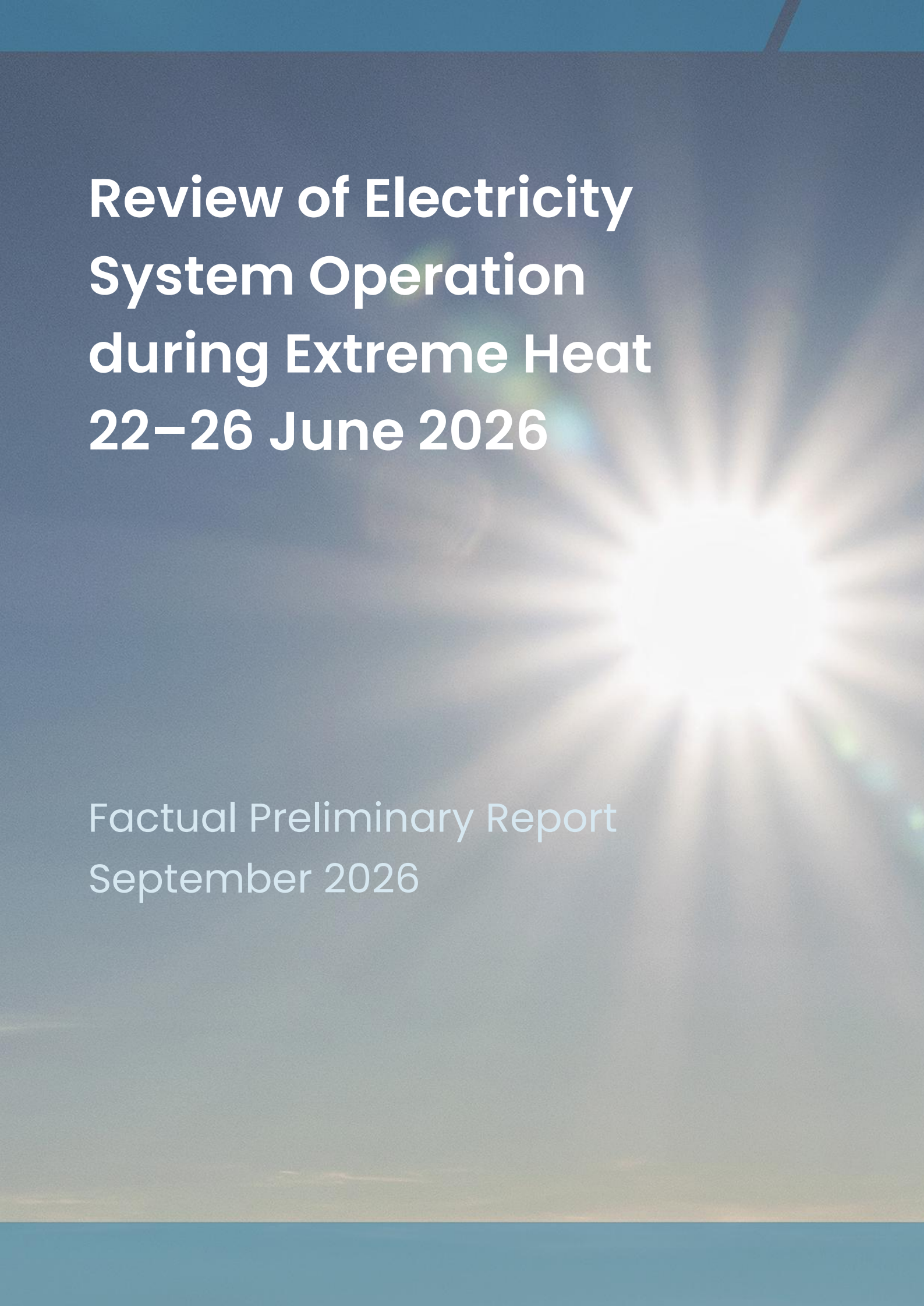




Review of Electricity System Operation during Extreme Heat 22–26 June 2026

Factual Preliminary Report
September 2026

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1. Foreword

- 1.1.1 This preliminary report concerns the events of 22 to 26 June 2026 (the review period). During this period, a prolonged spell of higher-than-average temperatures impacted the operation of electricity markets and systems in Great Britain and Europe.
- 1.1.2 Ofgem (the energy regulator in Great Britain) has commissioned NESO to review the circumstances surrounding the notable events of the week commencing 22 June 2026. The Review was commissioned to include market conditions, electricity system performance, market participant behaviour, NESO decisions and supporting records, and to assess the system status against all relevant security standards during these periods. In addition, Ofgem asked that the Review identify lessons learned and share the findings with Ofgem, the Department of Energy Security & Net Zero (DESNZ) and other relevant government bodies.
- 1.1.3 Ofgem has set out a Terms of Reference, dated 17 July 2026, which is available in full in Appendix A and is also publicly available on Ofgem's website.
- 1.1.4 The Review is independent in the conduct of its assessment and reporting activities. NESO has established an independent review function, supported by external experts and overseen through robust governance and assurance arrangements. These measures, including the management of potential conflicts of interest, are designed to ensure the Review is conducted objectively, impartially, and with appropriate independence. More detail is contained in Appendix F.
- 1.1.5 The Review to date has been focused on evidence gathering regarding the timeline of events during the Review period. It has made use of operational records, market data, system tools, documented evidence and information provided to the Review by a range of relevant parties.
- 1.1.6 Evidence gathering remains ongoing and additional material continues to be reviewed. Where statements are based on information provided to the Review that has not yet been fully corroborated by documentary evidence, these have been identified using consistent terminology i.e. "[Relevant Party] informed the review" to distinguish them from evidence-supported statements.
- 1.1.7 An overview of the legislation, regulation, and industry codes pertinent to this Review is contained in Appendix B.
- 1.1.8 To support factual accuracy, materially affected parties have been provided with the opportunity to review relevant sections and comment on factual matters. Appropriate assurance processes have been applied to this preliminary factual report with further validation, testing and assurance activity to be undertaken as part of the final report.

- 1.1.9 This preliminary report has been produced by NESO pursuant to condition C7.5 of its Electricity System Operator Licence. It is based on an initial examination of the available evidence gathered and provided by key stakeholders as of 9 Sept 2026. Any further information provided after this date will be considered for inclusion in the final report.
- 1.1.10 The Review, and this preliminary report, are entirely separate from the independent investigation into allegations made following alleged whistleblowing, currently being conducted by Eversheds Sutherland (International) LLP (“ESI”). As mentioned above, this Review has been established as an independent review function, benefiting from robust governance and assurance arrangements, and the Review has undertaken its own evidence gathering consistent with its Terms of Reference. It has neither sought nor obtained from ESI access to evidence gathered as part of ESI’s investigation or to any of ESI’s preliminary outcomes.
- 1.1.11 If ESI’s final report is published within the timescale of this Review, the Review will assess whether its findings have a meaningful impact on the analysis and whether additional lines of enquiry or data collection are necessary for the purposes of the Review.
- 1.1.12 The Review’s final report will provide independent analysis and recommendations on improving the security and resilience of the energy system.
- 1.1.13 The Review Team would like to thank all stakeholders for their collaboration, cooperation and timely provision of information and evidence to support this Review.

2. Executive Summary

- 2.1.1 Between 22 and 26 June 2026, Great Britain experienced a period of exceptional heat, characterised by sustained high temperatures and weather conditions that influenced electricity demand, generation availability, network conditions and market behaviour.
- 2.1.2 The operation of the electricity system routinely requires the management of a complex set of market and system conditions to maintain the balance between supply and demand and operate the system securely.
- 2.1.3 However, during the Review period, the interaction of concurrent and compounding factors over successive days contributed to a distinct system operating environment across the week, which is examined in this report.
- 2.1.4 This preliminary report:
 - a) Explains the roles and responsibilities of the key stakeholders involved
 - b) Explains the structure of the electricity industry in Great Britain and the roles of participants including NESO
 - c) Establishes the timeline and sequence of notable events during the week 22–26 June
 - d) Outlines areas of further lines of enquiry that are required for the final report to answer the Terms of Reference set by Ofgem dated 17 July 2026 (Appendix A)
- 2.1.5 Given the breadth and volume of daily electricity system and market activity, this report does not seek to consider every event that occurred between 22–26 June. Instead, it sets out the key system conditions, stresses, operational activities, market developments, and decision-making that were most relevant to understanding how the electricity system was operated and managed, and how conditions evolved over the week.
- 2.1.6 The evidence reviewed to date indicates that the events cannot be attributed to a single cause. Rather, they appear to have resulted from the interaction of multiple factors across weather conditions, generation availability, market behaviour, interconnector flows, transmission constraints and system operation. Further detailed analysis is required to understand the relative contribution of each factor and the effectiveness of the mitigating actions taken.
- 2.1.7 In line with the Terms of Reference, this preliminary report does not present findings, conclusions or recommendations. These will be addressed in the final report following completion of the Review.

3. List of Figures and Tables

In figures and tables, British Summer Time (BST) is used unless stated otherwise. Dates are in DD–MM–YYYY format. Unless statement otherwise, all settlement periods and energy data are reported against the start of each half-hour period.

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4. Roles and Responsibilities

4.1.1 This table outlines the roles and responsibilities of relevant parties to this Review and Great Britain's energy system.

Table 1: Relevant parties with Roles and Responsibilities in this Review

Organisations	Roles and Responsibilities in this Review
The Department for Energy Security and Net Zero ("DESNZ")	The Department for Energy Security and Net Zero (DESNZ) is the UK government department responsible for UK energy security, protecting billpayers, supporting economic growth for the UK and reducing the UK's emissions.
Office of Gas and Electricity Markets ("Ofgem")	Ofgem is the energy regulator for Great Britain. Its role is to protect the interests of energy consumers. Ofgem regulates NESO through the electricity system operator and gas system planner licences and associated guidance.
National Energy System Operator ("NESO")	NESO is the independent system operator and planner established under the Energy Act 2023. The System Operator: NESO is the planner for Great Britain's electricity and gas systems and operates its electricity system. NESO makes sure that Great Britain has the essential electricity it needs by ensuring supply meets demand every second of every day, which includes procuring Balancing Services. NESO's System Operations directorate was actively involved in managing the system response to the system events. More broadly, NESO is focused on ensuring a secure and affordable energy system for Great Britain, while also driving the transition to a clean energy future. The Review Team: This is an independent review function that undertakes post-event analysis and assessment of events that have, or could have, detrimentally impacted the energy sector, engaging with relevant stakeholders as necessary. The team is formed on a case-by-case basis, with its composition determined by the nature of the event and the expertise required, ensuring an objective and appropriately skilled assessment. In this case, the Review has been commissioned by Ofgem.
Transmission Owners	The companies that own the high voltage electricity transmission networks in Great Britain, namely, National Grid Electricity Transmission, Scottish Power Transmission and Scottish and Southern Electricity Networks Transmission. The Transmission Owners connect large generators and demand to their networks. There are also multiple Offshore Transmission Owners who own the connections between the onshore network and offshore wind farms.

Distribution Network Operators	The companies that own, operate and maintain the electricity distribution networks to distribute electricity to homes and businesses and connect smaller generators (embedded generators) to their networks. There are six Distribution Network Operators across 14 distribution licence areas in Great Britain. There are also several Independent Distribution Network Operators who operate smaller local networks across Great Britain.
Interconnectors	An interconnector is a high-voltage cable, and associated converter stations, that connects the electricity systems of neighbouring countries or regions. Interconnectors enable the transfer of electrical energy between systems, allow for the trading of electricity between different markets, and improve security and resilience by allowing electricity and associated system services to be exchanged across regional boundaries. The interconnectors considered in this report are IFA (Interconnexion France-Angleterre), IFA2, Eleclink, Nemo Link, BritNed, North Sea Link (NSL) and Viking Link. See Figure 1.
Generators	Generators are organisations and assets that produce electricity, such as wind farms, solar parks, batteries, pumped hydro, nuclear stations, and gas-fired power stations, and export that electricity onto the network.
Suppliers	Suppliers are licensed by Ofgem to supply electricity to domestic and non-domestic premises. Suppliers buy electricity to meet their customers' demands from Generators or from other Parties trading in the market.
Balancing Services Providers	Balancing Service Providers supply services to NESO to balance demand and supply and to meet the required standards. In some cases, these are generators, demand, suppliers, aggregators or interconnectors.
European Transmission System Operators (TSOs)	European Transmission System Operators (TSOs) are entities responsible for the bulk transmission of electric power on main high voltage electric networks across Europe.
Elexon	Elexon administers the Balancing and Settlement Code (BSC) and manages the wholesale electricity market balancing and settlement processes in Great Britain.
The Met Office	The Met Office is an executive agency, sponsored by the Department of Business, Science, Innovation and Trade. It provides weather and climate-related services to government, businesses, emergency responders and the public, combining weather and climate science, data and expert insight to support decision-making and risk management.

5. Overview of Great Britain's Electricity System and Markets

- 5.0.1 This section provides an overview of how Great Britain's electricity system and markets operate. The system is highly complex, with numerous markets and participants making decisions and trading electricity throughout the day. Understanding these arrangements provides important context for the timeline of events during the period of extreme heat in June under review.

5.1 Electricity supply and demand

- 5.1.1 Electricity underpins modern life, supporting homes, businesses and critical national infrastructure. Great Britain's electricity is generated from a range of sources, including gas, nuclear, wind, solar, hydro, and biomass. Additional electricity can be imported from or exported to neighbouring countries through cross-border connections.
- 5.1.2 Great Britain's electricity system also includes energy storage technologies such as pumped storage hydro and batteries. These assets can both consume and supply electricity, storing energy when supply is abundant and releasing it when supply is tighter.
- 5.1.3 Suppliers forecast future electricity demand and purchase the required energy in advance, adjusting their positions as forecasts become more accurate. Weather is a key factor influencing demand, where changes in temperatures cause people to turn to heating or air conditioning. Generation is also affected by the weather, as windspeed, sunshine and cloud cover determine output from wind and solar generators.
- 5.1.4 All generators require routine maintenance, inspection, and asset replacement activities throughout their operational lifecycle. During these periods, often over summer when demand is typically lower, units are unavailable for commercial operation. Unexpected events or incidents, for example maintenance delays or faults can lead to short notice unplanned outages. Generators declare their planned and unplanned outages, which can be considered alongside the weather to help forecast supply.

5.2 The wholesale electricity market

- 5.2.1 The wholesale market allows suppliers, generators and other participants to buy and sell electricity. Prices reflect the balance between available supply and expected demand every half an hour of every day. Trading takes place from years ahead of delivery through to shortly before real time.
- 5.2.2 The price signals will impact how market participants act. For example, higher prices may encourage additional generation, the discharge of storage assets, increased imports, or reductions in demand. In this way, the wholesale market enables participants

to align physical supply and demand ahead of real time. The wholesale market also has financial participants, such as financial institutions, who speculate on price movements rather than physically producing or consuming electricity.

- 5.2.3 In Great Britain the wholesale electricity market comprises a range of trading products, from annual products which can be traded years ahead, to 30-minute Settlement Periods traded up to fifteen minutes before delivery. For each Settlement Period, market participants are incentivised to meet the electricity volumes they have traded. Any difference between traded and metered volumes results in imbalance charges or credits through a process managed by Elexon.
- 5.2.4 In addition, market participants are required to publicly disclose inside information related to their business and facilities by the Regulation on Wholesale Energy Market Integrity and Transparency (REMIT). Generators declare this information on an industry portal, alongside data from all market participants that could affect market behaviour. For more details on market regulations see Appendix B.

5.3 The retail electricity market

- 5.3.1 The retail market is the part of the electricity system with which most consumers interact directly. Electricity suppliers purchase electricity through the wholesale market and sell it to homes, businesses and communities.
- 5.3.2 This supply and demand is connected to generation by physical networks, and suppliers inform NESO of their expected consumption in each Distribution Network Operator area by submitting Physical Notifications.
- 5.3.3 As well as the wholesale market incentives described above, Ofgem place additional rules, obligations and incentives on suppliers.

5.4 Electricity networks

- 5.4.1 Electricity is often generated or imported some distance from where it is used. Great Britain therefore relies on transmission and distribution networks, together with interconnectors, to move electricity to homes, businesses and large users. These networks include overhead lines, underground and subsea cables, substations and other equipment.

Transmission

- 5.4.2 The transmission network carries large volumes of electricity at high voltage over long distances, connecting large generators and interconnectors to large demand users and local distribution networks. Using high voltages helps to minimise losses as electricity is transported. It can be thought of as the motorway system for electricity.
- 5.4.3 Great Britain's onshore transmission network is owned and maintained by three Transmission Owners: National Grid Electricity Transmission in England and Wales, and Scottish and Southern Electricity Networks Transmission and Scottish Power Transmission

in Scotland. Offshore transmission assets are owned and maintained by licensed Offshore Transmission Owners.

- 5.4.4 Much like a motorway network, some parts of the electricity system get a lot of traffic and can become congested. These pinch points are referred to as constraints. If too much electricity flows over a constraint, a fault on the network can cause equipment to carry more electricity than it can safely tolerate, potentially damaging infrastructure. However, building a completely unconstrained transmission network would be prohibitively expensive and uneconomical due to changes in demand patterns, generation patterns and outages. Transmission Owners work with the system operator, NESO, to manage constraints to ensure the lowest costs for consumers.

Distribution

- 5.4.5 Distribution networks are the local networks that take electricity from the transmission system, and from generation connected directly to distribution networks, to homes and businesses. If transmission is the motorway system, distribution networks are the A-roads and B-roads that carry electricity to where it is ultimately used.

Interconnectors

- 5.4.6 Interconnectors are high-voltage direct current cables and associated converter stations that connect Great Britain's electricity system with neighbouring countries or regions. They allow electricity to be traded and transferred between markets, supporting security and resilience by enabling electricity and associated system services to be exchanged across borders.
- 5.4.7 Electricity generally flows from the lower-priced market to the higher-priced market. Each interconnector has its own auction arrangements and schedule, allowing market participants to trade between the connected markets and determine the scheduled flow of electricity. NESO can apply restrictions to interconnectors, depending on electricity system conditions, to limit flow into or out of Great Britain.

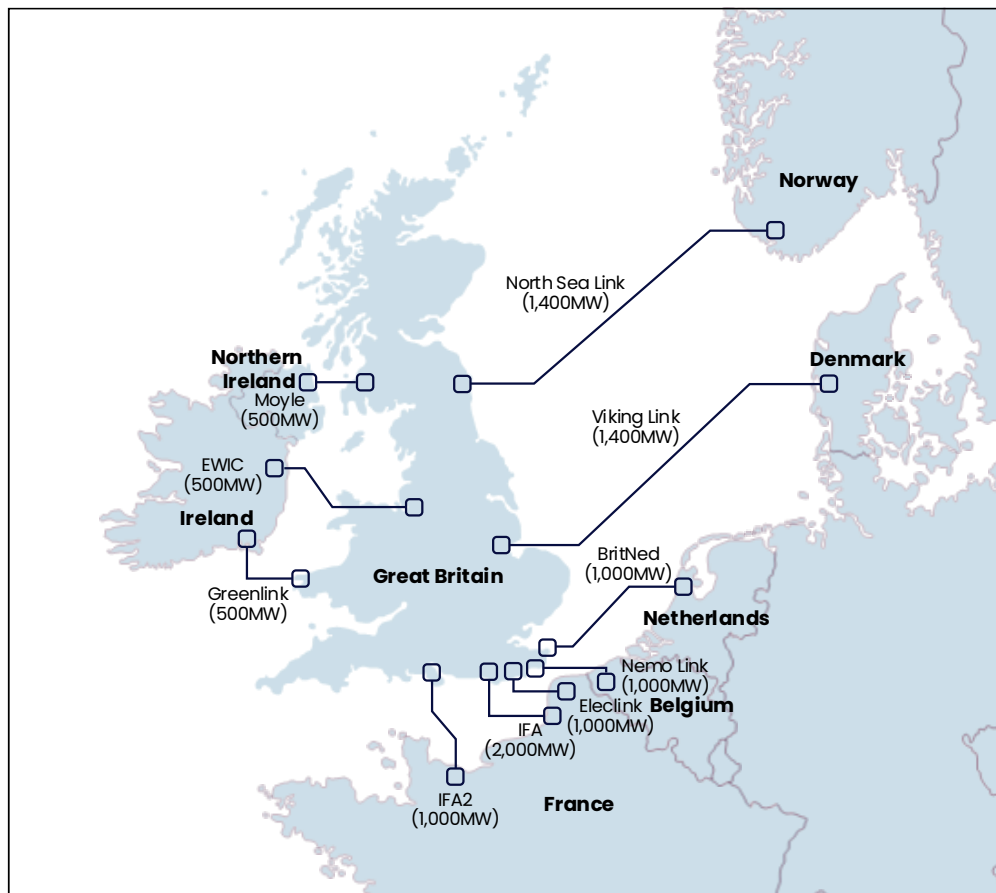


Figure 1: Map showing location of Great Britain's interconnectors

5.4.8 NESO, Transmission Owners, Distribution Network Operators, generators, storage providers and interconnectors work together to manage the safety, security and stability of the whole electricity system. They do this in accordance with industry laws, regulations and codes which are set out in Appendix B.

5.5 How weather affects the electricity system

5.5.1 Weather can affect every part of the electricity system, influencing how much electricity is generated, how it is transported safely and how much consumers use:

- Wind and solar output vary with wind speed and solar irradiance.
- Extreme temperatures can reduce the efficiency or available output of gas, nuclear and solar generation.
- Heat can reduce the capacity and efficiency of network equipment, increase the risk of overheating and overhead-line sag. Heat also contributes to wildfires that threaten infrastructure and public safety.
- Demand patterns also change with the weather, including increased electricity use for air conditioning and cooling during hot periods.

- Storms, lightning, flooding, ice and strong winds can cause faults or disrupt generation and network assets.

5.5.2 These effects, coupled with the changes to Great Britain's weather patterns driven by climate change, increase uncertainty and the complexity of forecasting and operating the electricity system.

5.6 Statutory and Regulatory Framework

5.6.1 Market participants carry out their roles and responsibilities in accordance with a sector specific statutory and regulatory framework. This framework includes some key pieces of UK legislation – notably the Electricity Act 1989 and the Energy Act 2023 – as well as assimilated law (formerly retained EU law) such as the System Operation Guideline. Most market participants operate under licences granted by Ofgem, and interact with one another through compliance with systems and processes set out in licences and industry codes.

5.6.2 An overview of the legislation, regulation, and industry codes pertinent to this Review is contained in Appendix B.

5.7 Electricity system operation

Overview of NESO's system operator role

- 5.7.1 As the electricity system operator, NESO has obligations to ensure electricity supply and demand are balanced in real time while maintaining system stability, frequency, voltage and asset loadings.
- 5.7.2 NESO also plans for future system needs by forecasting demand and generation patterns and coordinating the actions required to meet the Security and Quality of Supply Standard (SQSS). This Standard contains the planning and operational criteria by which NESO operates the transmission system to ensure a continuous safe, secure and reliable service for consumers. For more information see Appendix B.
- 5.7.3 Unless otherwise stated, references to demand forecasts in this report relate to net demand on the transmission network rather than total electricity consumption in Great Britain. Embedded and behind-the-meter generation is not included in the demand observed by NESO and therefore influences forecast accuracy and outturn demand levels.
- 5.7.4 While wholesale markets enable participants to buy and sell electricity and establish commercial positions, NESO's role is to ensure a physically operable and secure electricity system. In the context of real-time system operation, NESO's role here is designed to be that of a 'residual balancer'. It takes actions through its Balancing Services to close any gaps between wholesale market positions and what is needed to meet a secure and operable electricity system.

- 5.7.5 If supply does not meet demand every second, the frequency of electricity supply changes. Frequency is the rate at which electricity alternates in the electricity system. In Great Britain, the target frequency is 50Hz, meaning the current and voltage complete 50 cycles per second. When generation exceeds demand, frequency will increase; when demand exceeds generation, frequency will decrease. Electrical devices in Great Britain are designed to operate at a 50Hz supply frequency. If the electrical frequency deviates too far from this 50Hz target, equipment can be damaged. To prevent damage, generators and other assets connected to the system can disconnect and stop consuming or producing electricity as their automatic protection systems operate.
- 5.7.6 NESO is required to maintain steady state frequency within the statutory limits of 49.5Hz and 50.5Hz under normal conditions. To facilitate meeting this requirement, NESO typically aims to operate the electricity system within a tighter 'standard frequency range' of 49.8Hz to 50.2Hz, in order to provide a buffer against potential events or faults. This range is sometimes referred to as 'normal operational limits'.
- 5.7.7 Deviations are permitted outside of the statutory limits following the unexpected loss of a large source of generation or demand. The standards for the size, duration and how often these permitted deviations can occur are set out in the System Operator Guideline and the Frequency Risk and Control Report. For example, the maximum allowed deviation following a secured event is to 49.2Hz and frequency must return to 49.5Hz within 60 seconds. See Figure 3 and Appendix B.
- 5.7.8 NESO also needs to consider the physical limitations of network infrastructure to manage the risk of excess power flows overloading equipment. Overloads can lead to damage and unsafe conditions, therefore NESO needs to act promptly to prevent them from occurring. Managing the effect of potential overloads needs to account for both steady state conditions and what would be expected to happen after a fault.
- 5.7.9 Taken together, these requirements inform the planning NESO does ahead of time, the actions NESO takes as real-time approaches, and the services it procures to support system operation.

Residual Balancing

- 5.7.10 Wholesale markets help participants align expected supply and demand, facilitating the buying and selling of electricity and determining commercial positions for each Settlement Period. Alongside this, NESO undertakes extensive forecasting of electricity supply and demand, considering factors such as weather, consumer behaviour, emerging technologies (for example, electric vehicles and heat pumps), and one-off events. This helps NESO identify potential mismatches in supply and demand ahead of time that normal market activity may not be able to resolve.
- 5.7.11 If market outcomes are insufficient to maintain system security, there are a range of actions NESO can take. These are described by NESO as 'Everyday', 'Enhanced' and 'Emergency', and increase in potential impact to the affected party. For NESO's Order of Actions see Appendix C.

- 5.7.12 The System Operating Plan is an internal planning document produced by NESO to lay out the plans to: meet System Demand and reserve requirements, ensure that constraints are satisfied, and ensure actions are planned on a cost-optimal basis. It incorporates forecasting data and is created between 24 hours and four hours before real-time operation and identifies any actions needed to keep the electricity system balanced.
- 5.7.13 Each System Operating Plan focuses on a key point in the daily demand cycle, including the morning peak in electricity use, the afternoon low point, the evening peak, and the overnight minimum. By examining these periods in advance, NESO can identify power stations and other electricity sources that may need to be brought online. This is particularly important for generating units that require several hours to start up and connect to the system.
- 5.7.14 Each System Operating Plan may go through several revisions as NESO assesses different options to solve the electricity system requirements. Earlier versions of plans are less likely to have been fully cost-optimised than later versions. If the analysis shows that expected electricity supplies may be insufficient to meet demand and reserve requirements, NESO may consider issuing a system warning, such as an Electricity Margin Notice (see Appendix D), to alert the market to a potential shortage of available generation capacity.
- 5.7.15 NESO also produces daily internal status reports circulated to relevant NESO staff that provide summaries, updates and contextual information about system operation.

The Balancing Mechanism

- 5.7.16 60 minutes before the start of a Settlement Period is known as 'Gate Closure'. Gate Closure marks the point at which Balancing Mechanism participants' physical positions are finalised and NESO formally assumes responsibility for the residual balancing of the electricity system.
- 5.7.17 By this point, larger generators, storage facilities, batteries and eligible demand-side participants (Balancing Mechanism Units) must submit their planned physical positions, known as 'Physical Notifications'.

5.7.18 After Gate Closure, the Balancing Mechanism becomes the principal tool for making real time adjustments to supply and demand. As part of its Everyday actions, NEMO buys and sells energy from participating generators, storage facilities and demand-side providers to increase or decrease generation or consumption as required. These are known as bids and offers, see Figure 2 below.

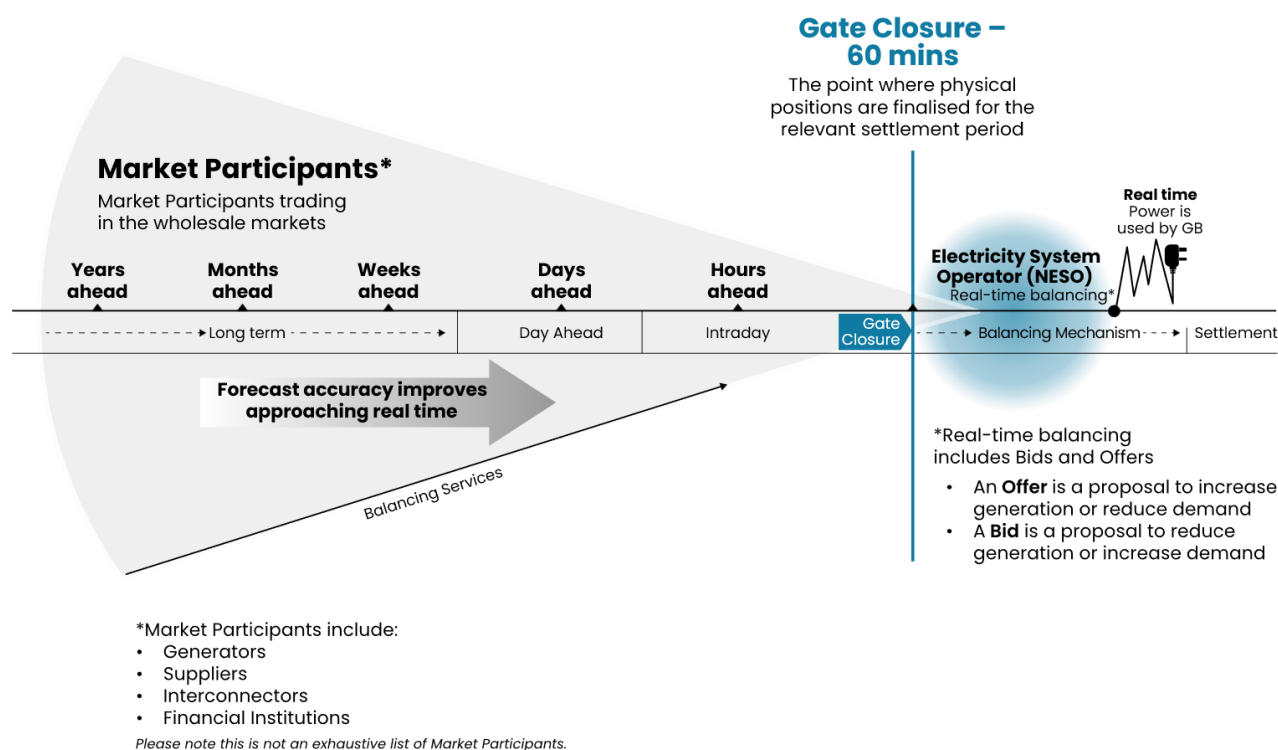


Figure 2: How the market system works to balance electricity in Great Britain

5.7.19 NEMO can trade with market participants through the interconnectors, to increase or decrease the transfers of electricity between connected countries. In some scenarios, NEMO can set restrictions on interconnector transfers to inhibit wholesale trading from causing or exacerbating a risk to system security. These restrictions cannot encroach on interconnector transfers that have already been set. NEMO's trading activity occurs at the same time as the rest of the market's trading activity, therefore the wider market activity can reinforce or offset the impact of NEMO's trading actions.

5.7.20 NEMO can also access other Balancing Services to assist it with managing the system. In particular, NEMO has engaged consumers through the Demand Flexibility Service enabling them to participate in balancing markets. The Demand Flexibility Service allows businesses and households to reduce or increase their consumption at specific times under direction from NEMO, thereby improving system margins.

Managing constraints

5.7.21 When selecting balancing actions, NEMO must consider the location of generation and demand, and how electricity will flow around the physical network. Constraints are a normal feature of electricity systems worldwide and the presence of constraints does not in itself indicate an inefficient or poorly performing network; rather, they are an inherent feature of operating a large, interconnected electricity system.

- 5.7.22 There are multiple types of constraints on the transmission network, with each type limiting electricity flow or generation for different technical reasons. Constraints can be the result of the physical limitations of the system as it has been built out and changing generation patterns. An example of this is the boundary between Scotland and England, which does not always have sufficient capacity to transmit the large volumes of wind generation produced in Scotland to the rest of Great Britain. They can also temporarily change due to the combination of factors, such as network asset outages, and are continually reassessed to manage their impact on system operation.
- 5.7.23 NESO can take balancing actions based on the location of market participants and change network topology to maximise available network capacity and avoid overloading network assets.
- 5.7.24 NESO also coordinates with Transmission Owners to find the best way to plan the work required to maintain and upgrade the system, which includes connecting new generation sources and making the changes which will reduce constraints in the longer term. This work almost always needs equipment to be taken out of service which reduces network capability and therefore affects constraints. Occasionally there is a need to recall transmission circuits early from outage, to increase the capacity available on the network.
- 5.7.25 One way NESO manages constraints is by setting Constraint Limits, which are NESO internal guidelines derived from calculations about how much electricity can flow across a constraint boundary while remaining secure following a credible fault or outage. As system conditions can constantly change, these limits typically represent a worst case, and in some cases flows across the network could exceed them without exceeding the assets' capability or relevant security standards.

Managing Frequency: Response Services

- 5.7.26 NESO also procures several services to support system operation in the event of unanticipated events, such as the sudden loss of generation or unexpected rise in demand. These changes can cause frequency to rapidly rise or fall.
- 5.7.27 The rate of frequency change can be slowed by having a high amount of 'inertia' in the system. Inertia is proportional to the kinetic energy stored in rotating machines that resists changes in electricity system frequency when there is a mismatch between supply and demand. This dampens the effect of any disruption to frequency, giving the system operator's other tools time to restore frequency back towards 50Hz. Inertia is a by-product of large synchronous generators and historically has been provided by large turbines turned by water, steam, gas, and other fuels. Unlike synchronous generators, renewables like wind and solar typically don't provide inertia, so NESO forecasts and monitors system inertia requirements gaps and procures additional inertia services, for example from a synchronous compensator or batteries.
- 5.7.28 NESO also procures a suite of rapid and slower acting response services through its Balancing Services markets. Response acts automatically to counteract changes in the frequency. Some of these response services are focused on managing frequency before a

fault has happened (for example, Dynamic Regulation and Dynamic Moderation). Others are focused on managing frequency after the fault of a large generation or demand source (for example, Dynamic Containment and Static Firm Frequency Response).

- 5.7.29 NESO aims to procure up to a certain volume of reserve and response under its forecast of its requirements and the real time cost of alternative actions. NESO may buy less than 100% of the service requirement ahead of time if it is deemed more economical to procure some volume close to real time.
- 5.7.30 Balancing Services contracts specify both the volume of response to be delivered and the period over which it must be maintained. These time periods are especially relevant where providers have finite amounts of stored energy or cannot sustain output indefinitely.
- 5.7.31 To assess the potential impact of a loss or 'fault', NESO assumes a starting frequency of 49.85Hz for generation losses and 50.15Hz for demand losses. These are known as pre-fault frequency assumptions and are used alongside a number of other assumptions when determining NESO's response requirements. The starting frequency refers to the frequency of the electricity system at the time when a fault could occur. If frequency is away from 50Hz, it becomes more onerous to manage generation and demand losses. This is because a proportion of the dynamic response capacity will already have been used, and because the frequency is already closer to the allowed limits.
- 5.7.32 The response requirement is not a fixed value. It depends on prevailing system conditions, such as demand, system inertia and the size of the loss being secured. It is also influenced by modelling assumptions, including the assumed starting frequency and how response services are expected to behave following a fault.

Illustration of Frequency Control Limits

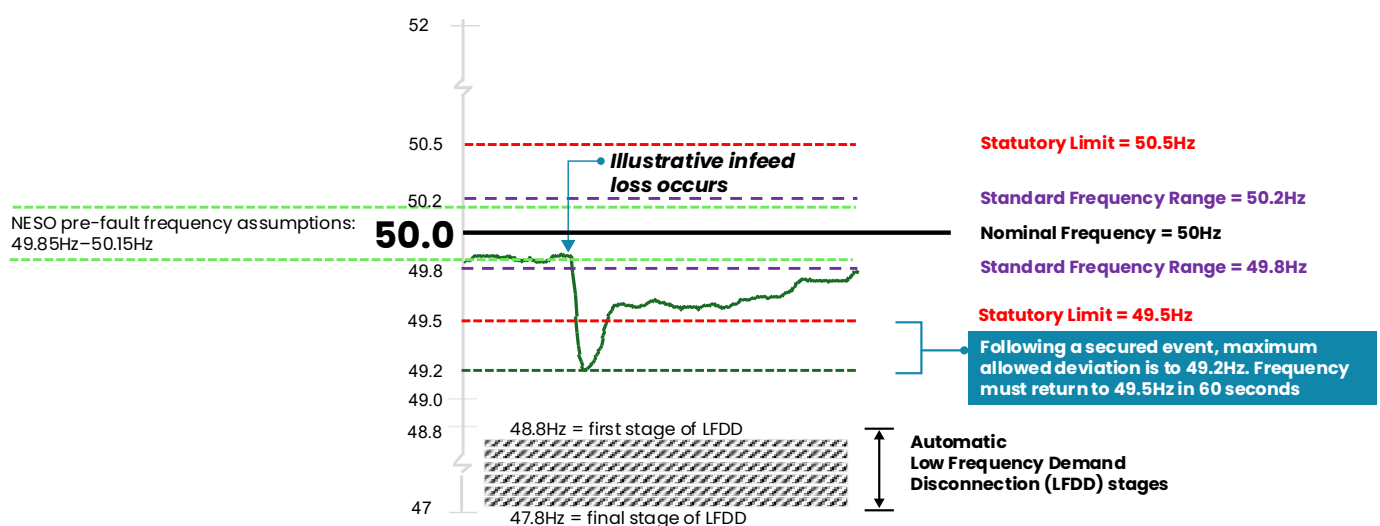


Figure 3: Illustration of relevant frequency levels

Managing Frequency: Reserve Services and Operating Margin

- 5.7.33 NESO continuously monitors whether there is enough generation available to meet expected demand and provide a buffer against secured events as per the Security and Quality of Supply Standard. These events include things like faults of single circuit overhead lines, loss of power infeed (generation), and loss of power outfeed (demand).
- 5.7.34 The buffer is known as Operating Margin, or just 'margin'. The margin is spare capacity that could be called upon if demand is higher than forecast, generation is lost unexpectedly, weather conditions change, or other operational issues occur.
- 5.7.35 An Operating Margin surplus means NESO expects sufficient capacity to be available to achieve the level of margin it considers necessary for secure operation. An Operating Margin shortfall indicates that additional actions may be required to achieve the level of margin that NESO considers necessary. See Figure 4 below.

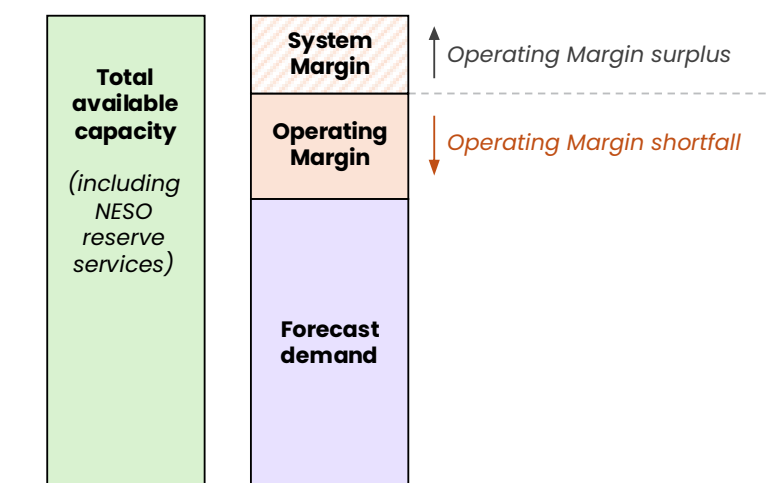


Figure 4: Diagram showing the relationship between Forecast Demand, Operating Margin, System Margin and total available capacity (i.e. Sum of Maximum Export Limits)

- 5.7.36 The amount of margin NESO has available can fluctuate as market positions, forecasts and demand change. As real time approaches and confidence in operating conditions increases, the amount of buffer, or contingency, required to be held in reserve reduces, so the overall operating margin requirement also reduces.
- 5.7.37 To ensure it has an adequate margin, NESO procures reserve services which provide additional capability. As with response, some of these services are focused on restoring frequency to 50Hz before a fault has happened (for example, Balancing Reserve and Quick Reserve). Others are focused on recovering frequency after a large loss of generation or demand (for example, Slow Reserve).

Managing Voltage: Reactive Power Services

- 5.7.38 NESO must also maintain the voltage. Voltage is the electrical 'push' that enables electricity to be transported from generators to homes and businesses. The location of generation and demand, the capacity of transmission assets to regulate voltage, and network configuration can all cause voltage to rise or fall in different areas.

5.7.39 Maintaining voltage within the tolerances of physical assets is essential for safety and system security purposes. The Security and Quality of Supply Standard sets voltage limits for the transmission system, requiring voltages to remain within defined operational ranges during normal conditions and within wider tolerances following secured events. To achieve this, NESO procures reactive power services which can support voltage management as required to ensure voltage levels are maintained within secure limits across Great Britain.

System Warnings

5.7.40 Wherever possible, NESO will communicate with market participants to notify them of potential challenges with system operation that participants could help resolve or may need to prepare for.

5.7.41 NESO has a range of notices and warnings available to communicate emerging system risks to the market. The two notices most relevant to this report are the Electricity Margin Notice (EMN) and the Capacity Market Notice (CMN). Both notices are for the information of the market and are not instructions to act. They serve different purposes and are issued under different conditions. For a comparison of how these notices are used, please see Appendix D.

5.7.42 These notices above are intended to encourage market responses before more direct operational interventions become necessary.

5.7.43 Electricity Margin Notices are issued based on operational and engineering judgement. The current threshold NESO uses when assessing whether to publish an Electricity Margin Notice is when the Operating Margin is 500MW below operational requirements. This is referred to by NESO as the 'Electricity Margin Notice trigger level'. If the Operating Margin is beyond the trigger level, NESO assesses whether a Notice should be published. See Figure 5 below.

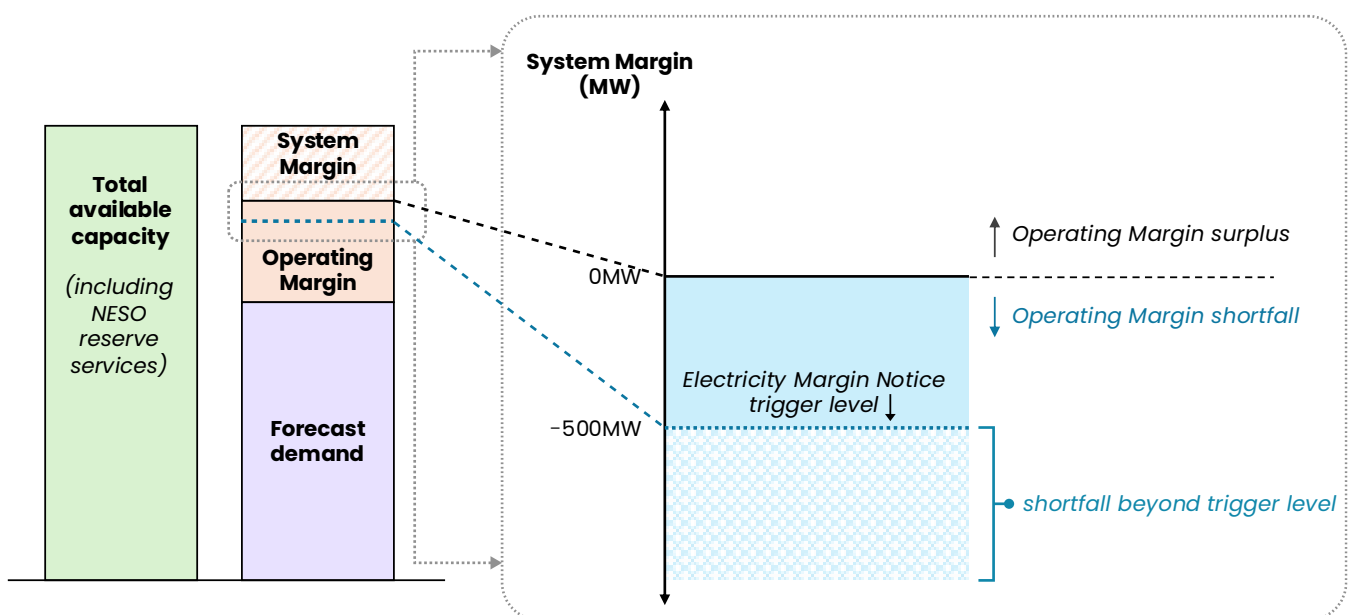


Figure 5: Diagram showing the relationship between Forecast Demand, Operating Margin, System Margin and total available capacity (i.e. Sum of Maximum Export Limits), and margin surpluses or shortfalls in relation to the Electricity Margin Notice trigger level

Emergency Assistance, Emergency Actions and Demand Control

- 5.7.44 If the type of actions referred to above to manage system safety and security prove insufficient, NESO can use other actions. These include Emergency Assistance, Emergency Instructions and Demand Control.
- 5.7.45 Emergency Assistance is the process through which support is requested between NESO and connected European Transmission System Operators. It is only applicable if capacity is available on interconnectors and its availability can be withdrawn at any time by the other system operator.
- 5.7.46 NESO can also issue Emergency Instructions to connected users of the electricity transmission system. This includes issuing an Emergency Instruction to an interconnector operator to reduce the export of an interconnector from Great Britain.
- 5.7.47 If all actions to increase generation have been exhausted, NESO can instruct distribution network operators to reduce the voltage of their systems, in effect reducing the 'strength' of electricity reaching end users to reduce demand. An observable effect of this would be a kettle taking longer to boil.
- 5.7.48 As a last resort, NESO can instruct controlled demand reduction, and/or customer disconnections, to very rapidly reduce demand on the transmission system. This is to prevent frequency falling low enough to risk causing a National Power Outage (NPO).

Timeline of the Events

Timeline of notable events during the week commencing 22 June 2026

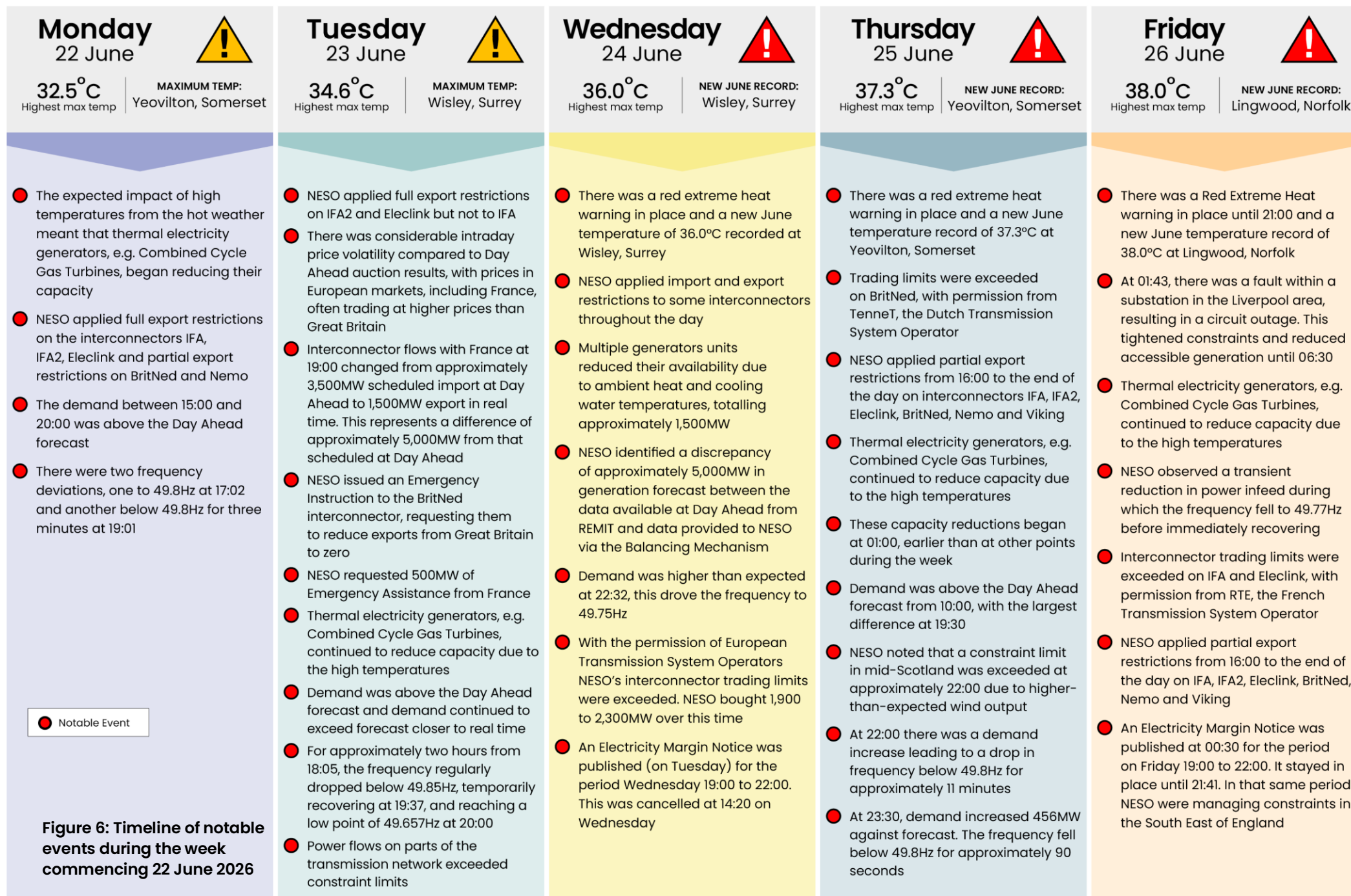


Figure 6: Timeline of notable events during the week commencing 22 June 2026

6. Introduction

- 6.1.1 This section sets out a description of the notable events of the week commencing 22 June. In supplementing the Terms of Reference, Ofgem told the Review Team that they “consider notable events to be the events that were out of the norm or beyond typical day-to-day system operation events. We expect the Review to consider all system operation events during the week commencing 22 June 2026 and determine which events to be notable.”
- 6.1.2 The events are described in chronological order by day of the week. Where an earlier decision or development affected a later notable event, it is discussed under the day of the event rather than the day it first occurred. For example, if a decision made on Monday affected a notable event on Tuesday evening, it is covered under Tuesday. As a result, not every occurrence within each daily section is presented in strict chronological order.
- 6.1.3 There are different types and time periods for electricity demand forecasting. To show how the week unfolded, the Review has focused on the forecast at Day Ahead, and the forecast at the point of the final System Operating Plan, which is created by NESO approximately four hours ahead of real time. This will be shown alongside the actual demand.
- 6.1.4 Response and reserve services are procured Day Ahead for the full day. For this preliminary report, the focus is on the material shortfall for the evening peak when most shortfalls occurred. For Response services, this covers 15:00–19:00 and 19:00–23:00; for reserve services, it covers the Settlement Periods from 17:00 to 21:00 local time.
- 6.1.5 The Maximum Export Level charts were produced using Maximum Export Limit data provided at individual Balancing Mechanism Unit level. Each unit was matched to its registered fuel type, with identified classification corrections applied before selecting the Combined Cycle Gas Turbine fleet. For each half-hour Settlement Period, the Maximum Export Limits of all included Combined Cycle Gas Turbine units were added together to produce a fleet total. The charts compare the outturn Maximum Export Limit with the Maximum Export Limit declared at Day Ahead, 12 hours ahead and four hours ahead. Values were converted from MW to GW for display, and delivery times are shown in British Summer Time.
- 6.1.6 The cited Maximum Export Limit reduction is calculated from the outturn Maximum Export Limit series. For each day, the highest aggregate outturn Maximum Export Limit before 12:00 is identified as the morning peak. The lowest aggregate outturn Maximum Export Limit from 12:00 onwards is identified as the afternoon low. The afternoon low is then subtracted from the morning peak:

$$\text{Maximum Export Limit reduction} = \text{Morning peak} - \text{Afternoon low}$$

- 6.1.7 The resulting value represents the largest morning-to-afternoon reduction in the Combined Cycle Gas Turbine fleet's declared available capacity. It is a capacity difference expressed in MW or GW, not an energy volume in MWh.
- 6.1.8 There were multiple periods where frequency was beyond different levels; the table below shows the number of deviations outside of different levels, and how long they lasted for. There were no deviations outside of the 'statutory limits' (49.5Hz and 50.5Hz), approximately 40 deviations outside of the 'standard frequency range' (49.8Hz and 50.2Hz) and approximately 600 deviations outside of NESO's 'pre-fault response assumptions' (49.85Hz and 50.15Hz) (see 5.8.29). In the timeline for this preliminary report, the Review has focused on the frequency deviations which were flagged in the evidence provided to us by NESO.
- 6.1.9 For the final report, the Review will assess these frequency deviations, including system status against all relevant security standards during these periods and the consequences for system operation of operating outside of the standard frequency range for the durations observed.

Table 2: Length, cumulative number and maximum duration of frequency deviations

Length, cumulative number and maximum duration of frequency deviations						
Duration	Below 49.5Hz	Below 49.8Hz	Below 49.85Hz	Above 50.15Hz	Above 50.2Hz	Above 50.5Hz
≥ 1 second	0	36	291	295	8	0
>10 seconds	0	18	72	83	4	0
>30 seconds	0	13	48	35	3	0
> 1 minute	0	10	30	26	1	0
> 2 minutes	0	5	21	12	0	0
> 5 minutes	0	4	7	1	0	0
> 10 minutes	0	2	5	0	0	0
> 15 minutes	0	1	4	0	0	0
> 20 minutes	0	1	2	0	0	0
Max duration (mins)	0.0	25.8	29.6	6.0	1.1	0.0

- 6.1.10 There were also multiple instances where NESO reported that Constraint Limits on certain parts of the network were exceeded throughout the course of the week. In the timeline for this preliminary report, the Review has focused on the Constraint Limits which were flagged in the evidence provided by NESO. Further analysis is required to determine what the impact, if any, was to the system.
- 6.1.11 For the final report the Review will assess the system status against all relevant security standards during these periods.

7. Relevant events prior to 22 June

- 7.1.1 Generators plan and schedule outages of their generating units for maintenance due to multiple factors. These include expected seasonal demand patterns, i.e. in the summer when demand for electricity is lower and weather conditions are more conducive to outdoor maintenance work. The time between 1 June and 31 August was the period when the greatest number of planned generator outages was expected in 2026.
- 7.1.2 NESO's within-day trades on the interconnected transmission systems were causing increased operability challenges for connected European transmission system operators. Following negotiations between all the European transmission system operators, NESO issued a market notice on 14 May 2026 (effective 20 May 2026) concerning NESO trading activity. This notice informed market participants that NESO would introduce restrictions on the amount of electricity that NESO can trade via interconnectors. Notably, it restricted trades in the opposite direction to the Day Ahead scheduled position to 300MW, with a total cap of 1,500MW, across the six interconnectors NESO can trade through within-day auctions [IFA, IFA2, Eleclink, Viking, BritNed and Nemo].
- 7.1.3 On 8 June 2026, there was initial guidance of the potential for heat to build, issued by operational meteorologists at the Met Office. Heatwave conditions were reached somewhere in the UK every day from 16 to 30 June 2026.
- 7.1.4 Heatwave conditions were also felt across France, Germany, Italy and Spain, where temperatures reached 5.0–12.0°C above seasonal averages, driven by a prolonged high-pressure system.
- 7.1.5 National Grid Electricity Transmission and Scottish and Southern Energy Networks - Transmission conducted operational readiness activities to prepare for the hot weather, focusing on maintaining transmission network security, mitigating asset risk, reducing exposure to credible fault scenarios, enhancing resource readiness and supporting wider system operability.
- 7.1.6 Scottish Power Transmission stated that it assessed the period under review did not constitute extreme heat in its licence area, and therefore no specific actions related to assets or operations were recommended to be taken.
- 7.1.7 Extreme heat conditions can affect generation output and demand levels, therefore raising wholesale electricity market prices due to scarcity. This was more evident in Europe, particularly in France, where prices for electricity almost doubled in price in the weeks leading up to delivery. This reduced Great Britain's price premium to France, indicating a higher likelihood of interconnector exports from Great Britain to France through the week.

8. Monday 22 June

The Review considers the following four events to be notable:

- The expected impact of high temperatures from the hot weather meant that thermal electricity generators, e.g. Combined Cycle Gas Turbines, began reducing their capacity
- NESO applied full export restrictions on the interconnectors IFA, IFA2, Eleclink and partial export restrictions on BritNed and Nemo
- The demand between 15:00 and 20:00 was above the Day Ahead forecast
- There were two frequency deviations, one to 49.8Hz at 17.02 and another below 49.8Hz for 3 minutes at 19.01

8.1 Summary

Weather

- The first amber extreme heat warning covered Monday 22 June to Tuesday 23 June. On Monday evening, a yellow thunderstorm warning was in force for central-western Southern England.

Wholesale markets, interconnectors and generation

- The Day Ahead market prices for electricity for Monday evening were approximately £175/MWh in Great Britain and France. Prices in Belgium, the Netherlands and Denmark were higher, at up to £264/MWh.
- Day Ahead schedules for interconnector flows showed that Great Britain would be importing an overall net volume of 750MW to 1,250MW between 18:00 and 22:00 on Monday evening. Real time net interconnector flows were roughly the same as the Day Ahead position.
- Thermal electricity generators began reducing their Maximum Export Limits due to the expected impact of high temperatures on equipment and operations. For example, Combined Cycle Gas Turbines reduced their Maximum Export Limits by approximately 800MW between 10:00 to 16:00. See Figure 9.

NESO's preparations

Trading and cross-border cooperation

- NESO traded to increase interconnector imports from 18:00 to 22:00 to secure sufficient margin, with the trade volumes being within the agreed NESO trading limits.
- Over the course of the whole day, NESO applied full export restrictions on IFA, IFA2, Eleclink, and partial export restrictions on BritNed and Nemo.

Balancing Services

- NESO procured most of its response and reserve requirements. Positive and Negative Quick Reserve did not meet their service requirement between 17:00–21:00 and Dynamic Moderation Low did not meet its service requirement between 19:00–23:00.

System Operating Plans and System Warnings

- The System Operating Plans for Monday's evening peak showed Operating Margin surpluses above the Electricity Margin Notice trigger level.

Real time events and actions taken

- At 17:00, the frequency on the electricity transmission system dropped to 49.8Hz. NESO informed the Review this was because of an unexpected increase in demand of approximately 1,500MW. Frequency was returned from 49.8Hz via the use of pump storage units and batteries, among other actions.
- At 19:00, the frequency dropped below 49.8Hz for three minutes. Demand had increased by approximately 1,000MW while interconnector imports reduced. NESO took balancing actions to recover the frequency.

Demand Forecast Commentary

Demand peaked at 19:00 at 30,268MW. Actual demand was above the Day Ahead forecast between 15:00 and 20:00, with the largest difference at 17:30, when demand was 1,846MW higher than forecast. Forecasts produced closer to real time through NESO's final System Operating Plan were more accurate.

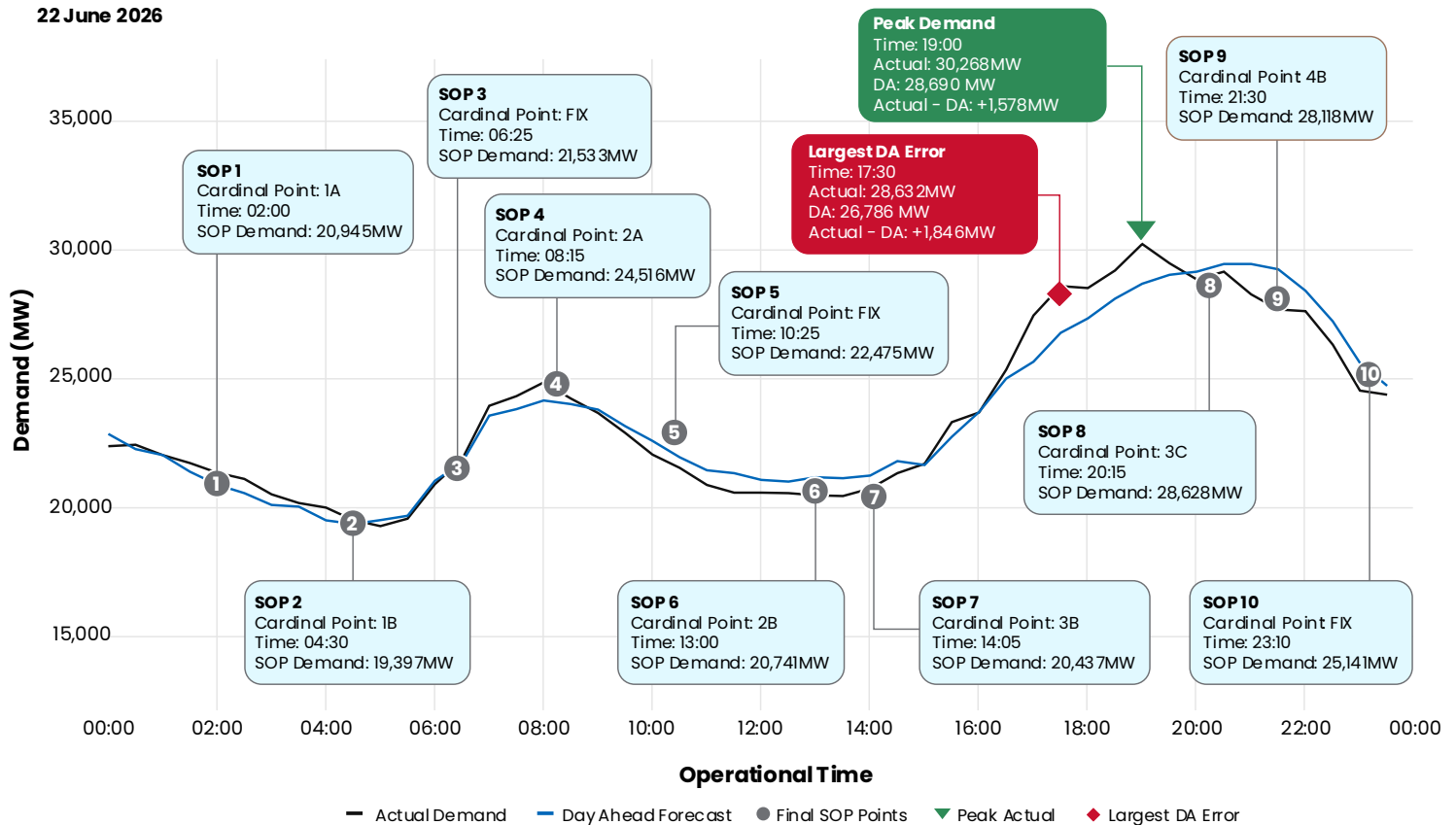
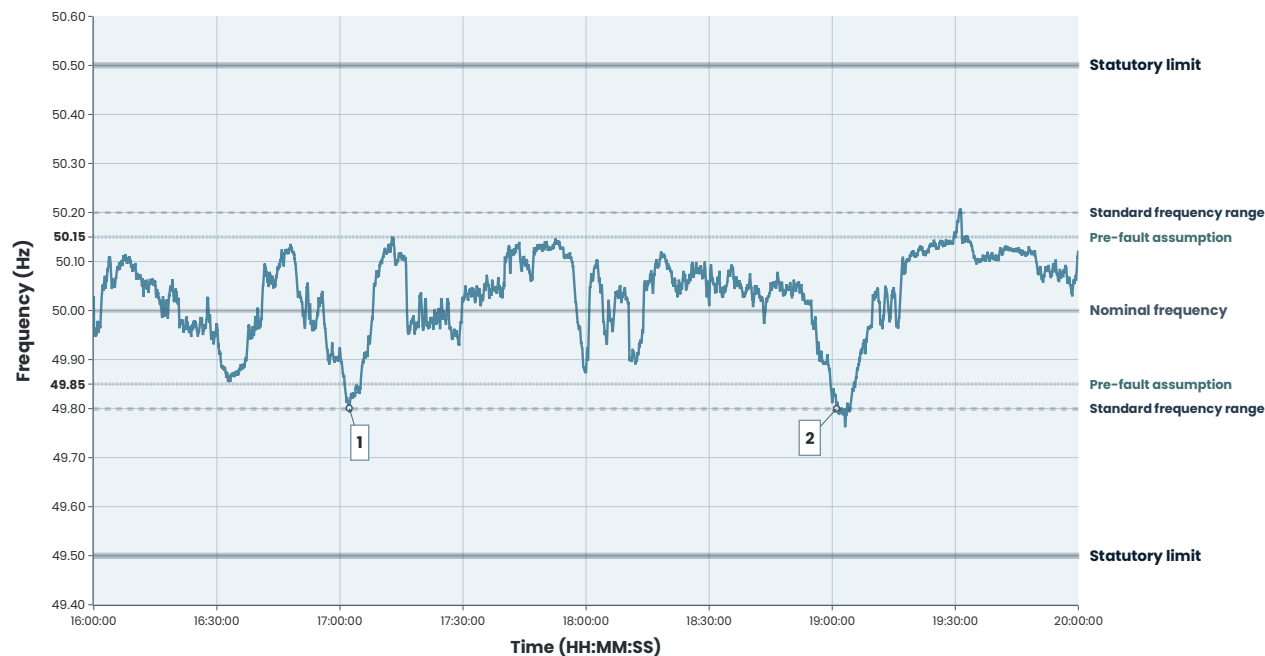


Figure 7: Day-Ahead Forecast and Actual Demand overlaid with final System Operating Plan demand for each Cardinal Point for Monday 22 June

Monday 22 June 2026



1	17:02	Unexpected demand increase of ~1,500MW
2	19:01	~1,000MW demand increase while Interconnector imports reduced. Below 49.8Hz for 3 minutes

Figure 8: Frequency trace with relevant events numbered for Monday 22 June

22 June 2026 Approximate Maximum Export Limit Reduction: 1,070MW

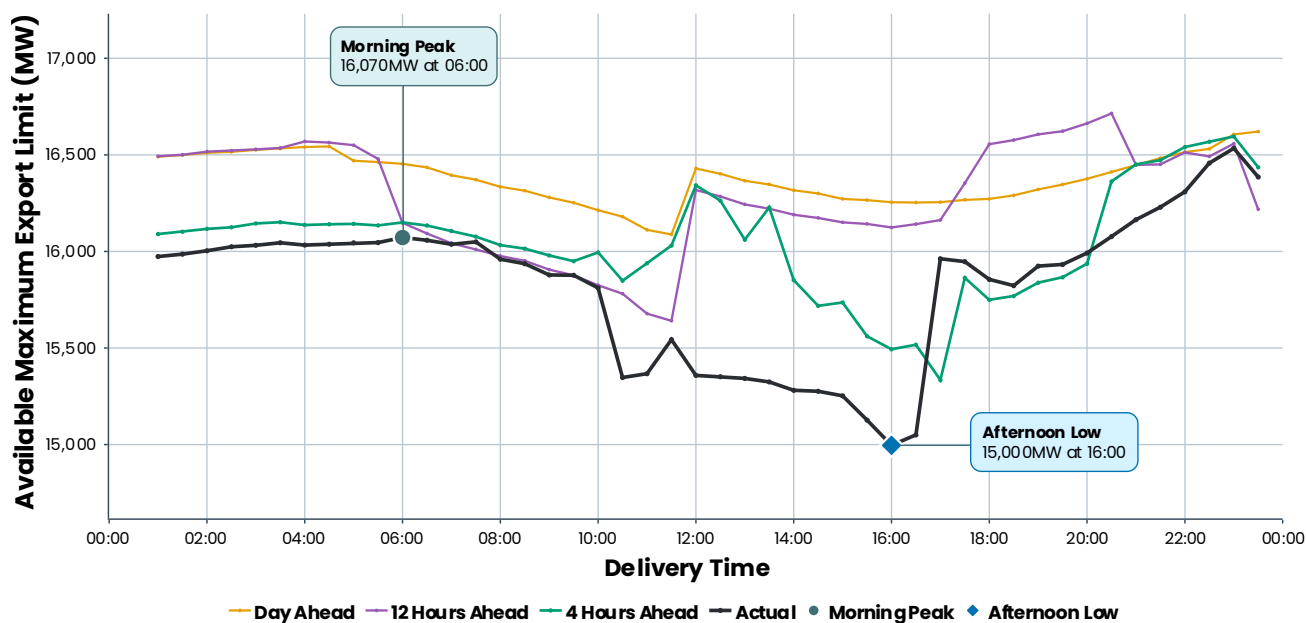


Figure 9: Aggregate Combined Cycle Gas Turbine Maximum Export Limit for Monday 22 June

8.2 Sequence of Events

Prior to 22 June

- 8.2.1 On Friday, 19 June, an amber warning for extreme heat was issued by the Met Office, covering the period of Monday 22 June to Tuesday 23 June.
- 8.2.2 The Day Ahead auction results in the wholesale market for Monday 22 June showed there would be some scarcity in Great Britain's and neighbouring electricity markets for the evening of Monday 22 June, driving higher pricing. Prices reached up to £264/MWh, with prices in Belgium, Netherlands and Denmark higher than Great Britain and France, which were broadly aligned over the evening peak, reaching ~£174/MWh. At 13:00, the Day Ahead schedules for interconnector flows for 22 June showed that Great Britain would be importing an overall net volume of 750MW–1,250MW between 18:00 and 22:00. This was a mixture of exports to the Netherlands, Belgium and Denmark and imports from France and Norway.

Monday 22 June

- 8.2.3 From 06:00, thermal electricity generators, e.g. Combined Cycle Gas Turbines, began reducing their Maximum Export Limits due to the expected impact of high temperatures on equipment and operations. This resulted in an initial loss of approximately 500MW between 10:00 and 10:30. The impact continued throughout the afternoon, with the combined loss to the system estimated to be approximately 800MW. See Figure 9.
- 8.2.4 At 10:12, NESO's System Operating Plan for Monday evening showed an Operating Margin shortfall of 122MW. This included NESO's plan to trade on interconnectors to further improve the margin position in Great Britain.
- 8.2.5 NESO reviewed all the Combined Cycle Gas Turbine plants' submitted Maximum Export Limits and concluded that they matched the physical notifications submission of these generators (which they are required to submit ahead of time). As a result, the level of generation was already accounted for in NESO's strategy for the relevant periods.
- 8.2.6 At 13:45, NESO's final System Operating Plan for the evening peak showed an Operating Margin surplus of 246MW. The forecast electricity demand for that evening had decreased and the amount of electricity that Combined Cycle Gas Turbines could produce had increased from their low point at 16:00. The peak demand had also moved from being forecast at 20:15 to the earlier time of 19:50.
- 8.2.7 At 14:00, NESO issued a buy requirement to increase interconnector flows from 18:00–22:00 to secure sufficient margin. NESO procured 250MW–650MW over this period.
- 8.2.8 At 15:13, NESO was told by the operator of the IFA interconnector that there would be a partial outage at 16:00 that would be restored by 18:00. The outage lasted until 19:00. This reduced available imports to Great Britain's electricity system by 500MW.
- 8.2.9 At 17:02, the frequency on the electricity transmission system dropped to 49.8Hz, which NESO's evidence indicated was because of an unexpected increase in demand of



approximately 1,500MW, and interconnector flows reducing. Frequency was returned from 49.8Hz via the use of two pump storage units at 300MW each and 200MW of batteries, among other actions.

- 8.2.10 At 19:01, the frequency dropped below 49.8Hz for three minutes. Demand had increased by circa 1,000MW while interconnector imports reduced. NESO took balancing actions to recover the frequency.

9. Tuesday 23 June

The Review considers the following nine events to be notable:

- NESO applied full export restrictions on IFA2 and Eleclink but not to IFA
- There was considerable intraday price volatility compared to Day Ahead auction results, with prices in European markets, including France, often trading at higher prices than Great Britain
- Interconnector flows with France at 19:00 changed from approximately 3,500MW scheduled import at Day Ahead to 1,500MW export in real time. This represents a difference of approximately 5,000MW from that scheduled at Day Ahead
- NESO issued an Emergency Instruction to the BritNed interconnector, requesting it reduce exports from Great Britain to zero
- NESO requested 500MW of Emergency Assistance from France
- Thermal electricity generators, e.g. Combined Cycle Gas Turbines, continued to reduce capacity due to the high temperatures
- Demand was above the Day Ahead forecast and demand continued to exceed forecast closer to real time
- For approximately two hours from 18:05, the frequency regularly dropped below 49.85Hz, temporarily recovering to 50.03Hz at 19:37, and reaching a low point of 49.657Hz at 20:00
- Power flows on parts of the transmission network exceeded Constraint Limits

9.1 Summary

Weather

- The amber extreme heat warning continued.

Wholesale markets, interconnectors and generation

- The Day Ahead market price for electricity on Tuesday evening was approximately £240/MWh in Great Britain and France. By 17:45 on Tuesday, the within-day price of electricity in France for the evening peak had risen to approximately £1,200/MWh, while the price in Great Britain had risen to approximately £600/MWh. Interconnector flows with France at 19:00 changed from approximately 3,500MW scheduled import at Day Ahead to 1,500MW export in real time.
- Maximum Export Limit reductions by thermal electricity generators continued due to the high temperatures. For example, Combined Cycle Gas Turbines reduced their Maximum

Export Limits by approximately 1,700MW between 09:00 to 14:00, and by approximately 500MW between 18:00 to 19:30. See Figure 12.

NESO's preparations

Trading and cross-border cooperation

- NESO applied full export restrictions on IFA2, and Eleclink through the day, but not on IFA. There were some other partial restrictions on interconnectors in both import and export directions.
- NESO traded to reduce interconnector imports from 10:00 until 13:00 to reduce excess generation and manage constraints, and to increase imports from 17:00 until 22:00 to secure sufficient margin. All trading was within agreed NESO trading limits.
- There were ongoing discussions throughout the day and into real time between NESO and RTE in France about the availability of Emergency Assistance.

Balancing Services

- NESO procured most requirements for response and reserve other than Dynamic Containment High, Dynamic Moderation High and Low, Static Firm Frequency Response, Positive and Negative Quick Reserve, and Positive Slow Reserve at various times between 15:00 and 23:00.

System Operating Plans and System Warnings

- The System Operating Plans for Tuesday's evening peak mostly showed Operating Margin surpluses above the Electricity Margin Notice trigger level (other than the initial System Operating Plan, which was not optimised).

Real time events and actions taken

- Shortly after 18:00, the frequency in Great Britain's electricity system dropped to 49.85Hz and remained at or below this level for most of the next two hours.
- Frequency dropped below 49.8Hz (the standard frequency range) after 18:52 and recovered above 49.8Hz at 19:00. Frequency decreased below 49.8Hz again at 19:04 and remained below this level until 19:30, then dropped below again between 19:49 and 20:03.
- NESO informed the Review that between 17:00 and 21:00 it took all available and commercially accessible actions in an attempt to restore the frequency to 50Hz. This resulted in 4,750 instructions to deliver a net increase of 5,480MWh.
- Between 18:00 and 21:00, power flows on parts of the transmission network exceeded Constraint Limits.
- At 19:12, NESO issued an Emergency Instruction to the BritNed interconnector, requesting it reduce exports from Great Britain to zero. This was delivered at 19:25 and exports of 755MW ceased, lasting until 21:30.
- At 19:15, NESO posted that Great Britain was in 'Alert State' on the European Alert System for system margins.

- NESO requested 500MW of Emergency Assistance from France which was delivered on the IFA interconnector from 20:05 until 21:00. This restored the frequency to within NESO's standard frequency range.

Demand Forecast Commentary

Actual demand was above the Day Ahead forecast from 08:00, including during the low-frequency event between 18:00 and 20:00, with the largest difference at 23:00 when demand was 1,643MW higher than forecast. Forecasts produced closer to real time through NESO's final System Operating Plan were closer to actual demand. Demand peaked at 21:00 at 30,039MW.

23 June 2026

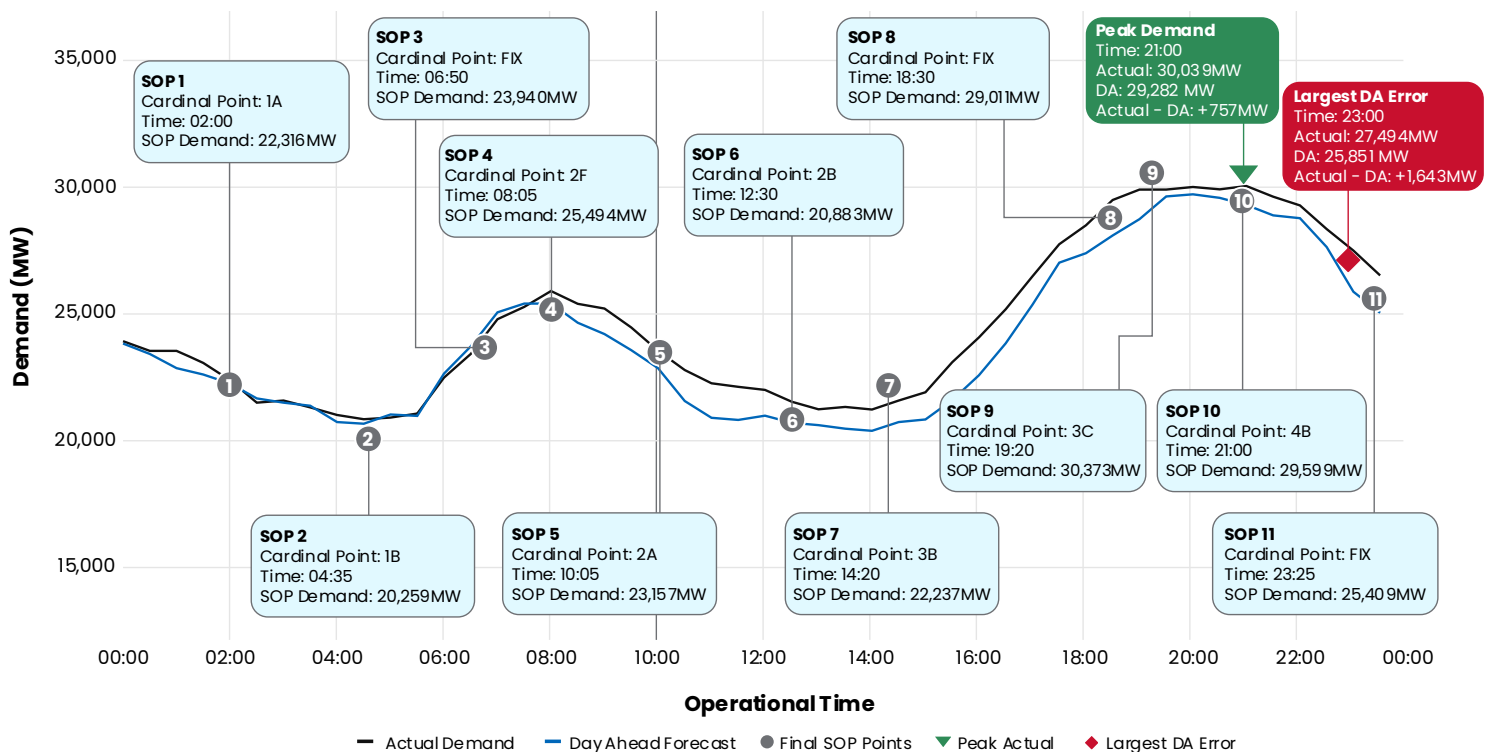
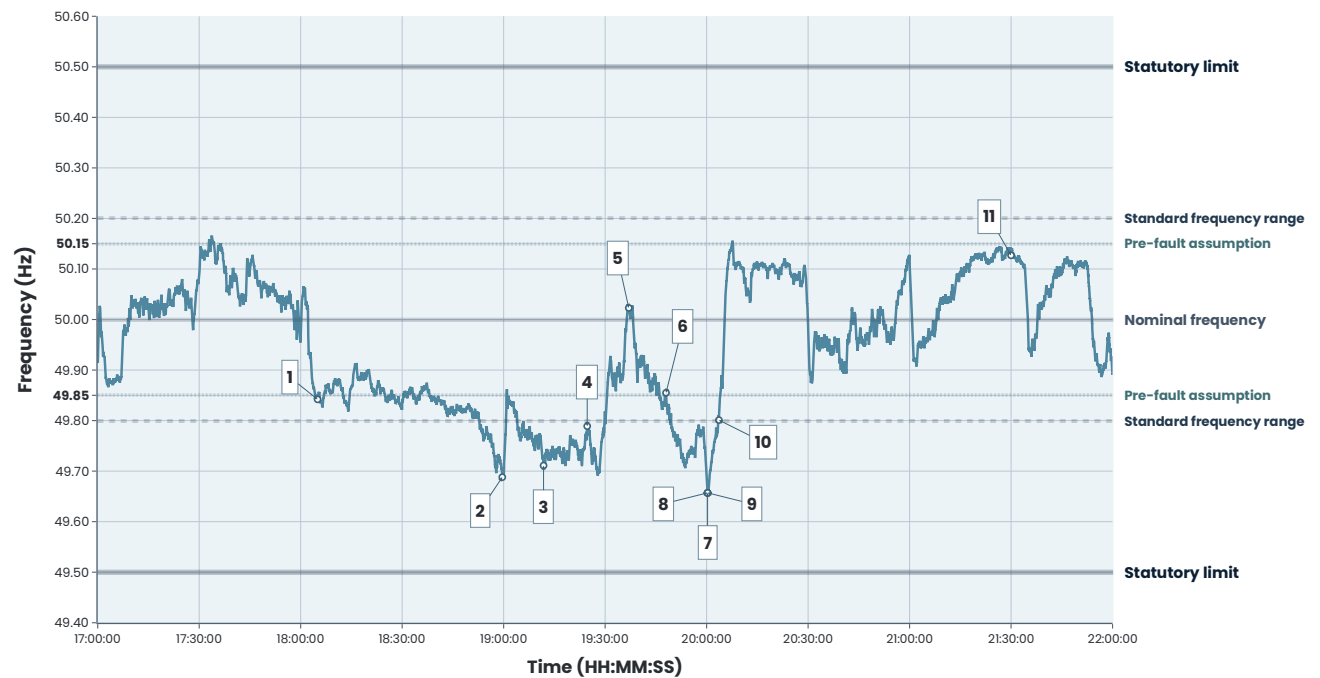


Figure 10: Day-Ahead Forecast and Actual Demand overlaid with final System Operating Plan demand for each Cardinal Point for Tuesday 23 June

Tuesday 23 June 2026



1	18:05	Extended low frequency period begins
2	19:00	Response providers now delivering less than NESO expected
3	19:12	NESO issue Emergency Instruction to BritNed
4	19:25	BritNed deliver Emergency Instruction
5	19:37	Frequency briefly recovers to 50.03Hz
6	19:48	NESO request 500MW of Emergency Assistance from RTE
7	20:00	Frequency reaches lowest point of 49.657Hz
8	20:00	Eleclink interconnector outage ends, increasing imports to Great Britain
9	20:00	RTE start delivering 500MW of Emergency Assistance to NESO
10	20:04	Frequency returns within the standard frequency range, marking the end of the sustained low frequency period
11	21:30	BritNed allowed to return to normal operations

Figure 11: Frequency trace with relevant events numbered for Tuesday 23 June

23 June 2026 Approximate Maximum Export Limit Reduction: 2,400MW

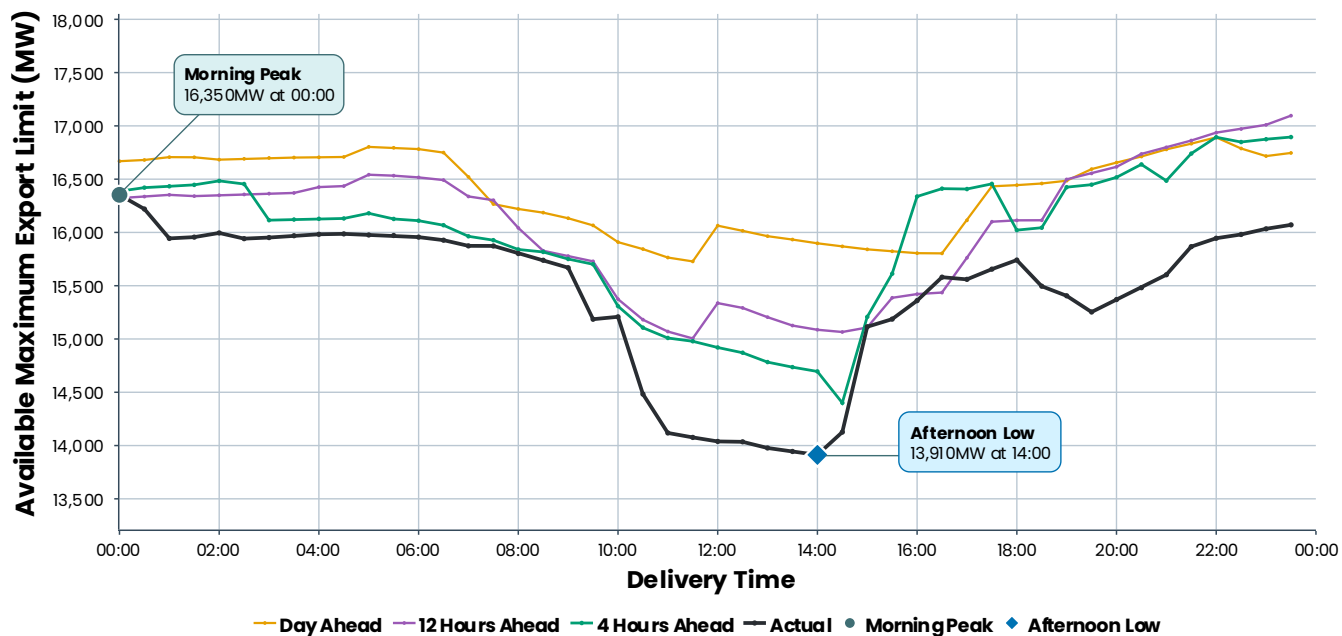


Figure 12: Chart showing the change in aggregate Maximum Export Limits of Combined Cycle Gas Turbines over the course of Tuesday 23 June

9.2 Sequence of Events

Monday 22 June

- 9.2.1 The Day Ahead auction results showed there would be scarcity of electricity supply in some European electricity markets for the evening of Tuesday 23 June, and prices were reaching up to £548/MWh. For the same period, prices in Great Britain and France were approximately £240/MWh. At 13:00, the Day Ahead schedules for interconnector flows for 23 June showed that Great Britain would be importing an overall net ~1,500MW between 19:00 and 23:00. This was a mixture of exports to the Netherlands, Belgium and Denmark (higher priced countries) and imports from France and Norway (marginally lower priced).
- 9.2.2 At 13:36 the first System Operating Plan was created for the evening of Tuesday 23 June. This showed that Great Britain would have an Operating Margin shortfall of 904MW. This is 404MW beyond the Electricity Margin trigger level.
- 9.2.3 At 18:47 the Eleclink interconnector informed the market that there would be a short-term outage from 13:00 to 19:00 on Tuesday 23 June.
- 9.2.4 At 23:56, NESO issued a sell requirement to decrease interconnector flows from 10:00–12:00 on Tuesday 23 June to reduce excess generation. NESO traded 1,100–1,200MW over this period.

Tuesday 23 June

- 9.2.5 At 00:13 the System Operating Plan for the evening peak (at 19:55) showed an Operating Margin surplus of 1,225MW.
- 9.2.6 At 06:00, a NESO status report showed weather warnings for Tuesday and indicated adequate Operating Margin for the evening peak demand.
- 9.2.7 At 09:37, NESO issued a sell requirement to decrease interconnector flows from 12:00–13:00 for constraint management purposes. NESO traded 300MW over this period.
- 9.2.8 At 11:55, NESO's updated System Operating Plan for Tuesday's evening peak showed an expected Operating Margin shortfall of 190MW. The demand peak was now expected to be at 19:20 instead of 19:55. This System Operating Plan also indicated that NESO included an extra 200MW of margin requirements to manage the potential impacts of the high temperatures on the electricity system.
- 9.2.9 At 13:00, the outage on Eleclink interconnector (referenced above) began. Based on Eleclink's market notification, NESO expected it to last until 19:00.
- 9.2.10 At 13:18, NESO issued a buy requirement to increase interconnector flows from 17:00–22:00 to secure sufficient margin. NESO traded 900–1,500MW over this period.
- 9.2.11 At 13:21, NESO's System Operating Plan shows that the evening peak in demand would have a 30MW Operating Margin shortfall.
- 9.2.12 Prior to 16:00, NESO observed that some available generation was inaccessible due to constraints on the transmission network. Between 15:56 and 16:40, NESO took actions to optimise the network, including a reconfiguration of the transmission system and arming a commercial intertrip.
- 9.2.13 At 16:15, NESO intended to withdraw availability of Emergency Assistance from Great Britain to France from 16:30–18:30, due to network constraints in the South East of England. NESO informed the Review that this was incorrectly communicated to RTE to be in the opposite direction than intended, i.e. from France to Great Britain.
- 9.2.14 At 16:46, the French transmission system operator, RTE, withdrew the availability of Emergency Assistance to Great Britain from 19:00 to 20:00.
- 9.2.15 Through the afternoon of 23 June, the position of the final interconnector schedule consistently showed less imports into Great Britain from Europe than expected at the Day Ahead stage. Scheduled imports from France for the evening continued to decrease through the afternoon.
- 9.2.16 The price of power for the evening peak in Great Britain and France rose over the course of the day. By 17:49, the price of electricity in France had risen to ~£1,200/MWh, while the price in Great Britain had risen to ~£600/MWh. NESO had bought 1,500MW over the interconnectors for the hours of 17:00 to 19:00, and 900MW for 19:00 to 22:00, to mitigate a shortfall in Great Britain's Operating Margin. Trading by other market participants in the

opposite direction on the interconnectors reduced the benefit of these trades on Operating Margin.

- 9.2.17 At 17:45, the interconnector schedules for 19:00 to 20:00 between Great Britain and France were finalised. The net electricity flowing to Great Britain from France during the evening peak was going to change from the Day Ahead expectation. Great Britain would no longer be importing 3,528MW energy from France but instead exporting 1,500MW. This represents a 5,028MW difference from that scheduled at Day Ahead.

Day-Ahead and real time net interconnector schedules

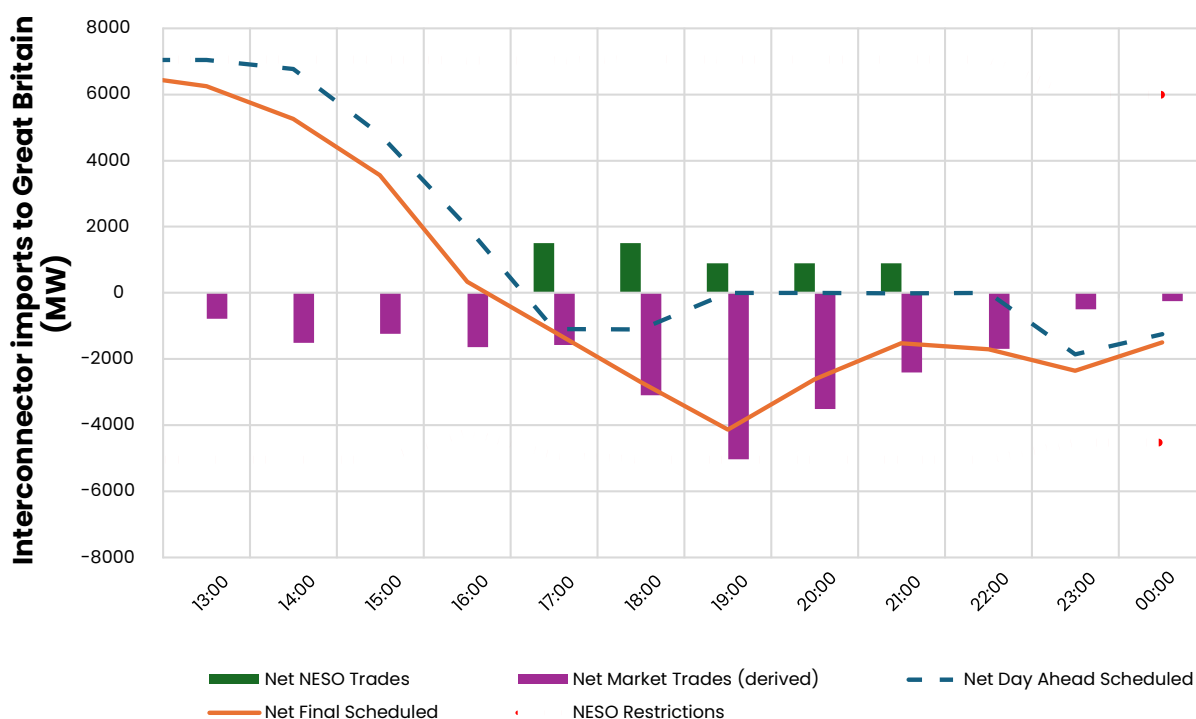


Figure 13: Chart showing Day-Ahead and real time net interconnector schedules (IFA, IFA2, Eleclink, BritNed, NEMO and Viking), NESO and market trades, and restrictions on interconnector capacity applied by NESO for Tuesday 23 June

Interconnectors IFA, IFA2, Eleclink, BritNed, Nemo and Viking have intraday auctions, meaning their positions can change within-day in line with market conditions. Figure 13 above shows the net positions of these interconnectors, showing the effect of both market trading and NESO trading on their Day Ahead and final scheduled positions. The Net Day Ahead Scheduled position, for the above interconnectors, as of 19:00 was approximately neutral (imports=exports), and the Net Final Scheduled position, post market and NESO intraday trading, was 4,131MW of exports from Great Britain.

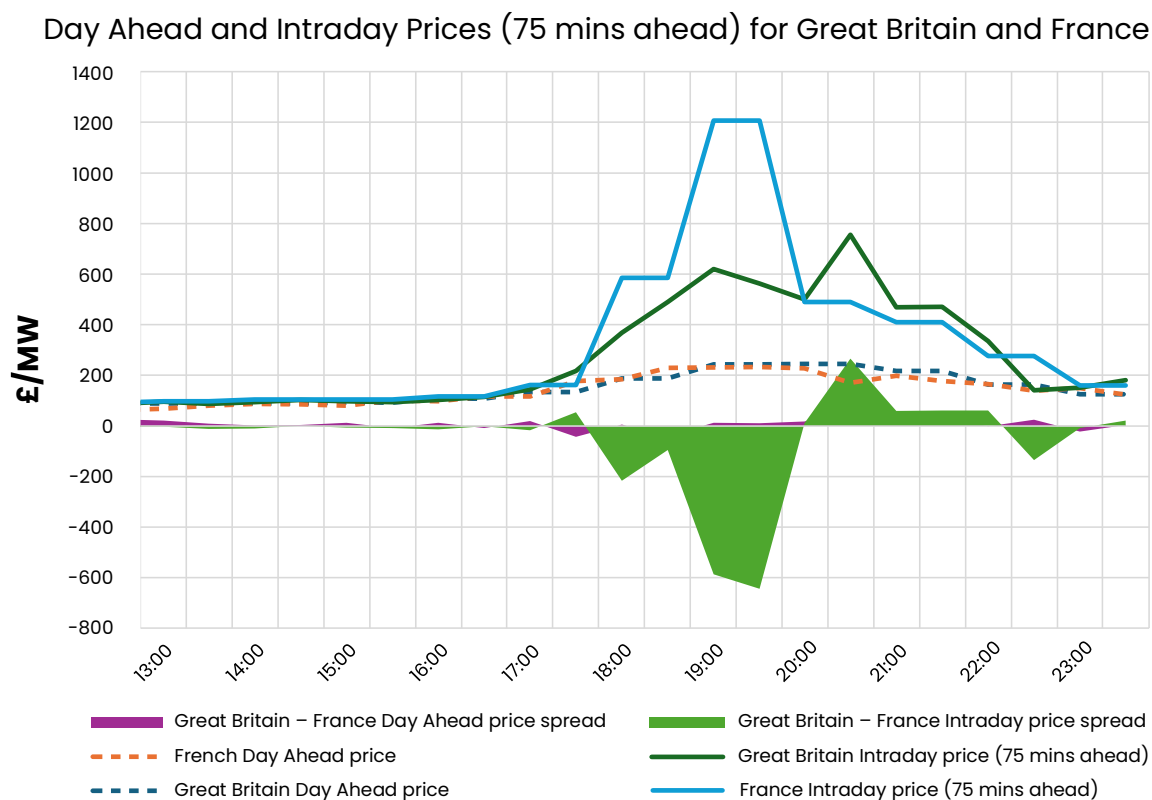


Figure 14: Chart showing the Day Ahead and Intraday prices (75 minute-ahead) and price differences in and between Great Britain and France over the course of Tuesday 23 June. Price spreads (differences) above £0/MWh show a Great Britain price premium to France, and vice versa for price spreads below £0/MWh.

- 9.2.18 Shortly after 18:00, the frequency in Great Britain's electricity system dropped to 49.85Hz and remained at or below this level for most of the next two hours.
- 9.2.19 NESO informed the Review that between 17:00 and 21:00 it took all available and commercially accessible actions to dispatch Balancing Market Participants in an attempt to restore the frequency to 50Hz. This resulted in 4,750 instructions to deliver a net increase of 5,480MWh.
- 9.2.20 During this time, dynamic frequency response services were automatically responding to the low frequency to prevent further falls in the frequency at a national level.
- 9.2.21 Between 18:00 and 21:00, there were a number of instances of different durations where power flows on parts of the transmission network exceeded the established Constraint Limits. These included flows across Scotland (up to 300MW), North England (up to 400MW), in Humber area (up to 300MW), in South East England (up to 800MW) and South West England (up to 100MW).
- 9.2.22 At 18:30 NESO told RTE that it could provide 500MW of Emergency Assistance to France from 20:00 to 23:00.
- 9.2.23 At 18:53, Eleclink published an updated Urgent Market Message confirming an extension of the outage on the interconnector from 19:00 to 20:00.

- 9.2.24 NESO informed the Review that by 19:00, dynamic response providers were delivering 423MW less than anticipated.
- 9.2.25 At approximately 19:00, frequency recovered from 49.69Hz to 49.85Hz, coinciding with the boundary between Settlement Periods, but then fell back below 49.8Hz by 19:04.
- 9.2.26 At 19:12, with frequency back below 49.8Hz and having been low for over an hour, NESO issued an Emergency Instruction to the BritNed interconnector, which connects Great Britain with the Netherlands, requesting it reduce exports from Great Britain to zero. At 19:25, BritNed carried out the instruction and exports of 755MW ceased. At 19:43, NESO issued a notification to the market that this had taken place.
- 9.2.27 At 19:15, NESO posted that Great Britain was in Alert State on the European Alert System. This was stated as being for reason '04 reduction of Reserve Capacity'.
- 9.2.28 At 19:32 frequency briefly recovered to 49.93Hz, reaching 50.03Hz at 19:37. At 19:49 it fell below 49.8Hz, reaching its lowest point of 49.657Hz at 20:00.
- 9.2.29 At 19:48, the 500MW of Emergency Assistance that NESO had agreed to make available to RTE in France from 20:00 to 23:00 was cancelled by NESO. NESO requested Emergency Assistance from France to Great Britain from 20:00 to 21:00.
- 9.2.30 At 20:00, the Eleclink interconnector outage, which began at 13:00, ended, increasing import to 277MW into Great Britain between 20:00–21:00.
- 9.2.31 At 20:00, NESO's request for 500MW of Emergency Assistance started to be delivered on the IFA interconnector, reducing exports from Great Britain to France from 883MW to 383MW. This restored the frequency to within NESO's standard frequency range, marking the end of the sustained low frequency period.
- 9.2.32 At approximately 20:30, RTE withdrew the availability of Emergency Assistance to Great Britain from France until 01:00 on Wednesday morning.
- 9.2.33 At 21:16 NESO confirmed to BritNed that it could return to normal operations at 21:30. At 21:28, there was a notification from NESO to the market that the Emergency Instruction to BritNed was cancelled from 21:30.
- 9.2.34 NESO returned Great Britain's status on the European Alert System to 'Normal' at 21:32.

10. Wednesday 24 June

The Review considers the following seven events to be notable:

- There was a red extreme heat warning in place and a new June temperature of 36.0°C recorded at Wisley, Surrey
- NESO applied import and export restrictions to some interconnectors throughout the day
- Multiple generator units reduced their availability due to ambient heat and cooling water temperatures, totalling approximately 1,500MW
- NESO identified a discrepancy of approximately 5,000MW in generation forecast between the data available at Day Ahead from REMIT and data provided to NESO via the Balancing Mechanism
- Demand was higher than expected at 22:32, this drove the frequency to 49.75Hz
- With the permission of European Transmission System Operators NESO's interconnector trading limits were exceeded. NESO bought 1,900 to 2,300MW over this time
- An Electricity Margin Notice was published (on Tuesday) for the period Wednesday 19:00 to 22:00. This was cancelled at 14:20 on Wednesday

10.1 Summary

Weather

- A red extreme heat warning was in place from 09:00 on Wednesday 24 June until 23:59 on Thursday 25 June.
- A new June record maximum temperature of 36.0°C was recorded at Wisley, Surrey.

Wholesale markets, interconnectors and generation

- Day Ahead prices for electricity across Europe were higher for Wednesday evening than for Tuesday. Day Ahead schedules showed that Great Britain would be importing an overall net volume of 1,400MW to 1,750MW between 19:00 and 23:00. Real time net interconnector flows had higher imports than at Day Ahead position, mainly due to NESO trading.
- Maximum Export Limits reductions due to the high temperatures continued, mainly between 09:00 and 14:00 with total reductions of approximately 1,000MW from Combined Cycle Gas Turbines. See Figure 17.



NESO's preparations

Trading and cross-border cooperation

- NESO applied various import and export restrictions on IFA, IFA2, Eleclink, BritNed, Nemo and Viking.
- NESO traded to reduce interconnector imports from 12:00–16:00 and increase imports from 17:00–22:00. Trading limits were exceeded on Nemo and BritNed, with permission from relevant TSOs provided earlier in the day.

Balancing Services

- NESO procured most requirements for response and reserve other than Dynamic Containment High and Low, Dynamic Moderation High and Low, Positive and Negative Quick Reserve, Positive Slow Reserve, and Static Firm Frequency Response, where there was under-procurement at various times between 15:00 and 23:00.

System Operating Plans and System Warnings

- The System Operating Plan for Wednesday's evening peak showed Operating Margin shortfalls in the first System Operating Plan at the Day Ahead stage through until the early afternoon.
- On Tuesday evening, NESO issued an Electricity Margin Notice for Wednesday 19:00 to 22:00 for an Operating Margin shortfall of 1,900MW.
- The Electricity Margin Notice cancellation was published at 14:20 on Wednesday 24 June, once the Operating Margin had improved.

Real time events and actions taken

- By Wednesday morning, multiple generator units totalling approximately 1,500MW had reduced their Maximum Export Limit due to ambient heat and cooling water temperatures.
- NESO communicated with market participants throughout the morning. Many units had to reduce output due to heat, but some units were able to provide additional capacity by delaying outages.
- NESO traded to buy between 1,900MW and 2,300MW on the interconnectors between 17:00 and 23:00, along with procuring 134.4MW from the Demand Flexibility Service.
- The Electricity Margin Notice cancellation was published at 14:20. NESO informed the Review that at 17:00 there was a change in the scheduled flow on the interconnectors from France reducing imports by 1,600MW between 18:00 and 19:00. In addition, at 18:00, the wind generation was 1,500MW below NESO's forecast.
- Between 18:41 and 20:37, there was an outage on the IFA interconnector to France, reducing the import capacity from 1,500MW to 800MW.
- Frequency deviations were seen throughout the evening. Demand increased by approximately 450MW between 22:27 and 22:32. Frequency reached 49.75Hz at 22:32, and

NESO informed the Review that restoration was achieved through normal frequency management processes once the demand increase ceased.

Demand Forecast Commentary

Demand peaked at 21:00 at 31,353MW. Actual demand was above the Day Ahead forecast from 07:00, with the largest difference at 11:00, when demand was 2,055MW higher than forecast.

Forecasts produced closer to real time through NESO's final System Operating Plan were closer to actual demand between 12:00 and 20:00.

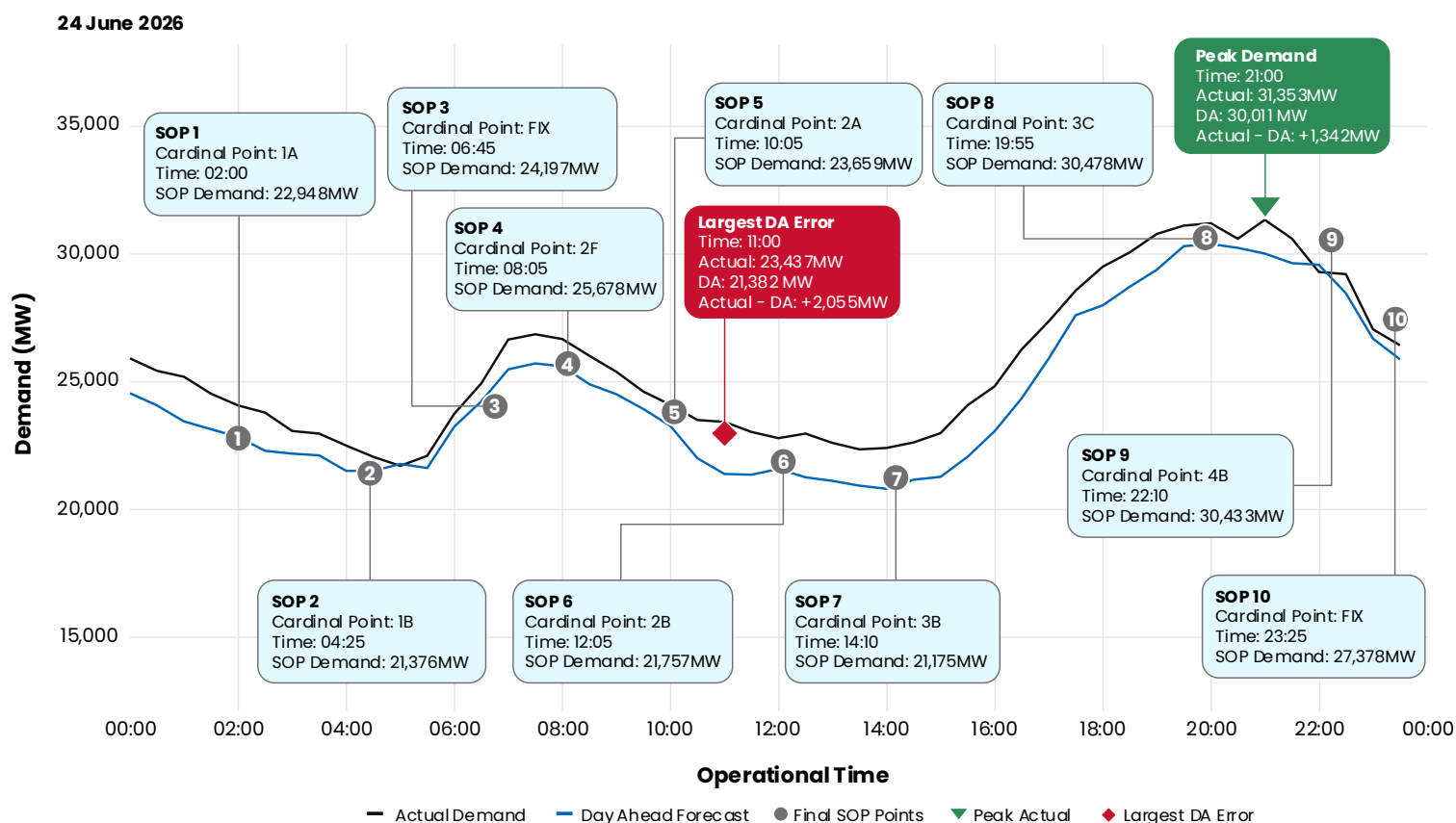
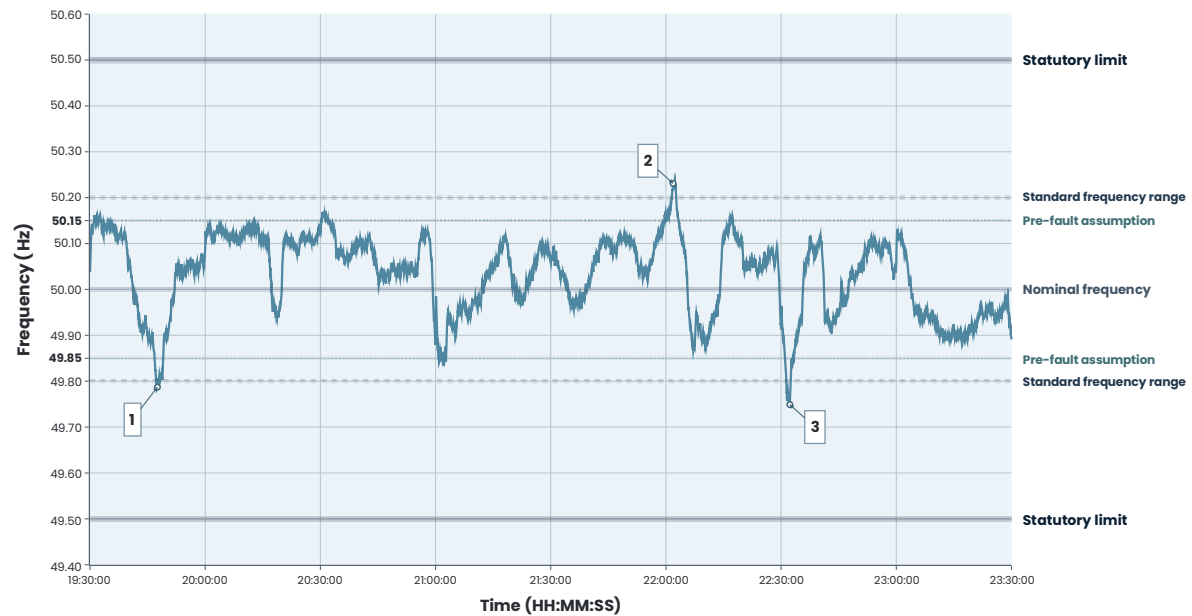


Figure 15: Day-Ahead Forecast and Actual Demand overlaid with final System Operating Plan demand for each Cardinal Point for Wednesday 24 June

Wednesday 24 June 2026



1	19:47	Frequency below 49.8Hz for approximately 40 seconds
2	22:01	Frequency above 50.2Hz for approximately one minute
3	22:32	Frequency below 49.8Hz for approximately one minute

Figure 16: Frequency trace with relevant events numbered for Wednesday 24 June

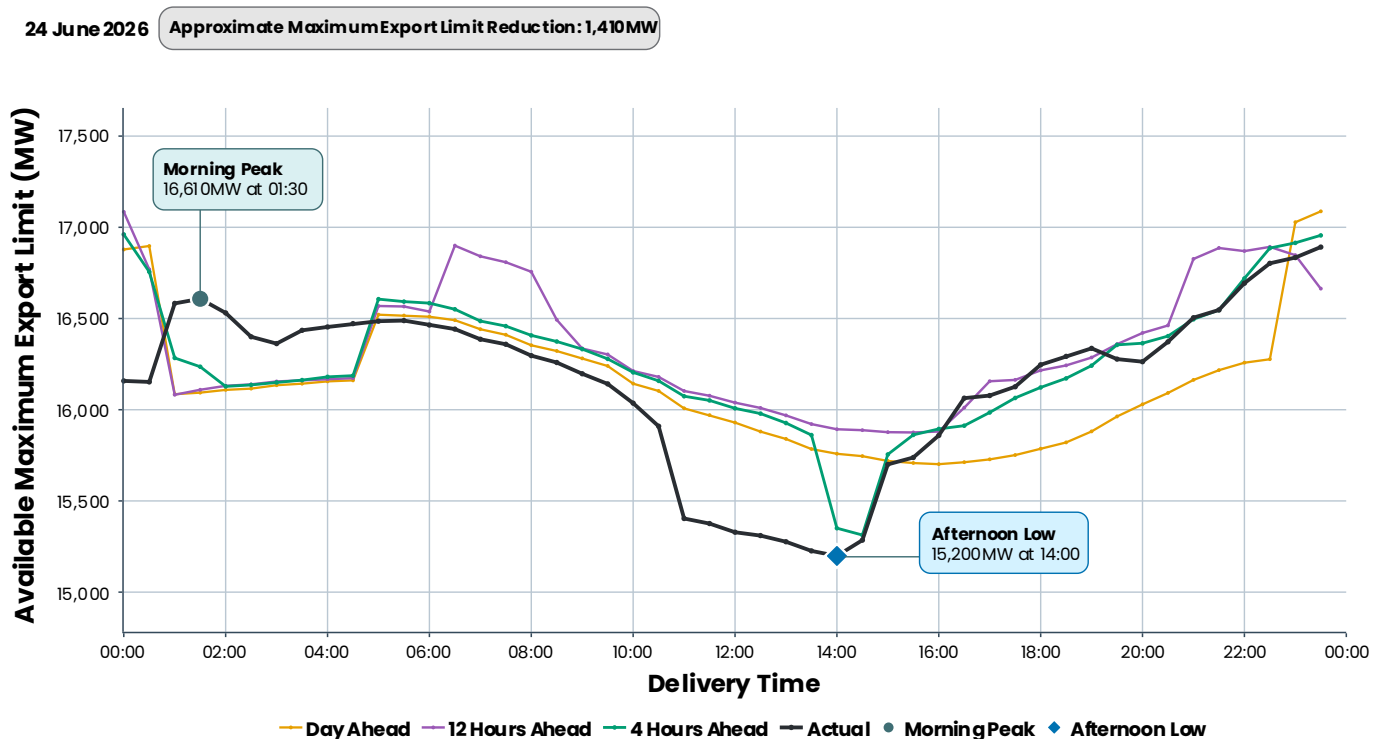


Figure 17: Chart showing the change in aggregate Maximum Export Limits of Combined Cycle Gas Turbines over the course of Wednesday 24 June

10.2 Sequence of Events

Monday 22 June

- 10.2.1 At 10:30, the Met Office issued a Red Heat Warning for south Wales and central and western southern England for the period of 09:00 Wednesday 24 June to 21:00 Thursday 25 June.

Tuesday 23 June

- 10.2.2 The Day Ahead auction results in the wholesale market for Wednesday 24 June showed there would be greater scarcity in Great Britain and border electricity markets for the evening of Wednesday 24 June compared to the day before. European prices reached up to £895/MWh, with particularly high prices in Belgium, Netherlands and Denmark. Great Britain and French prices were lower, with Great Britain peaking at £434/MWh, and French prices lower still, peaking at £374/MWh.
- 10.2.3 At 13:00 the Day Ahead schedules for interconnector flows for 24 June showed that Great Britain would be importing an overall net volume of 1,400MW–1,750MW between 19:00 and 23:00. This was a mixture of exports to the Netherlands, Belgium and Denmark and imports from France and Norway.
- 10.2.4 At various times, NESO placed restrictions on the exporting capacity of interconnectors for the following day.
- 10.2.5 At 19:18 NESO's first System Operating Plan for Wednesday's evening peak showed a 2,472MW Operating Margin shortfall. This is 1,972MW beyond the Electricity Margin Notice trigger level. The System Operating Plan also showed an additional 500MW reserve requirement was in place for high ambient temperature between 15:00 and 22:00.
- 10.2.6 Due to these circumstances, at 22:04 an Electricity Margin Notice was published for the period 19:00 to 22:00 on Wednesday 24 June. The Electricity Margin Notice indicated that there was an Operating Margin shortfall of 1,900MW at that point. A Margin Brief was also issued to relevant NESO staff, Ofgem and DESNZ.

Wednesday 24 June

- 10.2.7 At 06:00, the updated System Operating Plan stated that there was an Operating Margin shortfall of 2,050MW. This is 1,550MW beyond the Electricity Margin Notice trigger level. At the same time, NESO's status report for Wednesday carried a red status and stated that a Margin Brief update would be shared with DESNZ and Ofgem at 07:00.
- 10.2.8 By 06:00, multiple generator units had reduced their Maximum Export Limit due to the ambient heat and cooling water temperature, which totalled approximately 1,500MW.
- 10.2.9 In order to further mitigate the margin shortfall, NESO contacted EDF at 06:21 about the viability of a nuclear power station delaying a planned outage which was due to start at 10:00.



- 10.2.10 NESO's Margin Brief at 07:00 provided an updated Operating Margin shortfall of 1,450MW. At 08:10, the Electricity Margin Notice was re-published to encourage market actions to increase system margins.
- 10.2.11 At 09:00, NESO Silver Command was stood up to coordinate, communicate and manage the incident.
- 10.2.12 EDF confirmed an outage delay at 09:58, increasing available generation by 607MW.
- 10.2.13 Throughout the morning, NESO sought and received feedback from 29 Combined Cycle Gas Turbines on their availability and performance in the heat. The majority of Combined Cycle Gas Turbine units had to reduce output due to heat. For example, Connah's Quay informed NESO of specific circumstances where it could need to de-load if local river water temperatures exceeded limits or if levels were to run low. Although there was no indication of this being the case as of the morning of 24 June, Connah's Quay confirmed it was continuing to monitor the situation. Connah's Quay confirmed it was assessing whether a unit could be returned to service earlier to support following the Electricity Margin Notice publication, but noted that this would require careful consideration due to water constraints which could impact the two running units. Rye House was also able to support by providing additional capacity from 14:00.
- 10.2.14 At 09:56, NESO issued a sell requirement to decrease interconnector flows from 12:00–16:00 to reduce excess generation. NESO traded 500–1,250MW over this period.
- 10.2.15 At 11:00, a North East South West Area Consortium coordination call was convened as a precautionary measure. Network operators reported an operationally business-as-usual day, but with increased monitoring and readiness, heightened media interest and potential for transport disruption.
- 10.2.16 At 11:26, NESO issued a buy requirement to increase interconnector imports from 17:00 to 23:00 to secure sufficient margin. It traded 1,900 to 2,300MW over this time.
- 10.2.17 By 11:38, the System Operating Plan reflected an improved Operating Margin shortfall of 864MW. This is 364MW beyond the Electricity Margin Notice trigger level. This System Operating Plan also included planned NESO trades to increase imports through the BritNed interconnector by 800MW 17:00–19:00, and by 1,400MW 19:00–22:00.
- 10.2.18 At 11:39, NESO's Silver Command contacted government departments and Ofgem with the first Silver Situation Report for Operating Margin shortfalls forecast for the afternoon, which showed an approximately 5,000MW discrepancy in generation availability data. A revised version of the report issued at 12:57, clarified that the discrepancy in generation was identified between the data available at Day Ahead from REMIT publications and data provided to NESO via the Balancing Mechanism.
- 10.2.19 At 12:55, the updated System Operating Plan for Wednesday's evening peak showed the shortfall had been reversed following NESO's trades, and that there was an expected Operating Margin surplus of 545MW.



- 10.2.20 Cancellation of the Electricity Margin Notice was published at 14:20.
- 10.2.21 At 16:06, a new June record maximum temperature of 36.0°C was recorded at Wisley (Surrey).
- 10.2.22 At 16:56, NESO informed Ofgem that it intended to urgently issue a letter to generator units asking that information and data on their equipment performance are updated effectively in hot weather so NESO could have more visibility of expected outputs. This letter was sent to all Balancing Mechanism asset operators registered on the Single Markets Platform and published on the NESO website.
- 10.2.23 NESO's daily status report indicated that at 17:00 there was a change in the scheduled flow on the interconnectors from France, Eleclink, IFA and IFA2, reducing imports by 1,600MW between 18:00 and 19:00. In addition, at 18:00, the wind output was 1,500MW below NESO's forecast.
- 10.2.24 Between 18:41 and 20:37, there was an unplanned outage on the IFA interconnector to France due to a fault, reducing the import capacity from 1,500MW to 800MW.
- 10.2.25 From 19:39, system frequency fell from 50.12Hz and reached a minimum of 49.78Hz at 19:47. Frequency subsequently increased to 49.81Hz by 19:48, following an estimated 40 second period below 49.8Hz. NESO informed the Review that "No significant BM intervention was taken with frequency restoration via response service provision only."
- 10.2.26 NESO has stated that, as the evening progressed, the demand profile was not as NESO expected, with demand decreasing after 21:30. At 22:01, the frequency deviated above 50.2Hz for approximately one minute, reaching a peak of 50.234Hz.
- 10.2.27 Frequency then declined from 50.10Hz at 22:28 to 49.76Hz at 22:31, before recovering to 49.84Hz by 22:32.
- 10.2.28 Over the same period, demand reversed its previous downward trend, rising from 29,156MW at 22:27 to 29,612MW by 22:32. Frequency reached 49.75Hz at 22:32, and NESO informed the Review that restoration was achieved through normal frequency management processes once the demand increase ceased.
- 10.2.29 Several demand fluctuations within this same time frame ran counter to the overall daily demand pattern. NESO informed the Review that these events can be driven by different factors, including changes in embedded generation and/or demand, price signals and resulting market behaviour.

11. Thursday 25 June

The Review considers the following nine events to be notable:

- There was a red extreme heat warning in place and a new June temperature record of 37.3°C at Yeovilton, Somerset
- Trading limits were exceeded on BritNed, with permission from TenneT, the Dutch Transmission System Operator
- NESO applied partial export restrictions from 16:00 to the end of the day on interconnectors IFA, IFA2, Eleclink, BritNed, Nemo and Viking
- Thermal electricity generators, e.g. Combined Cycle Gas Turbines, continued to reduce capacity due to the high temperatures
- These capacity reductions began at 01:00, earlier than at other points during the week
- Demand was above the Day Ahead forecast from 10:00, with the largest difference at 19:30
- NESO noted that a constraint limit in mid-Scotland was exceeded at approximately 22:00 due to higher-than-expected wind output
- At 22:00 there was a demand increase leading to a drop in frequency below 49.8Hz for approximately 11 minutes
- At 23:30, demand increased 456MW against forecast. The frequency fell below 49.8Hz for approximately 90 seconds

11.1 Summary

Weather

- The Red Weather Warning for extreme heat continued.
- Temperatures reached a new June record of 37.3°C at Yeovilton, Somerset.

Wholesale markets and activity in the interconnectors

- Day Ahead market prices for Thursday evening were lower than on Wednesday, but higher than the start of the week, reaching up to £315/MWh. Day Ahead interconnector schedules showed that Great Britain would be exporting an overall net volume of approximately 1,700MW to 3,600MW between 19:00 and 23:00. Real time net interconnector flows had approximately 2,000MW less export than the Day Ahead position, mainly due to NESO trades.

- Thermal electricity generators, e.g. Combined Cycle Gas Turbines, continued to reduce output due to the high temperatures. Maximum Export Limit reductions began at 00:30. See Figure 20.

NESO's preparations

Trading and cross-border cooperation

- NESO traded to reduce interconnector imports from 10:00 until 12:00 for constraint management purposes, and to increase imports from 16:00 until 23:00 for constraint management and to secure sufficient margin. Trading limits were exceeded on BritNed, with permission from TenneT, the Dutch TSO, provided the evening before.
- NESO applied partial export restrictions from 16:00 to the end of the day on IFA, IFA2, Eleclink, BritNed, Nemo and Viking.

Balancing Services

- NESO procured most required volumes for response and reserve other than in Dynamic Moderation High and Low, Static Firm Frequency Response and Positive and Negative Quick Reserve. The difference between NESO service requirement and procured volumes occurred between 15:00 and 23:00 for Dynamic Moderation High and Low and Static Firm Frequency Response and between 17:00 and 21:00 for Positive and Negative Quick Reserve.

System Operating Plans and System Warnings

- The System Operating Plans for Thursday's evening peak mostly showed Operating Margin surpluses, other than one overnight System Operating Plan that showed a shortfall marginally beyond the Electricity Margin Notice trigger level.

Real time events and actions taken

- Approaching 22:00, NESO forecasted a significant demand drop, as there had been at this point on Tuesday and Wednesday. Instead, there was a demand increase of 500MW causing frequency to deviate below 49.8Hz for approximately 11 minutes. NESO took actions to recover the frequency, including 400MW of pumped storage and 1,000MW of further actions.
- NESO informed the Review that at 23:30 it observed an increase in demand of 456MW against forecast. This caused frequency to fall briefly below 49.8Hz for approximately 90 seconds.
- Evidence from NESO noted that a constraint limit in mid-Scotland was exceeded at approximately 22:00.

Demand Forecast Commentary

Actual demand was above the Day Ahead forecast from 09:00, with the largest difference at the 19:30 peak, when demand was 2,087MW higher than forecast, with actual demand of 31,747MW. Forecasts produced closer to real time through NESO's final System Operating Plan varied between under- and over-forecasting.

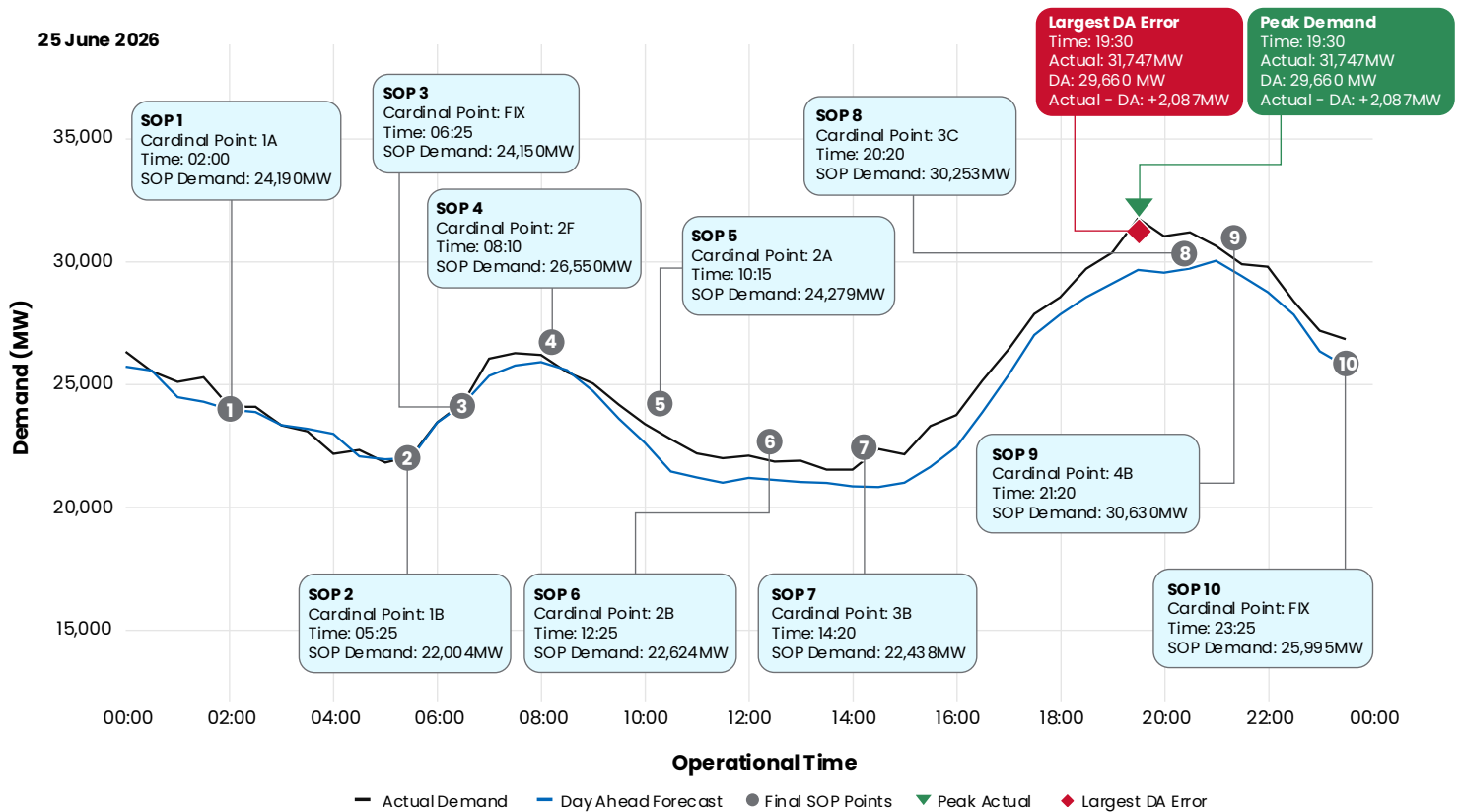
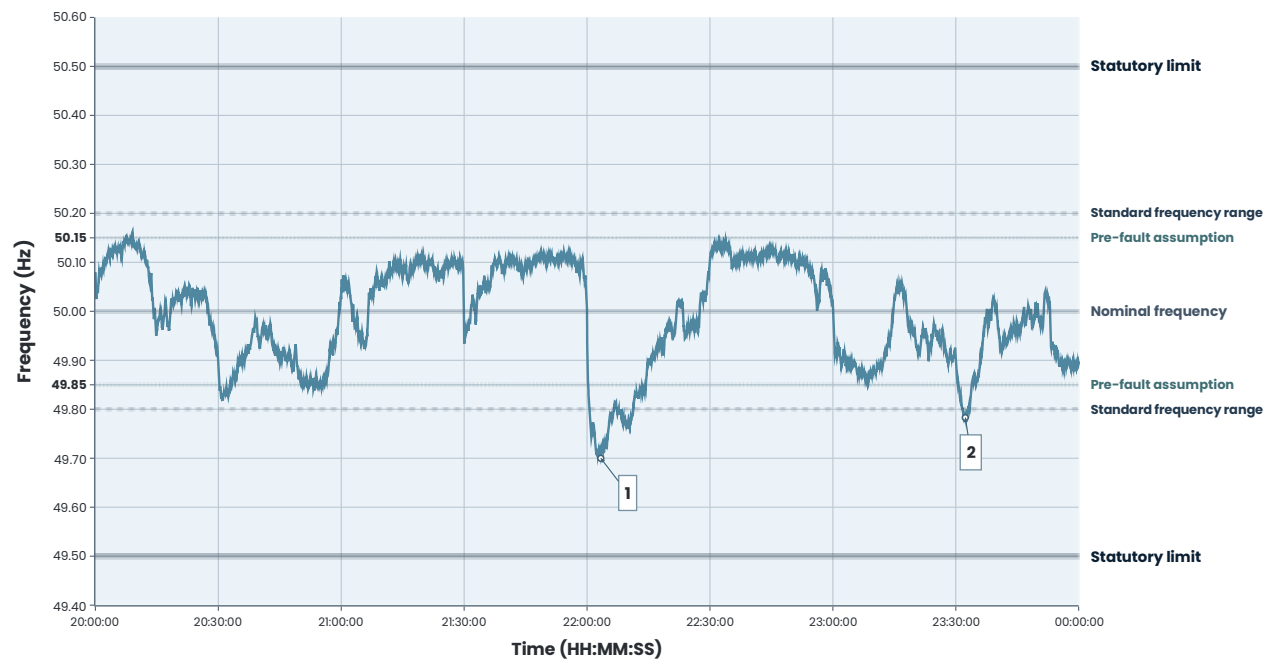


Figure 18: Day-Ahead Forecast and Actual Demand overlaid with final System Operating Plan demand for each Cardinal Point for Thursday 25 June

Thursday 25 June 2026



1	22:00	Demand increases unexpectedly, rather than decreasing. Frequency below 49.8Hz for approximately 11 minutes
2	23:30	Demand increases unexpectedly. Frequency below 49.8Hz for approximately 90 seconds

Figure 19: Frequency trace with relevant events numbered for Thursday 25 June

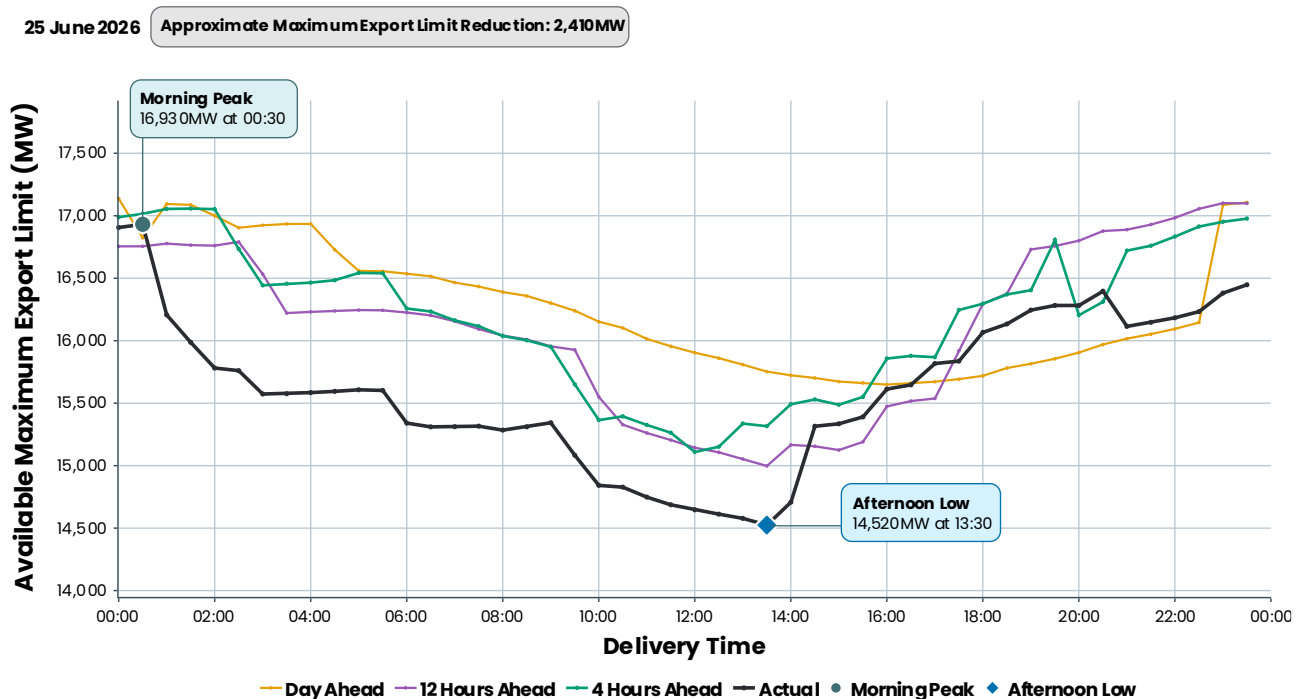


Figure 20: Chart showing the change in aggregate Maximum Export Limits of Combined Cycle Gas Turbines over the course of Thursday 25 June

11.2 Sequence of Events

Wednesday 24 June

- 11.2.1 The Day Ahead auction results in the wholesale market for Thursday 25 June showed there would be less scarcity in Great Britain and European electricity markets for the evening of Thursday 25 June compared to the day before. Prices were notably lower than the previous day, reaching £315/MWh. Great Britain and French prices were lower and more closely aligned during the evening peak, with periods of French premium to Great Britain indicating Great Britain–France flows were likely. At 13:00 on Wednesday 24 June, the Day Ahead schedules for interconnector flows for 25 June showed that Great Britain would be exporting an overall net volume of 3,595MW–1,735MW between 19:00 and 23:00. This was a mixture of exports to the Netherlands, Belgium, France and Denmark and imports from Norway.
- 11.2.2 At 23:41 NESO issued a sell requirement in order to decrease interconnector flows from 10:00 to 12:00 on Thursday 25 June for constraint management reasons. It traded 200MW over this period.

Thursday 25 June

- 11.2.3 At 13:29, NESO issued a buy requirement to increase interconnector flows from 16:00–19:00 for constraint management purposes. NESO trades ranged between 300–2,200MW over this period.
- 11.2.4 The Electricity Operational Level Tripartite meeting between DESNZ, Ofgem and NESO took place at 15:00, which discussed the Electricity Margin Notice issued on Wednesday.
- 11.2.5 At 15:05, NESO issued a further buy requirement to increase interconnector imports from 19:00–23:00 to secure sufficient margin. Overall, NESO's trades to increase interconnector imports ranged from 300MW to 2,500MW for delivery over this period.
- 11.2.6 At 15:24, temperatures reached a new June record of 37.3°C at Yeovilton, Somerset.
- 11.2.7 At 16:11, the IFA interconnector to France was returned to its full capacity of 2,000MW following its long-term unplanned outage. This added 500MW of cross-border capacity.
- 11.2.8 Approaching 22:00, there was a forecast expectation of a significant demand drop, as there had been at this point in the two previous days. However, instead there was a demand increase of 500MW causing frequency to deviate below 49.8Hz for approximately 11 minutes with a maximum deviation to 49.69Hz. NESO responded by taking actions including 400MW of pumped storage and 1,000MW of further actions. This recovered the frequency above 49.8Hz.
- 11.2.9 Evidence from NESO noted that a constraint limit across Scotland was exceeded at approximately 22:00. NESO's daily status report noted that this was due to higher-than-expected wind output, which was managed by changing the flows on the Western Link and arming a commercial intertrip.



- 11.2.10 NESO informed the Review that at 23:30, it observed an increase in demand of 456MW against forecast. At approximately the same time, the frequency fell below 49.8Hz, reaching a minimum of 49.78Hz at 23:32. It was below 49.8Hz for approximately 90 seconds.

12. Friday 26 June

The Review considers the following seven events to be notable:

- There was a Red Extreme Heat warning in place until 21:00 and a new June temperature record of 38.0°C at Lingwood, Norfolk
- At 01:43, there was a fault within a substation in the Liverpool area, resulting in a circuit outage. This tightened constraints and reduced accessible generation until 06:30
- Thermal electricity generators, e.g. Combined Cycle Gas Turbines, continued to reduce capacity due to the high temperatures
- NESO observed a transient reduction in power infeed during which the frequency fell to 49.77Hz before immediately recovering
- Interconnector trading limits were exceeded on IFA and Eleclink, with permission from RTE, the French Transmission System Operator
- NESO applied partial export restrictions from 16:00 to the end of the day on IFA, IFA2, Eleclink, BritNed, Nemo and Viking
- An Electricity Margin Notice was published at 00:30 for the period on Friday 19:00 to 22:00. It stayed in place until 21:41. In that same period NESO were managing constraints in the South East of England

12.1 Summary

Weather

- A Red Weather Warning for extreme heat was in place from 00:00 to 21:00.
- A new June temperature record of 38.0°C was set at Lingwood, Norfolk.

Wholesale markets and activity in the interconnectors

- Day Ahead market prices for electricity for Friday evening were slightly higher than Thursday, reaching up to £358.85/MWh. Day Ahead interconnector schedules showed that Great Britain would be exporting an overall net volume of approximately 2,023MW to 4,089MW between 18:00 and 23:00. Real time net interconnector flows had approximately 2,000MW less export than the Day Ahead position, mainly due to NESO trades.
- Maximum Export Limit reductions due to the high temperatures continued. Reductions began from 07:00 and there was a reduction of over 1,700MW at 14:00. The output consistently trended under Day Ahead forecasts from 09:00. See Figure 23.

NESO's preparations

Trading and cross-border cooperation

- NESO traded to reduce interconnector imports from 10:00 until 15:00, and to increase imports from 17:00 until 23:00. Trading limits were exceeded on IFA and Eleclink, with permission from RTE, the French TSO, provided earlier in the day.
- NESO applied partial export restrictions from 16:00 to the end of the day on IFA, IFA2, Eleclink, BritNed, Nemo and Viking.

Balancing Services

- NESO procured all required volumes for response and reserve other than in Positive Balancing Reserve, Dynamic Moderation High and Low and Static Firm Frequency Response between 15:00 and 23:00, and Positive Balancing Reserve, Positive and Negative Quick Reserve between 17:00 and 21:00.

System Operating Plans and System Warnings

- The System Operating Plan for Friday's evening peak mostly showed Operating Margin shortfalls beyond the Electricity Margin trigger level from the Day Ahead stage through until early afternoon.
- NESO published an Electricity Margin Notice for 19:00 to 22:00 at 00:30. The cancellation of this was published at 21:41.

Real time events and actions taken

- At 01:43, a fault within a substation in the Liverpool area resulted in a circuit outage reducing access to generation in the North of England and Scotland.
- At 04:36 the System Operating Plan for the evening peak indicated that the Operating Margin shortfall would reach 3,519MW if circuit outages continued, including those driven by the fault within a substation. This is 3,019MW beyond the Electricity Margin Notice trigger level. At 06:30, the substation returned to operation.
- At 09:10, NESO observed a transient reduction in power infeed during which the frequency fell to 49.77Hz before immediately recovering

Demand Forecast Commentary

Demand peaked at 21:30 at 29,333MW. Actual demand was mostly below the Day Ahead forecast after 10:00, with the largest difference at 16:00, when demand was 1,037MW lower than forecast. Actual demand remained below the Day Ahead forecast for most of the Electricity Margin Notice period.

26 June 2026

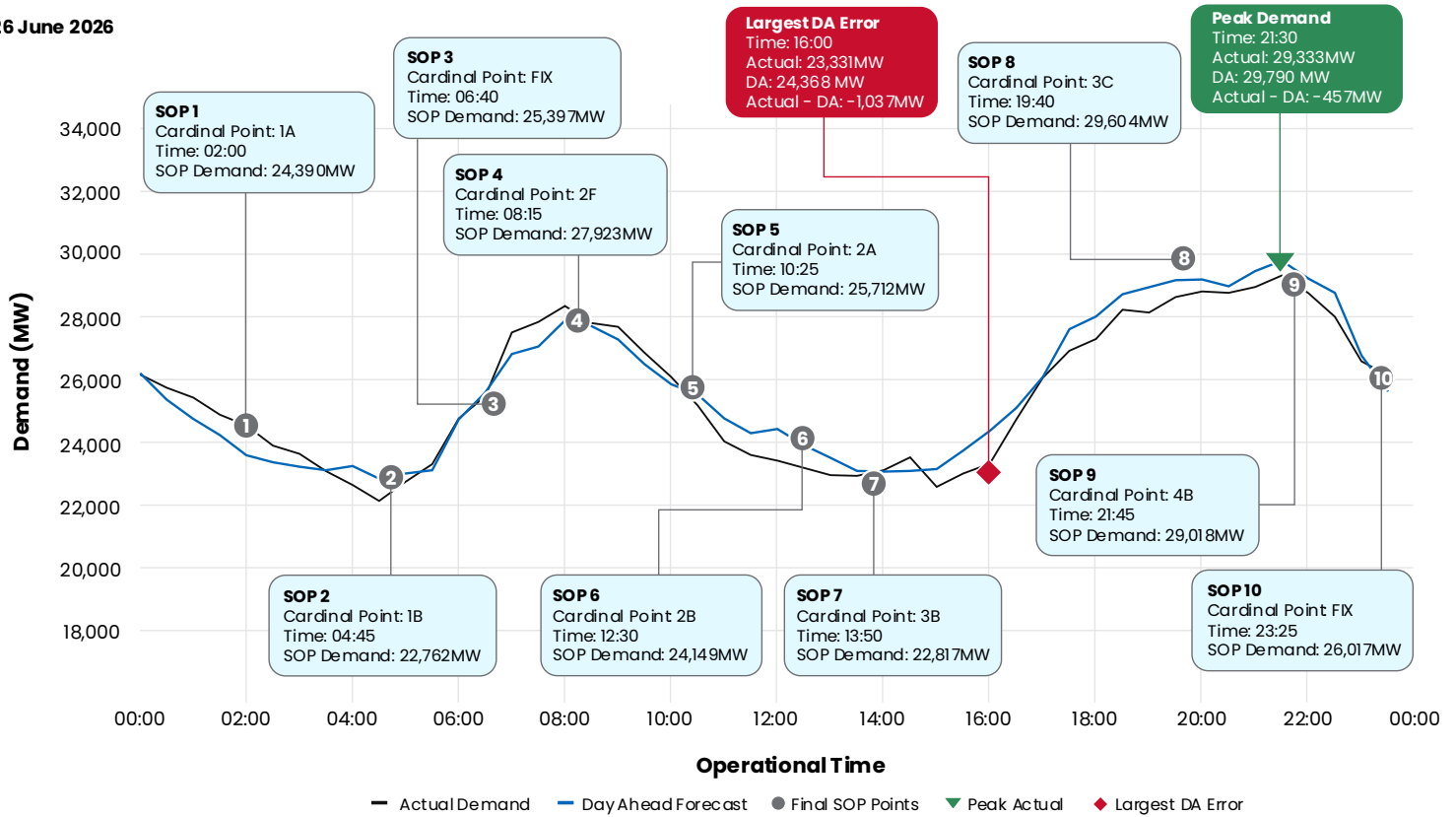
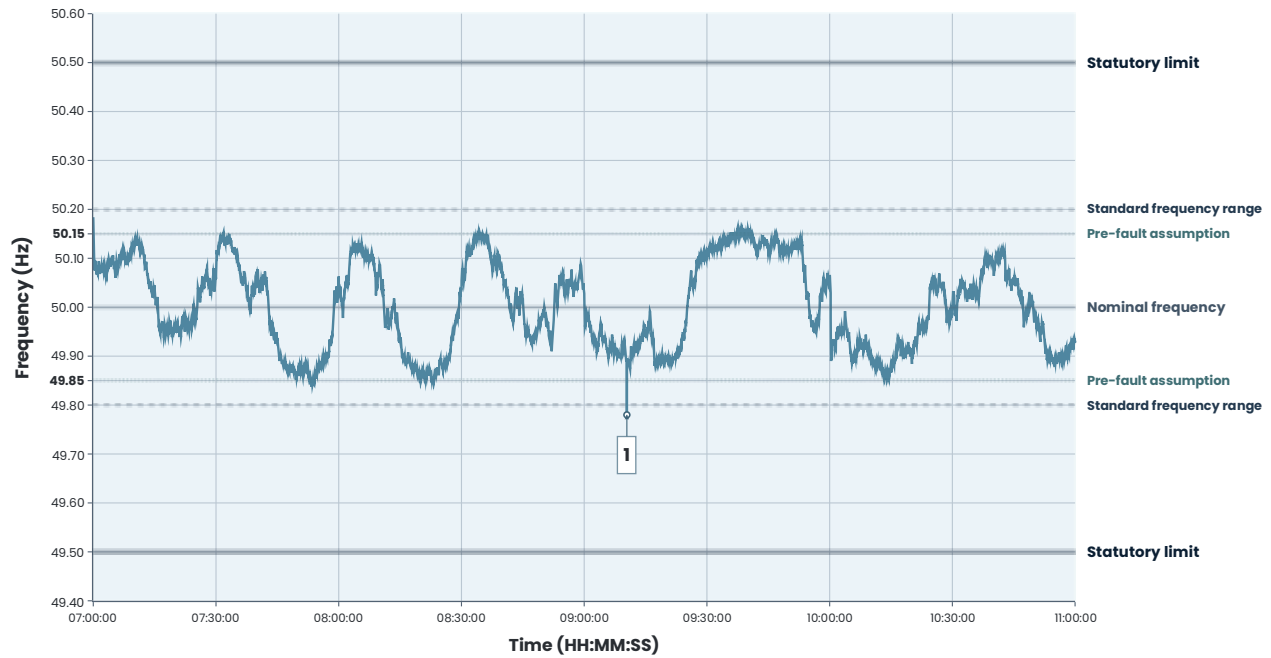


Figure 21: Day-Ahead Forecast and Actual Demand overlaid with final System Operating Plan demand for each Cardinal Point for Friday 26 June

Friday 26 June 2026



- 1 09:10** NESO observed a transient reduction in power infeed during which the frequency fell to 49.77Hz before immediately recovering

Figure 22: Frequency trace with relevant events numbered for Friday 26 June

26 June 2026 Approximate Maximum Export Limit Reduction: 1,160MW

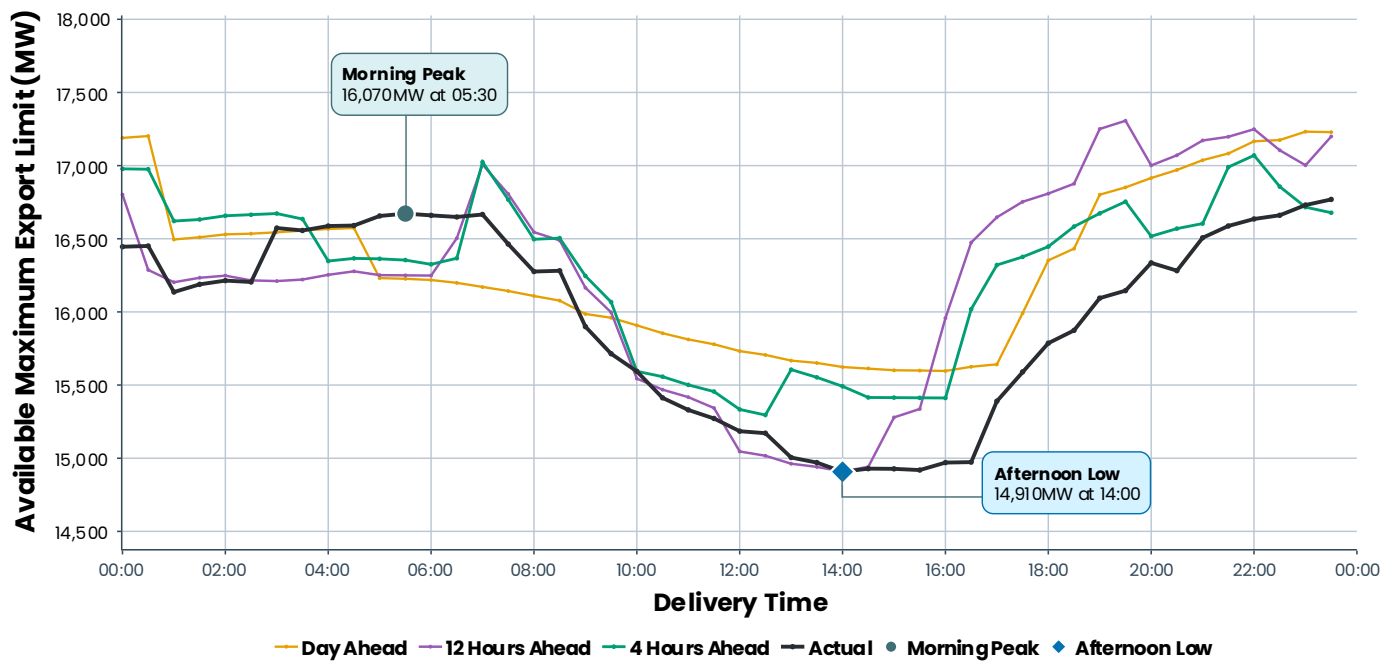


Figure 23: Chart showing the change in aggregate Maximum Export Limits of Combined Cycle Gas Turbines over the course of Friday 26 June

12.2 Sequence of Events

Thursday 25 June

- 12.2.1 The Day Ahead auction results in the wholesale market for Friday 26 June showed there would be slightly increased scarcity day-on-day in Great Britain and border electricity markets for the evening of Friday 26 June. Prices were slightly higher than the previous day, reaching £358.85/MWh. Great Britain and French prices were lower with a French premium to Great Britain during the evening peak, indicating Great Britain–France flows were likely. At 13:00 on Thursday 25 June, the Day Ahead schedules for interconnector flows for 26 June showed that Great Britain would be exporting an overall net volume of 2,023MW–4,089MW between 18:00 and 23:00. This was a mixture of exports to the Netherlands, Belgium, France and Denmark and imports from Norway.
- 12.2.2 At 23:38, a System Operating Plan indicated that there was a 1,171MW Operating Margin shortfall for the Friday peak demand period. This is 671MW beyond the Electricity Margin Notice Trigger level.

Friday 26 June

- 12.2.3 A Red Weather Warning for extreme heat was in place for the East of England and London and the South East of England. A new June temperature record of 38°C was set at Lingwood, Norfolk.
- 12.2.4 At 00:30, NESO published an Electricity Margin Notice for 19:00 to 22:00 on Friday 26 June indicating an Operating Margin shortfall of 671MW. This is 171MW beyond the Electricity Margin Notice trigger level.
- 12.2.5 At 00:32, NESO issued a Margin Brief to DESNZ and Ofgem.
- 12.2.6 At 00:35, NESO issued a sell requirement to the market to reduce interconnector imports from 10:00–12:00 for constraint management reasons. NESO traded 600MW over this period.
- 12.2.7 At 01:43, there was a fault on a supergrid transformer within a substation in the Liverpool area, which tripped its connected circuit and resulted in a small, contained fire. The circuit returned to service automatically after the trip.
- 12.2.8 At 01:57, the circuit tripped again and remained de-energised. The resulting circuit outage exacerbated constraints by 1,300MW, as well as reducing the generation that could be exported (or accessed) from a generator connected through the substation by 700MW.
- 12.2.9 At 04:36, NESO's updated System Operating Plan for Friday evening's peak indicated that the Operating Margin shortfall would be 3,519MW if circuit outages continued. That included those driven by the tripped circuit at the substation in the Liverpool area. This is 3,019MW beyond the Electricity Margin Notice trigger level.
- 12.2.10 At 06:00, a NESO status report stated that margins for the day were tight, even after all the trades that are allowed under NESO's interconnector trading restrictions. The latest

System Operating Plan at that time showed an Operating Margin shortfall of 1,071MW. This is 571MW beyond the Electricity Margin trigger level.

- 12.2.11 At 06:30, the tripped circuit at the substation in the Liverpool area was returned to operation. This re-established power through-flow routes and alleviated system constraints.
- 12.2.12 At 08:18, the updated System Operating Plan indicated the Operating Margin shortfall had reduced from 1,071MW to 946MW. This is 446MW beyond the Electricity Margin Notice trigger level.
- 12.2.13 At 08:45, NESO Silver Command stood up, this was because of the expected shortfall for the evening peak.
- 12.2.14 At 09:08, a second Margin Brief was issued and the Electricity Margin Notice was republished at 09:40.
- 12.2.15 At 09:10, NESO observed a transient reduction in power infeed during which the frequency fell to 49.77Hz before immediately recovering.
- 12.2.16 At 09:25, NESO issued a sell requirement to reduce interconnector imports from 12:00 to 15:00 for constraint management reasons. NESO traded 600MW during this time.
- 12.2.17 At 11:55, NESO issued a buy requirement to increase interconnector imports from 17:00 to 23:00 for constraint management reasons. NESO traded 1,500MW over the period.
- 12.2.18 At 12:49, the updated System Operating Plan showed an Operating Margin shortfall of 76MW. However, constraints in the South East of England limited the availability of generation outside the region to support flows. NESO shared a Margin Brief with Ofgem and DESNZ stating that it intended to "leave the EMN[sic] active due to the increased likelihood of using Emergency Actions."
- 12.2.19 At 14:45, NESO republished the Electricity Margin Notice for a 100MW shortfall from 19:00 until 22:00.
- 12.2.20 RTE agreed to provide an additional 600MW between 17:00 and 22:00 beyond the interconnector trading limits NESO had agreed with European Transmission Operators. At 14:45 and then again at 15:42, NESO issued further buy requirements to increase interconnector imports from 17:00 to 22:00 for constraint management reasons. NESO traded 600MW across the two auctions, bringing the total volume traded for this period to 2,100MW.
- 12.2.21 At 16:55, NESO replied to an Ofgem query about the Electricity Margin Notice and the South East of England import constraints outlining that five circuit outages had contributed to the constraint with no option to return them to service. NESO also clarified to Ofgem that a nuclear generator unit could not be utilised.
- 12.2.22 At 19:00, the Electricity Margin Notice period began.
- 12.2.23 The cancellation of the Electricity Margin Notice was published at 21:41 following the period of tight margins.

13. Next Steps

- 13.1.1 The Review's final report will provide independent analysis and recommendations on improving the security and resilience of the energy system.
- 13.1.2 The ongoing lines of enquiry for the final report are aligned to the four themes outlined in the Ofgem published Terms of Reference:
 - A. Understanding the Drivers of System Stress
 - B. Assessing the Impact of Operational and Market Responses
 - C. Determining the System's Security Position
 - D. Learning Lessons and Strengthening Future Resilience

14. Appendices

A. Terms of Reference

Introduction

The week commencing 22 June 2026 saw a prolonged period of higher-than-average seasonable temperatures with red weather warnings for extreme heat in place across both Great Britain and Europe. This impacted the operation of both the markets and electricity systems in Great Britain and across Europe such that a range of operating tools were required to secure the system. In Great Britain, this saw NESO issue an Emergency Instruction and request Emergency Assistance on an Electricity Interconnector to the Netherlands and France respectively on 23 June 2026, and also issue Electricity Margin Notices for the days of both 24 and 26 June 2026.

On 17 July 2026 Ofgem commissioned the independent National Energy System Operator (NESO) to review the notable events of the week commencing 22 June 2026. This includes the System Event that occurred on the 23 June 2026 and the Electricity Margin Notices on 24 and 26 June 2026. Ofgem have asked NESO to:

1. Establish the circumstances that led to the system event on the 23 June 2026 and the EMNs that were issued on the 24 and 26 of June. Including market conditions, system performance and market participant behaviour.
2. Review the actions taken by the NESO control room, including what decisions were made and why.
3. Review and identify if there were any breaches to any of the applicable rules and regulations. Including but not limited to: Grid Code, SQSS, SOGL and FRCR.
4. Review the availability and sufficiency of NESO control room records to determine all of the above.
5. Identify any potential learnings from these events.
6. Share the findings with Ofgem, DESNZ, other government bodies as applicable.

Under condition C7.5 of the Electricity System Operator Licence (“the Licence”), NESO must, when requested by the Secretary of State or Ofgem, provide post-event analysis and assessment in relation to an event that has, or could have, detrimentally impacted consumers, NESO, or any other licensee.

For avoidance of doubt, we expect that no records relating to these matters are altered, deleted, overwritten or otherwise disposed of while the Review is ongoing. For clarity, this extends to:

- Emails and attachments.
- Microsoft Teams chats, meeting records and files.
- SharePoint sites and live working documents, including version histories.
- Mobile phone records and messages where used for operational discussions.
- Call logs and recordings.

- Operational logs, incident records and NESO control room documentation.
- Risk registers, internal reports and review material.
- Any other electronic or physical records relevant to the matters.

Scope of the Review

The Review will not cover the operation of European electricity systems.

NESO will fully consider, assess and report on:

A. Drivers of System stresses which should include:

1. An assessment of the prevailing weather conditions for the full week broken down by at minimum a daily granularity.
2. NESO energy forecasting, particularly Demand, Wind, Solar, System Margin and Generation (included embedded generation forecasting), including a comparison of the error of these forecasts in key periods against average error both generally and for similar conditions. Whether the impact of extreme heat was captured in the formation of these forecasts.
3. The potential impact of NESO published forecasting (including an assessment of timeliness and accuracy) on Market activity.
4. An assessment of planned network and generation outages and of any unplanned network and generation outages, and whether these outages influenced events.
5. How NESO's recent Summer Readiness and Preparedness reports fed into NESO planning and operational assumptions. For example, generator performance reduction was identified as a risk during periods of high heat; and the accuracy of Summer Outlook predictions.
6. The status of the European energy system.
7. The scheduling and power flows across the interconnectors (including NESO forecasts of interconnector movements). Document the size and speed of actual (and what would have happened in the market without trades) interconnector flow changes.
8. The price differentials between GB and Europe and how these impacted interconnector volatility.
9. Generation availability (including weather impact and the alignment of physical availability with commercial availability.)
10. Review of data from REMIT and the in day availability of generation.
11. Market pricing and the market response to margins and prices.
12. System Margin evolution over time (including when the extent of the operational problem became apparent, the timeliness of key operational indicators and whether these provided sufficient warning of deteriorating system conditions).
13. The relative importance of these factors and identification of any other key drivers of system stress during this period not identified by the above.



B. Actions taken by NESO and the market

1. The NESO System Operation Plans from the day ahead to real-time showing the effective timeline, NESO operational awareness and preparedness for real time system operation.
2. The options available and actions taken by NESO during the periods of system stress, including the basis for decision taken. To be broken down into BAU balancing actions, enhanced actions and emergency actions.
3. What was GB Status on the European awareness system. What discussions took place with European TSOs regarding interconnector trades.
4. Assess the timings of any actions taken, emergency or otherwise and provide explanations for any notable delays or alterations.
5. The use and effectiveness of Market notices and whether additional market notices/system warning should have been used.
6. Ancillary services, both use of and delivery performance, including how much remained available during the incident.
7. The use of energy trading and management of interconnector flows including the use of counter trading, intraday trading limits (ITLs) and Net Transfer Capacity (NTCs).
8. Operation of the transmission system including the assessment of its resilience potential faults/N-1 compliance.
9. Record keeping including its sufficiency to understand what decisions were made and why.
10. Communications – within NESO, to other network operators, the regulator, UK Government and with industry.

C. The precise security status of the system against relevant security standards

1. The system status against all relevant security standards during these periods, including but not limited to: the Grid Code, SQSS, SOGL, FRCR. If not meeting any relevant standard, when was this identified and was it reported.
2. Whether any Constraint limits were breached. If not when was this identified and was it reported.
3. The consequences for system operation of operating outside of normal operational limits for the durations observed.
4. Whether the post-fault actions identified through NESO's post-event review would have been realistically achievable in real time, given operational pressures, decision-making timescales and information available to NESO control room staff at the time.

D. Wider system operation lessons to be learned, both now and in the future

1. If any similar periods historically should have prompted action that would have helped in these circumstances.
2. Any lessons that have been learned from these events.
3. Any recommendations for changes that should be made by NESO or other bodies.

Key Deliverables & Timeline

1. NESO will provide a factual preliminary report (ie, data gathering and analysis without conclusions) to the Oversight Group by mid-August, with the exact date confirmed with the Oversight Group in advance.
2. Following submission of the preliminary report, Ofgem will review the findings and determine whether any additional work or lines of enquiry should be incorporated into the Terms of Reference. On completion of that review, Ofgem will determine a timetable for delivery of the final report.
3. The final report will be submitted to the Oversight Group in accordance with the timetable agreed following consideration of the preliminary report and any subsequent revisions to the Terms of Reference.
4. Following submission to the Oversight Group, the final report will be published in due course. Publication will be subject only to limited redactions required to protect the anonymity of individual staff members, commercially sensitive information, matters of national security, or other legitimate confidentiality considerations.

Oversight and governance

- Governance arrangements should ensure Ofgem oversight throughout the Review. Ofgem will establish and Chair an Oversight Group to oversee the Review. Ofgem will determine the membership, which may include DESNZ representatives. The Chair will have final say on the group membership. The group must be free from direct conflict of interest.
- NESO must engage with and provide regular updates to the Oversight Group. Unless further directed by the Chair, NESO will report progress and key findings fortnightly, with the first update being required by 24 July 2026. NESO will present and discuss both its preliminary and final findings of the Review to the Oversight Group to support full and thorough understanding.
- Following the completion of the preliminary report, there will be sufficient time for Ofgem to consider the findings and ask further questions. Based on the preliminary findings, Ofgem may add additional questions to the terms of reference and request specific further information to be considered in the final report. Ofgem may choose to interview relevant NESO staff following the completion of the preliminary report. This will be done through an anonymous route that ensures NESO control room operatives are given a safe space to provide information and opinions without fear of retribution.
- Upon receiving the final report, Ofgem will consider and determine whether or not NESO complied with all regulations and what lessons can be learnt for the future. Should the Review identify issues warranting further regulatory scrutiny, Ofgem will consider what additional action is required and will utilise the full range of its regulatory powers where appropriate.

- The Review will be led by NESO's Director for Whole System Resilience, who will bring together an appropriate, suitably expert Review team to conduct the work. The Review will report directly to the NESO Board's Operations and Resilience Committee, (whose chair and members are all Non-Executive Directors), who will be responsible for providing quality assurance and clearance for all outputs. All work related to the Review will be ringfenced from NESO colleagues outside of the Review Team, including other members of the NESO Executive, except as required to provide evidence to the Review. Any conflicts of interest within the Review Team must be declared to the Oversight Group which must agree that mitigations are sufficient to enable their role.

B. Statutory and Regulatory Framework of the Electricity Sector

This appendix provides an overview of the main provisions in legislation and industry codes pertinent to this Review. The Great Britain Transmission System and the assets connected to it are planned and operated in accordance with the security and safety standards established by these regulatory and industry frameworks.

Legislation

Electricity Act 1989: This sets out some of Ofgem's primary duties and objectives, as well as the industry activities that require a licence. It makes rules relating to the granting and enforcement of those licences, as well as their transfer (to a new licensee), modification, and revocation. This includes the Electricity Operator Licence granted to NESO. Ofgem's licence enforcement powers include compelling licensees to do (or not do) certain things, and to pay compensation to consumers. The Electricity Act also imposes duties on industry participants, for example in relation to connections to electricity distribution systems, electricity quality, renewable subsidies, and consumer protection.

Electricity System Operator Licence: This is the licence treated as granted to NESO under the Electricity Act pursuant to which NESO is undertaking this review. The conditions of this licence place various obligations on NESO as system operator including to seek to ensure the national electricity transmission system is operated within safe and secure operational limits (C1.6), and in that context to maintain, have in force, implement and comply with the Security and Quality of Supply Standard (designed to facilitate the achievement of objectives which include ensuring an appropriate level of security and quality of supply and safe operation of the national electricity transmission system) (E7.4). Licence conditions also place requirements on NESO as regards its procurement of Balancing Services (C1 and C9).

Energy Act 2023: This statute introduced several important reforms to the energy sector. Particularly relevant to this report, it created the role of Independent System Operator and Planner (ISOP), held by NESO following a designation from government, and sets out the ISOP's primary duties and objectives.

Assimilated law (formerly retained EU law): There are various pieces of EU law which, with some changes, continue to have an impact on market participants by virtue of being retained in UK law after EU Exit. Those relevant to NESO's balancing activity include the System Operation Guideline (which sets common rules for operating transmission systems – see below) and the Electricity Balancing Regulation (which sets out requirements as to the terms and conditions for balancing).

Electricity Safety, Quality and Continuity Regulations 2002: These regulations are secondary legislation made under the Electricity Act 1989. They set out mandatory technical safety and quality requirements regarding the installation and use of equipment owned or operated by generators, distributors and transmission companies. Of relevance to this report, they set a requirement as to the quality of electricity supplied to consumers, including the statutory

frequency limit of 50Hz $\pm$ 0.5Hz, and sit alongside SOGL in defining frequency quality parameters used in operation of the Great Britain transmission system.

Regulation on Wholesale Energy Market Integrity and Transparency (REMIT): This is another EU regulation, which in consequence of EU Exit was assimilated into UK law with amendments. It requires market participants to publicly disclose inside information related to their business and facilities on inside information platforms, typically via an urgent market message, and creates criminal offences of insider trading and market manipulation focused on the Great Britain energy and balancing markets.

System Operation Guideline (SOGL): an EU regulation, with the full title “Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation”. SOGL was designed to set common rules across the EU for operating transmission systems, given the extent of interconnection of different countries’ networks. As noted above, in consequence of EU Exit SOGL was assimilated into UK law with amendments. Notably, SOGL sets out the frequency quality parameters to be applied in operation of the Great Britain transmission system.

Industry Codes

The electricity market relies on a number of centralised systems and processes governing how participants interact with each other. These range from how a consumer switches from one supplier to another, to the arrangements for collection of metering and other data for central settlement purposes, to coordination of generator and network outages.

Most of these systems and processes are found in ‘industry codes’, which market participants are required to comply with under their licence conditions. Ofgem has supervisory powers in relation to the industry codes, which are set out in the codes themselves, participants’ licence conditions, and the Energy Act 2023. However, day-to-day management of the industry codes is devolved to industry bodies, and ‘code manager’ activity is in the process of becoming a licensed activity as well.

Electricity market codes relevant to this investigation include:

- **Balancing and Settlement Code (BSC):** This is the industry ‘commercial’ rulebook, containing the rules around imbalance settlement (for generators, interconnectors, suppliers and traders), including metering requirements and notifications of contract positions. The BSC also sits alongside the Grid Code in setting out the rules for operation and settlement of the Balancing Mechanism, which is NESO’s principal balancing tool for adjustment of Balancing Market participant profiles after Gate Closure, when market trading has ended.
- **Connection and Use of System Code (CUSC):** This sets out the commercial rules and processes for connecting to and using the Great Britain transmission system. It includes the charging methodology whereby NESO recovers the costs of its balancing activity.
- **Grid Code:** This is the technical rulebook for the Great Britain transmission system. It specifies such things as the engineering standards that equipment must meet, the rules

around outage planning, the processes by which NESO will interact with providers of Balancing Services, and mechanisms for giving of system warnings and instructing demand disconnection.

- Security and Quality of Supply Standard (SQSS): This is the home of various technical planning and operational standards, in particular the normal operational criteria by which NESO operates the transmission system. The SQSS requires NESO to periodically produce a 'frequency risk and control report' (FRCR), after industry consultation and with approval of Ofgem, which (alongside an accompanying methodology) sets out NESO's analysis of frequency risks and which will be secured operationally.

C. NESO Order of Actions

The Order of Action for Winter 2025/26 is summarised in the tables below. It is as agreed by NESO Executive Leadership Team, is communicated externally at Markets Forum and is published on NESO's website. The Review Team has included the Winter 2025/2026 Order of Action as NESO stated that this Order of Action covers positive margin, whereas the Order of Action Summer 2026 covers negative margin.

Everyday Actions	Order	Comments
Reconfigure Transmission Network to reduce network congestion: Change substation running arrangements, Tap Quad Boosters, and make use of enhanced ratings	#1 Normal operating practice	Changing daily operating conditions can result in different network configurations to reduce congestion.
Review and refine reserve requirement within day dependent on system conditions	#1 Normal operating practice	Changing system conditions can relieve requirements for reserve or increase requirements. This can change at any time as the conditions change.
All deliverable Offer action on all available Balancing Mechanism (BM) participants	#1 based on Cost	Scheduled from Day Ahead, action taken in real time – some offers may not be available due to network congestion.
Issue warming instructions to cold Balancing Mechanism participants	#1 based on Cost	Scheduled from Day Ahead, action taken in real time. Warming instruction required for any Balancing Mechanism Unit (BMU) with Notice to Deviate from Zero (NDZ) >89mins.
Buy energy from continental Europe	#1 based on Cost	Scheduled from Day Ahead, action taken from Day Ahead to 4hrs ahead of time by NESO Traders.
Reconfigure Close Cycle Gas Turbines (CCGTs) to increase available energy (e.g. sync additional GTs)	#1 based on Cost	Scheduled from Day Ahead, managed within the control timescales within day.
System Operator (SO)–SO trade in cost order	#1 based on Cost	SO to SO trade with other SO in Europe/ Ireland.
Instruct Demand Flexibility product	#1 based on Cost	For predominantly peak periods (16:00 to 19:00) activated within day.

Enhanced Actions	Order	Comments
(If everyday actions are insufficient)		
Recall Transmission Owner (TO) assets from outage to increase network availability and available capacity	#2	Anytime through to control room timescales, depending on ERTS (Emergency Return to Service) time.
Intraday Trading Limit (ITL) and Net Transfer Capacity (NTC) restrictions	#3	Required to ensure interconnectors flows remain within operational security limits. Used as a last resort after all available commercial actions and system optimisations have been taken, accounting for the difference in timing of different actions and the information that NESO has available at those times. As well as being used to secure network constraints and rapid frequency deviations, ITLs and NTCs can be used for margin extremes when an interconnector flow could result in an Electricity Margin Notice (EMN) or High Risk of Demand Reduction (HRDR) being issued (this is detailed further in NESO's NTC policies).
Use of Emergency Assistance (EA) from other SO	#4	Enacted close to real time. Only applicable if capacity is available on interconnectors. EA can be withdrawn at any time by the other SO.

Emergency Actions	Order	Comments
(If enhanced actions are insufficient)		
Emergency Instruction (EI) to other SO	#5	Only applicable if this does not cause demand control in the interconnected countries.
Use of MaxGen	#5	This should be used at the same time as EI to other SO. This service will be initiated by the issuing of an Emergency Instruction.
OC6.5.3 Fast Demand Control instructions to Distribution Network Operators (DNOs)	#6	This could be via voltage control or demand control of fast disconnection blocks up to 20%, protecting critical sites.
OC6.5.4. Demand Control Rotation Protocol	#7	In-day rota'd demand control disconnections up to 40%, protecting critical sites. NESO has emergency powers to do this, when approved by NESO's Gold Crisis Management Team.

Emergency Powers	Order	Comments
Recommend to Department of Energy Security and Net Zero (DESNZ) to implement the Electricity Supply Emergency Code (ESEC)	#8	Ongoing conversations prior to this so all parties would be aware of risk.
ESEC instructed by DESNZ	#9	NESO implement rota disconnections within ESEC framework, likely with 48h notice. Demand Control greater than 40%.



Notices issued at any time as required	Comments
Issue Electricity Margin Notice (EMN)	Request to market to increase available energy or reduce demand. Likely to be issued at Day Ahead. Updated regularly.
Issue a High Risk of Demand Reduction (HRDR) system warning	Warning network operators of high likelihood of demand control. Further request to market to increase available energy or reduce demand. Closer to real-time than EMN.
Issue Demand Control Imminent (DCI) system warning	If possible, this system warning will be issued 30 minutes prior to demand control. Warning to network operators.
A Capacity Market Notice (CMN) is <u>automatically triggered</u> to alert Capacity Market participants	Driven by calculation of Market data at four hours ahead of real time.

D. Electricity Margin Notices and Capacity Market Notices

NESO has a range of notices and warnings available to communicate emerging system risks to the market. The two notices most relevant to this report are the Electricity Margin Notice (EMN) and the Capacity Market Notice (CMN). Their use is compared in the following table:

Table 3: Comparison of Electricity Margin Notice and Capacity Market Notice

	Electricity Margin Notice (EMN)	Capacity Market Notice (CMN)
What triggers it?	Issued where NESO forecasts that market mechanisms are not providing an adequate margin between expected generation capability and the additional buffer NESO has calculated as necessary. EMNs are issued based on operational and engineering judgement. The current threshold NESO uses when assessing whether to publish an EMN is when the Operating Margin is 500MW below operational requirements.	Communicated automatically four hours ahead of real time based on specific industry information about the electricity system's forecasted margins. Issued under the Capacity Market Rules.
Who receives it?	Sent to electricity market participants, including generators, interconnectors, suppliers and other parties who may be able to respond to the signal.	Communicated primarily to Capacity Market participants, but is visible to wider electricity market participants.
What is it intended to signal?	That additional generation and/or demand-side response may be needed, allowing the market to respond before further operational measures become necessary.	That the risk of a System Stress Event in Great Britain's electricity network is higher than under normal circumstances.
Is it an instruction?	No. An EMN is not an instruction or requirement for market participants to take action.	No. A CMN is not an instruction or requirement for Capacity Market participants or other market participants to take action.
What practical effect may it have?	May encourage generators and interconnectors to increase availability and prompt suppliers to consider demand-management actions, such as the Demand Flexibility Service (DFS), where consumers are paid to reduce electricity consumption. This can help the market respond to periods of scarcity before more impactful measures are required to maintain system security.	Alerts market participants that Operating Margins are tight and that the likelihood of a System Stress Event is elevated. Capacity Market obligations may become relevant if a System Stress Event occurs.

E. NESO Frequency Response and Reserve Services

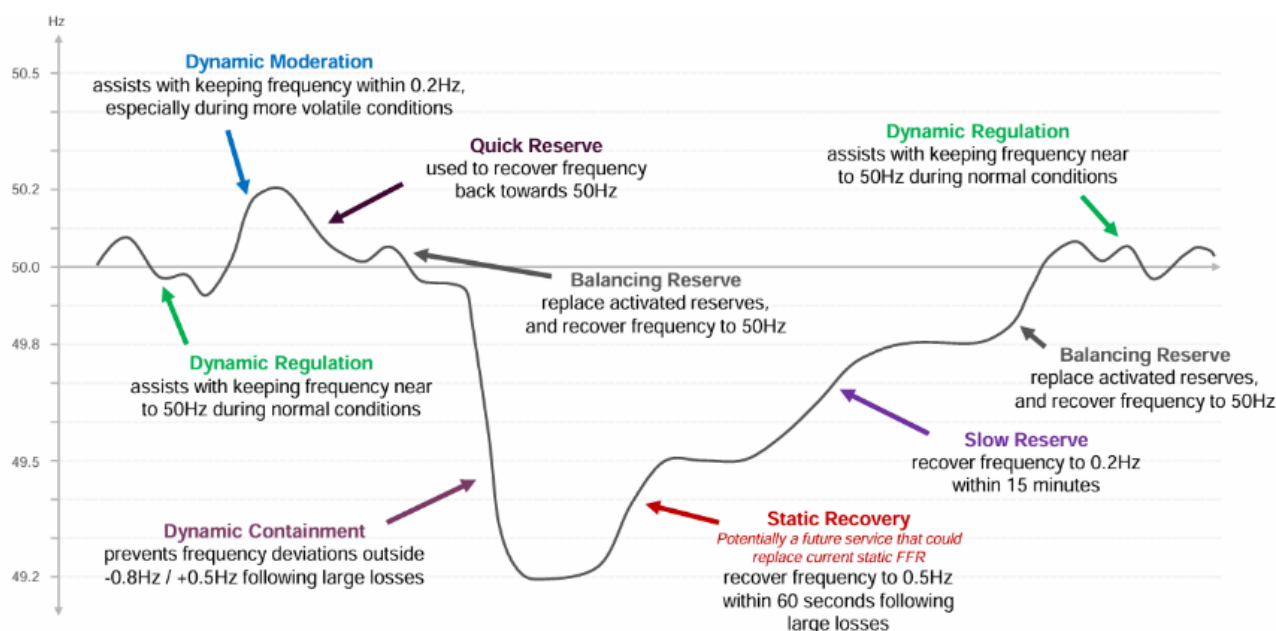


Figure 24: Chart showing the use of Frequency Response and Reserve Services to manage frequency (provided by NESO).

Table 4: Table of key features of Day Ahead procured Response Services

Service	Speed	Duration	Direction	Purpose
Dynamic Regulation	10 seconds	Up to 60 minutes	High and Low	Pre-fault service
Dynamic Moderation	1 second	Up to 30 minutes	High and Low	Pre-fault service
Dynamic Containment	1 second	Up to 15 minutes	High and Low	Post-fault service
Static Firm Frequency Response (FFR)	30 seconds	30 minutes	Low	Post-fault service

F. Methodology and Assurance

This appendix outlines NESO's approach to the Review.

Investigation commissioned and Terms of Reference published

Ofgem has commissioned NESO, under condition C7.5 of the Electricity System Operator Licence to review the notable events of the week commencing 22 June 2026. This includes the System Event that occurred on the 23 June 2026 and the Electricity Margin Notices on 24 and 26 June 2026. The Review will examine system performance, system conditions, operational decision-making, compliance with relevant security standards and lessons for the future. It is intended to provide a rigorous, objective and evidence-based assessment of the events in question, establish the facts and identify lessons for the future.

Table 5: Authority to conduct review under Electricity System Operator Licence

Licence Condition	Obligation Part
Part B: Post-event and post-emergency analysis	C7.5 The licensee must, when requested by the Authority or the Secretary of State, provide post-event analysis and assessment in relation to an event that has detrimentally impacted, or could have detrimentally impacted, the licensee, gas and electricity consumers, or any licensed party operating across the National Transmission System, the National Electricity Transmission System, Distribution Network, Distribution Systems, Gas Interconnectors, Electricity Interconnectors, Electricity Generators, and embedded generators.
	C7.6 The licensee must, when requested by the Authority or Secretary of State, provide post-emergency analysis and assessment in relation to an emergency which has occurred on the National Electricity Transmission System and/or the National Transmission System.
	C7.7 The licensee must engage with the stakeholders which it determines to be relevant to the request under paragraphs C7.5 and C7.6 to the extent required.
Part F: Provision of reports and confidential information	C7.17 The licensee must seek the Authority's approval, prior to sharing, to provide appropriately redacted versions of the reports and assessments under Parts A, B, C, D and E to materially affected parties.

The Terms of Reference for NESO's review were published on 17 July 2026 and are available on Ofgem's website. As per the Terms of Reference, the Review was to focus on six main areas:

1. Establish the circumstances that led to the system event on the 23 June 2026 and the EMNs that were issued on the 24 and 26 of June. Including market conditions, system performance and market participant behaviour.
2. Review the actions taken by the NESO control room, including what decisions were made and why.
3. Review and identify if there were any breaches to any of the applicable rules and regulations. Including but not limited to: Grid Code, SQSS, SOGL and FRCR.
4. Review the availability and sufficiency of NESO control room records to determine all of the above.
5. Identify any potential learnings from these events.
6. Share the findings with Ofgem, DESNZ, other government bodies as applicable.

NESO was required to submit a preliminary report to Ofgem for review before continuing to final report.

NESO's responsibilities in relation to this Review

1. Delivering this Review in line with the Terms of Reference and its licence responsibilities to provide post-event analysis.
2. Ensuring that NESO's System Operations directorate is treated equitably as a stakeholder participating in this review, given NESO's role in the events of the week commencing 22 June.

Process

Resourcing

To fulfil the commission from Ofgem, NESO stood up a Review team from across the organisation with expertise in investigations, energy markets, system operations, networks, and forecasting. The Review Team was supported by access to an Independent Expert Advisory Panel. Further information on the panel's role and expertise is provided in 'Independent review and challenge'.

Information Requests and validation

This Review requested information from all relevant stakeholders. A list of parties who provided this Review with information and evidence will be provided following the completion of the final report.

The information received has been cross-checked and validated as far as practical to inform the outputs of this Review. Each stakeholder has been given an opportunity to fact-check and validate all information sourced from or referencing them. Stakeholders have also been given the opportunity to redact sensitive information for security or commercial sensitivity reasons.

Information management and handling

This Review logged and stored all information received in a secure area, allocating a unique reference number to each document to ensure traceability throughout. All information has been carefully managed in line with NESO's data privacy and data security standards.

Methodology

Phase one: Sequence of events (the preliminary report)

The priority of phase one was establishing the timeline and sequence of events of the week commencing 22 June, understanding and articulating the roles and responsibilities of the key stakeholders involved, and identifying areas of further investigation required to deliver the final report.

Phase one did not attempt to attribute causation but established a factual account of the sequence of events. This provides a baseline allowing further evidence and information to be put into context to ensure its significance to the events in question could be properly understood.

Governance and assurance

The success of the Review depends on its findings and recommendations being trusted, credible and evidence-based. To support this, a robust governance, oversight and assurance framework was established and embedded throughout the Review.

These arrangements ensured that information gathering, analysis and report drafting were undertaken rigorously and in accordance with good practice. A separate technical assurance function provided independent guidance, challenge and review, helping to ensure the Review remained objective and appropriately independent from the operational areas under consideration.

The assurance framework is summarised below:

- The Review Team is working with trained investigators to ensure rigour of approach
- Embedded technical assurance through an Engineering Assurance team supported by relevant experts
- Scrutiny by an Independent Expert Advisory Panel
- Oversight by the NESO Operational Effectiveness and Resilience Committee who are independent Non-Executive Directors
- An Ofgem Oversight Group

NESO Operational Effectiveness and Resilience Committee (O&R Committee)

The IRC Co-Chairs report to the NESO Operational Effectiveness and Resilience Committee (O&R Committee), which is a sub-committee of the NESO Board, members all being independent Non-Executive Directors.

The O&R Committee's role is to review, approve and endorse the preliminary and final reports, providing confirmation that the processes followed by the Review Team have ensured a full, accurate and unbiased account of the events covered by the Review. The Committee's role is one of governance and assurance oversight. Following the Committee assuring itself of the robustness and independence of the process it approves release to Ofgem of the preliminary and final reports.

Independent Review Committee (IRC)

The IRC members include Executives of NESO explicitly excluded from any NESO business response to the Review and with non-disclosure agreements in place to prevent inappropriate exchange of information during the Review. The IRC:

- Provides strategic oversight and guidance to the Review Team, based on their areas of expertise and decision-making for the Review.
- Ensures the Review has appropriate capability, governance, remains independent, and that any conflicts of interest are identified and managed. The IRC approved key decisions and recommended release of report to the O&R Committee at agreed milestones.
- Established an Independent Advisory Panel of Experts and a second line of assurance to support technical challenge, scrutiny and confidence in the Review's findings. These arrangements were agreed with the O&R Committee.
- Co-Chairs report to the Non-Executive Chair of the O&R Committee, with oversight from the Ofgem Oversight Group. Relevant conflicts of interest and their proposed mitigations were shared with both the O&R Committee Chair and Ofgem Oversight Group for approval.

Engagement between Ofgem Oversight Group and the IRC

The leadership of NESO's Review team (IRC Co-Chair) provided updates to the Ofgem Oversight Group, including the approach to the Review, and progress and key findings.

The Ofgem Oversight Group and NESO Independent Review Committee Chairs agreed the timings of report submission and publication.

The Review Team

The Review Team engaged with stakeholders as required throughout the Review and ensured it has access to the appropriate expertise. Any internal experts supporting the Review were subject to appropriate independence and confidentiality arrangements to maintain the integrity of the Review process.

Continual Assessment of Governance

The Review Team and IRC maintained continual assessment of governance throughout the Review, to account for material changes that could have necessitated amending the governance model. Any material changes were agreed with the Operational Effectiveness & Resilience Committee with the decision and reasoning recorded and endorsed by the Ofgem Oversight Group.

Conflicts of interest

NESO is committed to performing with the highest standards of ethical conduct and integrity. At the beginning of this review, employees involved were required to sign a confidentiality agreement and declare any actual or perceived conflict of interest pertaining to this review in accordance with NESO's Conflict of Interest and Disclosure Policy. Employees involved in this review were also exempted from responding to this review in their business-as-usual roles, ensuring adequate separation between the ring-fenced review team and other NESO employees.

Declaration

All IRC members, advisory functions, Review Team staff assigned to the Review, and any external experts or assurance providers completed a written conflicts declaration undertaking covering financial, professional, and personal interests relevant to the subject matter, parties, or likely lines of enquiry. There was also a requirement to sign a confidentiality agreement ensuring that there was a firewall between information held within the Review and the NESO business more generally. Declarations are a standing obligation: any interest arising during a Review must be declared as soon as it is identified. Any advice provided to the Review or IRC by subject matter experts who are also members of the NESO Executive Committee was documented.

Assessment

Declared interests have been assessed by NESO's Ethics team using existing NESO processes. Where deemed material, they have been triaged, and ultimately assessed by the IRC Chair, advised by NESO Director of Legal and Regulation. Each interest is recorded as either (a) no conflict, (b) manageable with safeguards (e.g. change of line management for the Review, fully removed from day job), or (c) disqualifying, requiring the individual to stand down from the Review Team, IRC or additional governance panels for its duration.

Record

All declarations, assessments, and safeguards are recorded in a Conflicts Register held by the Secretariat. The register for each Review forms part of the Review's assurance record. A summary of the conflicts recorded and the mitigations in place to effectively manage will be shared with the O&R Committee and the Ofgem Oversight Group for approval.

Technical assurance

This report has been technically assured internally by NESO's functionally independent engineering assurance team. This team provided assurance over the rigour applied to the Review process, in addition to verifying that there is evidence to support the factual assertions made in the report, noting that evidential review and assessment remains ongoing.

A small team of external experts, led by a former Chief Operating Officer of a European Transmission System Operator, was onboarded to support the delivery of technical assurance.

Independent review and challenge

NESO brought together a panel of external cross-sector experts to act as an Independent Expert Advisory Panel for this review. The role of the panel was to provide independent scrutiny and challenge, and to assist NESO in completing this review robustly and thoroughly in accordance with the Terms of Reference. Panel members had expertise in areas such as energy markets and design, interconnectors, transmission and distribution engineering, system operation and energy consultancy.

For these purposes, panel members were acting as advisors to this review, and this review was permitted to share confidential information with panel members in accordance with its licence conditions. All panel members signed a confidentiality agreement setting out specific obligations with respect to information obtained as part of their role.

**Sharing of report**

In advance of any information being made public, this Review shared relevant sections with stakeholders to enable them to fact-check and validate all information sourced from or referencing them. Stakeholders were also given the opportunity to make representations regarding disclosure and/or redaction and have been given fair notice of any actual criticisms or implied criticisms in this report.

The preliminary report was shared with Ofgem on 11 September 2026.

G. Glossary

Balancing Mechanism Units (BMU)

A generator, battery, storage facility, interconnector or participating demand asset that is registered to participate in the Balancing Mechanism and can receive instructions from NESO to increase or decrease generation or consumption.

Balancing Reserve

NESO utilise a product called 'Regulating Reserve' to correct energy imbalances (differences between generation and demand) on the Great Britain power system. The Balancing Reserve (BR) service allows NESO to procure Regulating Reserve on a firm basis at Day Ahead.

Balancing Services

Services provided to/used by NESO to assist in co-ordinating and directing electricity flows over the GB transmission system, ensuring the security and reliability of the electricity system.

Bid-Offer Acceptance (BOA)

An instruction issued by NESO through the Balancing Mechanism directing a participant to increase or decrease generation or consumption in response to an operational need, such as balancing the system or managing network constraints.

BritNed

An electricity interconnector between Great Britain and the Netherlands. It is a bidirectional interconnector with a capacity of 1,000MW.

Capacity Market (CM)

The Capacity Market helps to ensure security of electricity supply. It provides a payment for sources of capacity using a competitive auction process.

Cardinal Point

A specific point on the electricity demand curve used in forecasting and operational planning, representing either a fixed time or a significant turning point such as a demand peak or trough. Cardinal Points are used by NESO to forecast demand, assess system margins, and plan system operation.

Combined Cycle Gas Turbine (CCGT)

A Combined Cycle Gas Turbine (CCGT) is a power generation system that combines a gas turbine and a steam turbine to produce electricity.

Commercial intertrip

A pre-arranged automatic scheme that rapidly reduces generation or power flows following a fault or operational trigger. It allows higher transfers across some constrained parts of the network while maintaining system security.

Constraint Limits

The amount of electricity that can safely flow across a particular transmission boundary or part of the network under specified conditions. They are set and used by NESO operational teams as limits within which the system should be operated.

Demand Flexibility Service (DFS)

Demand Flexibility Services (DFS) is a bi-directional service whereby NESO is able to procure a reduction or increase in demand through engagement with energy suppliers / aggregators, who pay customers to shift their energy usage outside of a particular time window.

Eleclink

A power interconnector through the Channel Tunnel providing a transmission link between the UK and France with a capacity of 1,000MW in either direction.

Electricity Forward Agreement (EFA) Blocks

Some Day Ahead services are procured in EFA Blocks, each of which comprises a block of 8 consecutive half-hourly settlement periods.

Embedded Generation

Embedded generation (also known as distributed generation or distributed energy resources) refers to electricity generation or storage plants connected to a distribution network rather than the transmission network.

Emergency Assistance (EA)

The process through which support is requested between NESO and connected European Transmission System Operators. Emergency Assistance is only applicable if capacity is available on interconnectors and can be withdrawn at any time by the other system operator.

Emergency Instruction (EI)

An instruction issued by NESO to a generator or Network Operator. Emergency Instructions should only be used in circumstances when it is necessary to preserve the integrity of the national electricity transmission system or in response to safety issues where a normal Bid-Offer Acceptance will not resolve the problem.

ENTSO-E Awareness System (EAS)

The ENTSO-E Awareness System (EAS) is a platform for real time monitoring and reporting of the state of transmission systems (alert, emergency or blackout).

European Transmission System Operators

The operators of the neighbouring electricity transmission systems in Europe, which are connected to the national electricity transmission system by interconnectors. They are sometimes referred to as TSOs (NESO is Great Britain's TSO).

Evening peak

The period of highest electricity demand during the day, typically occurring in the early evening when households and businesses are using large amounts of electricity at the same time.

Frequency Response Dynamic Services

Dynamic Containment (DC), Dynamic Moderation (DM) and Dynamic Regulation (DR) make up NESO's suite of Dynamic Response Services. Together they work to control system frequency. DM provides fast acting pre-fault delivery for particularly volatile periods. DR is a slower, pre-fault service providing a constant power response across the operational frequency range. DC is a fast-acting, post-fault service designed to contain frequency in the event of a sudden demand or generation loss.

Heatwave

The Met Office defines a heatwave as a period of at least three consecutive days where the daily maximum temperature meets or exceeds the location-specific heatwave threshold.

Interconnexion France-Angleterre (IFA)

A 2,000MW interconnector between the French and British transmission systems.

Interconnexion France-Angleterre 2 (IFA2)

A 1,000MW interconnector between the French and British transmission systems commissioned early 2021.

Operating Margin

The difference between the electricity expected to be available and the electricity required to meet demand and response and reserve requirements. Margin provides an indication of how much spare capacity is available on the system.

Margin Brief

An internal operational report used to communicate NESO's current assessment of Operating Margin, forecast shortfalls or surpluses, reserve requirements, interconnector assumptions and actions being taken to maintain system security.

Maximum Generation Service

Maximum Generation It is an optional service agreed under a 'Maximum Generation Service Agreement' (MGSA) where the generator will provide additional MW output above the normal maximum of the Balancing Mechanism Unit for a defined price per MWh on a 'best endeavours' basis.

Maximum Export Limit (MEL)

The maximum amount of electricity a generating unit declares it is capable of exporting to the system during a settlement period, taking account of the unit's technical condition and operating limitations.

National Grid Electricity Transmission (NGET)

National Grid Electricity Transmission (NGET) owns and maintains the high-voltage electricity transmission network in England and Wales.

National Power Outage (NPO)

A total shutdown of the national electricity transmission system.

Negative Margin

Negative margin is the difference between NESO's expected operating position, and the absolute minimum supply that NESO can achieve. It will sometimes be referred to as 'footroom' or 'downward/negative flexibility'.

Nemo Link

A 1,000MW interconnector between Great Britain and Belgium.

NESO Incident Command Structure

NESO uses a three tier incident response structure: Gold Command provides strategic direction. Silver Command coordinates the tactical response, including issuing Situation Reports (Sitreps) internally and externally. Bronze Command manages operational delivery.

North East South West Area Consortium (NEWSAC)

The NEWSAC (North East South West Area Consortium) agreement details the application and co-ordination of mutual aid between network operators in the United Kingdom, Ireland and the Isle of Man during and after network electricity supply emergencies, for example major storms.

North Sea Link (NSL)

A 1,400MW HVDC sub-sea link from Norway to Great Britain.

Quick Reserve

Quick Reserve is a service used to quickly balance the energy supply and demand to keep the electrical frequency stable. There are two types of Quick Reserve: Negative Quick Reserve (NQR) and Positive Quick Reserve (PQR). They both work to correct imbalances and return the frequency close to 50.0Hz.

Ramp Rates

The rate in MW/min that an interconnector can change its flow. They are defined, and limited, in Grid Code.

Reserve requirement

The amount of additional capacity NESO requires above expected demand to manage uncertainty, forecast errors, plant failures and the loss of the largest source of generation or demand on the system. Reserve requirements form part of the Operating Margin.



Scottish and Southern Electricity Networks Transmission (SSEN)

A subsidiary of SSE plc, SSEN Transmission is responsible for owning, operating and investing in the high voltage electricity transmission network in the north of Scotland.

Scottish Power Transmission

A wholly owned subsidiary of SP Energy Networks, Scottish Power Transmission is responsible for the transmission of electricity in central and southern Scotland – and to maintain, design, develop and deliver new or modified connections to its network.

Secured Event

Defined in SQSS as “a contingency which would be considered for the purposes of assessing system security and which must not result in the remaining national electricity transmission system being in breach of the security criteria”.

Settlement Period

A period of 30 minutes beginning on the hour or the half-hour. Settlement Periods always refer to local time (whether this is GMT or BST).

Shortfall

A situation where the available generation, reserve or service volume is lower than the amount required. For example, an Operating Margin shortfall means available capacity is less than the level needed to meet demand and reserve requirements.

Single Markets Platform

The platform used by NESO to procure Balancing Services, allowing market participants to submit bids and offers for multiple services through a single interface.

Slow Reserve

Slow Reserve (SR) is primarily aimed at reacting to post-fault disturbances to restore energy imbalances to $\pm 0.2\text{Hz}$ within 15 minutes of a loss event (generation or demand). For Negative Slow Reserve (NSR), units are instructed to increase demand or decrease generation in full within 15 minutes. The inverse is true for Positive Slow Reserve (PSR).

SOP (System Operating Plan)

A planning tool used by NESO to assess expected supply, demand, reserve requirements, interconnector flows and network constraints ahead of real time. SOPs are updated throughout the day and provide the basis for decisions on margin, reserve and system operation.

Standard Frequency Range

Defined within the System Operation Guideline (SOGL) as the defined symmetrical interval around the nominal frequency within which the system frequency of a synchronous area is supposed to be operated. In Great Britain the nominal or target frequency is 50Hz. The Standard Frequency Range is between 49.8Hz and 50.2Hz. This range is also sometimes referred to as the operational limits.

Static Firm Frequency Response (SFFR)

Static Firm Frequency Response (SFFR) is a non-dynamic frequency response service which is triggered at a defined frequency level (49.7Hz), providing response within 30 seconds and sustained for 30 minutes.

Supergrid transformer

At supergrid substations, voltages are stepped up or down through electrical devices called supergrid transformers (SGTs).

Synchronous Compensator

A Synchronous Compensator (also called a Synchronous Condenser) is a rotating electrical machine that helps to stabilise the grid.

Transient Fault

A transient fault is a temporary, short-duration electrical disturbance on the power network that self-clears or disappears once power is briefly disconnected and then restored.

Unacceptable Frequency Conditions

These are defined by the SQSS and FRCR, and relate to (1) any frequency deviations outside of the statutory limits during normal or 'steady state' conditions, and (2) the size and duration of frequency deviations outside of the statutory limits after a fault on the system, and how often such deviations occur.

Unacceptable Overloading

This is defined in the SQSS, and relates to subjecting transmission system equipment to more power than it can tolerate for a given amount of time without risk of damage.

Viking Link

Viking Link is a 1,400MW high voltage direct current (DC) electricity link between the British and Danish transmission systems.

Western Link

Western Link is a high voltage direct current subsea electricity link owned by Scottish Power Transmission and National Grid Electricity Transmission.

