



Department for
Energy Security
& Net Zero

National Preventive Action Plan: Gas

Report completed for the Gas (Security of
Supply) Regulation

July 2023

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Introduction

The UK gas market is well placed to remain resilient to all but the most extreme combination of severe infrastructure failures or supply shocks. This publication describes a number of preventive actions which have been, or are being, taken to ensure this remains the case; and complements the UK National Risk Assessment (NRA) for Security of Gas Supply, published in October 2022.

The National Preventive Action Plan: Gas (PAP) is made in accordance with Regulation 2017/1938 concerning measures to safeguard the security of gas supply, as incorporated into UK law by section 3 of the European Union (Withdrawal) Act 2018, with amendments made by the Gas (Security of Supply and Network Codes) (Amendment) (EU Exit) Regulations 2019 (the “Gas Security of Supply Regulation” or “Regulation”).

The Gas Security of Supply Regulation’s overall aim is to safeguard the security of gas supply and to enhance resilience to gas supply disruptions and exceptional climactic conditions. It sets out standards for, both, gas infrastructure and gas supply (‘infrastructure standard’ and ‘supply standard’ respectively) to ensure that all necessary measures are being taken to ensure gas supply and infrastructure adequacy.

This is a national PAP for the UK and, as such, encompasses measures for Great Britain (GB) and Northern Ireland (NI). It also recognises specific initiatives underway between NI and Ireland and supports the development of regional cooperation measures and agreements.

The UK’s Gas Emergency Plan is included as an annex to the PAP. The Gas Emergency Plan outlines the robust procedures in place for the unlikely event of a major disruption to gas supplies and has been constructed in accordance with Article 10 of the Gas Security of Supply Regulation. The Gas Emergency Plan should be read in conjunction with the PAP and the National Emergency Plan for Downstream Gas & Electricity (NEP-DG&E).¹ The NEP-DG&E provides key stakeholders with an accessible and detailed guide to the UK’s Government’s operational emergency procedures for a gas and electricity supply disruption scenario, with a specific emphasis on the interactions between the gas and electricity systems during an emergency scenario.

Both the PAP and Gas Emergency Plan seek to mitigate the risks outlined in the NRA. Neither are standalone documents, and both are to be read in parallel with the NRA. Where relevant, the PAP makes reference to the NRA for additional information, and does not seek to unduly duplicate the details already set out in the NRA.

The UK Government will put in place measures to ensure we have the supplies we need for the long term, and increased resilience in the gas system to withstand supply shocks if they do occur. The UK Government will do this through each of the following, which are detailed further in this document:

- Maximising supply of UK gas;
- Maintaining and securing our gas import and export capacity;
- Increasing system resilience; and
- Ensuring long term investment in gas networks.

¹ The National Emergency Plan for Downstream Gas and Electricity can be found here:

<https://www.gov.uk/government/publications/national-emergency-plan-downstream-gas-and-electricity-2016>

General Information

The Department for Energy Security & Net Zero (DESNZ) is responsible for the preparation of these plans. In preparing this document, DESNZ consulted with the NI Department for the Economy (DfE) in NI. The Transmission System Operator (TSO) for gas is National Gas Transmission (NGT)².

² National Gas Transmission is the new name for National Grid Gas following the sale of a majority interest completed in January 2023.

Description of the gas system

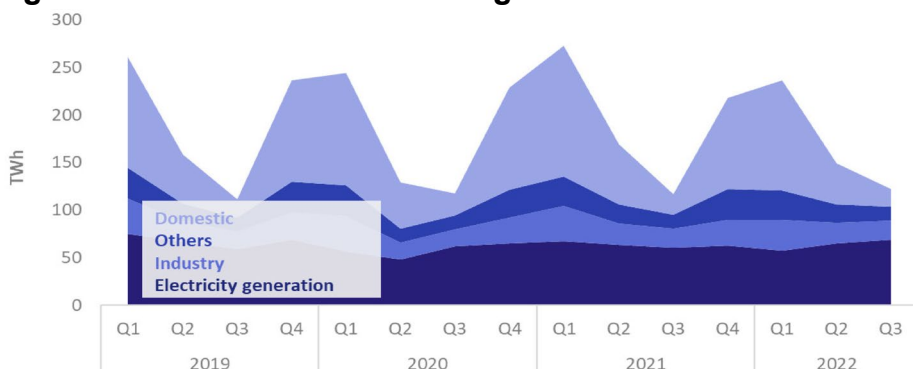
This section summarises the detailed description of the system set out in the NRA, but does not seek to duplicate it. The NRA should be consulted for further information.

Gas Demand

Natural gas provides the main energy source for heating homes and businesses in GB and NI. It is also a major primary energy source for industry and electricity generation, as well as being a feedstock for some industrial applications. In 2022, natural gas accounted for nearly 40% of all the UK's primary fuel consumption³.

Gas consumption follows a seasonal pattern (Figure 1). In 2022, natural gas consumption decreased by 13.4% on 2021 levels, to a record low of 456 terawatt hours (TWh) (41 billion cubic metres (bcm)). This decrease was attributable to the warmest year on record, and high gas prices, changing consumer behaviour. This decrease was seen across all sectors, with domestic and industrial demand for natural gas dropping by 19.0% and 8.2% respectively to levels last seen in the early 1970s. Gas demand for electricity generation remained stable, with a consumption level of 253 TWh in 2021, relative to a level of 255 TWh in 2020⁴.

Figure 1: UK demand for natural gas



Source: Chart 4.1 BEIS (March 2023) Energy Trends publication

According to NGT's data explorer, the peak winter day demand for 2022/23 was 416 million cubic metres (mcm) on the 15th of December, an increase of 46 mcm relative to the peak winter day demand for 2021/22⁵.

Gas demand from the UK electricity generation sector is expected to increase in the coming years, as gas-fired plants will help replace coal-fired power plants due to the requirements of the Industrial Emissions Directives and the UK Government's plan to end unabated coal-fired power

³ See table 1.3b in BEIS (2023) Energy Trends: UK total energy. Available at: <https://www.gov.uk/government/statistics/total-energy-section-1-energy-trends>

⁴ See Chapter 4: Natural Gas, in BEIS (2023) Energy Trends. Available at: <https://www.gov.uk/government/statistics/gas-section-4-energy-trends>

⁵ See demand folder in Data Item Explorer by NGT, available here: <https://mip-prd.web.azurewebsites.net/DataItemExplorer/Index>

generation by 2025. Flexible, gas-fired, generation is also likely to be necessary to provide marginal electricity balancing, as more intermittent renewable energy sources are installed.

Gas-fired power stations and electricity generation

UK electricity generation capacity increased from 101.3 Gigawatts (GW) in 2020 to 105.0 GW in 2021. This increase can be attributed to an increase in renewables (wind, solar, hydro and bioenergy) and conventional steam generation capacity. Table 1 shows the maximum generation capacity of all generation sources.⁶

Table 1⁷: Generation capacity in Gigawatts^{}**

	1996	2000	2010	2019	2020	2021
Conventional steam	43.0	36.8	36.3	12.4	10.8	12.6
Combined Cycle Gas Turbine	12.7	22.9	34.1	31.5	31.8	31.8
Nuclear	12.9	12.5	10.9	9.3	8.1	8.1
Pumped Storage	2.8	2.8	2.7	2.7	2.7	2.7
Renewable	2.3	3.0	9.3	47.0	47.9	49.7
Total*	73.6	77.9	93.2	102.9	101.3	105.0

*Figures may not sum due to rounding

**Years selected to demonstrate changes in the system over time

Gas-fired power stations accounted for 122.7 TWh of generation in 2021, representing approximately 40% of the generation mix. There was a substantial increase in gas generation in 2021, up by 11.3 TWh compared to 2020. This increase was primarily due to a decrease in renewable energy as a percentage of overall generation, with its share dropping from 43.2 % in 2020 to 39.7 % in 2021⁸. This was due to less favourable weather conditions. Gas generation can be a contiguous option when conditions are less favourable for renewable generation, for example lower wind.⁹

Combined Cycle Gas Turbine (CCGT) capacity increased almost threefold over the period from 1996 to 2010, from 12.7 GW to 34.1 GW. Since 2019, CCGT capacity has increased slightly by 0.3 GW, but was 31.8 GW in both 2020 and 2021. Conventional steam capacity has been falling since 2010, but increased in 2021 to 12.6 GW.

Renewables capacity increased by 1.8 GW compared to 2020, with an installed capacity of 49.7 GW in 2021¹⁰. This is more than 20 times the capacity in 1996.

⁶ See page 30 in UK Energy Brief 2022, available here:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1130451/UK_Energy_in_Brief_2022.pdf

⁷ See above reference, 2022 statistics are scheduled to be released in July 2023

⁸ As above

⁹ See table on page 28 in UK Energy Brief 2022, available here:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1130451/UK_Energy_in_Brief_2022.pdf

¹⁰ The Latest figures from energy trends suggests renewable installed capacity has increased to 52.5GW for 2022, a 3.8GW increase compared to 2021.

Gas supply & import infrastructure

The UK has a diverse range of gas supply sources, and benefits from infrastructure connected to neighbouring countries. These include indigenous gas production, piped from the UK Continental Shelf (UKCS); pipelines connecting the UK to the Norwegian Continental Shelf; ‘interconnector’ pipelines connecting the UK and mainland Europe; and Liquefied Natural Gas (LNG), transported by ship and landing at three LNG terminals. Further details on the current import infrastructure present in the UK have been published by NGT¹¹.

In 2022, total UKCS production for the year was 37.7 bcm (or 424TWh), accounting for 53% of total supply. Table 2 shows the total volume of UK gas supplies by source, and their percentage contribution to overall supply.¹²

Table 2: UK Gas Supply mix*: volume (bcm) and percentage contribution (%) ¹²

		2019		2020		2021		2022	
		bcm	%	bcm	%	bcm	%	bcm	%
Production	UK (Continental shelf)	39.3	50.6	39.4	53.7	32.5	41.9	37.7	53.1
Imports	Total Pipeline imports	28.8	37.1	24.1	34.7	36.6	47.1	30.9	44.5
	Norway	26.9	93.5	24.1	94.8	32.4	88.6	30.7	99.5
	Netherlands	1.5	5.4	0.9	3.9	2.3	6.3	0.1	0.3
	Belgium	0.2	1.0	0.3	1.3	1.8	5.0	0.1	0.1
	Total LNG imports	17.8	22.9	18.4	25.1	14.7	18.9	25.6	36.1
	Qatar	8.5	47.7	8.8	48.3	5.6	38.6	7.7	30.2
	USA	2.8	16.0	4.9	26.8	3.9	26.5	12.7	49.8
	Russia	2.8	16.1	2.2	12.3	3.1	21.2	0.4	1.9
	Other	3.5	20.1	2.3	12.6	2.0	13.6	4.6	18.0
	Total imports	46.7	60.1	43.9	59.8	51.3	66.1	56.5	79.6
Exports	Exports	-8.2	-10.6	-9.6	-13.0	-6.8	-9.0	-23.4	-33.1
Miscellaneous	Stock change	-0.6	-0.1	-0.9	-0.1	-0.1	-0.1	-0.3	-0.1
	Transfers	0.5	0.1	0.5	0.1	0.5	0.1	0.5	0.1
	Total gross supply	77.7	100	73.3	100	77.7	100	71	100

*Figures may not sum due to rounding

Interconnectors

The UK has gas interconnector pipelines, which can transport gas between neighbouring countries. Two of these have bi-directional flow capacity which facilitate both imports and exports:

- Interconnector Limited, between Belgium and the UK (INT).
- Bacton-Balgzand Line, between the Netherlands and the UK (BBL).

See Energy trend table 6.1, available here: <https://www.gov.uk/government/statistics/energy-trends-section-6-renewables>

¹¹ See table A8.2 on page 108 in in ‘Gas Ten Year statement’ published by NGT, available here:

<https://www.nationalgas.com/insight-and-innovation/gas-ten-year-statement-gtys>

¹² See table 4.2 in BEIS (2023) Energy Trends: <https://www.gov.uk/government/statistics/gas-section-4-energy-trends>

The other interconnectors remain uni-directional. They are:

- The Moffat interconnectors (IC1/IC2) between Scotland and Ireland. The Scotland-Northern Ireland Pipeline (SNIP) exports gas from the Moffat Interconnection Point to Northern Ireland.
- The South-North Pipeline (SNP) connecting IC2 at Gormanston in Ireland to NI.

Ireland continues to be heavily reliant on the GB market for its gas. Indigenous Irish production, from the Corrib gas field, is expected to decline steadily in the future. Currently, there is no potential for sustained gas flows from Ireland into the GB market.¹³

Liquefied Natural Gas (LNG)

The UK has the second-largest LNG import infrastructure in Europe with three LNG terminals, providing an aggregate import capacity of around 48.1 bcm/year.¹⁴

In 2022, imports of LNG reached a record high, accounting for 45% of total imports for the year. This was due, in part, to the UK supporting European efforts to move away from Russian gas – following Russia’s illegal invasion of Ukraine in February 2022 – by re-exporting LNG to continental Europe via our interconnectors.¹⁵

Gas Storage

Gas storage offers flexibility to the GB gas market at times when supply sources (UKCS, Norwegian Continental Shelf, interconnectors, LNG) are more expensive or have limited availability. Gas storage responds to price changes, allowing shippers to utilise market opportunities throughout the year and supports security of supply as gas is, typically, injected into storage when demand and prices are lower (summer) and withdrawn when demand and prices are higher (winter).

Table 3 lists the gas storage sites operational in GB as of July 2023. Currently, the GB storage landscape is made up of eight sites, all of which are operated on a commercial basis. Total storage capacity is ~3.1 bcm, which includes the recently announced increase in storage capacity at the Rough site, where their maximum capacity increased from around 0.8bcm to 1.5bcm in July 2023¹⁶. GB storage has a maximum deliverability of ~133 mcm per day (mcm/d, the volume per unit of time that can be injected into the transmission network), which equates to ~40% of average

¹³ <https://www.gov.ie/en/consultation/dbe14-review-of-the-security-of-energy-supply-of-irelands-electricity-and-natural-gas-systems/>

¹⁴ See table 2 page 7 of the National Risk Assessment on Security of Gas Supply 2022, available here: <https://www.gov.uk/government/publications/uk-national-risk-assessment-on-security-of-gas-supply-2022>

¹⁵ <https://www.gov.uk/government/publications/energy-trends-march-2023-special-feature-article>

¹⁶ <https://www.centrica.com/media-centre/news/2023/centrica-bolsters-uk-s-energy-security-by-doubling-rough-storage-capacity/#:~:text=Further%20investment%20in%20the%20facility,2.4%20million%20homes%20over%20winter>. Figures have been converted from the billion cubic feet (bcf) mentioned in the article, to billion cubic meters (bcm) for the purpose of consistency in this document.

January daily demand¹⁷. Storage played an important role in maintaining GB energy security throughout winter 2022/23, and contributed ~2.9bcm to winter supply¹⁸.

There are different commercial operating models for gas storage in GB. Some site operators sell their capacity to shippers in pre-agreed contracts, allowing third parties to determine injections and withdrawals; whilst others operate the site themselves, buying and selling the gas based on commercial signals. All sites are considered ‘medium-range storage’ (meaning they can withdraw and inject gas quickly, within days), apart from Rough, which is considered ‘long-range storage’ (which injects and withdraws over a longer period of time, and primarily serves to accommodate seasonal demand swings).

Table 3: List of current GB storage¹⁹

Site (Operator)	Capacity (mcm)	Approx. max withdrawal rate (mcm/d)
Aldborough (SSE Hornsea Limited/Equinor)	220	31
Hatfield Moor (Scottish Power)	70	2
Holford (Uniper UK Ltd)	240	22
Hornsea (SSE Hornsea Limited)	310	12
Humbly Grove (Humbly Grove Energy)	240	7
Hill Top Farm (EDF Energy)	50	13
Rough (Centrica Storage)	1,500	9
Stublach (Storengy)	430	36
Total²⁰	3,100	133

¹⁷ The ~40% figure is calculated from internal DESNZ analysis, which uses January gas demand data taken from National Gas Transmission’s “Data Item Explorer” available via: <https://gasdata.nationalgrid.com/DataItemExplorer>.

¹⁸ DESNZ analysis of National Gas Transmission data: <https://mip-prd-web.azurewebsites.net/DataItemExplorer>

¹⁹ Most of the data are sourced from National Gas Transmission’s “Gas Ten Year Statement”, Appendix 6.2, Table A6.3, available via: <https://www.nationalgas.com/insight-and-innovation/gas-ten-year-statement-gtvs>. The capacity and max withdrawal rate figures for the Rough storage site are taken from Ofgem’s GB Gas Storage Facilities 2023 report, available via: <https://www.ofgem.gov.uk/publications/gb-gas-storage-facilities-2023>.

²⁰ The figures have been rounded and therefore may not sum.

Summary of the National Risk Assessment

In October 2022, in line with the Article 7 (Risk Assessment) of the Gas Security of Supply Regulation, the UK Government carried out an updated assessment of the risks affecting the security of gas supply in the UK. The National Risk Assessment (NRA²¹) was based on a number of common elements as set out in the Regulation, including assessment of the Infrastructure Standard (see page 11 for further detail), and a description of the national gas system and gas market.

Through the use of the Infrastructure Standard, the NRA assessed the impact of a supply shock equivalent to the loss of the largest single piece of gas supply infrastructure across a range of scenarios under both average and severe demand conditions. The NRA concluded that UK infrastructure can meet gas demand across these scenarios, including a combination of exceptional demand caused by severe weather conditions, and the failure of the largest single piece of infrastructure on the gas network.

²¹ The NRA is produced every four years jointly with Ofgem, with input from NGT. This report provides analysis on security of supply risks and drivers, and scenarios to help inform the market. Available via:
<https://www.gov.uk/government/publications/uk-national-risk-assessment-on-security-of-gas-supply-2022>

Infrastructure Standard

The infrastructure standard set out in the NRA uses the 'N-1 calculation', which tests that the National Transmission System (NTS) has been designed to meet the '1-in-20' peak day demand (i.e. the level of demand to be expected during a cold winter of a probability of occurring once every 20 years) even with the failure of the single biggest piece of infrastructure. The N-1 calculation is updated yearly by National Gas Transmission in their Gas Winter Outlook Report ²².

The assessment of the Infrastructure Standard is based on testing the impact of a failure of the 100km Felindre pipeline connecting the South Hook and Dragon LNG terminals at Milford Haven to the NTS. The failure of this pipeline represents the failure of the UK's single largest gas infrastructure, and it would lead to the loss of an estimated 72 mcm/d of capacity.

N-1 Formula

The N-1 formula is as follows:

$$N - 1[\%] = \frac{EP_m + P_m + S_m + LNG_m - I_m}{D_{max} - D_{eff}} \times 100, N - 1 \geq 100\%$$

Where, in summary (the terms are defined in Annex II to the Regulation):

P_m - maximal technical production capacity

S_m - maximal technical storage deliverability

EP_m - technical capacity of entry points, other than production, LNG and storage facilities covered by P_m

LNG_m - maximal technical capacity of LNG facilities

I_m - technical capacity of the single largest gas infrastructure

D_{max} - total daily gas demand

D_{eff} - the part that can be covered with demand-side measures

The UK N-1 calculation shows that the UK passes the requirements of the Regulation, with a result of 110% at the peak projected gas demand. See equation below::

$$N - 1 = \frac{230 + 117 + 117 + 141 - 72}{483} = 110\%^{23}$$

The score of 110% means the current system is able to meet a 1-in-20 peak day demand even with an infrastructure failure.

²² <https://www.nationalgas.com/insight-and-innovation/winter--outlook>

²³ Further details can be found in annex 1

If the 1-in-20 peak demand value considered UK-only demand, without factoring in any exports, then the value of the D_{\max} parameter would decrease from 483 mcm/d to 453 mcm/d. This would lead to an N-1 score of 118%.

In NGT's Gas Winter Outlook Report for 2022/23, under N-1 conditions the supply margin at peak 1-in-20 demand increased from a 104 mcm/day surplus last winter to a 122 mcm/day surplus.²⁴

²⁴See page 6 in National Gas Winter Outlook 2022-23, available here: <https://www.nationalgas.com/document/140921/download>

Supply standard

UK Regional Supply Standard

Under Article 6 (Gas Supply Standard) of the Regulation, the Secretary of State requires that natural gas undertakings take measures to ensure gas supply to prioritised customers in the following cases:

- Extreme temperatures during a 7-day peak period occurring with a statistical probability of once in 20 years;
- Any period of 30 days of exceptionally high gas demand, occurring with a statistical probability of once in 20 years;
- For a period of 30 days in the case of disruption of the single largest gas infrastructure under average winter conditions.

Definition of Prioritised Customers

In accordance with the Gas Transporters Standard Licence Conditions (GTSLC), gas transporters are obliged to establish, amend and review a list of prioritised customers, who would be the last to be told to cease taking gas where this is necessary for safety reasons (paragraph 15 in combination with paragraph 13 of condition 6²⁵).

In the highly unlikely event of a local or network gas supply emergency, three classes of customer are prioritised, so far as this remains possible:

- Category A: Customers where a failure in the supply to their premises could put lives at risk, for example hospitals or homes for the elderly and disabled.
- Category B: Customers for which the sudden loss of gas causes or threatens to cause serious damage, for an unacceptably prolonged period, to human welfare, the environment or the security of the United Kingdom that cannot be reasonably mitigated.
- Category C: Customers taking over 2 million therms per annum (p.a.), for which the sudden loss of gas would result in repair or replacement costs amounting to 10% or more of the Site Fixed Tangible Asset Value.

To summarise, the UK can fulfil the supply standard on a national basis. Further information on this can be found from page 19 of the NRA, and in Annex III of this document.

²⁵ <https://www.ofgem.gov.uk/licences-and-licence-conditions>

Preventive measures

The NRA identifies key areas for development in order to improve resilience within the gas sector. Whilst it demonstrates that the UK's security of supply position is strong, the UK Government is not complacent and continues to work to reduce security of supply risks. Recent policy announcements made within Powering Up Britain: Energy Security Plan²⁶, published in March 2023; as well as three other key proportionate risk reduction measures now established in the energy market (detailed below); are all designed to contribute towards long-term stability of the gas market. These measures, collectively, support the use of gas as a transition fuel in line with our net zero targets.

Policies announced within Powering Up Britain: Energy Security Plan

Within the Energy Security Plan, we have announced measures to help ensure we have the gas supplies we need for the long term, and increased resilience in the gas system to withstand supply shocks, if they do occur. This will be achieved by maximising supply of UK gas, maintaining and securing our gas import and export capacity, increasing system resilience and ensuring long term investment in gas networks. The following commitments were made:

- We will issue an update by Autumn 2023 looking at the future role that gas storage and other sources of flexibility can play in gas security.
- We will task a new body, the Future System Operator, to conduct a gas supply security assessment, and to assume a whole system coordination role for improving the security and resilience of our energy systems.
- We have legislated to change the Wobbe Number²⁷, meaning that a greater volume of gas can, from April 2025, be injected into the National Transmission System without the need for blending.
- We will consult on introducing a policy framework for biomethane from 2026, to follow the current Green Gas Support Scheme.

Proportionate risk reduction measures

The UK has a liberalised, competitive energy market. Commercial incentives combine with efficient processes to mitigate and manage the risks of any interruption. Additionally, the UK has three proportionate measures for reducing the risk of a gas supply emergency based on the analysis in the National Risk Assessment, as follows:

1. Gas Demand Side Response (DSR) Methodology;
2. The Capacity Market; and

²⁶ <https://www.gov.uk/government/publications/powering-up-britain/powering-up-britain-energy-security-plan>

²⁷ The Wobbe Number (WN), or Wobbe Index (WI), is an indicator of the interchangeability of fuel gases such as natural gas. Gases are said to be interchangeable when they may be substituted for one another without affecting the operation of gas burning appliances and equipment; and reflect the degree to which they give similar heat input to the appliance, ignite reliably, have a stable flame, and completely combust

3. Regular systematic assessments of risk to the GB Gas System.

It should be noted that the UK Government sees monitoring the market, risk assessment and the application of risk reduction measures as a continual activity and may implement other measures as necessary to ensure security of supply.

1. Gas Demand Side Response (DSR) methodology

NGT's DSR methodology was implemented on 1st October 2016 following the conclusion of Ofgem's Gas Significant Code Review (SCR), which placed an obligation on NGT to develop a centralised DSR mechanism to encourage greater demand-side participation from industrial and commercial users.

The DSR scheme is a mechanism to compensate large industrial and commercial gas consumers (greater than 2m therms p.a. or 58.6 GWh p.a.) for reducing the amount of gas they use if called upon to do so during times of system stress.

This platform was deployed for the first time after the issuing of the Gas Deficit Warning in March 2018, however, no DSR offers were made to NGT. In this instance, no involuntary demand-side measures were required because of the market-based response seen after the Gas Deficit Warning was issued.

In 2022, changes were made to the DSR tool to address a number of barriers to participation in the scheme. These reforms enabled NGT to issue an invitation for all eligible users to commit to making DSR market offers for the 2022/23 winter period and the subsequent two winter periods. Where NGT accepts an offer from a gas consumer to reduce demand, the gas shipper supplying that consumer would receive an option payment for each accepted offer, which would be passed to the end-consumer who would provide the physical flow curtailment. If the DSR scheme was called upon, a further exercise payment would be made for the demand reduction delivered. The trigger for opening the DSR market was also extended to include the issue of a Margins Notice by NGT, enabling the market to be opened a day ahead of forecast imbalance.

NGT continues to work with industry, Ofgem and DESNZ to further enhance and increase participation in the DSR scheme.

2. The Capacity Market

The Capacity Market is the UK government's main mechanism for ensuring electricity security of supply. Existing and new-build capacity compete in technology-neutral auctions, to obtain agreements under which they commit to making their capacity available when needed, in return for guaranteed payments to support investment in new and existing capacity.

Gas plants play an important role in the Capacity Market because they have the potential to provide reliable capacity. Meeting our 2035 commitment for a decarbonised power system, subject to security of supply, will mean transitioning away from unabated gas generation, where possible. Whilst unabated gas generation currently provides much of our flexible capacity at present, ensuring the power system is stable and secure, its role will reduce as low-carbon alternatives mature.

The UK Government is actively ensuring unabated plants deployed over the coming years will have clear decarbonisation pathways and are built in such a way as to easily take advantage of future

decarbonisation opportunities.

3. Regular systematic assessments of risk to the GB gas system

The UK Government has a process of regular, systematic, assessments to examine the risks to the gas system over the longer term and the level of security we can expect it to deliver. We believe that the gas market is robust against a range of adverse events. But we cannot rule out the risk of supply shortfalls in extreme circumstances, nor the risk of a significant rise in wholesale gas prices to balance the market during times of system stress.

The below table provides a diverse range of publications relating to gas security, from the UK Government and other actors in the UK gas system. This includes regular and one-off reports, assessments, consultations, and key recent announcements on energy security. It is not an exhaustive list, but provides information on key documents that cover gas security and provide more detail on the UK's approach to security of gas supply.

Name	Type	Frequency/date ²⁸	Description
Statutory Security of Supply Report (DESNZ)	Report	Annual	Annual report to Parliament on the supply of electricity, gas and oil to meet the demands of consumers in GB.
UK National Risk Assessment on Security of Gas Supply 2022 (DESNZ/OFGEM)	Assessment	Every four years	Every four years the UK Government carries out an updated assessment of the risks affecting the security of gas supply in the UK. It is produced jointly with Ofgem, with input from NGT. This report provides analysis on security of supply risks and drivers, and scenarios to help inform the market.
Powering Up Britain: Energy Security Plan 2023 (DESNZ)	Policy paper	March 2023	A comprehensive plan by UK Government created to direct the UK's transition to a cleaner, greener, more energy-secure future. Sets out the actions taken to secure energy supplies this winter and the next steps in ensuring resilience of our gas supplies.
British Energy Security Strategy (DESNZ)	Policy paper	April 2022	This plan was published in light of rising global energy prices, provoked by surging demand after the pandemic as well as Russia's invasion of Ukraine.
Winter Review and Consultation (NGT)	Consultation	Annual	A review of the previous winter and an opportunity for stakeholders to feed into the content of the following NGT

²⁸ Where a date is given, these are individual publications, rather than part of a regular cycle.

Name	Type	Frequency/date²⁸	Description
			Winter Outlook (see below).
Winter Outlook Report (NGT)	Report	Annual	This provides information to market participants on the supply and demand situation for the coming winter (October to March). Published annually following stakeholder consultation as mentioned above.
The Summer Outlook Report (NGT)	Report	Annual	This provides information to market participants on the supply and demand situation for the coming summer (April to September).
Future Energy Scenarios (National Grid ESO)	Report	Annual	Sets out a range of potential pathways for future gas and electricity demand to 2050.
Gas Ten Year Statement (NGT)	Report	Annual	A rolling ten-year forecast of gas transportation system usage and likely system developments that can be used by companies which are contemplating connecting to the system, or entering into transport arrangements, to identify and evaluate opportunities.
The Annual Network Capability Assessment Report (NGT)	Report	Annual	An assessment of the capability of the gas national transmission system, compared to forecast future flows on the network.
Gas Capacity Statement (NI) (Utility Regulator for Electricity and Gas, Northern Ireland (UREGNI))	Statement	Annual	UREGNI provides an assessment of the ability of the transmission network to meet forecast demands on the network over a ten-year period.

Other UK Government measures and obligations

In addition to the specific standards and preventive measures described above, security of gas supply is supported by a number of wider features of the UK's gas system, including policy, legislation and market regulation. This section describes some of these features.

Market-based approach

The UK takes a broadly market-based approach to security of energy supply. A fundamental part of this approach is a liberalised, competitive energy market, providing strong commercial incentives to help ensure effective risk mitigation measures. In the wholesale gas market, security of supply has been delivered by market participants balancing supply and demand and trading on international commodity markets. It should be noted that the UK Government does not intervene in the wholesale gas market.

The key elements of our overall market-based approach are:

- The maximisation of economic production from indigenous resources;
- A well-functioning commodity market that delivers a high quality, reliable and competitive service to consumers;
- A well-functioning capital market that works with the UK Government to provide necessary levels of investment in energy infrastructure;
- An enabling regulatory framework that is set by the UK Government in areas where the market, acting alone, might not be incentivised to deliver adequate levels of security; and
- Strong and diverse markets that are promoted internationally.

Roles and Responsibilities

The roles and responsibilities of key market participants are governed by a range of UK legislation including the Gas Act 1986 (the Gas Act), the Gas Safety (Management) Regulations 1996 (GS(M)R), and other primary and secondary legislation. Key responsibilities for actors in the system are set out below:

- The regulators – Ofgem in GB and the Utility Regulator in NI – are responsible, with the UK Government, for protecting the interests of both current and future consumers, including the security of energy supplies. Both regulatory authorities have a role in ensuring that licensed companies protect their customers.
- Energy companies active in the gas market are responsible for delivering energy infrastructure and ensuring sources of energy are available to meet demand in a

competitive market. To enable competition there is legal separation between the transportation of gas from source to network, and the shippers and suppliers that take ownership of the gas once it enters the network. The Gas Act sets out the licensing requirements for firms operating in the gas market.

- The Energy Bill 2023 will, subject to Parliamentary passage seek to establish the Future System Operator (FSO): an independent, publicly owned body, acting as a trusted voice at the heart of the energy sector. The FSO will be set up initially with all the existing functions of the electricity system operator (ESO) and longer-term strategic gas planning and forecasting functions, with the intention that the FSO will evolve into a body that has the capability and capacity to take a whole system perspective when planning the network and undertaking its roles. As set out in the Energy Bill, the FSO will be required to carry out its functions in the way that it considers is best to promote the objectives of ensuring security of gas and electricity supply, meeting our statutory decarbonisation targets and promoting a coordinated, efficient and economical energy system for electricity and gas. Our aim is for the FSO to be operational in 2024, subject to a number of factors, including timings of the Energy Bill and the timelines that are agreed with key parties.

Legislation

There are three main pieces of legislation that provide the GB framework under which the current gas emergency arrangements are set. These are: the Energy Act 1976; the Gas Act; and the GS(M)R. NI has similar legislation to that described below.

- The Energy Act 1976 sets out powers resting with the UK Government for energy conservation and control. These provide the Secretary of State with the vires to regulate or prohibit the production, supply, acquisition or use of natural gas, predominantly in an emergency, and to give directions to the gas industry in an emergency.
- The Gas Act (as amended) is the fundamental legislation underlying the UK gas market, providing for the regulation of gas shipping, transport, and supply. It prohibits the shipping, transport or supply of gas without a licence, unless an exemption has been granted by the Secretary of State. It also sets out the basic regulatory framework establishing Ofgem as the gas regulator and provides authority for the Secretary of State to require the promotion of energy efficiency. The Act has been subject to frequent changes to make sure it keeps pace with the evolving energy policy environment.
- The GS(M)R is the legislation which sets out the requirement for a network, which has more than one gas transporter, to have a Network Emergency Coordinator (NEC). The GS(M)R requires parties across the gas industry to cooperate with the NEC and each other (this duty is not specifically limited to preventing or minimising a gas supply emergency). The GS(M)R also places a duty on gas conveyors (also known as gas transporters) and the NEC to hold a 'safety case', accepted by the Health & Safety Executive (HSE), and makes it an offence not to conform to an accepted safety case. Gas conveyors must have their safety case accepted by HSE before they can begin transporting gas through their network. The NEC safety case sets out the role and responsibilities of the NEC in the event of an emergency. This includes particulars of the procedures that the NEC has established to monitor the situation throughout a supply emergency and for coordinating actions across affected parts of the gas network. It also sets out the stages of a Gas Deficit Emergency (GDE) that the NEC may declare in order to minimise the risk or impact of a supply emergency. Appropriately, these are described more fully in the Gas Emergency Plan annex.

Gas Licences

All persons licensed by Ofgem are required to comply with the conditions of their licences. The licences for the gas industry are categorised into transporter, shipper, supplier and interconnector.²⁹ The licence conditions are separated into standard licence conditions which apply to all licensees, special licence conditions which are conditions specific to each individual licensee (e.g. NGT) and standard special conditions of licences which apply to a class of licensees.

Storage and LNG operators are regulated by Ofgem but the regulatory requirements, with which they have to comply, are set out in the Gas Act, rather than in licences.

There is a licence condition for transmission system operators to plan the system to meet the 1-in-20 peak aggregate daily demand including, but not limited to, within-day gas flow variations on that day. The condition states that the 1-in-20 peak demand level should be calculated to include the load reduction through interruption or for contractual reasons and requires that historic data from at least the 50 previous years should be used when identifying the 1-in-20 peak day.

The North Sea Transition Authority regulate the licensing of exploration and development of the UK's offshore and England's onshore oil and gas resources, gas storage and unloading activities.

Incentives to supply sufficient gas

Gas shippers are incentivised to balance their gas supplies and demands through imbalance or 'cash-out' charges set out in the Uniform Network Code (UNC). 'Cash out' is a long-established mechanism in the UK to incentivise market participants to balance their inputs and outputs. Shippers are 'cashed out' at the end of each gas day depending on their end of day imbalance, which may be 'long' or 'short'.

- 'Short' shippers — those that have not 'put on' (i.e. provided) as much gas to the system as their customers are 'taking off' (i.e. consuming) — are required to pay the System Marginal Buy Price for the volume of gas for which they are 'short' (i.e. excess of demand over supply).
- 'Long' shippers — those that have put on more gas to the system than their customers are taking off — are paid the System Marginal Sell Price for the volume of gas for which they are 'long' (i.e. any additional gas they flow onto the system).

The system marginal prices are set so that shippers receive a worse rate for their imbalance compared to the prevailing market rate for the day. Therefore, in most circumstances, long shippers would be paid less than they would have received from selling their excess gas in the market. Similarly, short shippers would be charged more than they would have likely paid for buying the gas in the market. Hence, there is an economic incentive for shippers to try to keep their supply and demand in balance.

The level of cash-out is related to the market price, and so will generally reflect system

²⁹ Further information on licences and licence conditions is available at <https://www.ofgem.gov.uk/licences-and-licence-conditions>

tightness, so that cash-out will rise when supplies are scarce relative to demand. It is these short-term cash-out prices that incentivise shippers to balance their positions and invest in sources of flexibility (such as storage and LNG) to allow them to manage their supply and demand. In addition, the TSO can – as Residual System Balancer – move the cash-out prices to drive the balance through its balancing actions.

Cash-out is currently a legal requirement under Article 19 of Regulation (EU) 312/2014 establishing a network code on gas balancing, although its existence in the GB market predates this regulation.

By incentivising shippers to secure enough supply to balance their customers' demands, cash-out has a positive impact on UK security of supply. Furthermore, cash-out allows prices to rise to attract new sources of gas in a period of supply tightness and this is fundamentally important in attracting LNG to Europe in a global market.

Transparency and information sharing

NGT publishes a range of data on its website³⁰, providing equitable and timely access to its operational and market information to all relevant industry stakeholders. This reduces market uncertainty, reinforces equal access to information and information transparency, and facilitates efficiency in the capacity and energy markets.

At an operational level, NGT has regular (monthly or bi-monthly) liaison meetings with all its connected TSOs (i.e. GNI, Gassco, Interconnector and BBL). Since summer 2022, NGT has initiated a regular senior level security of supply meeting with adjacent TSOs including Gasunie, Fluxys, INT and BBL. These meetings are convened and chaired by NGT and take place every 6-8 weeks. These relationships enable additional information-sharing between TSOs in different countries, supporting NGT's work to monitor gas supplies and ensure the system remains in balance.

Meanwhile, working closely with our energy market regulator Ofgem and the gas and electricity system operators, the UK Government builds and maintains strong relationships with interconnected countries and our key European partners to build on and expand the measures we put in place for winter 2022/23. The commitments in Powering up Britain, the UK Government's blueprint for the future of energy in our country, form a key part of this effort, as do our strategic energy dialogues and other engagements with key countries and regions including the EU, Norway, Qatar and the US.

Maintenance

To ensure a high level of safety and reliability in operation, it is essential that a system of inspection and maintenance exists for assets associated with the gas transmission and distribution network.

In accordance with each network's Safety Case, maintenance activities need to comply at all times with any applicable statutory or legislative requirements, in order to meet legal obligations. Generally, the main legislative drivers are the Pressure Systems Safety Regulation 2000, the

³⁰ Please see <https://www.nationalgas.com/data-and-operations>

Pipeline Safety Regulations 1996, the Dangerous Substances and Explosive Atmospheres Regulations 2002, the Provision and Use of Work Equipment Regulations 1998 and the Electricity at Work Regulations 1989.

Maintenance, operational practices and procedures adopted by the networks have the objective of ensuring the safe and efficient operation of the network.

The networks periodically review operational and maintenance procedures and practices to ensure they remain appropriate. Reviews are based upon historic evidence from the existing strategy, the development of new maintenance techniques, and operational feedback.

Legislation, Licences and Codes: Northern Ireland (NI)

For NI, similar legislation mirrors that which is in force in GB. The relevant legislation is set out below.

The main piece of legislation with respect to emergency arrangements is the Gas Safety (Management) Regulations (Northern Ireland) 1997 (GS(M)R(NI)). The responsibility for enforcing GS(M)R(NI) rests with the Health and Safety Executive Northern Ireland (HSENI).

GS(M)R(NI) requires anyone conveying gas to have a safety case accepted by the HSENI. The legislation envisages two types of safety cases: one to be submitted by those conveying gas and one by the Northern Ireland Network Emergency Coordinator (NINEC), currently Mutual Energy Ltd as of November 2019. The NINEC and the lead TSOs (Mutual Energy Ltd and GNI(UK)) play the key roles when co-ordinating the response to an emergency.

The NINEC safety case must demonstrate the arrangements that the holder has established to coordinate the actions to be taken to prevent an emergency from occurring including actions to be taken during an emergency. The safety case of those conveying gas should include arrangements to cooperate with the NINEC, others conveying gas, and gas suppliers in the event of a gas emergency. There is also a requirement that arrangements are regularly tested.

The Energy (Northern Ireland) Order 2003 sets out the principal objective and duties of the Department for the Economy and UREGNI with regards to promoting an efficient, economic and co-ordinated gas industry in Northern Ireland and to the protection of consumers. Both DfE and UREGNI must carry out their gas functions having regard to the need to ensure a high level of protection of the interests of consumers of gas and to secure a diverse, viable and environmentally sustainable long-term energy supply. UREGNI may grant a licence to convey, supply and store gas under the Gas (Northern Ireland) Order 1996. The relevant licences contain conditions with respect to emergency arrangements and establish a network code which covers the steps to be taken by TSOs and shippers in the event of an emergency on the transportation system.

Shale Gas

As set out in the 2019 manifesto, the UK Government will not support shale gas extraction unless the science shows it can be done safely. The UK Government has taken a presumption against issuing any further hydraulic fracturing consents, due to the risk of these activities causing seismic events. A report completed last year on scientific advances in hydraulic fracturing by the British Geological Survey found that forecasting the occurrence of such seismic events, and their

expected magnitude, owing to hydraulic fracturing remains a challenge with significant uncertainty. The UK does not assume any contribution from UK-produced shale gas in its assessment of gas security of supply.

Proposed Infrastructure Projects

Table 4 shows the list of proposed new LNG infrastructure projects, as outlined in NGT’s 2022 Gas Ten Year Statement³¹. It should be noted that there is no guarantee that the proposed projects will go on to be operational.

Table 4: Proposed new LNG infrastructure projects³²

Project	Operator/Developer	Type	Location	Capacity (bcm/year)
Isle of Grain 4	National Grid Ventures	LNG	Kent	-
South Hook 3	South Hook Gas	LNG	Milford Haven	3.4bcm

Table 5 shows the list of proposed new storage infrastructure projects, as outlined in NGT’s 2022 Gas Ten Year Statement. It should be noted here also that there is no guarantee these proposed projects will go on to be operational, and that the list is not meant to be exhaustive.

Table 5: Proposed new UK storage infrastructure³³

Project	Operator/Developer	Location	Space (bcm)	Status
Gateway	Stag Energy Offshore	Morecambe Bay	1.5	Planning granted, no FID
Deborah	Eni Offshore	Bacton	4.6	Planning granted, no FID
Islandmagee	InfrasStrata	County Antrim, Northern Ireland	0.5	Planning granted, no FID
King Street	King Street Energy	Cheshire	0.3	Planning granted, no FID
Preesall	Halite Energy	Lancashire	0.6	Planning granted, no FID
Saltfleetby	Wingaz	Lincolnshire	0.8	Planning granted, no FID
Whitehill	E.ON	East Yorkshire	0.4	Planning granted, no FID
		Total	8.7	

³¹ <https://www.nationalgas.com/insight-and-innovation/gas-ten-year-statement-gtys>

³² As above

³³ As above

Stakeholder Consultations

DESNZ officials work closely with NGT, as the GSO, to monitor risks to the UK's gas supply and discuss mitigating actions; and frequently engage with businesses from across the gas industry including upstream producers, gas shippers and suppliers. NGT regularly engages with industry, collectively, through various fora such as the Gas Operational Forum and Transmission Workgroup; and, bilaterally, through regular meetings at operational and senior levels.

The GS(M)R requires the TSO and the Gas Distribution Network (GDN) Operators to establish adequate arrangements for dealing with supply emergencies. GS(M)R defines a supply emergency as an emergency endangering persons and arising from a loss of pressure in a network or any part thereof.

The TSO and the GDN Operators are also required under GS(M)R to prepare safety cases for their own networks. These safety cases describe the arrangements established by the TSO or the GDN Operators to manage a network gas supply emergency (NGSE) or local gas supply emergency (LGSE) and should be consistent with the arrangements within the NEC safety case.

The NEC arranges for the preparation of the Procedure for Network Gas Supply Emergency. The purpose of this procedure is to provide a measured, appropriate and co-ordinated response to a NGSE in accordance with the requirements of the NEC safety case. The procedure describes the causes and classifications of a NGSE, the arrangements the TSO has in place for managing the NGSE, the possible stages of a NGSE and the actions that could form part of the strategy for resolving the emergency. The procedure is made available to all industry participants via publication on the NGT website.

The TSO and the GDN Operators have also prepared detailed procedures describing the arrangements they have in place for managing a NGSE. Other industry participants are expected to establish and maintain procedures for responding to gas supply emergencies in accordance with their statutory or regulatory obligations and these procedures should align with the Procedure for Network Gas Supply Emergency and in turn the NEC Safety Case.

In addition, the GDN Operators have prepared Procedures for Managing a Local Gas Supply Emergency. The purpose of this procedure is to provide a measured, appropriate and co-ordinated response to a LGSE in accordance with the requirements of the GDN Operator's safety case.

The emergency procedures are reviewed on a regular basis and are subject to periodic testing to ensure they remain suitable for use during a NGSE and/or LGSE and support NGT and the GDN Operators in meeting their statutory safety obligations including GS(M)R.

The NEC runs an annual cross-industry/HMG exercise to test the emergency arrangements in place to manage a NGSE as part of its safety case obligations. Following the exercises, the NEC prepares a report providing the results of these exercises and identifying recommendations to improve the emergency arrangements which is made available to all industry participants. A report of the most recent exercise, "Exercise Celsius (2022)" can be obtained from the NGT website.³⁴ The industry was able to demonstrate that it is able to respond effectively to a NGSE, and a number of learning points were identified that are being addressed proactively.

³⁴ <https://www.nationalgas.com/safety-and-emergencies/network-gas-supply-emergencies-ngse>

Conclusions

The UK gas market is resilient to all but the most unlikely combination of high demand and supply disruption. The UK Government continues to work closely with its stakeholders and supports the consultations routinely executed by industry. The UK Government also continues to work closely with its stakeholders on additional projects to improve resilience within the sector and prevent disruption.

Annex I – N-1 Calculation

The N-1 formula, as described in Annex II to the Regulation, is as follows:

$$N - 1[\%] = \frac{EP_m + P_m + S_m + LNG_m - I_m}{D_{max} - D_{eff}} \times 100, N - 1 \geq 100\%$$

Where, in summary (the terms are defined in Annex II to the Regulation):

EP_m - technical capacity of entry points, other than production, LNG and storage facilities covered by P_m

P_m - maximal technical production capacity

S_m - maximal technical storage deliverability

LNG_m - maximal technical capacity of LNG facilities

I_m - technical capacity of the single largest gas infrastructure

D_{max} - total daily gas demand

D_{eff} – the part that can be covered with demand-side measures

N-1 Calculation for the UK

2022	Capacity (mcm/d)	Notes
Main Infrastructure (I _m)	72	Felindre pipeline to reflect the combined capacity of both Milford Haven LNG terminals
Max imports (EP _m)	230	Include entry points other than production with: Belgium: IUK (77.8mcm/d) the Netherlands: BBL (47.4mcm/d) and Norway: Langeled (76 mcm/d), Vesterled (41mcm/d) and FLAGS – Tampen and Gjoa (30mcm/d)
Max domestic production (P _m)	117	Total indigenous production from the UK sectors of both the North Seas and Irish Sea along with gas produced onshore
Max Storage (S _m)	117	The technical capacity of UK storage
LNG (LNG _m)	141	Includes South Hook (60mcm/d), Dragon (21mcm/d) and Isle of Grain (59mcm/d)
Max Demand (D _{max})	483	Diversified 1-in-20 peak day demand from FES 2018 'Steady Progression' scenario (highest gas demand case). It includes exports to Ireland.

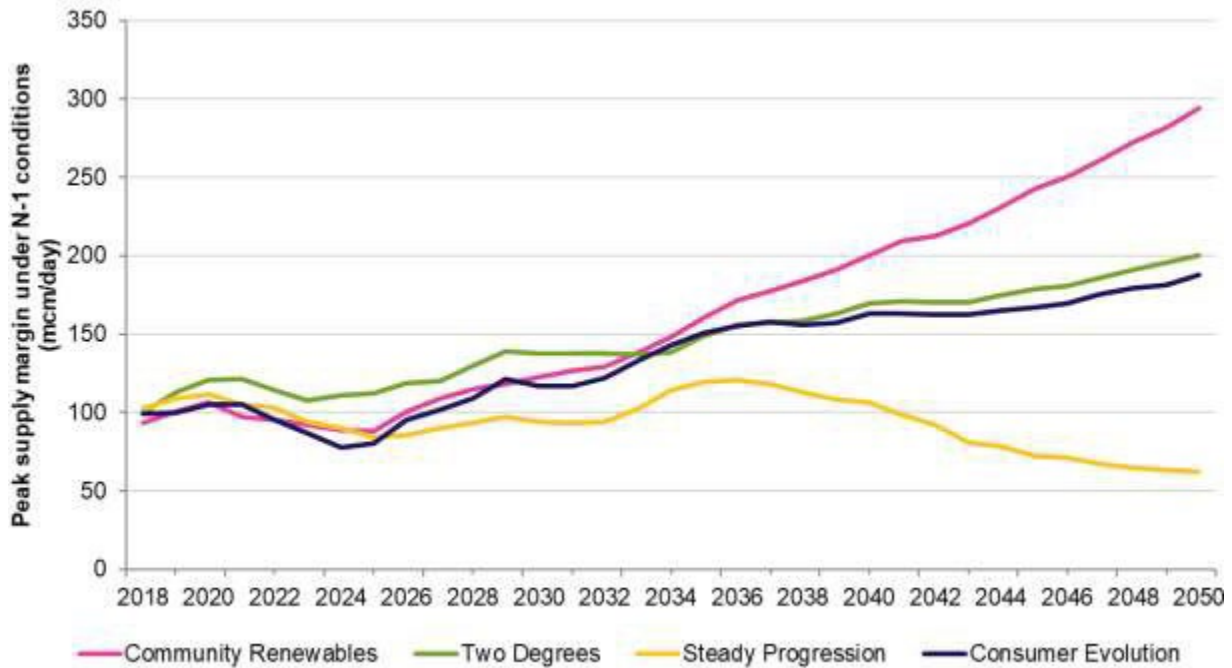
This provides the following N-1 calculation:

$$N - 1 = \frac{230 + 117 + 117 + 141 - 72}{483} = 110\%$$

Annex II – Projected N-1 Calculations

As part of the Future Energy Scenarios analysis, National Grid ESO provided a projected annual N- 1 margin calculation until 2050 as shown below.

35



³⁵ Future Energy Scenarios 2018 <https://www.nationalgrideso.com/document/169921/download>. Note, this Future Energy Scenarios 2018 <https://www.nationalgrideso.com/document/169921/download>. This calculation has not been produced for subsequent FES documents.

Annex III – Meeting the Supply Standard

UK ‘protected customers’ gas volumes are split into the following as per Article 2 of the Regulation:

- Household customers;
- Small and medium-sized enterprises connected to a gas distribution network;
- Essential social services where loss of gas supplies could endanger health (as long as these customers and small medium enterprises do not exceed 20% of final use gas).

The table shows that the volume of Small and Medium Enterprises (SMEs) and essential social services does not exceed the Regulation’s limit of 20% final demand under the following scenarios:

- 1-in-20 year peak day demand;
- Day 7 under one in 50 year (‘1-in-50’) weather conditions;
- Day 30 under 1-in-50 conditions;
- Day 30 under average winter conditions.

The demand volumes have been estimated for winter 2023/24 using the Central forecast³⁶.

	Day 1 1-in-20 conditions	Day 7 1-in-50 Conditions (weather)	Day 30 1-in-50 conditions	Day 30 Average Winter Conditions
Households (mcm/d)	266.5	247.8	207.7	174.4
SMEs (mcm/d)	74.1	65.8	57.7	50.7
Essential Social Services (mcm/d)	2.2	2.0	1.9	1.9
Total Demand including other categories (mcm/d)	474.3	412.5	359.4	318.5
% SME and Social Services	16.1	16.5	16.6	16.5

Source: National Gas Transmission central forecast / 5-year forecast

³⁶ The figures provided in the table are based on NGTs 5- year forecast from their central scenario. Due to the uncertain market conditions and impact on gas demand, the demand profile in this scenario might not fully reflect gas demand for the winter 2023/24 period.

Annex IV – Gas Emergency Plan

Downstream Gas and Electricity

Definitions

DESNZ - Department for Energy Security & Net Zero
NEC - Network Emergency Co-ordinator
NGSE - Network Gas Supply Emergency
NGT - National Gas Transmission plc
NINEC - Northern Ireland Network Emergency Coordinator
NTS - National Transmission System
GDN - Gas Distribution Network
GS(M)R - The Gas Safety (Management) Regulations 1996
GSO - Gas System Operator
HSE - Health and Safety Executive
LGSE - Local Gas Supply Emergency
LNG - Liquefied Natural Gas
TSO - Transmission System Operator
UNC - Uniform Network Code

General Information

The Secretary of State for Energy Security & Net Zero is responsible for the preparation of the present plan for the United Kingdom.

Specific procedures and requirements for responding to gas sector emergencies are covered in this annex. This annex should be read in conjunction with the National Preventive Action Plan: Gas and the National Emergency Plan for Downstream Gas & Electricity.³⁷

1. Legislative Framework

1.1. The retained EU Regulation concerning measures to safeguard the Security of Gas Supply 2017/1938 (the Regulation) sets out measures to safeguard the security of gas supply, including requiring publication of this plan. The Regulation also requires that the plan set out detailed procedures and measures that are to be followed for each crisis level.

1.2. The Gas Safety (Management) Regulations 1996 (GS(M)R) require National Gas Transmission (NGT, previously called National Grid),³⁸ and the Gas Distribution Network (GDN)

³⁷ The National Emergency Plan is published on the GOV.UK website, here: <https://www.gov.uk/government/publications/national-emergency-plan-downstream-gas-and-electricity-2016>.

³⁸ The GS(M)R duty is imposed on National Gas Transmission in its capacity as the 'Primary Transporter;' of the GB National Transmission System. National Gas Transmission is the new name for National Grid Gas following the sale of a majority interest completed in January 2023.

Operators to establish adequate arrangements for dealing with supply emergencies. The GS(M)R define a supply emergency as an emergency endangering persons and arising from a loss of pressure in a network or any part thereof.

1.3. Gas supply emergency procedures are subject to the GS(M)R, which sets out the requirement to have a Network Emergency Coordinator (NEC) where there is more than one gas transportation company operating on the UK network, and the NEC Safety Case demonstrating adequate arrangements to coordinate actions to prevent a supply emergency. The NEC directs all gas industry players in the event of a Network Gas Supply Emergency (NGSE), defined as a potential or actual supply emergency on the National Transmission System. The NEC role is currently performed by a nominated individual within NGT but is independent of the System Operator and independent of any commercial interests of National Gas or the wider industry.

1.4. In Northern Ireland such arrangements are effectively mirrored with the Gas Safety (Management) Regulations (Northern Ireland) 1997 and the Northern Ireland Network Emergency Coordinator (NINEC). The NINEC and the Primary Transmission System Operator (TSO) play the key roles when co-ordinating the response to an emergency.

2. Definition of crisis levels and measures to be adopted per crisis level

2.1. There are different classifications of NGSE, and the NEC may declare up to four stages of a NGSE. These classification levels sit alongside the three crisis levels established under Article 11 of the Regulation. It would be for DESNZ to determine whether a crisis level has been reached and to inform stakeholders. Figure 1 shows the different classifications of NGSE, the corresponding crisis levels, and indicates the possible actions at each stage of the NGSE that may be implemented by NGT as part of the emergency strategy authorised by the NEC.³ A detailed explanation of the actions to be taken is set out below.

Regulation 2017/1938 Crisis Levels:	NGSE Emergency Stage	Gas Deficit: Insufficient Gas Supplies Available to the NGT		Critical Transportation Constraint in the NGGT
		Gas Deficit Emergency	GS(M)R Monitor Breach	
Early Warning	NGSE not declared	<ul style="list-style-type: none"> Shippers incentivised to balance themselves: Price of gas is increased in an attempt to get the market to buy more gas. The GSO trades with shippers to reduce demand. Transmission system reconfiguration: The GSO changes how gas moves around the network. Under BAU, the network is set up to be the most efficient; in this stage the GSO adapt the network to make sure gas gets where it is needed. GSO trading: The GSO buys gas which increases the price of gas. An average price is around 10p – 40p per therm¹. Price will increase to encourage the market, until this is considered not successful. The GSO must stop trading at £14 (but usually stop a lot lower than this). Contractual limits enforced: Firm supply customers (those directly connected to the transmission system) have minimum amounts of gas to be supplied within their contracts. Demand Side Response: A voluntary scheme for large gas users to reduce gas use and receive compensation. Utilise Operating Margins: The GSO will use existing available linepack, usually down to 300-320mcm. Scale back off-peak exit capacity and release of daily firm exit capacity: This will reduce the amount of gas provided to customers. Issue Gas Balancing Notice: The GSO will issue a commercial notice to inform the market of tight gas supply. 		
Alert	1 (Potential)	<ul style="list-style-type: none"> Emergency Spec Gas National Transmission System Linepack Distribution Network Utilisation: Distribution Network Storage & Emergency Interruption Public Appeals 	<ul style="list-style-type: none"> Instruct shippers and storage operators to amend storage flows Public Appeals 	<ul style="list-style-type: none"> Emergency Spec Gas NGT Linepack Distribution Network - Utilisation: Distribution Network Storage & Emergency Interruption Public Appeals
Emergency	2	<ul style="list-style-type: none"> National Gas Transmission plc's participation in the On The Day Commodity Market (OCM) will be suspended Maximise supplies Firm Load Shedding 	<ul style="list-style-type: none"> National Gas Transmission plc's participation in the OCM will be suspended Maximise Supplies Firm Load Shedding 	<ul style="list-style-type: none"> Maximise Storage Firm Load Shedding
	3	<ul style="list-style-type: none"> Allocation & Isolation 		
	4	<ul style="list-style-type: none"> Restoration 		

Figure 1: Network Gas Supply Emergency Classification

Action	Definition
Emergency Spec Gas	Regulation 8(1) of the GS(M)R provides that transporter must not convey gas in the network unless it complies with the requirements specified in Part I of Schedule 3 to the GS(M)R. However, under regulation 8(2), the NEC may, where it is necessary to prevent or delay the occurrence of a NGSE, authorise gas that does not conform with Part I of Schedule 3 to be conveyed in the network if the gas conforms with the requirements of Part II of Schedule 3 to the GS(M)R.
NGT Linepack & Distribution Network Utilisation: Distribution Network Storage & Emergency Interruption	During stage 1 all usable primary system linepack will be utilised by the Primary Transporter (NGT). During the process of collecting data all secondary transporters (the GDNs) will indicate to the primary transporter how much storage they have available. At stage 1 the Primary Transporter may ask the secondary transporters to release this storage by reducing the amount of gas they take from the primary system.
Instruct shippers & storage operators to amend storage flows	In the event that there is likelihood that the safety monitor will be or has been breached, the NEC will seek co-operation from shippers and storage operators to curtail delivery of storage gas to the primary system ³⁹ Shippers and storage operators should amend their flows in accordance with the Primary Transporter's (NGT) request and undertake demand reduction measures or increase supplies to the Network to maintain a supply-demand balance.
Public Appeals	Public appeals target domestic and smaller industrial/commercial consumers (<25,000 tpa). The method for communicating the public appeal messages could include public appeal broadcasts over the radio or television, and social media. Posters and leaflets drops should also be used. Public appeals are made in two phases: (i) an appeal to "use as little gas as possible"; (ii) an appeal "to stop using gas".
Maximise supplies	If it has been identified that there are additional beach gas supplies available, then the Primary Transporter will request that shippers should source as much gas as they can and arrange for delivery to the relevant entry facilities. If it has been identified that there is additional primary system storage gas available over and above that already being delivered or being made available for use the NEC will request the primary transporter to make arrangements for the delivery of this storage gas.

³⁹ Further information on the role of the safety monitor can be found on the National Gas website, here: <https://www.nationalgas.com/balancing/safety-monitors>

Action	Definition
National Gas Transmission plc's participation in the On The Day Commodity Market (OCM) will be suspended	The Primary Transporter will contact the operator of the OCM to inform of the suspension of National Gas Transmission plc's role as residual system balancer with immediate effect. Shippers will continue to be able to trade.
Firm load shedding	Used by transporters to secure a graduated and controlled reduction in firm demand on all or part of their systems in order to keep the system securely pressurised. The primary transporter will identify in the emergency strategy the volume and location of the firm load shedding required. If the emergency strategy identifies the need for load shedding in a secondary system, the primary transporter will communicate with the relevant gas transporter the volume to be shed.
Allocation	If insufficient gas is available to supply the network or parts of the network as applicable, even with firm load shedding, the NEC allocates the available gas to secondary systems and must instruct the primary transporter to physically restrict the offtake of gas by secondary systems to the allocated amount. If secondary transporters are unable to maintain acceptable minimum pressures in their systems, they must apply to the NEC via the Primary Transporter for an increased allocation.
Isolation	If the Primary Transporter is unable to increase the allocation of gas to one or more secondary systems, it must, in consultation with the Primary and Secondary transporters, review the allocation of gas in order to match network supply and demand by selected system isolation. Isolation of these lower pressure systems should result in a loss of gas pressure to consumers.
Restoration	If the supply-demand balance is improving, the primary transporter will develop a strategy to progressively revoke the measures taken during the various stages of the emergency. If allocation and isolation actions have been taken during the emergency, it is likely to take a considerable amount of time to restore all affected customers. When the supply situation has returned to normal and restoration has been completed, the NEC must notify the Primary Transporter of the revocation of the NGSE. The NEC will consult with DESNZ to ascertain the priority customers for restoration.

Figure 2: Network Gas Supply Emergency Actions

2.2. This represents the list of all actions that may be taken by the NEC during an NGSE. The dynamic nature of the gas network and supply is such that the utilisation of each action will depend on the event. However, the agreed process demonstrates the order in which these actions should

be considered. The table below from the industry T/PM/E/1 Procedure for a Network Gas Supply Emergency (E/1) details each stage of an NGSE and the market arrangements in each.

2.3. At the emergency level of an NGSE, the non-market-based measures available to the NEC include:

- **Maximising supplies and storage:** NGT will attempt to maximise all sources of supply onto the transmission system; they will instruct beach and LNG terminals to flow any available gas and instruct storage to empty and suspend their participation in the On-the-day Commodity Market. This measure includes a combination of market-based and non-market-based measures.
- **Firm load shedding:** NGT will inform DESNZ if the NEC has approved the need to move to demand reduction by instructing large users including gas fired electricity power stations to cease taking gas. The customers instructed to cease taking gas will vary depending on the type of emergency. In general, however this will be in size order starting with the largest users directly connected to the National Transmission System (NTS).

Each GDN has a list of prioritised customers, large users of gas that will be the last to be instructed to cease taking gas in an NGSE. These include hospitals, and large industrial sites that would suffer extensive and costly damage if they lost gas supply.

As the crisis manager, the NEC will make the informed decision to enact non-market-based measures at the Emergency level, communicating each decision with key industry stakeholders and DESNZ via NGT.

Stage	Critical Transportation Constraint	Gas Deficit Emergency	Safety Monitor Breach
Normal Operation	Normal commercial arrangements in place.		
1	Normal commercial arrangements in place.		
2, 3, 4	Uniform Network Code Section Q provisions apply but only for additional storage gas. Normal commercial regime continued.	Uniform Network Code Section Q provisions apply. National Gas Transmission plc will suspend its participation in the commercial market regime.	Uniform Network Code Section Q provisions apply. National Gas Transmission plc will suspend its participation in the commercial market regime.
Normal Operation	Normal commercial arrangements in place for storage gas 05:00 hours on gas day following the declaration of the end of the NGSE.	Normal commercial arrangements in place 05:00 hours on gas day following the declaration of the end of the NGSE.	Normal commercial arrangements in place 05:00 hours on gas day following the declaration of the end of the NGSE.

3. Specific measures for the electricity and district heating

3.1. The NGSE framework does not explicitly provide for district heating systems. However, where possible, domestic consumers connected to such systems would be treated in the same way as domestic gas customers.

3.2. Gas-fired power stations are some of the largest industrial gas customers and are among those that may be instructed to stop or reduce their consumption of gas. A gas emergency that restricts gas supply to gas-fired electricity generation plants (either through technical faults or due to emergency demand distribution to protect the gas network), could result in a shortfall of electricity generation leading to an electricity emergency which could require demand control (e.g., customer disconnections) to balance supply and demand. Further information on the mechanisms and existing provisions to mitigate the potential impact of a disruption of gas supply on the electricity sector are outlined in the Electricity Supply Emergency Code).⁴⁰

While electricity disruption is serious and impactful, it is more likely to be of short or intermittent duration as supplies can be restored relatively quickly and safely, in comparison to domestic gas which requires manual restoration of supply to each premises. The risks associated with a failure to balance the gas network are more severe, including potential fire and explosions, than the risks associated with short term power cuts.

4. Crisis Manager or team

4.1 In the event of a supply emergency.

4.2 The NEC is responsible for:

- Coordinating actions across the affected parts of the gas network to take action to prevent, as far as possible, a supply emergency developing, and where it cannot be prevented.
- Taking timely decisions in order to minimise the safety consequences.
- Directing gas customers to reduce or cease consumption within a given timeframe.
- Directing gas storage or suppliers to increase supply within a given timeframe.

5. Roles and Responsibilities of different actors

5.1. Regulation 2017/1938 requires that natural gas undertakings and industrial gas consumers are given sufficient opportunity to respond at each crisis level.

5.2. Under the licences to operate, granted to NGT and the GDN Operators by Ofgem, the natural gas undertakings are required to prepare a Uniform Network Code (UNC).

The UNC:

- Sets out the commercial relationship between the undertakings and the users of their systems.
- Covers arrangements for the timely exchange of information between the undertakings and system users to permit the safe and efficient operation of the network.
- Sets out arrangements to incentivise system users to deliver sufficient gas to the system to meet their customers' requirements.

5.3. NGT, via its Gas National Control Centre, continuously monitors the physical and commercial operation of the National Transmission System (NTS). The GDN Operators, via their Distribution Network Control Centres, continuously monitor the physical operation of their high-pressure gas distribution networks.

⁴⁰ The Electricity Supply Emergency Code (ESEC) can be found here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/995049/esec-guidance.pdf

5.4. NGT is responsible for providing information to system users to allow them to deliver sufficient gas to the system to meet their customers' requirements. This includes providing forecast gas demand information for the NTS for the current and following gas days.

5.5. On an hourly basis throughout the gas day, NGT will publish information to system users on the current supply/demand position on the NTS. This information is published on a number of systems, including the Gemini commercial system (NGT and system users make use of this to exchange information with each other) and the National Gas website.⁴¹

5.6. NGT also keeps all industry participants, including natural gas undertakings and industrial gas consumers, updated before and during the gas day of the supply/demand balance on the NTS. Detailed information on the current supply/demand balance on the NTS is made available via the National Gas website. Examples of the information provided on the National Gas website include forecast and actual instantaneous physical flows being delivered to the NTS from the beach terminals, LNG importation terminals and interconnectors.

6. Measures regarding undue consumption by customers who are not protected customers

6.1. The technical arrangements in place to prevent undue gas consumption of customers who are connected to a gas distribution or transmission network but are not prioritised customers include:

- **Public Appeals:** As mentioned above, public appeal targets domestic and smaller industrial/commercial consumers (<25,000 tpa), including those who are not prioritised customers. This would be initiated by the Network Emergency Coordinator and would target domestic and smaller commercial customers.
- **Industrial Load Shedding:** NGT will inform DESNZ if they need to move to demand reduction by instructing large users including gas fired power stations to cease taking gas. The customers instructed to cease taking gas will vary depending on the type of emergency. In general, however this will be in size order starting with the largest users directly connected to the NTS.

7. Emergency Tests

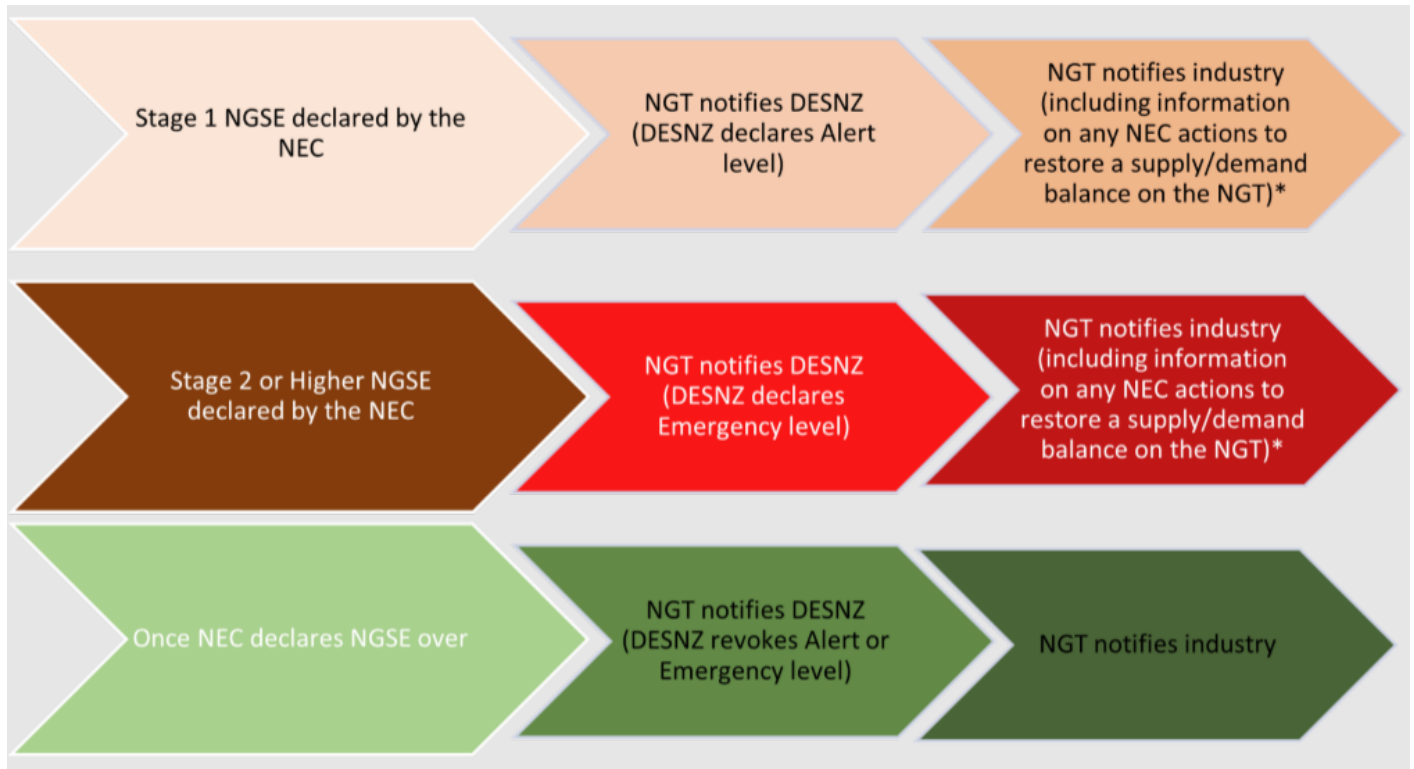
7.1. As part of its safety case, the NEC coordinates a yearly, real-time simulation of emergency situations (referred to as an 'exercise') with the UK Government and relevant industry personnel on the emergency procedure stipulated in the NGSE.

7.2. Further information on the actors and procedures involved, as well as the concrete high and medium impact scenarios simulated in this testing of the NGSE can be found in the post exercise report, published on the National Gas Transmission website.⁴² This post exercise report contains details of the tests carried out since the last emergency plan was presented, the main results, and those measures adopted as a result of these tests.

⁴¹ <https://mip-prd-web.azurewebsites.net/>

⁴² The post exercise report of the 2022 NEC Industry Exercise of the NGSE can be found on the National Gas website, here: <https://www.nationalgas.com/safety-and-emergencies/network-gas-supply-emergencies-ngse>

8. Activation of a response



*The actions authorised by NEC will be dependent on the cause and severity of the emergency

Figure 3: Flow chart showing the activation of a response.⁴³

9. Safety Cases and procedures

9.1. The Regulation requires this plan to set detailed procedures and measures to be followed for each Crisis Level.

9.2. Domestically, the GS(M)R requires NGT and the GDN Operators to establish adequate arrangements for dealing with supply emergencies. GS(M)R defines a supply emergency as an emergency endangering persons and arising from a loss of pressure in a network or any part thereof. A Network Gas Supply Emergency has been categorised by the NEC as a potential or actual supply emergency on the National Transmission System. Arrangements on gas supply emergency scenarios differ in Northern Ireland. Further information on the legislation, licenses and codes associated with emergency arrangements in Northern Ireland can be found in the section of the National Preventive Action Plan: Gas, entitled 'Other UK Government measures and obligations'.

9.3. As set out above, GS(M)R requires the NEC to prepare a safety case. The NEC's safety case describes the arrangements established by the NEC for co-ordinating the actions of relevant industry participants, including the GDN Operators, to prevent a supply emergency occurring or to minimise the safety consequences where one develops.

⁴³ Further information on the activation process of a large-scale gas emergency responses is detailed in section 3.1 of the National Emergency Plan Downstream Gas and Electricity. Further information on the response activation process can be found in the National Emergency Plan for Downstream Gas and Electricity, available on the GOV.UK website.

9.4. NGT and the GDN Operators are also required under GS(M)R to prepare safety cases for their own networks. These safety cases describe the arrangements established by NGT or the GDN Operators to manage an NGSE or LGSE (Local Gas Supply Emergency) and should be consistent with the arrangements within the NEC safety case.

9.5. The NEC arranges for the preparation of the Procedure for Network Gas Supply Emergency. The purpose of this procedure is to provide a measured, appropriate, and co-ordinated response to an NGSE in accordance with the requirements of the NEC safety case. The procedure describes the causes and classifications of an NGSE, the arrangements NGT has in place for managing the NGSE, the possible stages of an NGSE and the actions that could form part of the strategy for resolving the emergency. The definition and actions of an NGSE are outlined in further detail in Figure 1. The procedure is made available to all industry participants via publication on the National Gas website.⁴⁴

9.6. There are different classifications of NGSE and the NEC may declare up to four stages of a NGSE. Figure 1 above shows the different classifications of NGSE and indicates the possible actions at each stage of the NGSE that may be implemented as part of the emergency strategy, subject to authorisation by the NEC, to resolve the emergency.

9.7. NGT and the GDN Operators have also prepared detailed procedures describing the arrangements they have in place for managing an NGSE. Other industry participants are expected to establish and maintain procedures for responding to gas supply emergencies in accordance with their statutory or regulatory obligations and these procedures should align with the Procedure for Network Gas Supply Emergency and in turn the NEC Safety Case.

9.8. In addition, the GDN Operators have prepared Procedures for Managing a Local Gas Supply Emergency (LGSE) in a local Distribution Zone. The purpose of this procedure is to provide a measured, appropriate, and co-ordinated response to a LGSE in accordance with the requirements of the GDN Operator's safety case.

9.9. T/PM/E/1 is the procedure used to manage a Network Gas Supply Emergency (NGSE) in accordance with the directions of the NEC and includes detail on the reporting obligations imposed on natural gas undertakings. OBJ The procedure is owned, maintained and implemented by National Gas Transmission as the operator of the primary transportation system, the national gas transmission system.

9.10 The emergency procedures are reviewed on a regular basis and are subject to periodic testing to ensure they remain suitable for use during an NGSE and/or LGSE and support NGT and the GDN Operators in meeting their statutory safety obligations including GS(M)R.

9.11. The NEC runs an annual cross-industry/HMG exercise to test the emergency arrangements in place to manage an NGSE as part of its safety case obligations. The NEC prepares a report providing the results of these exercises and identifying recommendations to improve the emergency arrangements which must be approved by the HSE and made available to all industry participants by NGT.

9.12. Figure 4 indicates the extent to which natural gas undertakings and industrial gas consumers may be affected at each of the crisis levels for any potential or actual gas supply disruptions.

9.13. Regulation 2017/1938 requires that natural gas undertakings and industrial gas consumers are given sufficient opportunity to respond at each crisis level. Figure 5 indicates the likely

⁴⁴ <https://www.nationalgas.com/safety-and-emergencies/network-gas-supply-emergencies-ngse>

interactions between the natural gas undertakings and industrial gas consumers and the Competent Authority and Ofgem at each of the crisis levels for any potential or actual gas supply disruptions (though these may differ, depending on the specific situation).

Undertaking	Extent to which affected		
	Early Warning Level	Alert	Emergency
Gas Distribution Network Operators	<ul style="list-style-type: none"> Normal physical and commercial operation of GDN continues. 	<ul style="list-style-type: none"> Co-operate with NGT and the NEC in managing NGSE. May be requested to maximise utilisation of available storage within network and reduce inputs into network from NTS. 	<ul style="list-style-type: none"> Co-operate with NGT and the NEC in managing NGSE. May be requested to implement demand reduction measures including firm load shedding. May need to declare and manage a LGSE within network.
National Gas Transmission	<ul style="list-style-type: none"> Normal physical and commercial operation of NTS continues. Increased monitoring of supply/demand situation. Increased provision of information regarding supply/demand situation on NTS to industry participants. 	<ul style="list-style-type: none"> Stage 1 of an NGSE declared by the NEC. Strategy developed and, following authorisation by the NEC, implemented to achieve an acceptable balance between supply and demand on NTS. Notify industry participants of actions being implemented as part of authorised emergency response strategy. Continue to participate in energy market as residual system balancer. 	<ul style="list-style-type: none"> Stage 2 (or higher) of an NGSE declared by the NEC. Strategy developed and, following authorisation by the NEC, implemented to achieve an acceptable balance between supply and demand on NTS. Notify industry participants of actions being implemented as part of authorised emergency response strategy. Suspend participation in energy market as residual system balancer as required (depending on the nature of the emergency).
Industrial Gas Consumers connected to NTS or a Gas Distribution Network (including electricity producers)	<ul style="list-style-type: none"> Normal physical and commercial operations continue. 	<ul style="list-style-type: none"> Co-operate with NGT and NEC in managing NGSE. May reduce gas consumption requirements in response to energy market signals. 	<ul style="list-style-type: none"> Co-operate with NGT and NEC in managing NGSE. Co-operate with GDN Operator in managing NGSE and LGSE. Gas consumption may be reduced or suspended. Operations may be subject to directions from Competent Authority making use of emergency powers.

Figure 4: Effect on Gas Undertakings

	Interaction with DESNZ			Interaction with Ofgem		
	Early Warning	Alert	Emergency	Early Warning	Alert	Emergency
National Gas Transmission (NGT)	Notification of declaration from DESNZ			Exchange of information regarding impact of crisis level on operation of emergency market		
	Exchange of information regarding supply/demand situation on NTS.	Provision of information to DESNZ regarding supply/demand situation on NTS and regarding implications of emergency response strategy on NTS operations.			Notification of any temporary impairment of NGT's ability to meet regulatory obligations during NGSE.	
					Notification of suspension of NGT as residual system balancer in energy market.	
Gas Distribution Network Operators (GDN)	Not expected to occur.	Provision of information to DESNZ regarding implications of emergency response strategy on GDN operations.		Not expected to occur.		Notification of any temporary impairment of GDN Operator's ability to meet regulatory obligations during NGSE and/or LGSE.
Industrial Gas Consumers connected to NTS or GDN (including electricity producers)	Not expected to occur.	DESNZ may issue directions to electricity producers connected to the NTS or a GDN under emergency powers.		Not expected to occur.		

Figure 5

9.14. Compensation is available to all commercial and domestic customers who are load shed in an NGSE demand. The maximum pay-out to impacted customers is £14 per therm, the calculated Value of Loss Load (VoLL), and compensation can only be claimed for the first day a customer is disconnected. No compensation is available for any additional days a customer remains disconnected. On average, domestic households use approximately 2 therms per day. The compensation is calculated on typical consumption by consumer type, not an estimate of forgone consumption for every individual consumer.

9.15 After the NGSE has ended, National Gas Transmission will provide an estimate of the minimum payment consumers can expect to receive and Ofgem reviews this estimate. Impacted customers can apply to receive compensation via their gas supplier, who is paid by gas shippers, who are paid by National Gas Transmission via the Residual Balancing mechanism. National Gas Transmission are permitted to take up to 4 months to process compensation after an NGSE, so pay-outs may occur after a significant period of time has passed following the NGSE.

9.16. In the highly unlikely event of a gas supply emergency, the Foreign, Commonwealth and Development Office would lead on international liaison and international partners will in turn communicate with industry personnel.

9.17. In the highly unlikely event of a gas supply emergency, DESNZ will ensure that cross-border access to infrastructure in accordance with Regulation (EC) No 715/2009 is maintained as far as technically and safely possible. At Emergency level of a NGSE, in the unlikely scenario where GB is still exporting gas to Europe via interconnectors, the NEC (via the GSO) will request their assistance by reducing flow.⁴⁵ In the highly unlikely event in which the NEC must request that all exports from GB to Europe should cease, the NEC would consider the potential risk of this action to the transportation of gas purchased for use in Europe but transported through UK (for example, via one of the UK's LNG storage sites).

To note, GB also have gas interconnectors to Ireland and to Northern Ireland, but these connections are treated as Local Distribution Network offtakes, with the same status as the other Gas Distribution Network Operators offtakes in an NGSE.

⁴⁵ In a Stage 2 NGSE, this would be a legal direction under GS(M)R.