		
10					
11					
12					
13					

Figure 05: GC0151 and GC0105 System Incidents Report July 2025, 'Transmission Faults (GC0151)' Tab

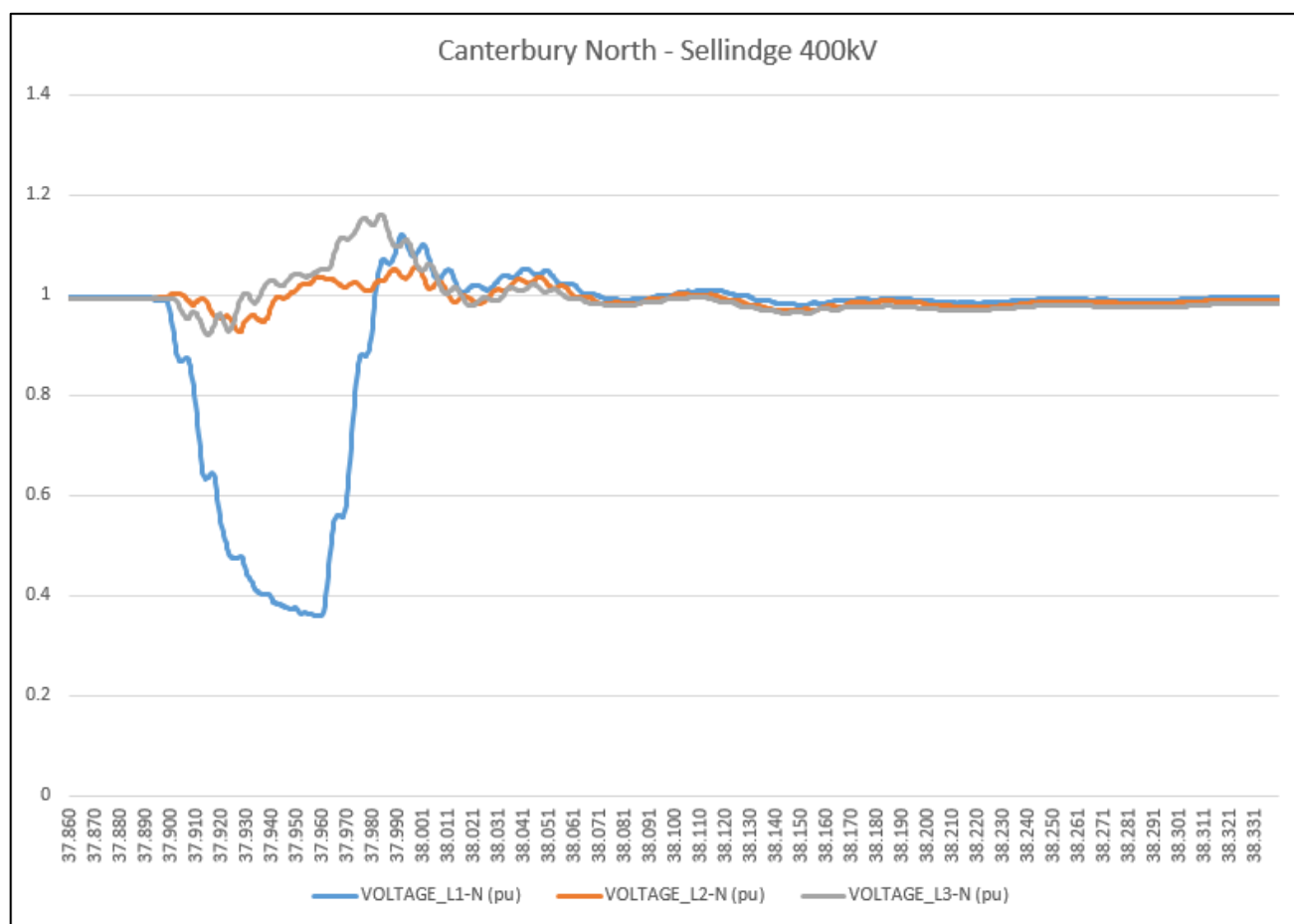


Figure 06: GC0151 and GC0105 System Incidents Report July 2025, 'V20250725-2' Tab

Figure 05 and Figure 06 show an example of OC3.5.1 reporting showing the voltage trace V20250725-2. Note the provision of voltage traces are very unusual.

b. NESO's Current System Incidents Report Process

NESO presented to the Workgroup a task breakdown for what they do for producing frequency reports, covering data extraction, running analytical code, investigation, requesting information from TOs, and final review.

The NESO Subject Matter Expert (SME) outlined:

- the frequency incident reporting process, estimating Full-Time Employees (FTEs) days for monthly and weekly reports under normal and stormy conditions;
- event investigation volume drives workload, weekly reports may require similar effort as monthly ones;

- monthly reports take 13.3 FTE days, weekly reports 11.5 FTE days and extra FTEs help but don't halve the time due to process bottlenecks; (see further in this consultation report for more information on this)
- the use of PMU data use could reduce reporting time; with PMU data, it is estimated that weekly reports could be produced in 8 FTE days, or further reduced to 3.6 days with an additional FTE (at an additional cost);
- reporting depends on IT systems, holidays, control room support and region count. The more regions considered, the more time it could take to assess the information prior to producing the reports; and
- some event data is already published externally. NESO has questioned the benefits case put forward by the Proposer of more frequent reporting for blackout prevention. Bi-weekly reporting was suggested by some Workgroup members as a practical compromise.

The above detail was presented by NESO at Workgroup 3, with further information available in the [GC0181 Workgroup 3 Papers](#)⁹.

The Workgroup discussed the data that is already available to industry parties as they hold their own monitoring information and investigate events at their Connection Points. It was argued that analysis of system incidents was possible, to some extent, using this data. A Workgroup observer explained that timely system-wide information remained valuable where an event was remote from a site or did not trigger local recording equipment. The Proposer agreed that the existing process should be described as capable of improvement rather than as non-functional.

Workgroup members discussed how reportable events are identified: NESO described checks they undertake across BMU outputs, NESO control room reports, information reported by Regulation on Wholesale Energy Market Integrity and Transparency (REMIT), Elexon data, and other sources to confirm Grid Code criteria are met.

NESO shared some historical data showing the total number of events initially analysed each month. This can be viewed as part of [Workgroup 6 meeting papers](#)¹⁰ alongside a process flow chart.

NESO raised feasibility concerns for some data requirements (e.g., 100 ms frequency data and phase jump angles), given tool limitations and data volumes. Some

⁹ GC0181 Workgroup Number 3, 26 January 2026, See Slides 23–28

¹⁰ GC0181 Workgroup Number 6, 05 May 2026, See Slides 11–13

requirements remain under discussion by the Workgroup pending further NESO review and tool development, with actions to clarify technical capabilities.

c. Cost Benefit Analysis (CBA)

The Proposer developed an impact assessment comparing the cost of the 2025 Iberian blackout to potential costs in GB. This analysis estimated a GB blackout could cost around £13 billion, with the benefit of improved reporting, by moving from monthly to weekly via GC0181, far outweighing NESO's operational cost of compiling and publishing data and reports¹¹.

The analysis estimated that if enhanced reporting prevented even one blackout in GB every 260,000 years, it would be more cost-effective than the status quo ('baseline').

The main Workgroup discussions were:

- whether the information required by OC3.4, related to GC105, could prevent a blackout, noting the benefit depended on whether the reporting could truly stop such events. The Proposer clarified that the goal is not to guarantee blackout prevention, but to reduce the probability by increasing transparency, analysis, and pre-emptive action. Past improvements in protection settings like ROCOF and vector shift relays (Accelerated Loss of Mains Change Programme – ALOMCP¹²) demonstrated how better information provision has helped avoid system issues in the past;
- that reporting alone cannot stop a blackout, but it does provide valuable transparency and system visibility to industry, which could help industry to identify risks early, before a blackout is triggered;
- suggestions of reframing the CBA to compare the expected probability of a blackout based on security standards to the calculated benefit, to better contextualise the value of improved reporting.
- clarification was needed on how producing a weekly report, as opposed to a monthly report, would make a difference in preventing a blackout, expressing uncertainty about the practical impact of increased reporting frequency on blackout prevention; and
- the Proposer used a *placeholder* of £50,000 per annum for the additional costs of improved reporting in the CBA, seeking confirmation from NESO. A Workgroup member indicated that weekly data provision should not be cost prohibitive (as

¹¹ GC0181 Workgroup Number 3, 26 January 2026, 'Impact Assessment', Slide 20–21,

¹² Accelerated Loss of Mains Change Programme, Window 9 Report

the underlying data should already be being gathered by NESO, as a reasonable and prudent operator) but more detailed breakdowns are needed for accuracy.

Workgroup members strongly agreed with the Proposer on the importance of timely incident reporting for pre-empting blackouts and identifying system trends.

The Workgroup discussed that the current three-month reporting lag and unhelpful data formatting make it difficult for stakeholders to analyse incidents and update their own reports promptly. Suggestions of more frequent bi-weekly reports would provide a clearer, up to date picture of system events, enabling earlier trend identification and better industry preparedness.

Workgroup Consultation Question 7: Do you currently use data reported under OC3? Please provide further details.

Workgroup Consultation Question 8: If this modification results in faster, more frequent, more granular and wider-area System incidents reporting, would your actions change? If so, please provide further information on how.

Workgroup Consultation Question 9: What industry and/or consumer benefits do you anticipate as a result of this modification?

d. Energy Data Taskforce and Ofgem's Data Best Practice Guidance

Some of the Workgroup shared their views that publishing data leads to greater system efficiency, consumer benefit, and innovation, referencing the Energy Data Task Force's recommendations¹³ (which were endorsed by both the UK Government and Ofgem, who had jointly commissioned the Taskforce) and Ofgem's call for improved data transparency.

The Workgroup also noted the principle of Ofgem's Data Best Practice Guidance that *'Data Assets must be treated as Presumed Open which means that data must be made available for all people use, unless the licensee responsible for handling the data*

¹³ For example, (from page 10 Footnote 14) (i) "Increased risk to system stability: Without visibility of assets, their operation and how they interact with each other at local and national levels, system stability is more at risk. Transparent actions matched with data modelling and machine learning will greatly improve the operational resilience of the system. This will become an increasingly important issue as we move to having system operation distributed across multiple entities", (ii) "Energy System Data that has value to the wider system and has been generated by monopoly or consumer subsidy should be available for the benefit of the 'system as a whole' " and (from page 24) (iii) "Presumed Open reverses the current default for data accessibility from closed to open....this principle places the onus on data owners to "start from open" justifying why any restriction might be required. The principle of Presumed Open should apply fairly and equitably to all parties in the sector including Government, the regulator and industry. ...More open data reduces friction across the sector, improving system management, supporting better decision making in asset procurement and deployment, and delivering overall cost efficiencies across the whole system."

provides specific evidence to show that the data should be withheld or its availability reduced’.

e. NESO Data Sharing Framework

The NESO SME outlined the organisation's comprehensive four-tier data classification framework, which categorises information as *i)* public, or *ii)* general, or *iii)* confidential, or *iv)* strictly confidential. This system governs the labelling and management of data based on its sensitivity, providing clear protocols for storage, access control, and physical security. The framework is designed to ensure strict adherence to Ofgem's Data Best Practice Guidance requirements as well as NESO's internal ringfencing policies. Further information can be found in one the Workgroup 4 Meeting Papers on NESO's Data Classification and Sharing processes in **Annex 07**.

The NESO SME also outlined the data sharing triage process, which systematically evaluates each request by assessing applicable legal constraints and a range of risks, including security, commercial, privacy, and reputational factors. Additionally, the process requires obtaining consent from relevant third parties, such as TOs. Each assessment is thoroughly documented and subjected to review by both risk specialists and legal counsel, ensuring that openness is maximised while all identified risks are effectively mitigated.

During the discussion, a Workgroup member questioned the scope of data sharing. The NESO SME explained that NESO escalates high risk situations to market monitoring to prevent any violations, particularly in the absence of a Non-Disclosure Agreement (NDA). Another member stressed the necessity of making data widely available to prevent potential market manipulation. In response, the SME reaffirmed NESO's commitment to transparency and its rigorous approach to reviewing triage decisions.

During the discussion, a Workgroup member expressed reservations regarding the distribution of raw PMU data, citing concerns about reputational and legal implications should specific incidents be linked to identifiable assets. In response, the SME clarified that NESO's triage process is designed to identify and address such risks, ensuring that any data sharing is contingent upon obtaining consent from TOs and implementing appropriate risk mitigation measures. Furthermore, data classified as *strictly confidential* is subject to enhanced controls to safeguard its integrity and security.

It was emphasised that NESO conducts annual reviews of recurring data sharing arrangements to reassess the associated risk profiles, with provisions for more frequent evaluations should risk factors evolve or new concerns arise. Following the triage and approval process, data is disseminated in accordance with its designated classification.

NESO is also committed to promoting transparency by proactively publishing data deemed low risk on its public portal.

The Workgroup debated whether to publish raw datasets or summary reports, with the NESO SME favouring summary reports for clarity. Thresholds for event inclusion in System Incident Reporting were also discussed (e.g., 250 MW loss, 0.1 Hz/s ROCOF), alongside potential automation criteria and avoiding redundant reporting; NESO also suggested potential changes to region definitions and data intervals.

The Workgroup discussed the potential for enhanced monitoring using dynamic system monitoring platforms and remote access to generator data. The NESO SME described ongoing work to develop a platform for aggregating such data. Concerns were raised regarding commercial sensitivity of generator data, balanced against the benefits of shared learning and system reliability. It was argued that transparency should take precedence where it supports system security.

Workgroup members pointed out that data can be and is collected by third parties, using PMU and other devices connected to the network and this data can and is shared and/or available commercially.

Workgroup Consultation question 10: Based on your understanding of what information would be reported, do you see any conflicts in relation to commercially sensitive information or what may be classified as 'confidential' information?

f. NESO Data triage process

The Workgroup discussed the complexities of data ownership, the triage process for sharing PMU data, and the challenges in publishing high resolution data. The Workgroup questioned current practices and advocated for greater openness and alignment with best practice obligations. NESO explained that while data is presumed open, (in accordance with the Energy Data Taskforce recommendations), NESO must conduct a triage process to determine if PMU data can be shared, considering confidentiality and potential system vulnerabilities, and requiring permission from TOs.

The Proposer and a Workgroup member highlighted that since PMU data¹⁴ is already being funded by consumers; via Transmission Network Use of System (TNUoS) / Balancing Services Use of System (BSUoS) charges; and falls under best practice obligations, TOs should be publishing it¹⁵, and the Workgroup should focus on ensuring

¹⁴ In terms of the PMU's purchase, installation, operation, data gathering, data analysis (by the TO / NESO) and data publication (internally – to the TO / NESO – currently, and, if GC0181 is approved, externally).

¹⁵ See, for example, page 10 of the Energy Data Taskforce report "Energy System Data that has value to the wider system and has been generated by monopoly or consumer subsidy should be available for the benefit of the 'system as a whole'".

compliance with these obligations rather than restricting publication due to security concerns. NESO clarified that it receives limited PMU data, much of which is not yet operational or of sufficient quality for publication, and that the TOs are responsible for the initial data, with NESO producing reports based on their analysis of this initial data from TOs.

The Workgroup discussed the status and future rollout of PMU installations, the feasibility of meeting the GC0181 reporting requirements being proposed, and the importance of regional data coverage. NESO shared an expected rollout timeline¹⁶ with the Workgroup. One Workgroup member emphasised the need for regional diversity in PMU data to ensure meaningful analysis, suggesting alignment with existing regional boundaries used in system operability frameworks, and the Proposer supported flexibility in the number of regions as more PMUs come online. One Workgroup member noted that the expected timeline for PMU rollout aligns with the requested implementation of GC0181 and queried when sufficient PMUs would be operational to meet the reporting requirements.

g. NESO Impact

NESO presented its view on the costs and benefits of moving to weekly reporting, highlighting the increased workload, requirement for process changes, significant expansion of data storage capability, while also potentially resulting in empty reports during weeks with few or no events.

Several Workgroup members questioned NESO's estimates of the magnitude of the cost increases that might arise with GC0181, arguing that much of the data processing is already being done by NESO and that the main change is in the frequency of external publication, not the underlying analysis (which should already be being undertaken by NESO, for internal operational purposes, as a reasonable and prudent operator).

The NESO representative further clarified that the number of incidents formally reported is significantly lower than the total number of events actually analysed. The reporting process requires thorough sifting and extensive cross-referencing (which includes control room reports, among other data sources) to ensure accuracy and compliance.

NESO stated that the main bottleneck for NESO in the current reporting process is waiting for TO data. Timelines are also affected by operational conditions, tool reliability, and staff availability.

¹⁶ GC0181 Workgroup Number 3, 26 January 2026, See slides 13-14

NESO assessed using PMU data and additional FTEs to accelerate reporting but noted that dependencies on other teams and end-to-end information flows are likely to limit the benefit of staffing increases alone.

However, in respect of PMUs, a Workgroup member noted that all PMU purchases, installations and operations have already been paid for by consumers, including the costs arising from data transfers from the TOs to NESO and the analysis of that data by NESO. Therefore, the Workgroup member reasoned, any GC0181 related costs shouldn't include anything for the PMU component that's already being paid for (via TNUoS or BSUoS).

Under best case assumptions, PMUs available and favourable conditions, the NESO representative estimated that the reporting period could reduce to 3.38 days; however, a weekly reporting cadence remains challenging and may not be feasible.

The NESO representative expressed that considering all the blockers and challenges, the only feasible reporting frequency is monthly with a one-month reporting window. The main barriers to achieving a weekly report delivery are data collection including third party data request (Digital Fault Recorder (DFR) and PMU), data validation, data analysis, peer-review and approval. In addition to the main barriers, other challenges impacting the reporting delivery include bank holidays tightening publication deadlines, IT issues, and resource allocation of NESO reporting staff to support the control room during emergency system operation conditions.

A Workgroup Observer noted that NESO has demonstrated via its existing data portal that weekly or more frequent reporting is possible via an automated system, unless specific concerns arise regarding data quality – if these occur then they can be highlighted and addressed after data has been published for. For example, [System Inertia | National Energy System Operator](#) notes on the webpage *NOTE: Updates to the System Inertia dataset have been temporarily paused while we [NESO] review and validate the most appropriate data available.*

Reporting cadence options were discussed. The NESO SME stated monthly reporting was currently feasible; the Proposer and another Workgroup member suggested transitional steps (e.g., fortnightly), or moving to weekly once PMU data is operational. The Workgroup agreed to revisit this after further analysis and tool implementation.

A Workgroup member asked whether NESO could use the Transmission Licence Condition D2 (*"Obligation to provide transmission services"*) to require TOs to provide information within set timelines, suggesting this could be formalised in the System Operator Transmission Owner Code (STC) to streamline data provision for incident reporting. The NESO SME responded that while PMU rollout will eventually provide live

data, current processes still rely on manual requests. The need for a Code modification or further discussion may diminish as PMU coverage improves.

One Workgroup member suggested having thresholds for publishing larger incidents and smaller incidents monthly. The NESO SME responded that NESO had considered the idea of publishing larger incidents more frequently and smaller ones monthly but noted that defining thresholds for "larger" and "smaller" incidents needs official clarification, particularly as the 250MW threshold is under review due to evolving system dynamics.

The Workgroup discussed automating the reporting process, which could be improved by using ROCOF thresholds instead of just MW loss, possibly making it easier to automate incident detection and reporting. It was noted that the current 250MW threshold is intended to capture the required events and switching to a ROCOF based threshold could complicate things and would need further thought. It was emphasised that, despite the potential for PMU data to reduce reporting time, many events near the lower MW threshold still require manual investigation. This is due to false positives and the difficulty of automating the identification of all relevant incidents.

The Workgroup agreed to continue considering whether changes to the code could support greater automation, with the Proposer encouraging the NESO SME to explore options that would maintain data quality while making the process more efficient.

- **Cost and Feasibility of System Incident Reporting**

The NESO SME provided an overview of the organisation's current data capabilities, highlighting limitations related to data granularity and confidentiality. The Workgroup subsequently considered the feasibility of implementing weekly reporting, increased sampling rates, and the inclusion of regional data, noting concerns regarding resource requirements and data ownership (whilst being mindful of the Energy Data Taskforce recommendations around the presumption of open data and that *"Energy System Data that has value to the wider system and has been generated by monopoly or consumer subsidy should be available for the benefit of the 'system as a whole' "*).

The operational challenges posed to NESO by the GC0181 proposal, particularly the need for high-resolution data and additional resources were highlighted.

NESO SME estimated that preparing the report would require one additional full-time employee, with an annual cost between £180,000 and £200,000. However, the SME stressed that factors such as limited data availability, the need to prioritise resources during incidents, and the requirement for complete data from TOs make weekly reporting impractical. As a result, monthly reporting is considered the most reliable minimum frequency.

The Proposer identified the frequency of reporting period (e.g. every week or every month) to be different to the timescale/ elapsed time for producing the report (e.g. 3 months or 7 days or 3 working days) after the reporting periods. Meanwhile, other Workgroup members emphasised the importance of using adaptable language in the Legal Text to support ongoing process improvements and the integration of automation.

Workgroup members are seeking enhancing automation for both data extraction and report preparation. The NESO SMEs acknowledged that automating the extraction of PMU data is feasible; however, the process of analysing this information and combining it with fault recorder data still demands manual effort. This is particularly important when handling complex incidents, where human expertise is required to ensure accurate integration and interpretation.

- **Process Flow, Event Filtering, and Reporting Logic**

The NESO Representative presented Gantt charts that compared the current reporting process with an optimised, best-case scenario. These charts, which can be found in **Annexes 05** and **06** of this consultation, demonstrated that the majority of tasks occur in sequence, and that adding more staff or increasing automation would only slightly shorten the overall timeline. This is primarily because much of the process depends on waiting for data from TOs, which introduces unavoidable delays.

The Proposer presented data illustrating the monthly and weekly distribution of incidents, noting that while weekly reporting may lead to an increased workload, the impact is not substantial.

The NESO SME explained that thousands of potential events are initially flagged each month, narrowed down using macros and manual checks to a smaller set for detailed analysis, with only a subset ultimately reported; the Workgroup members requested clearer documentation of each filtering step and its alignment with the current requirements in Grid Code OC3.

Workgroup members noted the importance of including embedded generation loss and DNO data in the process flow, with NESO SMEs agreeing to update the Gantt chart to reflect these steps and improve transparency.

h. Transmission Owner Impact

The Workgroup discussed potential impacts on TOs and some members concluded that no significant additional requirements are currently anticipated, noting that much of the required infrastructure is already being developed through the PMU rollout. NESO provided a high-level solution architecture to the Workgroup to support understanding

of delivery and implementation following and this could support further solution development. This can be found in **Annex 09**.

The Workgroup highlighted that incident reporting relies on TO provided data; delays may require escalation, potentially involving the STC Panel if changes are needed to formalise data-sharing obligations and/or timelines.

i. Impact to other industry parties

The Workgroup questioned potential impacts of GC0181 to industry parties in addition to TOs and NESO and that further insight from across industry would be valuable. It was noted that there were potential impacts to Users with Dynamic System Monitoring and Power Quality Monitoring.

Workgroup Consultation question 11: Will GC0181 impact your organisation in any way? Please provide a description of the impact(s).

j. Iberian Blackout

The Proposer noted the ENTSO-E final report of the Iberian Blackout⁴, highlighting that learnings from this have been considered and factored into different elements of the solution. The Workgroup noted the importance of PMUs in analysing the event. The ENTSO-E report stated (Page 61) *"There were 76 PMUs operational in Spain on 28 April. The extensive PMU coverage in Spain enabled the Expert Panel to establish several relevant facts and enabled producing detailed heatmaps."*

k. Review of System Incident Reporting by Grid Code Review Panel

An Observer questioned how the existing requirement to provide System Incident Reports to the GCRP was reflected in the process. The NESO Representative understood that the Panel received links through its papers, but noted uncertainty about whether the reports were discussed or clearly visible to industry. Following discussion with the GCRP Secretary, the Workgroup Chair confirmed that links to the publicly available System Incident Reports are provided each month to the GCRP. The Workgroup discussed that OC3 as currently drafted, does not make clear the obligations on the GCRP. A Workgroup Observer shared that both SQSS Panel and GCRP would have an interest in the reporting that could be delivered through GC0181, and it was important to distinguish between their respective scope given their responsibilities. The Proposer took an action to consider Legal Text drafting to clarify the expected use of monthly and annual reports by the GCRP and SQSS Panel, which will be updated following the Workgroup Consultation.

l. GB alignment with Worldwide Reporting Practices and European Standard

NESO presented to the Workgroup its findings on worldwide reporting practices and shared that in Europe, Australia, New Zealand, Japan, and North America typically require incident reporting within 30 calendar days or 20 Business Days and found no

examples of any country currently reporting within one week as proposed with GC0181. The Workgroup raised questions about the alignment of GB sampling rates with European requirements, specifically the move from one second to 0.5 seconds, and the need for dynamic alignment under the UK-EU agreement, which NESO agreed to investigate further. One Workgroup member proposed that instead of focusing solely on post-incident reporting, the Workgroup consider continuous publication of regional frequency data at higher resolution, which could simplify processes and provide greater value to stakeholders.

The NESO SME explained that GB currently aligns with European requirements for frequency data resolution, which is set at one second for frequency quality analysis, referencing Article 131.1A¹⁷. The one-second resolution is used for frequency quality checks and event analysis, while frequency control in Europe uses lower resolutions (one minute and fifteen minutes). There is no ROCOF reporting requirement in the referenced European standards.

A Workgroup member queried whether network operators in Europe might be operating at higher standards than the legislative minimum, suggesting the need to check with actual operators for current practices and direction of travel. Following this, NESO shared findings from discussions with European Transmission System Operators (TSOs), noting disparities in data reporting and sampling rates.

It was clarified that the one millihertz requirement in Article 130¹⁷ relates to measurement accuracy, not time resolution.

The Workgroup discussed that GB could potentially achieve better than one-second resolution if tools allowed, which would exceed current European requirements.

The NESO Representative noted that EirGrid (Irish TO) and Energinet (Danish TSO) release frequency data at different intervals, usually with a delay of one to two months. Additionally, ENTSO-E requires data submissions from TOs on a quarterly basis, along with annual public reports. Most European TSOs do not currently report as frequently as proposed (with GC0181) in GB.

The NESO Representative committed to regularly informing the Workgroup about any updates or advancements in international practices.

m. Revision of OC3.4.1 (ii)

This clause specifies any frequency outside the range 49.7–50.3 as a Significant Incident requiring a report. There was discussion about reducing this range.

¹⁷ Of the (EU) System Operation Guideline [CL2017R1485EN0010010.0001.3bi_cp1.1](#)

At NESO's OTF meeting on 02 September 2026¹⁸, NESO provided a response questions on the reporting of frequencies outside of the range 49.7Hz to 50.3Hz and their classification as Significant Events.

An Observer commented that they would strongly suggest limits of 49.7 and 50.3 Hz or narrower. This is considering the June 2026 incident that is currently under investigation by Ofgem and NESO. Also, on the basis that Ofgem highlighted concerns to NESO about frequency falling below 49.7 Hz in the NESO Licence Expectations Document from April 2025. *'Demonstrably minimise any increases in the number of instances where the system frequency is outside operational limits but within statutory limits (for example, excursions beyond 0.3Hz) or transparently demonstrate why tolerating increases in these excursions strikes an appropriate between security and cost-efficiency.'*

The Proposer stated that they had reviewed one second data published under OC3.4.4¹⁹ and concluded that narrowing this band would result in too many reports. However, the Proposer updated the proposed Legal Text in OC3.4.4 (see Element 7) to improve relevant data.

2. Element Specific Considerations

The following section sets out the proposed Elements to be changed in Grid Code OC3 along with references to the associated rationale and Workgroup discussion.

Element 1: Move from Monthly to Weekly reporting

The Proposer has included Element 1 to move the availability of data closer to real time.

There has been considerable discussion and debate in the WG on the feasibility of this change e.g. see 1(g) 'NESO Impact' and 1(f) 'NESO Data Triage process'

NESO highlighted the challenges to achieve a weekly report delivery. These include data collection (including third party data request), data validation, data analysis, peer-review and approval. In addition, other challenges impacting the reporting delivery include bank holiday which could tighten the publication deadlines, IT issues, resource allocation to support the control room during emergency system operation conditions. Please also see Element 3.

Workgroup Consultation question 12: With regard to Element 1, do you support the change from monthly to weekly reporting?

¹⁸ NESO Operational Transparency Forum, 02 September 2026, Slide 27

¹⁹ System Frequency Data

Element 2: Move from reporting 2–3 months after the event to reporting [5–10] working days after the event

The Proposer has included Element 2 to move availability of data closer to real time.

Considering all the blockers and challenges noted in Element 1 above, NESO considers feasible reporting frequency to be monthly with a one-month reporting window (i.e. 1–2 months after the event).

Workgroup Consultation question 13: With regard to Element 2, do you support the change from reporting delay from 2–3 months to [5–10] working days?

Element 3: Allow NESO extra time in exceptional circumstances.

The Proposer noted the importance of distinguishing reporting frequency or reporting period (currently 1 month) from publication delay or time to report (currently 3 months). The proposed solution is seeking weekly reporting with publication five working days after the end of the relevant week, subject to flexibility to extend the five working days for exceptional circumstances such as high control room workloads due to storms or bank holiday periods.

Noting the challenges raised in Elements 1 and 2 above, NESO informed Workgroup that it considers feasible reporting frequency to be monthly with a one-month reporting window.

Workgroup Consultation question 14: With regard to Element 3, do you agree to allowing NESO extra time (more than 5 Business Days) to report in exceptional circumstances?

Element 4: Improve the data reporting format(s), consistency and quality

The Proposer identified that nomenclature of reporting of Significant Events is inconsistent, so this Element has been included in the solution to better enable automated analysis of specific events and overall trends.

Standardised nomenclature

NESO advised that current asset naming arrangements are based on the general principles of using unique and persistent identifiers, with any inconsistencies typically resolved through bilateral discussions. BMU and related asset naming information is sourced from the Single Markets Platform, where participants register assets and are allocated NESO BMU IDs. The Workgroup agreed that further work is needed to develop consistent naming conventions across BMUs, Grid Supply Points (GSPs) and transmission circuits. NESO noted that Elexon is the authoritative source for BMU IDs and suggested that transmission circuits, and any associated transformer-circuit nodes, could adopt the Electricity Ten Year Statement (ETYS) naming convention.

Mechanism for Data Sharing

A Workgroup member noted that their team converts data in the NESO System Incidents Report spreadsheet into absolute figures and finds some columns unnecessary, while requesting the addition of generation source data to remove a manual step. NESO invited stakeholders to provide feedback on potential improvements to the spreadsheet format, including data fields and column relevance. The Workgroup also discussed data publication terminology and agreed to revisit the legal drafting as the solution develops. The Proposer emphasised that the proposal does not prescribe a specific reporting format and would support innovative solutions, such as searchable databases. The Workgroup further considered whether changes should focus on improving the existing process or enabling greater automation, with the Proposer noting that the drafting was intended to support initial reporting while allowing increased automation over time. A Workgroup member noted that real-time data processes existed elsewhere in industry and asked whether a redesigned process could be more effective than incremental efficiency changes.

Clarity of definitions

The Proposer explained that proposed Legal Text Section C covers wider transmission faults and events, highlighting uncertainty over whether current OC3.5.1 reporting includes auto-reclose events and the resulting circuit status. NESO confirmed that auto-reclosures are not routinely reported under OC3, except where associated with detected fault currents. Incidents involving maloperations or equipment failures are excluded from reporting. The relevant data is gathered from TOs and carefully verified before being included in official reports. Workgroup members supported clearer definitions of reportable faults, including voltage-time profiles that exceed generator ride-through requirements. The Workgroup also discussed introducing a defined Grid Code term for "auto-reclose", with NESO noting that broader terminology standardisation could be beneficial but may require a separate modification due to its potential materiality. This was captured by the Code Administrator.

NESO raised concerns regarding the proposal to include auto reclosure operations within the list of Significant Events or events leading/linked to Significant Events.

It noted that auto reclosure is a protection and control mechanism used to isolate a faulted circuit and restore it to service where appropriate once the fault has been cleared. It is not, in itself, a fault or a Significant Event, but rather a network response to an underlying Transmission fault. In many cases it is simply the normal and expected operation of protection systems restoring a circuit after a transient fault (for example, lightning or temporary contamination).

Workgroup Consultation question 15: With regard to Element 4, do you agree that the data reporting formats, consistency and quality can be improved and refined?

Workgroup Consultation question 16: What format would you like the revised System Incidents Report to take?

Element 5: Include a duty to report known data only

The Proposer has made clear that a principle of the proposed solution is for NESO to report known data only. NESO may not always have data or the capability to analyse and track data and adopting this approach allows NESO to improve reporting over time as technology, data processing and automation evolve.

Workgroup Consultation question 17: With regard to Element 5, do you agree that NESO should only be obliged to report on known data?

Element 6: Including frequency data in reports at 100ms (vs 1s now) and from 7 different regions

The Element has been included in the proposed solution to increase accuracy of ROCOF calculations and make regional ROCOF available, improving the analysis of events.

The Workgroup reviewed the draft Legal Text and refined wording on regional PMU data requirements, "at least five different regions if available", and sampling rates. Consensus was to include flexibility for data availability and to further assess technical feasibility and costs. Key discussion points included whether clause OC3.4.1(b) should explicitly require multiple regions, whether frequency data should come from specific PMUs or be averaged across several to address data quality and confidentiality concerns, and whether a historical comparison test could show if averaging masks important deviations; a potential compromise was to refer to "representative" PMUs for defined areas rather than naming individual assets.

Workgroup Consultation question 18: With regard to Element 6, do you agree that frequency data reported in Significant Events should be enhanced from 1 second data for the whole of GB, to 100ms data for 7 regions in GB?

Element 7: Update frequency reporting from a single GB region, 1s data set, provided monthly to 7 new regional frequency measurements at 100ms provided 1 hour after real time

This Element is included with the aim of improving data availability to industry to analyse events closer to real time.

A Workgroup member highlighted discrepancies between reported and actual electric time error data, stating that a Freedom of Information (FOI) response²⁰ showed frequent exceedance of established limits set out in the SQSS. This raised broader concerns about data accuracy and consistency across reporting channels. The importance of reliable and transparent data was emphasised as a key driver for this GC0181 modification.

NESO noted that whilst current expectations are that this requirement can be achieved once PMU data and the monitoring tools are available, it is reliant on the relevant infrastructure becoming operational and when its capabilities, coverage, data quality, resilience and limitations have been fully assessed.

The draft Legal Text plans to improve this data reporting by specifying:

- Provided hourly, 1 hour in arrears
- Data at 100ms not 1s
- Data from at least 7 regions not 1 GB data point
- Calculation of ROCOF for each data point
- Calculation of cumulative time for each excursion outside the range 49.800 to 50.200 Hz
- Rolling Electric Time error for each region.

Workgroup Consultation question 19: With regard to Element 7, do you agree that OC3.4.4 publication of Historic Frequency Data should be changed from 1 second data, reported monthly, 11 working days in arrears, for the whole of GB to publication of 100ms data, reported hourly, one hour in arrears, for 7 regions in GB?

Element 8: Include data from Phasor Measurement Units (PMUs) in reporting

PMUs have been installed on the NETS and have proved to be vital overseas e.g. in analysing events such as the Iberian Blackout in April 2025. PMUs were not available when GC0105 and GC0151 created OC3.

Sharing PMU data and installations

The NESO SME provided an update on whether TO data can be published and where it could best be accessed. Noting practicality and constraints around sharing PMU data more widely and in real time. Key issues raised were:

- clarification needed on what confidentiality constraints restrict data access, noting that the term is often used vaguely. TOs should not assume generators' views and that any objections must come directly from the source;

²⁰ FOI-26-029 – Electric Time Information – 03 June 2026

- both TOs and Generators have concerns about commercial sensitivity, particularly where data may reveal generator-specific issues. Noting that full User buy-in would be required before sharing certain data;
- suggestions of any confidentiality objections must be provided in writing by the party asserting them, rather than relying on verbal reports or assumptions;
- the validity of confidentiality concerns, noting that PMU data at substations is consumer-funded and should not easily identify individual generators. Practical justification of how confidentiality applies and who is raising the concern was needed.

A Workgroup member queried as to why TOs would incur any additional costs (associated with GC0181, if approved, since PMUs are already purchased, installed and operated, whilst the resulting data is already gathered by TOs and shared with NESO for analysis (and all this is fully funded by consumers, via TNUoS/BSUoS charges), suggesting TOs may not need to do anything beyond their current practices. One TO shared information on PMUs at the request of the Workgroup, and provided consent for this to be shared with the Workgroup Consultation during Workgroup 11. This can be accessed in **Annex 10**. PMU data, and consent to share, remain outstanding from the other two TOs.

The NESO SME advised the Workgroup that NGET are considering timelines for the full PMU rollout, noting that Scotland's rollout is complete, and other regions are expected to follow, with significant progress anticipated by March 2026 and completion targeted by the end of 2027.

The NESO SME also mentioned that the same timeline applies to frequency, inertia and system resolution data and by December 2027, there should be sufficient rollout to access the necessary data.

A map was presented to the Workgroup showing current and planned PMU installations, including their locations, numbers, zones and types which would be useful to provide clarity on current and future PMUs; and further information regarding PMUs being installed that are of the same technology or specification and to clarify their technical capabilities was requested by the Workgroup.

The NESO SME noted that two TOs are generally open to sharing data but have raised concerns regarding commercial sensitivity and liability. One TO has not yet provided a specific response on confidentiality. Despite these concerns, all TOs currently supply data to NESO according to existing agreements.

TOs could not provide definitive cost estimates for the proposed system changes. One sought input from their internal teams, while another indicated they would prefer to wait

until further PMU deployment before estimating costs. Overall, there is a general understanding (on the part of the TOs and NESO) that the resource requirements may be substantial, but specific details are still uncertain.

However, as set out above the Proposer and some other Workgroup members were of a contrary view; namely that the additional (GC0181 related) costs, to the TOs, would be very minor, if at all, (given the existing level of funding already provided to the TOs and NESO for this data gathering / assessment).

The Workgroup reviewed the requirements outlined in [STCP 27-1](#), which oblige TOs to provide incident-related information to NESO. Members discussed whether these procedures should be further formalised or automated, aiming to enhance efficiency and ensure the process remains robust and adaptable for future needs. Any data requirements proposed though GC0181 may need to be aligned with STCP 27-1 and it will be determined if a modification to the STC is needed to codify information exchange from TOs to NESO and onwards from NESO.

At a later Workgroup, the Proposer raised concerns about inconsistent and contradictory information regarding PMU rollout and data availability, noting difficulty progressing work due to unclear inputs. A Workgroup member suggested submitting a Freedom of Information request to clarify industry compliance with PMU installation deadlines set out in the STC, noting uncertainty about whether NESO or TOs are responsible and the lack of clarity on industry-wide adherence.

PMU Technical Specifications and Standards Alignment

The NESO SME clarified that whilst the PMUs installed across the network (by the three onshore TOs) come from different manufacturers, all are required to meet established minimum standards, specifically [IEEE C37.118-2005](#). This standard ensures PMUs report at a rate of 10 frames per second for 50 Hz systems and defines acceptable limits for measurement errors in frequency, phase angle, and harmonic distortion.

A Workgroup member highlighted that Appendix B of STCP 27-1 specifies the need for higher update rates specifically, 25 Hz and the collection of post-event waveform data. The Workgroup member questioned whether TOs are deploying Class P or Class M PMUs and recommended that the Workgroup request more detailed information regarding the actual equipment installed to ensure compliance with these requirements.

The Workgroup recognised that the referenced IEEE standard from 2005 is now outdated, as a newer 2018 version is available. It was agreed that recommending an update would help ensure alignment with current best practices and regulatory requirements.

At Workgroup 7, NESO confirmed that a review of IEEE PMU standards had been undertaken, identifying that PMUs across GB operate to a mix of 2005, 2011, 2014 and 2018 versions, with the 2014/2018 standards broadly aligned. NESO noted that given the broad compatibility of later standards and the potential retrospective impact of specifying a single version, the preferred approach could be to redraft with a version-neutral reference to the IEEE standards, while retaining STCP 27-1 Appendix B as the primary specification of operational data requirements.

PMU Deployment, Regional Coverage, and Data Confidentiality

The NESO Representative outlined the current approach to mapping PMU installations across GSP zones. Each zone is equipped with two PMUs to ensure redundancy and reliability. Frequency measurements from these PMUs will be consolidated into five regional values for system monitoring. However, the specific alignment of these regions with NESO planned seven restoration areas has not yet been finalised and will require further clarification.

A Workgroup member identified possible gaps in PMU coverage, especially near HVDC interconnector or onshore TO links and offshore wind farm connection points. The member requested that TOs confirm their future installation plans to help ensure the system is comprehensively monitored.

NESO presented an initial view of current and planned HVDC links and PMU locations via mapping material, noting limitations in visualising all locations.

The NESO SME explained that, although certain site-specific details must remain confidential, the primary concern centres on sharing sensitive data such as manufacturer and model information rather than general GSP locations. The SME assured the Workgroup that all non-confidential information, regarding the general locality of the PMUs, will be made available whenever possible.

Workgroup Consultation question 20: With regard to Element 8, do you agree to including data from PMUs in Significant Event reports?

Element 9: Improve OC3 by updating and coordinating previous changes made in GC0105 and GC0151

The overall intent of the modification is to build on reporting in OC3 introduced through GC0105 and GC0151. Where current OC3 sections overlap, this will be address in the Legal Text e.g. to rationalise reporting under OC3.4.1(c) and OC3.5.1.

Workgroup Consultation question 21: With regard to Element 9, do you agree that reporting requirements for transmission network faults under OC3.4.1(c) and OC3.5.1 should be rationalised?

Element 10: Change the triggers for reporting requirements for voltage events

The Proposer notes that no voltage events have been reported and so argues that the parameters that trigger this should be revised.

NESO indicated that the existing OC3 voltage reporting criteria is intended to identify sustained voltage excursions that indicate a significant and persistent system condition. The proposed thresholds would introduce a new category of short-duration transient events based on Fault Ride Through (FRT)/Temporary Over Voltage (TOV) compliance limits. While these limits may be appropriate for plant design and performance requirements, insufficient justification has been provided to demonstrate why exceedance of these thresholds should automatically constitute a Significant Event requiring reporting under OC3.

An Observer noted in respect of the proposed TOV reporting limits they were concerned that NESO state “NESO does not believe it has yet been demonstrated why exceedance of these limits should automatically constitute a Significant Event.” as any voltage event of this type at a GSP has the potential to cause a connected generator to trip off line. Where multiple generators are connected to the same GSP this has the potential to cause coincident tripping of multiple generators. This is not a secured event under SQSS so the existing of conditions that could cause an unsecured event should be considered a reportable Significant Event.

Workgroup Consultation question 22: With regard to Element 10, do you agree that the trigger for reporting voltage events should be changed, given that none have been reported and the voltage causation of the Iberian Blackout of April 2025?

Element 11: Add reporting when there is a significant change in phase angle

This is intended to introduce a new reporting trigger for NESO to report when there is a phase angle jump/vector shift.

The NESO SME explained that, at present, phase jump angles are not actively monitored. However, monitoring capabilities will soon be available within the Wide Area Monitoring System (WAMS), allowing for configurable settings. Detection will focus on specific buses, and event-based thresholds will be used to minimise unnecessary or false reports.

The Proposer proposed treating phase jump angles $\geq 5^\circ$ as significant events; NESO advised that this required further discussion in the grid-forming expert group, including clarification of measurement capability and location specific considerations.

A Workgroup member suggested starting with a 12-degree threshold based on historical data, while the Proposer emphasised the need for a pragmatic, best endeavours approach to reporting, adjusting thresholds as more data becomes available.

A Workgroup observer shared analysis which informed the inclusion of a 12-degree phase jump angle within 20 milliseconds as a trigger for System Incident Reports within the proposed Legal Text, with the Proposer and NESO SME debating the practicality and benefit of monitoring such events given current data limitations. Phase Jump Incident Reporting slides shared with the Workgroup can be found in **Annex 04**.

The NESO SME shared that NESO acknowledges that phase angle jumps are a relevant power system phenomenon and recognises the evidence presented regarding historical Vector Shift concerns, generator ride-through requirements, and the growing importance of phase angle behaviour as inverter-based resources (IBRs) increase on the system. However, NESO advised the Workgroup that it does not currently have the operational capability to monitor, assess and report phase jump events in the manner proposed. Although future WAMS capabilities are expected to improve this, the platform is not yet operational and key aspects, including monitoring coverage, measurement accuracy, reporting functionality, monitored locations, data retention requirements and associated operational processes, have not yet been assessed. As a result, NESO is unable to determine the practical feasibility of implementing the requirement or estimate the number of reportable events that may arise.

The NESO SME shared that they also consider that further evidence is required to justify the proposed reporting threshold of a 12-degree phase angle change within 20ms. An explanation has been provided by a Workgroup Observer that the threshold represents a compromise between historical vector shift settings and international ride-through requirements, but the NESO SME does not believe this demonstrates that these values are the most appropriate reporting criteria from a system operation perspective.

A Workgroup observer suggested that NESO could consider committing to an innovation project within the next twelve months to establish suitable monitoring and reporting capabilities, identify appropriate monitoring locations and methodologies, validate the proposed thresholds, and assess the associated implementation, governance and reporting impacts.

The Workgroup agreed to use the Grid Code defined term²¹ 'Phase Jump Angle' for consistency and discussed the need to align guidance documents and compliance requirements with formal Grid Code modifications.

Workgroup Consultation question 23: With regard to Element 11, do you agree with adding the occurrence of a phase jump, with an angle >12degrees in 20ms, to the list of Significant Events – OC3.4.1(a)?

Element 12: Add reporting whenever there is a ROCOF exceeding [0.1–0.25]Hz/s to report events when infeed/exfeed losses may be unknown, or uncertain in whole or in part.

The Proposer noted the importance of visibility of coincident tripping of Distributed Energy Resources (DER), stating issue of visibility of DER tripping has been a major concern since at least the 2019 power outage. This is referenced in Ofgem's open letter on Next steps on visibility of distributed generation connected to the GB distribution networks. A suggestion was made, as a strawman proposal, that a change of 5% power within 12 seconds of any other event may be a sensible threshold. Noting 12 seconds to align with proposed Legal Text on cascade System Incidents Reports.

The Proposer noted that the current reporting is triggered by a large (infeed or exfeed) loss >250MW. Small losses are not (and cannot practicably) be monitored. A large number of simultaneous small losses can be material and can be identified by a ROCOF event. Therefore, to capture events that may not involve a large single loss of >250MW, but could involve a cumulative loss of >250MW, a ROCOF trigger should be included. As a benchmark, with a system inertia of 100MW.s (MJ) at 50Hz a 250MW loss would result in a ROCOF of 0.06Hz/s. Therefore, a threshold of 0.1 to 0.25 Hz/s should be specified as a Significant Event. It was noted that before the ALOMCP, distributed generation protection relays were set to trip the generation at 0.125Hz/s.

NESO noted that the proposed threshold was too tight as a reporting threshold. The proposed 0.1Hz/s is lowering the bar for what constitutes a significant event. A ROCOF of 0.1Hz/s is on the normal operation noise range. The ROCOF protection settings (Loss of Mains (LoM) protection) is set to 1Hz/s. This means the proposed threshold is 10 times lower than the LoM protection threshold. Consequently, the 0.1Hz/s reporting threshold will inevitably detect a lot of false positives such as small disturbances, localised oscillations, measurement artefacts. The NESO SME added that materially relevant system impacts (e.g. protection operation or DER loss) are typically associated with significantly higher ROCOF values, meaning that a 0.1 Hz/s threshold may not be aligned with actual operational risk and therefore the proposed threshold could risk increasing

²¹ See Grid Code 'Glossary and Definitions'.

reporting volume without improving insight. NESO proposed reporting on ROCOF $\geq 0.9\text{Hz/s}$ being 10% below the ROCOF protection settings (LoM) and could avoid all noise problems, identify Significant Events.

Workgroup Consultation question 24: With regard to Element 12, do you agree with adding the occurrence of a ROCOF exceeding 0.25Hz/s to the list of Significant Events – OC3.4.1(a)?

Element 13: Add reporting of sub-synchronous oscillations

The Proposer notes that sub-synchronous oscillations were implicated in the Iberian Blackout April 2025.

At present there is no specification to trigger a Significant Event due synchronous oscillations. With the advent of PMUs such data is or will become available. The Proposer used artificial intelligence (AI) to determine the thresholds for reporting a Significant Event in OC3.4.1 a (viii).

NESO noted that while oscillatory behaviour can occur on the power system, the proposal has not demonstrated why all oscillations meeting the proposed criteria should be treated as Significant Events requiring mandatory reporting, and therefore further technical justification is required to demonstrate that the proposed thresholds appropriately identify events of material operational significance rather than general system behaviour.

Workgroup Consultation question 25: With regard to Element 13, do you agree with adding sub or super synchronous oscillations between $0.1\text{--}45\text{Hz}$, with an amplitude of $\geq 10\text{mHz}$, a duration of $\geq 10\text{s}$, and a damping ratio of $< 3\%$ for $\geq 5\text{s}$ to the list of Significant Events – OC3.4.1(a)?

Element 14: Update the duration of data reported before and after events

This requirement is intended to increase efficiency of analysis and the focus on relevant data. NESO noted support for the intent of this proposal, subject to the availability and validation of capabilities.

The change reduces the duration of data reported before and after the event to 30s from 1 minute, however, extends the duration after the event if the frequency has not recovered to normal operation range between 49.800 and 50.200 see OC3.4.1 b (iii).

Workgroup Consultation question 26: With regard to Element 14, do you agree with changing each Significant Event report to include 30seconds (not 1 minute) data before the event and 30s after the event (or longer if any frequency remains outside the band 49.80 to 50.20Hz ?

Element 15: Improve the detail of reported of inertia data

The increased level of detail in inertia data is to support a clearer understanding of the different sources of inertia on the system at specific events. NESO noted the industry's interest in greater transparency regarding system inertia data disclosure and reporting but also noted that discussions regarding inertia data disclosure and transparency were ongoing.

Inertia has been historically provided as a “by-product” of conventional synchronous generators and mechanically coupled turbines (power by gas, coal, hydro, nuclear etc) and also as a by-product of demand due to rotating machines and their motors. IBRs including HVDC interconnectors, solar, wind and Battery Energy System Storage (BESS), do not naturally provide such inertia. As a result, NESO has contracted for inertia services under Stability Pathfinders. These providers include Synchronous Compensators (some with flywheels for extra inertia) and also Grid Forming BESS. The Proposer believes the contributions of these different sources of inertia should be reported by NESO so that any shortcoming in their effectiveness and operation might be detected.

Workgroup Consultation question 27: With regard to Element 15 do you agree with the increased reporting of inertia data to include inertia contributions from different sources of inertia?

Element 16: Include DSM and PQM from plants that have tripped.

Workgroup Consultation question 28: With regard to Element 16, do you agree with the inclusion of DSM and PQM data from plant that trips in the Significant Events reports?

Element 17: Include the tripping of HVDC transmission links

The Proposer notes that NESO is not currently reporting the tripping of HVDC transmission links, and they were a key factor in the 22 December 2023 event and will play a much bigger part in the future NETS.

At NESO's OTF on 19 August 2026²², NESO provided a response to questions relating to the trip of the Caithness Moray HVDC link on 22 December 2023, stating that NESO do not report HVDC trips. Legal Text has not yet been developed but in proposed to ensure that the tripping or malfunction of HVDC links is also reported alongside faults on AC transmission assets and infeed and exfeed losses.

Workgroup Consultation question 29: With regard to Element 17, do you agree that any trips of HVDC links in the NETS needs to be reported?

²² NESO Operational Transparency Forum, 19 August 2026, See slides 37 and 38

Element 18: Require bespoke NESO analysis of events where there may have been cascade failures

This requirement is to ensure analysis and understanding of events occurring within a certain time of each other.

The Proposer presented findings from some recent FOI responses concerning coincident events, including a double circuit fault (Coventry-Ratcliffe-on-Soar / Drakelow-Ratcliffe-on-Soar) and interconnector trip in November 2025. It was noted that precise timestamp data was not available at millisecond resolution, and that monitoring of phase jump angles was not active.

Concerns were raised about inconsistent reporting practices, including the use of “representative time” instead of actual event time. A Workgroup member noted that the time stamp on transmission fault data reported under OC3.5.1 was the time that the SCADA system reported the fault, which was some seconds or more after the event.

The Workgroup discussion highlighted uncertainty around whether events occurring in close temporal proximity were related, and the limitations of available data in determining causality – hence the benefit of accurate timestamps on data.

The NESO SME clarified that the specific coincident events presented in the FOI were determined to be unrelated based on investigations with relevant parties, despite occurring at the same second. One event was attributed to a transmission tower collapse associated with flooding, while the other was an Interconnexion France-Angleterre (IFA) trip due to an undisclosed issue on the French side, confirmed by National Grid Ventures, the counterparty for the IFA Interconnector responsibilities on the GB side. Both events were determined to be unrelated after investigation using technical and operational evidence.

The Proposer reiterated the need for probabilistic analysis of event coincidence, maintaining that understanding statistical likelihood of co-incident trips remains important even if events are deemed unrelated.

The full FOI responses can be found on the [NESO Disclosure Log](#):

- [FOI-25-321 – System Incident report \(November 2025\) – 20 April 2026](#)
- [FOI-26-021 – System Incident Reporting: IFA & Circuit Fault – 27 May 2026](#)

Timestamp accuracy and event sequencing

Workgroup members discussed challenges in obtaining precise timestamps from protection systems, noting reliance on data reception time rather than actual event occurrence. It was emphasised that accurate sequencing of events within milli-seconds is critical to understanding cascading failures. A Workgroup member proposed

leveraging PMUs and digital fault recorders to obtain high precision timestamps, reducing reliance on manual data retrieval. A new suggestion was raised to require Generators to automatically provide fault recorder data to NESO following trips to improve post event analysis. The NESO SME noted the positive intention behind this but that it would be necessary to consider if the means to obtain this exists. The Workgroup queried how this data would be obtained and by whom and if there were associated confidentiality issues. A Workgroup member noted that the following Grid Code clauses could be relevant OC5.5.2.1 (o) & ECC5.5.2.1 (o) & ECC6.6.1.1 & ECC6.6.1.7 & ECC.6.6.1.8 & CP87.2 (d).

Workgroup Consultation question 30: With regard to Element 18, do you agree that, in the event of two Significant Incidents occurring within a 12 second period, NESO should publish a bespoke report (Cascade System Incident Report).

Element 19: Include an annual report

The proposed solution builds on regular System Incidents Report by placing an obligation on NESO to produce an annual report, to ensure that NESO is tracking and reporting trends with the aim of identifying issues before they become critical. The report would be presented to SQSS Panel and GCRP.

The Proposer wishes to introduce a new section for annual reports to analyse trends and significant events. The NESO SME expressed concern around duplication with the existing reports, annual report on load-frequency control (LFC) and the annual report on the incident classification scale (ICS). NESO agrees with the principle however. One Workgroup member recommended NESO use generic naming 'incident report' terminology instead of the Modification reference that led to their creation, referencing the current NESO use of GC0105 and GC0151 System Incidents Reports.

At NESO's OTF meeting on 19 August 2026²³, a question was asked if NESO would publish an annual report, noting the NESO document Past Frequency Events, dated November 2019, which stated '*...we aim to annually publish the significant frequency events. This can help...mitigate the risks we are facing when operating the system*'. NESO responded making no commitment to publish annually on significant frequency events stating, '*The System Performance Reports report significant events on a monthly basis since 2020*'.

Workgroup Consultation question 31: With regard to Element 19, do you agree that NESO should produce an annual report to review all Events and Reports over the last 12 months, to look for trends compared to previous years as detailed in the Draft Legal Text OC3.6.4.

²³ NESO Operational Transparency Forum, 19 August 2026, See slide 36

Implementation Considerations

Based on feedback within the Workgroup, the Proposer has refined the intended Legal Text drafting (for GC0181) to allow for reporting to be provided as and when data developments are made available, rather than working to a fixed delivery deadline. A Workgroup Observer noted that within the proposed solution, all data requested is available from current or planned instrumentation.

Further areas were identified as requiring consideration by the Workgroup which will be informed further by Workgroup Consultation feedback.

- PMU Progress
- Mechanism by which reporting will be shared
- NESO flagged considerations on tools, analysis and operational work required

The Proposer notes that they will engage with NESO, the Workgroup and the consultation responses to determine an appropriate implementation date.

Workgroup Consultation question 2: Do you support the proposed implementation approach?

Electrical Standards

The Workgroup has considered the interaction with the Electrical Standards, particularly in relation to PMUs, and believe that any wider work required would be separate from the modification.

Alternative Requests

NESO informed the Workgroup of an intention to raise an Alternative Request at an appropriate time, giving consideration to feedback received through Workgroup Consultation responses.

Consideration of other options

The NESO representative suggested a different approach to the Proposers' proposed Legal Text, aiming to reconcile the Workgroup's objectives with what is technically and operationally feasible, and invited feedback from the Workgroup and the Proposer on key points such as the number of regions, reporting frequency, and data resolution.

The Workgroup discussion focused on achievable solutions, futureproofing, and the balance between ambition and practicality. Several Workgroup members suggested

wording to allow for the addition of more regions as PMU data becomes available and to align data resolution requirements with existing obligations, ensuring the GC0181 solution remains relevant as technology and practices evolve. NESO clarified that sharing individual PMU measurements poses challenges, but publishing aggregated or representative frequency data at the required resolution is feasible, and that the main obstacles are process changes and alignment with international standards.

Workgroup Consultation question 4: Do you wish to raise a Workgroup Consultation Alternative request for the Workgroup to consider?

Draft Legal Text

The draft Legal Text for this change can be found in **Annex 03**. This currently covers changes to OC3 only. There may be updates to other areas of the Grid Code where necessary to ensure consistency with changes identified. A table which maps the solution Elements to the draft Legal Text can be found in **Annex 08**.

Workgroup Consultation question 5: Does the draft Legal Text satisfy the intent of the modification?

Workgroup Consultation question 32: Do you agree that the proposed Legal Text preserves flexibility for future publication formatting changes?

What is the impact of this change?

Proposer's assessment against Grid Code Objectives	
Relevant Objective	Identified impact
(i) To permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;	Positive This change means that the energy system can operate more safely and reliably now and in the future in a way that benefits end Consumers.
(ii) Facilitating effective competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity	Neutral

transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);	
(iii) Subject to sub-paragraphs (i) and (ii), 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;	Positive This change means that the energy system can operate more safely and reliably now and in the future in a way that benefits end Consumers.
(iv) To efficiently discharge the obligations imposed upon the licensee by this license* and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and	Positive This change assists in discharging Licence Condition 7.
(v) To promote efficiency in the implementation and administration of the Grid Code arrangements	Neutral

* See *Electricity System Operator Licence*²⁴

Proposer's assessment of the impact of the modification on the stakeholder / consumer benefit categories

Stakeholder / consumer benefit categories	Identified impact
Improved safety and reliability of the system	Positive This change mean that the energy system can operate more safely and reliably now and in the future in a way that benefits end Consumers
Lower bills than would otherwise be the case	Neutral

²⁴ <https://epr.ofgem.gov.uk/c/9wgWVKeHRymQ3pBbiptyqA/p/0196c209-4e4c-4e2b-92ae-525b634f2f51/wvp/dd292cbf-7f56-404e-b0a1-d504952a2607>

Benefits for society as a whole	Positive The recent Spanish Blackout around 12:35 on April 28, 2025 demonstrates the reliance of the society on a safe and secure electricity grid.
Reduced environmental damage	Neutral
Improved quality of service	Neutral

Workgroup Consultation question 1: Do you believe that the Original Proposal better facilitates the Applicable Objectives versus the current baseline?

When will this change take place?

Implementation date

10 Business Days after Authority decision

Proposer's justification of Implementation date

The Proposer considers that the full implementation of the modification is flexible as it allows NESO to publish only available data. As data systems and processes improve the expectation is that the reporting will provide more detailed, useful and insightful information. However, increasing the frequency of reports with additional data and more granular data in those reports will take some time to implement. The Proposer will engage with NESO, the Workgroup and the consultation responses to determine an appropriate implementation date after any Authority decision.

Date decision required by

As soon as possible.

Implementation approach

The existing processes to operate OC3 to be updated.

Proposer's justification for governance route

Governance route: Standard Governance modification with assessment by a Workgroup. The Proposer originally recommended a Self-Governance Modification as the Proposer did not think that the proposed solution would have a material impact on industry parties. At the Grid Code Review Panel (GCRP) on 21 August 2025, it was decided the Governance route be changed to Standard Governance with assessment by a Workgroup.

Interactions

Interactions

☐ CUSC	☐ BSC	☒ STC	☐ SQSS
☐ European Network Codes	☐ EBR Article 18 T&Cs ¹	☐ Other modifications	☐ Other

The proposed GC0181 solution includes the approach to allow system incident reporting to improve, as and when data and processes become available. On that basis, it is considered that GC0181 is not dependent on the progression of other code modifications.

STCP 27-01 may benefit from amendment to keep references to standards neutral as technology evolves. This is not considered a dependency for GC0181.

A further STC change may help clarify TO data provision to NESO, but this is not a dependency for GC0181.

Current proposed Legal Text drafting incorporates changes to OC3 which suggests no impact to the Electricity Balancing Regulation (EBR). This will continue to be assessed by the Workgroup as the solution and Legal Text are developed further.

How to respond

Standard Workgroup Consultation questions

1. Do you believe that the Original Proposal better facilitate the Applicable Objectives versus the current baseline?
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. Does the draft Legal Text satisfy the intent of the modification?
6. Do you agree with the Workgroup's assessment that the modification does not impact the European Electricity Balancing Regulation (EBR) Article 18 terms and conditions held within the Code?

Specific Workgroup Consultation questions

7. Do you currently use data reported under OC3? Please provide further details.

8. If this modification results in faster, more frequent, more granular and wider-area System incidents reports, would your actions change? If so, please provide further information on how.
9. What industry and/or consumer benefits do you anticipate as a result of this modification?
10. Based on your understanding of what information would be reported, do you see any conflicts in relation to commercially sensitive information or what may be classified as 'confidential' information?
11. Will GC0181 impact your organisation in any way? Please provide a description of the impact(s).
12. With regard to Element 1, do you support the change from monthly to weekly reporting? Please provide further details.
13. With regard to Element 2, do you support the change from reporting delay from 2-3 months to [5-10] working days? Please provide further details.
14. With regard to Element 3, do you agree to allowing NESO extra time (more than 5 Business Days) to report in exceptional circumstances? Please provide further details.
15. With regard to Element 4, do you agree that the data reporting formats, consistency and quality can be improved and refined? Please provide further details.
16. What format would you like the revised System Incidents Reports to take?
17. With regard to Element 5, do you agree that NESO should only be obliged to report on known data? Please provide further details.
18. With regard to Element 6, do you agree that frequency data reported in Significant Events should be enhanced from 1 second data for the whole of GB, to 100ms data for 7 regions in GB? Please provide further details.
19. With regard to Element 7, do you agree that OC3.4.4 publication of Historic Frequency Data should be changed from 1 second data, reported monthly, 11 working days in arrears, for the whole of GB to publication of 100ms data, reported hourly, one hour in arrears, for 7 regions in GB? Please provide further details.
20. With regard to Element 8, do you agree to including data from PMUs in Significant Event reports? Please provide further details.
21. With regard to Element 9, do you agree that reporting requirements for transmission network faults under OC3.4.1(c) and OC3.5.1 should be rationalised? Please provide further details.
22. With regard to Element 10, do you agree that the trigger for reporting voltage events should be changed, given that none have been reported and the voltage causation of the Iberian Blackout of April 2025? Please provide further details.

23. With regard to Element 11, do you agree with adding the occurrence of a phase jump, with an angle >12 degrees in 20ms, to the list of Significant Events – OC3.4.1(a)? Please provide further details.
24. With regard to Element 12, do you agree with adding the occurrence of a ROCOF exceeding 0.25Hz/s to the list of Significant Events – OC3.4.1(a)? Please provide further details.
25. With regard to Element 13 do you agree with adding sub or super synchronous oscillations between 0.1– 45Hz, with an amplitude of ≥ 10 mHz, a duration of ≥ 10 s, and a damping ratio of $< 3\%$ for ≥ 5 s to the list of Significant Events – OC3.4.1(a)? Please provide further details.
26. With regard to Element 14, do you agree with changing each Significant Event report to include 30seconds (not 1 minute) data before the event and 30s after the event (or longer if any frequency remains outside the band 49.80 to 50.20Hz)? Please provide further details.
27. With regard to Element 15 do you agree with the increased reporting of inertia data to include inertia contributions from different sources of inertia? Please provide further details.
28. With regard to Element 16, do you agree with the inclusion of DSM and PQM data from plant that trips in the Significant Events reports? Please provide further details.
29. With regard to Element 17, do you agree that any trips of HVDC links in the NETS needs to be reported? Please provide further details.
30. With regard to Element 18, do you agree that, in the event of two Significant Incidents occurring within a 12 second period, NESO should publish a bespoke report (Cascade System Incident Report). Please provide further details.
31. With regard to Element 19, do you agree that NESO should produce an annual report to review all Events and Reports over the last 12 months, to look for trends compared to previous years as detailed in the Draft Legal Text OC3.6.4? Please provide further details.
32. Do you agree that the proposed Legal Text preserves flexibility for future publication formatting changes?

The Workgroup is seeking the views of Grid Code 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 grid.code@neso.energy using the response pro-forma which can be found on the [GC0181 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
AC	Alternating Current
AI	Artificial Intelligence
BESS	Battery Energy System Storage
BMU	(BSC defined) Balancing Mechanism Unit(s)
BSC	Balancing and Settlement Code
BSUoS	Balancing Services Use of System (charges)
CBA	Cost Benefit Analysis
CUSC	Connection and Use of System Code
DER	Distributed Energy Resource
DFR	Digital Fault Recorder
DNO	Distribution Network Operator
DSM	Dynamic System Monitoring
EBR	(EU) Electricity Balancing Regulation
ENTSO-E	European Network of Transmission System Operators for Electricity
ESO	Electricity System Operator

ETYS	Electricity Ten Year Statement
FOI	Freedom of Information
FRCR	Frequency Risk and Control Report
FRT	Fault Ride Through
FTE	Full Time Equivalent
GB	Great Britain
GC	Grid Code
GCDF	Grid Code Development Forum
GCRP	Grid Code Review Panel
GSP	Grid Supply Point
HVDC	High Voltage Direct Current
IBR	Inverter Based Resources
ICS	Incident Classification Scale
IFA	Interconnexion France-Angleterre (the GB-France interconnector)
LFC	Load-Frequency Control
LoM	Loss of Mains
NDA	Non-Disclosure Agreement
NESO	National Energy System Operator
NETS	National Electricity Transmission System
OC	(Grid Code) Operating Code
OTF	Operational Transparency Forum
PC	(Grid Code) Planning Code
PMU	Phasor Measurement Unit
PQM	Power Quality Monitoring

PV	Photovoltaic
REMIT	Regulation on wholesale Energy Markets Integrity and Transparency ²⁵
REV	Resilient Electric Vehicle Charging
ROCOF	Rate of Change of Frequency
SME	Subject Matter Expert
SQSS	Security and Quality of Supply Standards
STC	System Operator Transmission Owner Code
STCP	System Operator Transmission Owner Code Procedure
T&Cs	Terms and Conditions
TNUoS	Transmission Use of System (charges)
TO	Transmission Owner
TOV	Temporary Over Voltage
TSO	Transmission System Operator
UK	United Kingdom
WAMS	Wide Area Monitoring System

Reference material

- [GCDF presentation slides](#)
- [Project Resilient Electric Vehicle Charging \(REV\) Report](#)
- [ENTSO-E Iberian blackout report](#)
- [IFA2 Interconnector Fault](#)

²⁵ [REMIT | Insights Solution](#)

Annexes

Annex	Information
Annex 01	GC0181 Proposal form
Annex 02	GC0181 Terms of Reference
Annex 03	GC0181 Draft Legal Text
Annex 04	Phase Jump Incident Reporting Sygensys Input to GC0181
Annex 05	NESO Gantt Chart - Monthly
Annex 06	NESO Gantt Chart – Weekly
Annex 07	NESO Data Classification and Sharing Processes
Annex 08	GC0181 Element and Draft Legal Text Mapping
Annex 09	NESO TO Solution Architecture Diagram
Annex 10	SPT PMU List with circuits Feb 2026