GAS TRANSMISSION OUTLOOK

2025 - 2026

GMO Northern Ireland mutualenergy GNI (UK) Ltd.

UNDERSTANDING TODAY, PLANNING FOR TOMORROW.

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PLANNING FOR TOMORROW.

GMO Northern Ireland

CONTENTS

EXECUTIVE SUMMARY

1. EXECUTIVE SUMMARY

Effective gas network planning ensures the capability of the gas transmission network to deliver for Northern Ireland's needs: to heat our homes, generate our electricity and power our industries and businesses. Mutual Energy Limited (MEL) and GNI (UK) Limited, as the gas Transmission System Operators (TSOs), working in unison through the Gas Market Operator for Northern Ireland (GMO NI) are responsible for gas network planning in Northern Ireland.

The analysis conducted for this edition of the Gas Transmission Outlook (GTO) concludes that the NI Network has the capability to deliver the gas requirements of NI over the next 10 years provided there is a sufficient gas supply delivered at reliably high inlet pressures. Higher pressures are available under the enhanced pressure arrangements. However, beyond these as is the case in several scenarios, pressures are subject to total SWSOS system demands which are out of scope for this study.

This is despite a large shift in how the network will be utilised to support power generation. Total annual gas power generation volumes are predicted to fall over coming years. Yet, peak day requirements will likely grow considerably to support intermittent renewables, including wind and solar. Continuing growth in distribution sector demand will contribute to these anticipated larger peaks, requiring supply from both entry points. Prospective gas power generation developers should therefore engage with the TSOs early ahead of participation in future SEM Capacity Auctions. This will allow sufficient time for additional assessments to be conducted to ensure the connection can be accommodated, thereby maximising the likelihood of potential projects meeting key milestones if awarded an electricity capacity contract.

However, there is limited headroom in later years if sufficient inlet pressures and supplies are unavailable during periods of heightened, severe winter demand. It should be noted that this is unlikely as is the likelihood of severe winter conditions as indicated by their 1 in 20 probability, but nevertheless the NI Network must anticipate this.

Challenges provide opportunities and there are a multitude of solutions that can be explored to streamline operational procedures and reinforce the NI Network. Collaborating with the power sector will help smooth the effects of short notice OCGT dispatch while longer term solutions are developed to increase NI Network flexibility.

Longer term solutions involve extracting the maximum from existing infrastructure while adding targeted reinforcements where necessary. For example, the addition of network upgrades can help unlock Northern Ireland's advantageous supply of biomethane that would assist with many network resilience concerns. There are indications that a supply of 7-11GWh/day could potentially be achievable by 2035, which would:

- Ease the strain on interconnectors during days of peak demand. 7-11GWh represents a significant portion of the demand gap between average and severe winter day demand levels for most of the projected years.
- Improve security of supply.
- Contribute to improving network flexibility.

Biomethane could provide a decarbonised like-for-like natural gas substitute requiring no upgrades downstream to gas fired domestic appliances or generation plant. To fully realise this potential, NI Network upgrades will be required. These may include solutions like reverse compression to transmission level and/or distribution level network linkages. Similar future developments in gas storage would further enhance security of supply and network resilience whilst advancing decarbonisation objectives. The TSOs will strive to advance these where it is within their power to do so for the good of the NI consumer.

1.1. KEY MESSAGES

1. Demand Outlook

The analysis shows total annual gas demand declining slowly over the next 10 years reflecting reduced overall demand for gas power generation offsetting continued growth in the distribution sector. Wind and solar generation is forecasted to provide a greater proportion of growing electricity demand. Conversely, the peak gas demand required on particular days is forecasted to increase dramatically to support renewables. Gas generation provides flexible back up generation on days where there is minimal wind and solar generation (conditions known as “dunkelflaute”). These conditions are likely to prevail during cold snaps which significantly increases the likelihood of high power generation demand coinciding with high distribution demand for domestic heating.

2. Network Resilience

The modelling reveals that the NI Network has the capability to cope with all but the most strenuous of demand scenarios in the next 10 years. This is provided that entry capacity is unimpeded at both Interconnection Points (IPs) and the network is managed effectively at high inlet pressures. Higher pressures are available under the enhanced pressure arrangements, however beyond these, as is the case in several scenarios, are subject to total SWSOS system demands which is out of scope for this study. However, there are operational challenges, both now and ahead. The dispatch of Open Cycle Gas Turbines (OCGTs) reduce network flexibility, with fast ramp rates they can quickly drain system pressures. In addition, accommodating potential severe winter demands in future years might require the system to be operating at its maximum capability.

3. Supply Developments

There is promising potential for future biomethane injection to contribute to decarbonisation and security of supply objectives. The analysis reveals that network reinforcements are required to achieve the full potential of this ambition. Realisation of a significant proportion of the potenital supply volumes would contribute to alleviating stress on the NI Network, particularly during future winter peak days to reinforce network resilience.

GLOSSARY

2. GLOSSARY

ACER
European Union Agency for the Cooperation of Energy Regulators

AD
Anaerobic Digestion

AGI
Above Ground Installation

AIRAA
All-Island Resource and Adequacy Assessment (annual publication produced by EirGrid & SONI)

AWP
Average Winter Peak

BGTL
Belfast Gas Transmission Limited

Capacity
Space within the pipelines as it applies to IPs and exit points. Shippers purchase capacity products to book space in which to flow gas volumes through pipelines.

CCGT
Combined Cycle Gas Turbine. A more efficient gas turbine power plant technology that burns natural gas to drive a turbine connected to an electrical generator. The waste heat from the gas turbine's exhaust is used to produce steam, which drives a steam turbine to generate additional electricity.

CV
Calorific Value which represents the energy density of a fuel source.

Degree Day
A unit that measures the difference between outside air temperature and a specific base temperature of 15.5°C to determine heating needs.

DESNZ
Department for Energy Security and Net Zero

DNO
Distribution Network Operator

EirGrid
Electrical system operator for the Republic of Ireland

ERAA
European Resource Adequacy Assessment

Exit Point
A commercial point at which gas leaves the transmission network either to enter a distribution network or a power station.

GMO NI
Gas Market Operator for Northern Ireland

GNI
Gas Networks Ireland

GNI (UK) Ltd
A wholly owned subsidiary of GNI

GNO
Gas Network Operator

GTO
Gas Transmission Outlook

HAR
Hydrogen Allocation Round

HVAC
High Voltage Alternating Current

HVDC
High Voltage Direct Current

Hydraulic Modelling
The use of mathematical equations to simulate and analyse the flow of gas through a network of pipes and associated equipment like compressor stations and valves.

I&C
Industrial & Commercial distribution gas consumers

IP
Interconnection Point which serves as an entry point to the NI Gas Transmission Network from another gas transmission network or an exit point from the NI Gas Transmission Network, insofar as there are capacity booking procedures at that point.

LNG
Liquified Natural Gas

MEL
Mutual Energy Limited of which PTL, BGTL & WTL are subsidiaries

MOP
Maximum Operating Pressure

NESO
GB's National Energy System Operator

NI Network
Northern Ireland Gas Transmission Network

NI GCS
Northern Ireland Gas Capacity Statement (previous name of the 10-year statement)

Nomination
An instruction issued by a gas shipper to the transporter to flow gas at an IP or an exit point on the transmission network for a particular day.

NTS
National Gas National Transmission System in Great Britain

NWP
North West Pipeline

OCGT
Open Cycle Gas Turbine. A flexible gas turbine power plant that burns natural gas to drive a turbine connected to an electrical generator. The exhaust gases are released directly into the atmosphere instead of being reused.

Plexos
An energy market simulation software developed by the company Energy Exemplar.

PTL
Premier Transmission Limited

SEM
Single Electricity Market

Shipper
A company that transports gas through a network and supplies it to an end user.

SNIP
Scotland to Northern Ireland Pipeline

SNP
South North Pipeline

SNSP
System Non-Synchronous Penetration: A measure of how much renewable (wind and solar) generation is in the electricity generation mix at any time.

SONI
Electrical System Operator for Northern Ireland

SWP
Severe Winter Peak

SWSOS
South West Scottish Onshore System

TA
Transmission Agreement

TER
Total Electrical Requirement

TES
EirGrid & SONI's Tomorrow's Energy Scenarios publication.

TSO
Transmission System Operator

UR
Utility Regulator for Northern Ireland

WTL
West Transmission Limited

WTP
West Transmission Pipeline

Report Structure

Section 3

Introduction to the Gas Transmission Outlook & Gas Network Planning:
Introduces & contextualises the GTO & the new approach towards gas network planning.

Section 4

Methodology & Assumptions:
Details the methodology, assumptions & the scenarios employed in the modelling.

Section 5

Network Capability:
Main section outlining the findings of the demand & hydraulic modelling.

Section 6

Flexibility& Supply:
Main section outlining flexibility challenges & supply considerations.

Section 7

Conclusions & Next Steps:
Summarises the key modelling results, challenges and future direction of the GTO.

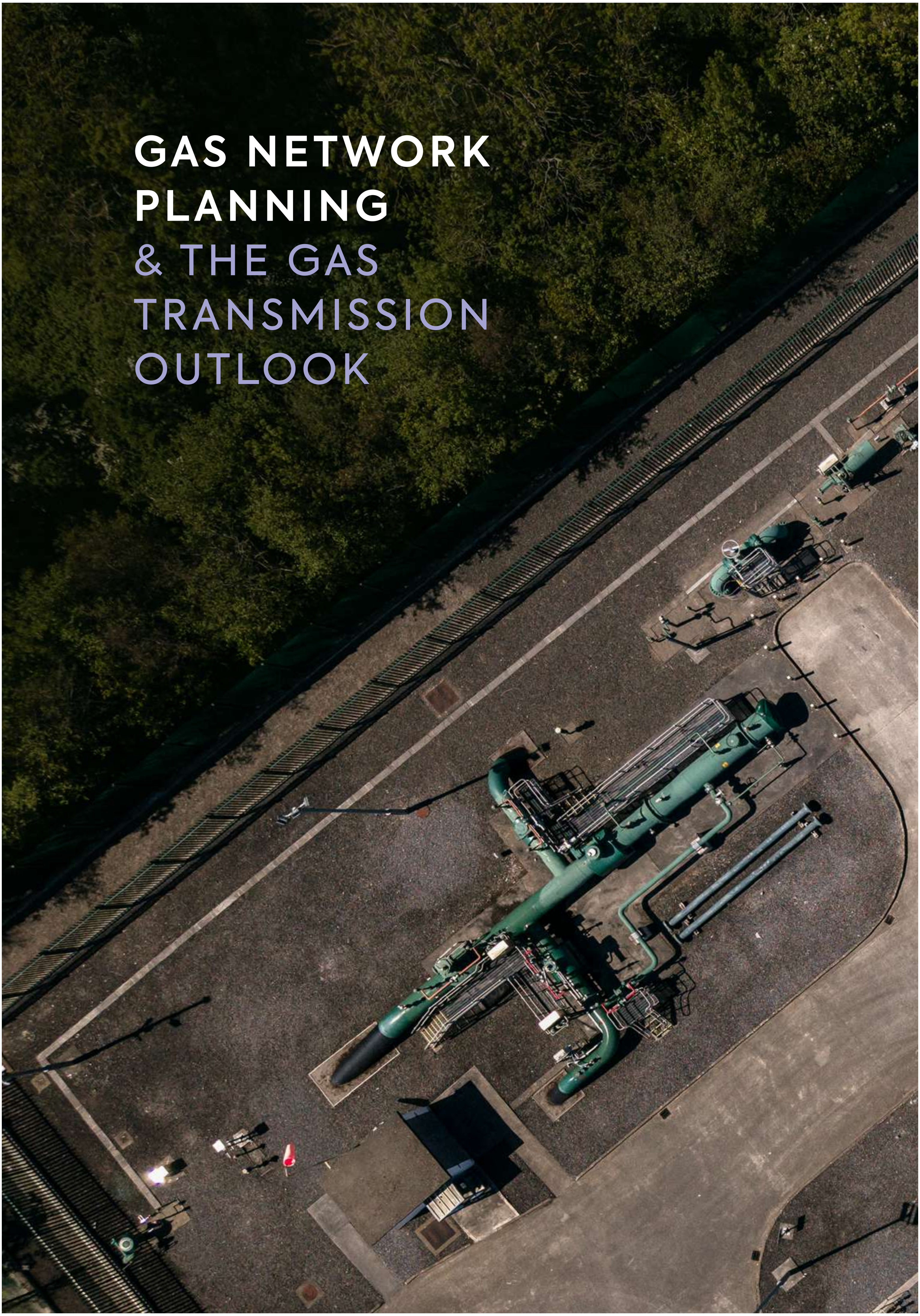
Section 8

Energy Horizons:
Introduces the additional new gas network planning publication.

Section 9

Appendices

GAS NETWORK PLANNING
& THE GAS TRANSMISSION OUTLOOK



3. GAS NETWORK PLANNING & THE GAS TRANSMISSION OUTLOOK

The first, and most fundamental, of the network planning responsibilities is to undertake an annual assessment of the adequacy of the NI Network to deliver the gas required over the next 10 years. The TSOs are obligated to conduct this assessment under their respective licence conditions[1].

The annual assessment involves forecasting the likely gas demand and evaluating the capability of the transmission infrastructure to deliver, ensuring security of supply. Simply put, this GTO will appraise whether the transmission network can physically flow the gas demand required for NI, every day for the next 10 years, at all times of day and during all seasons.

Previously, the TSOs have published a similar capability analysis under the title of "NI Gas Capacity Statement" (NI GCS)[2]. However, the needs of the rapidly evolving energy landscape have rendered its approach insufficient. The growth of renewable electricity generation and the ambition to significantly scale it up to 80% by 2030[3] means that gas powered generation is no longer operated as continuous baseload but rather as support for intermittent renewables. Gas power stations will be flexibly turned on and off when required to generate what can't be provided by renewables alone. This will have a huge impact on gas demand for power generation over the coming years. Compounding this is an uncertainty over the direction of decarbonisation for both domestic heating and for industry, both of which will heavily impact the evolution of distribution gas demand. Despite this uncertainty, the analysis demonstrates that gas will continue to be vital to Northern Ireland's energy needs.

Plotting the future NI Network trajectory requires a fresh approach. As a result, the TSOs have changed the approach for this first iteration of the GTO. By embracing greater collaboration, the TSOs can improve coordination across a multitude of stakeholders. This will stimulate a more informed gas network planning function that complements whole system energy planning, ultimately ensuring efficient planning that will guarantee security of supply and support NI's contribution towards decarbonisation and net zero targets. This model of whole energy planning is consistent with the cross sectoral coordination approach promoted and adopted by jurisdictions such as GB where NESO perform this role, or in the EU where ENTSOG and ENTSOE are legislatively required under the 4th package to jointly carry out such cooperation.[4]:

Gas as a fuel source has already helped facilitate the removal of coal from the electricity fuel mix in Northern Ireland and empowered over 300,000 homes and businesses[5] to use cleaner natural gas over more carbon intensive fuels. Effective future energy policy in NI should build on the decarbonisation role the gas network has already played and can increasingly play as the biomethane and hydrogen sectors develop. This GTO will provide the first insight into wider gas network planning activities, with the TSOs' ambition to evolve and improve it year by year. Through industry collaboration and feedback, the expectation is to better inform policy makers and the wider energy industry alike, to identify possible impacts and requirements on the NI Network.

[1] https://www.uregni.gov.uk/gas-licences - Condition 2.13 of PTL & BGTL licence, condition 2.11 of GNI (UK) licence & condition 2.10 of WTL licence.
[2] https://www.gmo-ni.com/assets/documents/Publications/NI-Gas-Capacity-Statement/NIGCS-2024-25.pdf
[3] https://www.daera-ni.gov.uk/articles/climate-change-act-northern-ireland-2022-key-elements
[4] https://www.acer.europa.eu/sites/default/files/documents/Official_documents/Acts_of_the_Agency/Opinions/Opinions/ACER-Opinion-01-2026-Integrated-Model.pdf
[5] https://www.uregni.gov.uk/files/uregni/documents/2025-09/Q2%202025%20QREMM%20report_0.pdf

The TSOs objectives are to:

ENSURE SECURITY OF SUPPLY

The primary objective is ensuring the NI Network can deliver the gas required for the needs of Northern Ireland.

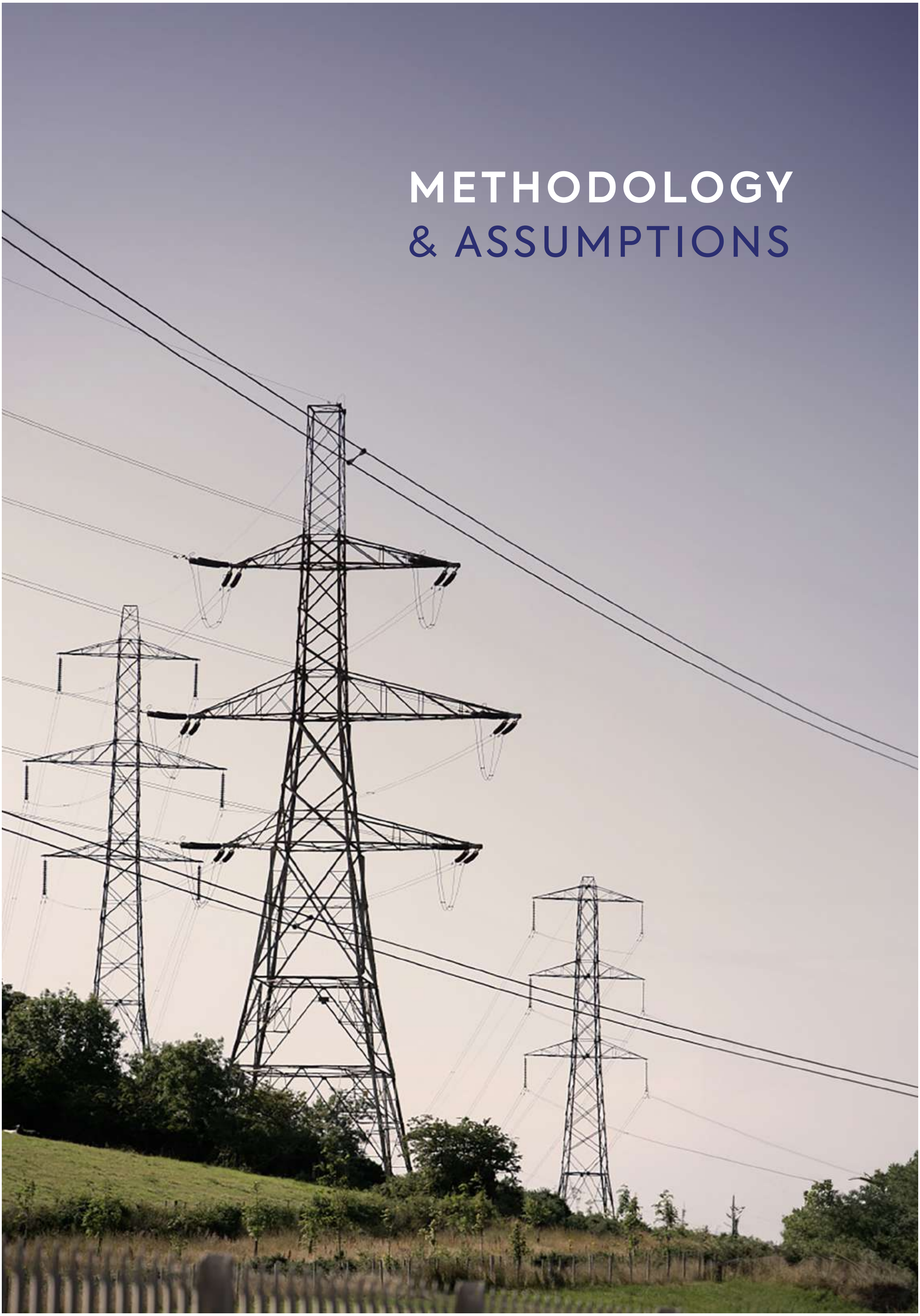
INFORM WHOLE SYSTEM PLANNING

A collaborative approach will help to inform other stakeholders for more effective & coordinated planning.

ENABLE NET ZERO & DECARBONISATION OBJECTIVES

The TSOs will empower the NI Network and its users to achieve decarbonisation objectives.

METHODOLOGY & ASSUMPTIONS



4. METHODOLOGY & ASSUMPTIONS

4.1. Northern Ireland Network Anatomy

Fig. 1 below features the layout of Northern Ireland's Gas Transmission Network (the NI Network) and its constituent pipelines, entry points and exit points that shippers utilise to flow gas to its end destination.

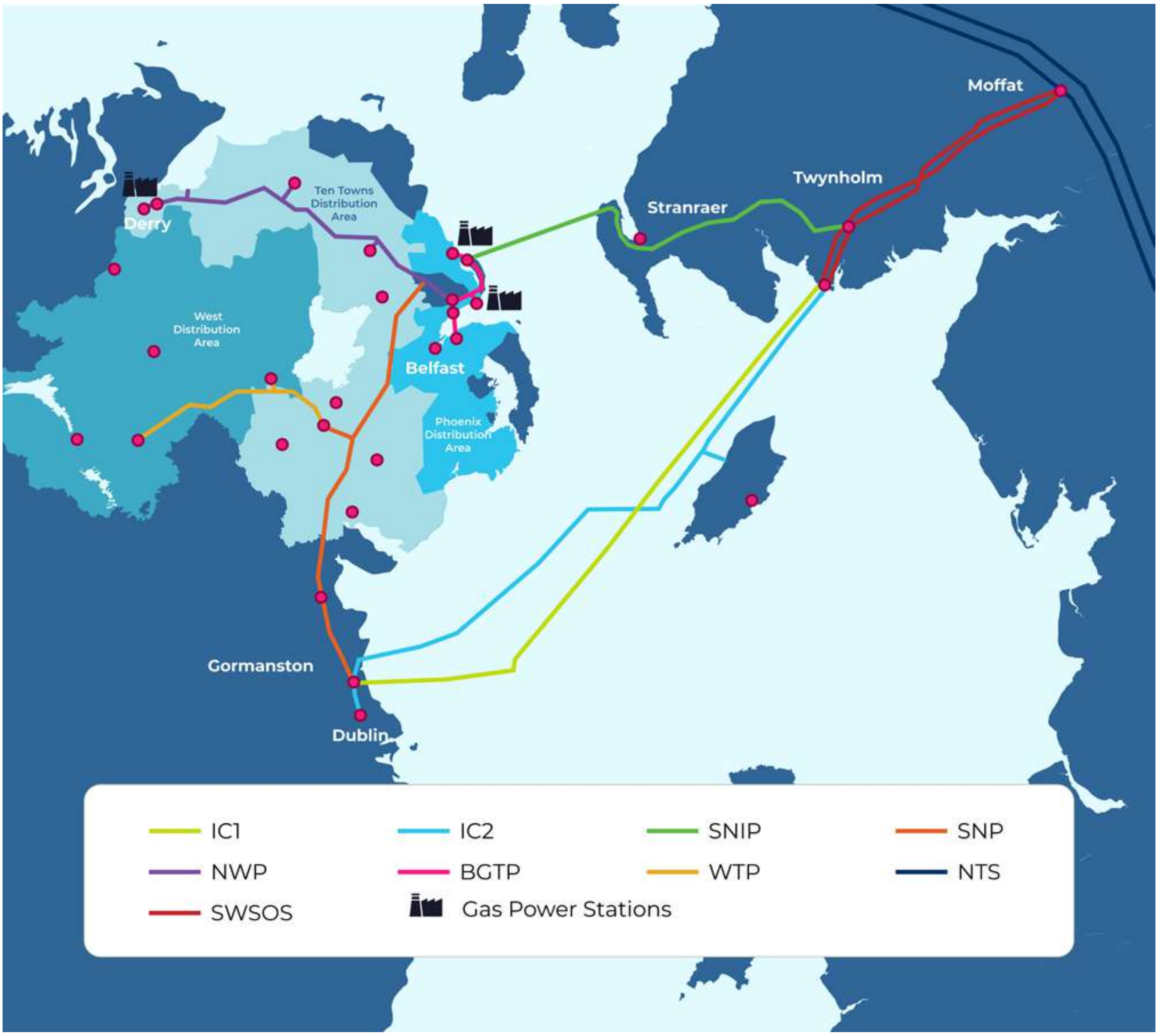


Fig. 1 – Northern Ireland Gas Transmission Network

• Entry Points/Interconnection Points (IPs)

The NI Network consists of two entry points or IPs situated in Northern Ireland's neighbouring jurisdictions of Great Britain (GB) and the Republic of Ireland (RoI):

1. **The Moffat IP**[6] is the commercial entry point for Northern Ireland. The Moffat IP is the connection point for the South West Scotland Onshore System (SWSOS) owned by GNI (UK) to tie into the National Gas National Transmission System (NTS) in Great Britain ("GB"). The Scotland to Northern Ireland Pipeline (SNIP) ties into the SWSOS at Twynholm and is the primary gas supply route from GB's NTS into NI.

2. **The South North IP**, located at Gormanston[7], facilitates the flow of gas from RoI northwards into NI via the South North Pipeline (SNP) and is used as the secondary gas supply route.

Each of these IPs facilitate the flow of gas into NI and gas shippers can book entry capacity at the IPs to give them the rights to nominate gas into Northern Ireland. It is worth noting that capacity is allocated at these points via auctions, and due to the Moffat IP products currently being at a lower tariff than the equivalent Gormanston IP capacity products, the route via the SNIP will "fill up" before the route via the Republic of Ireland. The available capacity at each of these IPs is detailed in Appendix B.

• Transmission Pipelines:

High pressure gas conveyance pipelines can be described as the motorways of the gas network. Their construction was completed in various phases, and as such the pipeline ownership is fragmented into the various Transmission System Operators. They all fall under two main parent companies Mutual Energy Limited (MEL), and / Gas Networks Ireland (UK) Limited (GNI (UK)).

Three are operated by MEL:

1. **Scotland to Northern Ireland Pipeline (SNIP)** – operated by Premier Transmission Limited (PTL)

2. **Belfast Gas Transmission Pipeline (BGTP)** – operated by Belfast Gas Transmission Limited (BGTL)

3. **West Transmission Pipeline (WTP)** – operated by West Transmission Limited (WTL)

Two are operated by GNI (UK):

1. **North West Pipeline (NWP)**

2. **South North Pipeline (SNP)**

[6] Where entry points are referenced for commercial reasons (relating to capacity or nominations), IP names are used but location names are used when referencing physical location or pressure configurations.
[7] Where entry points are referenced for commercial reasons (relating to capacity or nominations), IP names are used but location names are used when referencing physical location or pressure configurations.

• Distribution Exit Points:

The transmission system feeds three lower pressure gas distribution areas operated by Distribution Network Operators (DNOs) to supply homes and businesses:

1. **Belfast Distribution Area** – fed by the BGTP and operated by Phoenix Energy
2. **Ten Towns Distribution Area** – fed by the SNP and NWP and operated by Kinecx Energy
3. **West Distribution Area** – fed by the WTP and operated by Evolve

The DNOs book annual exit capacity on behalf of the gas shippers that operate in these areas. The gas shippers are responsible for nominating their gas flows at these exit points.

• Power Generation Exit Points:

There are three power station connections on the NI Network:

1. **Ballylumford Power Station** – Combined Cycle Gas Turbines (CCGTs) units operated by EP Ballylumford and fed by the BGTP
2. **Coolkeeragh Power Station** – CCGT units operated by Coolkeeragh ESB and fed by the NWP
3. **Kilroot Power Station** – Open Cycle Gas Turbines (OCGTs) units operated by EP Kilroot and fed by the BGTP

Each power station is a gas shipper and is responsible for booking its own annual exit capacity and nominating its gas flows at IPs and these exit points.

• Stranraer and Haynestown

SGN operates a distribution network supplying the town of Stranraer in Scotland, which is supplied via the SNIP. GNI operates a distribution network supplying the Dundalk area in RoI, which is supplied via the SNP.

Both physically function similarly to the distribution exit points on the NI Network. However, to accommodate their demand, commercial arrangements facilitated by inter-operator agreements reserves capacity for them on the NI Network. This has been accounted for in the modelling.

• Carrickfergus Above Ground Installation (AGI)

The Carrickfergus AGI is not a network exit point, but it connects the transmission pipelines of MEL with that of GNI (UK) in NI. Since implementation, it has been configured only for unidirectional flow of gas from the BGTP into the NWP. From gas year 2026/2027, and subject to Utility Regulator (UR) approval this AGI will be reconfigured to operate in free flow mode on an interim basis, allowing the unrestricted bidirectional flow of gas between these pipelines to realise full network flexibility.

For further reading on the gas network anatomy, a detailed review section is covered in Appendix A.

4.2. Methodology

To determine the NI Network capability, the following pivotal questions must be answered:

1. **What is the demand for gas?**
   This includes gas supply to homes, businesses, industries and power stations considering historic trends, extreme severe winter demand, decarbonisation policy and climate targets and technological advancements over the next 10 years.

2. **Can the network supply this demand?**
   Using hydraulic modelling, which is configured to limits and boundary conditions based on the NI Network Gas Transmission Code, the Transportation Agreement between PTL and GNI (UK), and the NI TSO System Operator Agreement, the TSOs analyse system pressures across various scenarios to assess the capability of the system over a 10-year horizon .

3. **Can the network handle additional large load connections?**
   Would the network be able to cope with the addition of a potential additional large load. For example, with the addition of another gas fired power station.

To answer these questions the following methodology has been employed:

Demand Forecasting

What is the demand for gas?

- Credible gas demand forecasts from each sector (power generation & distribution) were scoped through stakeholder engagement and forecast modelling
- The appropriate power generation forecasts and disribution forecasts were aggregated to provide a complete picture of whole system demand across these chosen scenarios.

Hydraulic Modelling

Can the network deliver this demand?

- The demand scenarios were modelled across several network pressure configurations to determine if the network can deliver the required demands.

Additional Sensitivities

Can the network handle additional large load connections?

- An additional demand load sensitivity was remodelled using the severe winter peak ("SWP") demand scenario to simulate a future new connection to assess the network's ability to accommodate it alongside existing demand.

[8] Note that hydraulic modelling may not exactly replicate how the NI Network is operated in practice. Section 6.1 (Operational Flexibility) details how operational factors can distort the underlying assumptions that underpin the hydraulic modelling.

4.2.1. Demand Forecasting – Whole Network

Modelling the scenarios involves the construction of demand outlooks for the network over the next 10 years:

Each of these scenarios has an element related to power generation and an element related to distribution demand. The **total demand and peak day demand** (on both an Average and Severe Winter peak basis) for each forecasted year are the key points of interest.

4.2.2. Demand Forecasting – Power Generation

To establish the element of gas demand likely to be required for power generation the TSOs engaged extensively with the electricity System Operator for NI (SONI) and have adopted their assumptions and methodology used to produce their All-Island Resource Adequacy Assessment (AIRAA)[9] except where indicated otherwise. This is to ensure the assumptions used are consistent to derive the likely gas volumes required by Northern Ireland's gas fired power stations, considering:

[9] https://cms.soni.ltd.uk/sites/default/files/publications/SONI-AIRAA-Main-Report_2026-2035.pdf

• Total Electrical Requirement (TER)

This dictates the potential magnitude of demand for gas fired generation. The demand considerations and scenarios used to estimate this requirement are summarised below.

Demand Factor	Median Baseline (represents SONI's best estimate of future electricity demand)
Conventional Electrical Demand	Residential, commercial & industrial electricity demand forecast based on temperature & economic performance with efficiency improvements considered. Demand shape informed by historical demand data for hour of the day, day of the week & day of the year for demand trends. Forecasts of 36 years of climate data used to model climatic variability. Potential smart meter effects have not been assessed.
Electric Vehicle Demand	Demand derived from the forecasted uptake of electrical vehicles. Demand shape is based on usage patterns, temperature dependent efficiency and charging behaviour.
Heat Pump Demand	Demand derived from the forecasted uptake of air source heat pumps (ASHP). Demand shape is based on consumer behaviour & climatic conditions.
Data Centre & New Technology Load	Demand derived from large scale data centres and technology loads that have dedicated connections to the high voltage network. Demand shape is assumed to be flat.

Table 1 – SONI Electricity Demand Considerations

In addition, electricity network losses are based on a 10-year average of historic network losses and have been estimated at 7.5%.

The severe peak day projections have been derived by uplifting the average winter peak based on a historic extreme electrical peak.

• Electrical Supply Considerations

The generation fleet participating in the Single Electricity Market (SEM), subject to availability, constraints and costs determines to what extent gas generation will be dispatched to satisfy the TER in the most efficient way possible. Variable renewable generation is often non-synchronous and lacking inertia. Therefore, gas generation is needed:

- To complement renewable energy and provide flexible power when climatic conditions are not favourable.
- As necessary synchronous generation to support the system non-synchronous penetration (SNSP) maximums. This is currently 75% but SONI's ambition is to boost this to 95% by 2030 to support the NI Climate Change Act 2022[10] target of 80% renewables penetration[11].

The generation included in the analysis is in line with SONI's AIRAA and is summarised in Table 2 below:

Supply Resource	Notes
Conventional Generation	Includes existing & potential future thermal generation (mostly gas powered) plant capacity including Ballylumford, Coolkeeragh and Kilroot. Plant availability is restricted by annual run hour limits, scheduled outages & plant performance statistics. Fuel prices are also sourced from Bloomberg. **Severe peak day modelling:** Full availability (with no annual run hour restrictions) of gas generation units is assumed.

Table continued on next page.

[10] https://www.daera-ni.gov.uk/articles/climate-change-act-northern-ireland-2022-key-elements#toc-0
[11] https://cms.soni.ltd.uk/sites/default/files/publications/SONI-Forward-Work-Plan-2025-26.pdf

Supply Resource	Notes
Variable Renewable Generation	Encapsulates existing & potential future weather dependent renewable capacity grouped by technology: • Onshore wind • Offshore wind (from 2035) • Solar photovoltaic (including large scale & rooftop) • Hydro Application of a stochastic selection of wind and solar profiles to include the typical variability in renewable generation year-to-year. Scheduled and forced generator outages were also included. Wind capacity factors are scaled to 29% for onshore wind and 42% for offshore wind. **Severe peak day modelling:** Wind capacity factors are fixed at 5% (this assumption is not applied in SONI's modelling).
Interconnection	Consists of existing & potential future HVDC and HVAC interconnection capacity between the SEM, GB, and Europe. This excludes some which have current publicised delivery dates within the 10-year horizon but are not sufficiently advanced to provide accurate operational date(s). Availability is modelled using available outage statistics. Interconnection with GB & France is explicitly modelled due to their proximity to the SEM. **Severe peak day modelling:** A 70% derating on interconnector capacity is applied (this assumption is not applied in SONI's modelling).

Table continued on next page.

Supply Resource	Notes
Batteries	Incorporates existing and potential future battery storage capacity, aggregated by duration: • <1 hour • 1-2 hour • >2 hour Units are modelled according to technical characteristics & planned outages.
Demand Side Units	Included as an aggregated capacity for units able to reduce their demand according to system need. Availability modelled according to available statistics (applied as a capacity rating factor) and run hour limits.

Table 2 – SONI Electricity Supply Considerations

A detailed description of SONI's electrical demand and generation methodology and assumptions can be found in the relevant Northern Ireland sections of **EirGrid and SONI's AIRAA**[12].

Combining this electrical supply and demand information and utilising Plexos modelling software enables the TSOs to derive the potential gas generation dispatch over the 10-year time horizon and across each scenario to acquire the important fundamental forecasts for modelling:

1. Annual gas demand required for power generation
2. Average Winter Peak (AWP) day power generation gas demand
3. Severe Winter Peak (SWP) day power generation gas demand

[12] https://cms.soni.ltd.uk/sites/default/files/publications/SONI-AIRAA-Main-Report_2026-2035.pdf

4.2.3. Demand Forecasting – Distribution

The demand figures used were provided by the DNOs and represent their best estimate of future gas demand.

Scenario	Data Description
Median Baseline	This includes estimations of annual demand, severe winter peak day demand, average winter peak demand, and summer minimum demand which is used in the biomethane analysis.

Table 3 – Distribution Demand

4.2.4. Gas Supply

A key assumption for the modelling is that gas is always available from GB at the Moffat IP at an inlet pressure for the compressors at Beattock to further uplift the pressures to those outlined in the modelling results for the Twynholm inlet. In terms of Twynholm inlet pressures there are three main scenarios utilised in the modelling:

- **Operational Minimum Limit** - The contractual minimum pressure under the Transportation Agreement (TA) between GNI (UK) & PTL.
- **Enhanced Pressures** - Relying on an enhanced pressure request mechanism under the TA.
- **Twynholm Maximum Flow** - Unrestricted pressures to deliver the required flow through Twynholm for the required demand.

It is also assumed that in all scenarios the gas is nominated in a timely manner by shippers.

The National Energy System Operator (NESO) in GB, through their published Gas Supply Security Assessment have concluded that GB's gas supply is secure over the next ten years. Although there is an admission that there will be a shift in the supply portfolio with diminishing production from the United Kingdom Continental Shelf being replaced with Liquefied Natural Gas (LNG), interconnector imports from Europe, gas storage and continuing supply from the Norwegian Continental Shelf. The NI Network will continue to avail of this supply and is protected under robust security of supply arrangements .

The modelling also assumes full availability of capacity at the South North IP.

[12] https://cms.soni.ltd.uk/sites/default/files/publications/SONI-AIRAA-Main-Report_2026-2035.pdf

4.2.5. Hydraulic Modelling

The hydraulic modelling phase allows the TSOs to determine if the NI Network can flow the combined power generation and distribution peak demands identified during the demand modelling at satisfactory operating pressures given the IP capacities and technical parameters of the network (detailed in Appendix B).

The hydraulic modelling software replicates the physical attributes of the transmission infrastructure in different pressure configurations to test the adequacy and resilience of the NI Network against these demand flow profiles, by identifying the potential pinch points of the system. Appendix B details the hydraulic modelling assumptions, including the demand flow profiles.

The software assesses if it is possible to flow a particular demand level whilst maintaining a 39barg minimum system pressure. Note that the contractual minimum offtake pressure across the network is 12barg.

The methodology involves testing the most extreme peak demand scenario on the baseline hydraulic system configuration and cascading down through demand scenarios and system configurations to identify the critical point where the network comes under strain as per the flow detailed in Fig. 2:

[13] https://www.neso.energy/document/372661/download
[14] https://www.gov.uk/government/publications/cooperation-for-natural-gas-security-of-supply-uk-ireland-memorandum-of-understanding/memorandum-of-understanding-between-the-government-of-ireland-and-the-government-of-the-united-kingdom-of-great-britain-and-northern-ireland-on-cooper

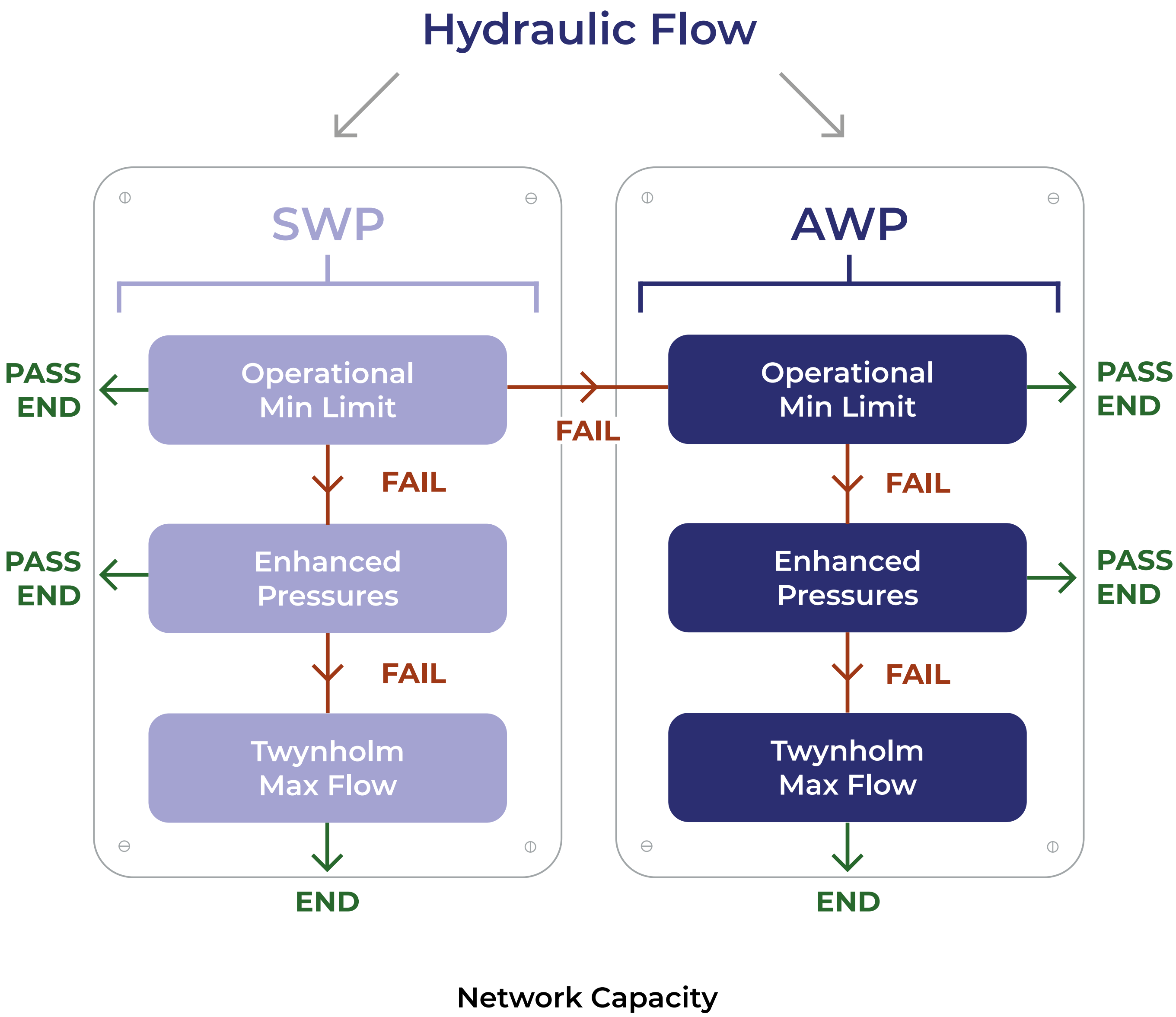


Fig. 2 – Hydraulic Modelling Decision Flow

Hydraulic Modelling Decision Flow

The SWP demand projections for each year are modelled first as the most extreme demand scenario, starting with:

Operational Minimum Limit
This represents the most challenging hydraulic configuration since a minimum Twynholm inlet pressure assumption of 56barg included in this scenario is far below average operating inlet pressures. A pass ends the testing since higher inlet pressures aren't required to accommodate the flows.

A fail leads to the next hydraulic scenario:

Enhanced Pressure
This scenario increases the network capacity by raising Twynholm inlet pressures to the extent of the TA maximum pressure cap. This increases the likelihood of a demand level passing. Again, a pass ends the testing since higher inlet pressures aren't required to accommodate the flows.

A fail leads to the final hydraulic scenario:

Twynhom Maxiumum Flow
This scenario raises the capacity of the network again by simulating Twynholm inlet pressures up to a maximum of 77.5barg. A pass here signifies that a demand level can be accommodated by the NI Network, albeit at its limits. A fail on this final scenario means that the network is unable to accommodate the tested level of demand. This would indicate a capability issue for the NI Network.

This cycle is then repeated for the lower AWP demand projections.

Demand and system configuration combinations modelled to identify where the system is stressed are detailed in Table 4:

System Configurations	Severe Winter Peak	Average Winter Peak	Description	Carrickfergus AGI Interface Assumptions	Minimum Transmission System Pressure	Minimum Diurnal Twynholm Inlet Pressure	Maximum diurnal Twynholm Inlet Pressure
Baseline Operational Minimum Limit	√	√	Minimum contractual inlet pressure prevalent at Twynholm (56barg) with flows through Gormanston as required to maintain 39bar minimum across the NI Network.	0.5barg pressure differential then free flow from 2026/2027	39barg	56barg	77.5barg
Enhanced Pressure	√	√	Maximum diurnal Twynholm inlet pressure as per the TA maximum pressure cap (Appendix B) is maintained, with flows through Gormanston as required to support 39barg minimum system pressure.	0.5barg pressure differential then free flow from 2026/2027	39barg	≥ 56barg	TA maximum pressure cap
Twynholm Maximum Flow	√	√	Twynholm inlet pressure as necessary to facilitate required flat flow (up to the commercial capacity available at Moffat IP Entry Point i.e. 8.08 mscmd) whilst maintaining 39barg minimum system pressure	0.5barg pressure differential then free flow from 2026/2027	39barg	≥ 56barg	77.5barg

Table 4 – Hydraulic Modelling Scenarios

4.2.6. Hydraulic Sensitivity

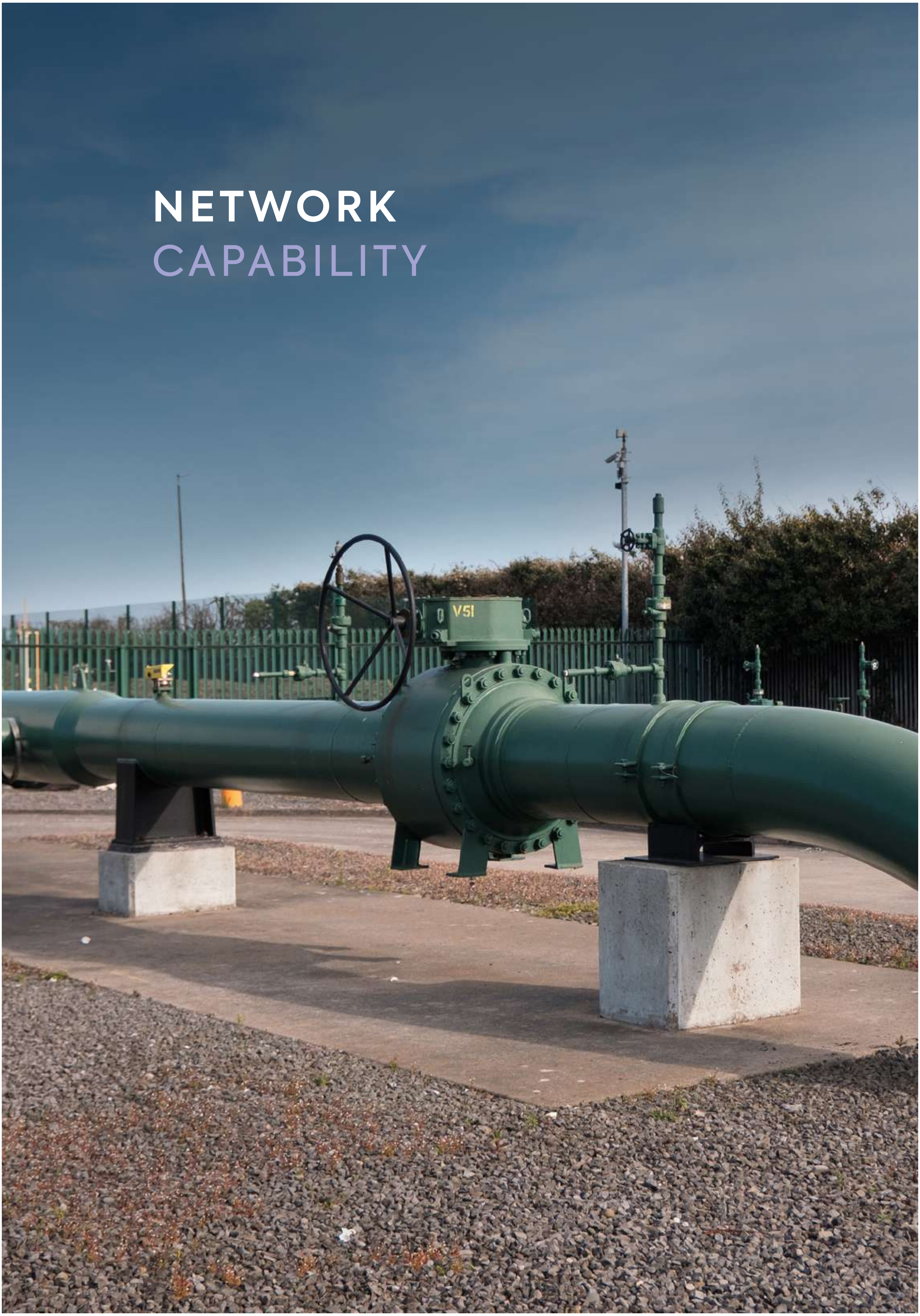
In addition, a purely illustrative power station load was modelled in isolation to evaluate the capability of the network to accommodate it.

Location	South North Pipeline between Drogheda & Dundalk
Electrical Generation Capacity	180 MW
Efficiency	36%
Technology	OCGT
Commissioning Year	Gas Year 2030/2031

Table 5 – Power Station Sensitivity

The station size and efficiency of this potential power station connection was based on a typical OCGT station.

NETWORK CAPABILITY



5. NETWORK CAPABILITY

5.1. Demand Evolution

5.1.1. Annual Demand

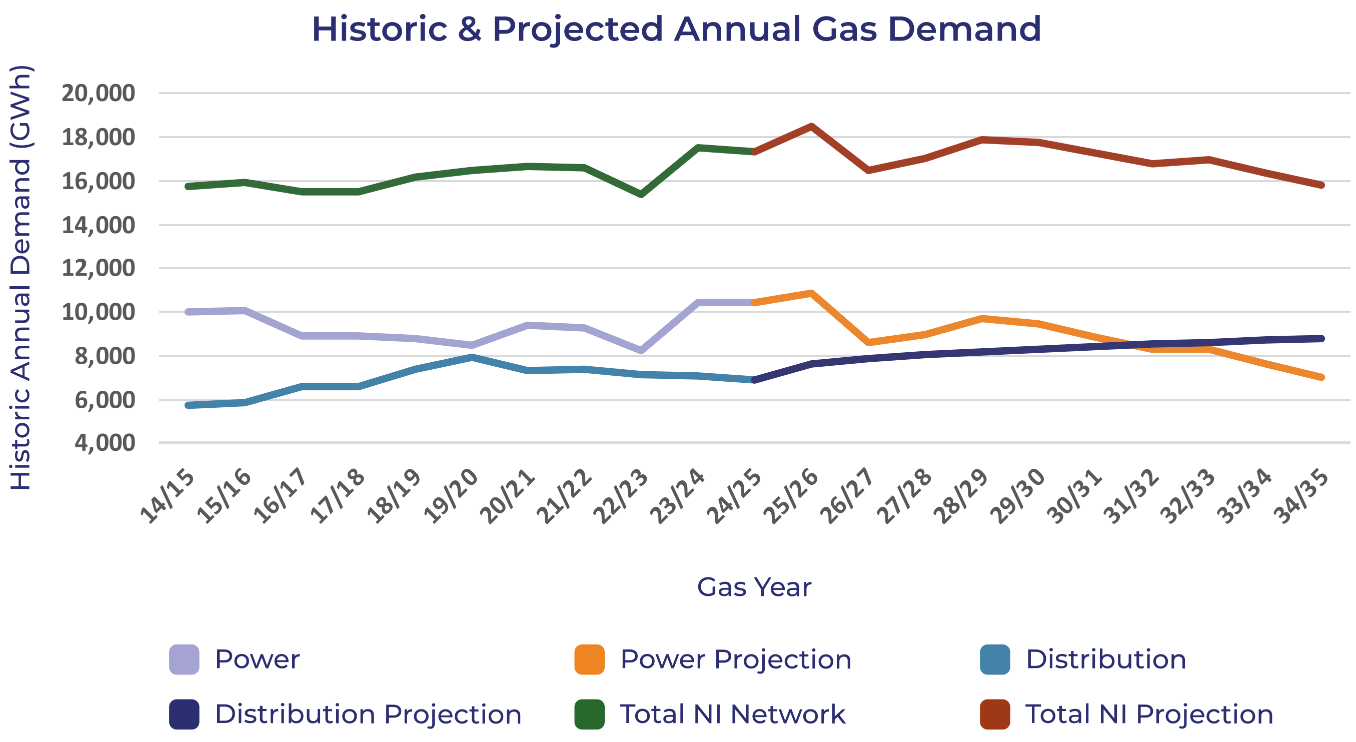


Fig. 3 – Evolution of Annual Gas Demand

Annual demand is an important measure to assess how efficiently utilised the NI Network is to support the energy needs of Northern Ireland. The projections above show an overall decline in annual volumes by 9% over the period with the network capacity factor[15] falling slightly from 31% today to 28% in gas year 2034/2035. Distribution sector demand may grow to become the largest proportion of demand by the later year projections.

[15] Defined as the ratio of the actual volume of gas transported through the network per year to the maximum potential volume that could have been transported if the network operated at full, continuous capacity.

Power Generation

The power generation sector drives the largest proportion of demand in the NI Network, accounting for an average of 60% of annual historical volumes across the last 10 years. Demand levels have remained relatively stable throughout this time, declining slightly only to rebound in the last few years following the phase out of coal and the general trajectory of NI's electrical demand.

Fig. 4 below shows the corresponding electricity demand (yellow line) but also details the important role that gas generation has played as the generation mix has evolved through the time period:

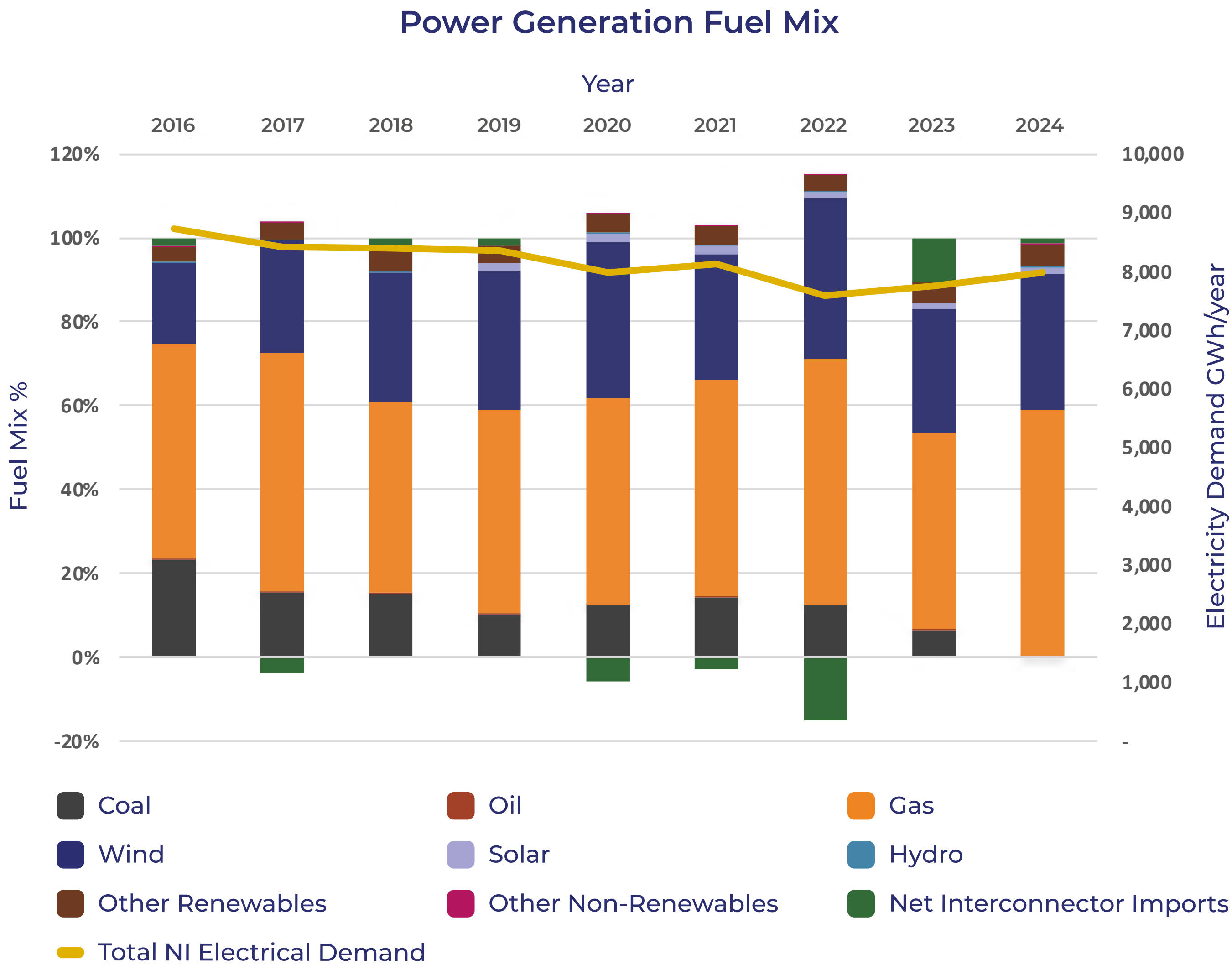


Fig. 4 – Historical Fuel Mix [16]

Fig. 4 Note: Fuel mix bars that exceed 100% represent years where NI has been a net exporter, therefore NI generated more than the Total Electrical Requirement (TER) demand. In other years, the net imports can be seen closing the gap to meet the TER demand.

[16] Data acquired from SONI's System and Renewable Data Reports - https://www.soni.ltd.uk/grid/system-and-renewable-data-reports

Coal was previously a prominent part of the fuel mix but the transition to renewables and wind in particular, with gas acting as the enabler has allowed for a complete phase out of coal in September 2023. Coal's contribution of 23% of the demand in 2016 is shared almost equally by wind and gas in 2024. These generation types now account for approximately 33% and 59% of the fuel mix respectively.

The conversion of Kilroot from a coal plant to an OCGT gas plant is behind the recent increases in gas demand. OCGT technology whilst very flexible, is significantly less efficient than CCGT technology.

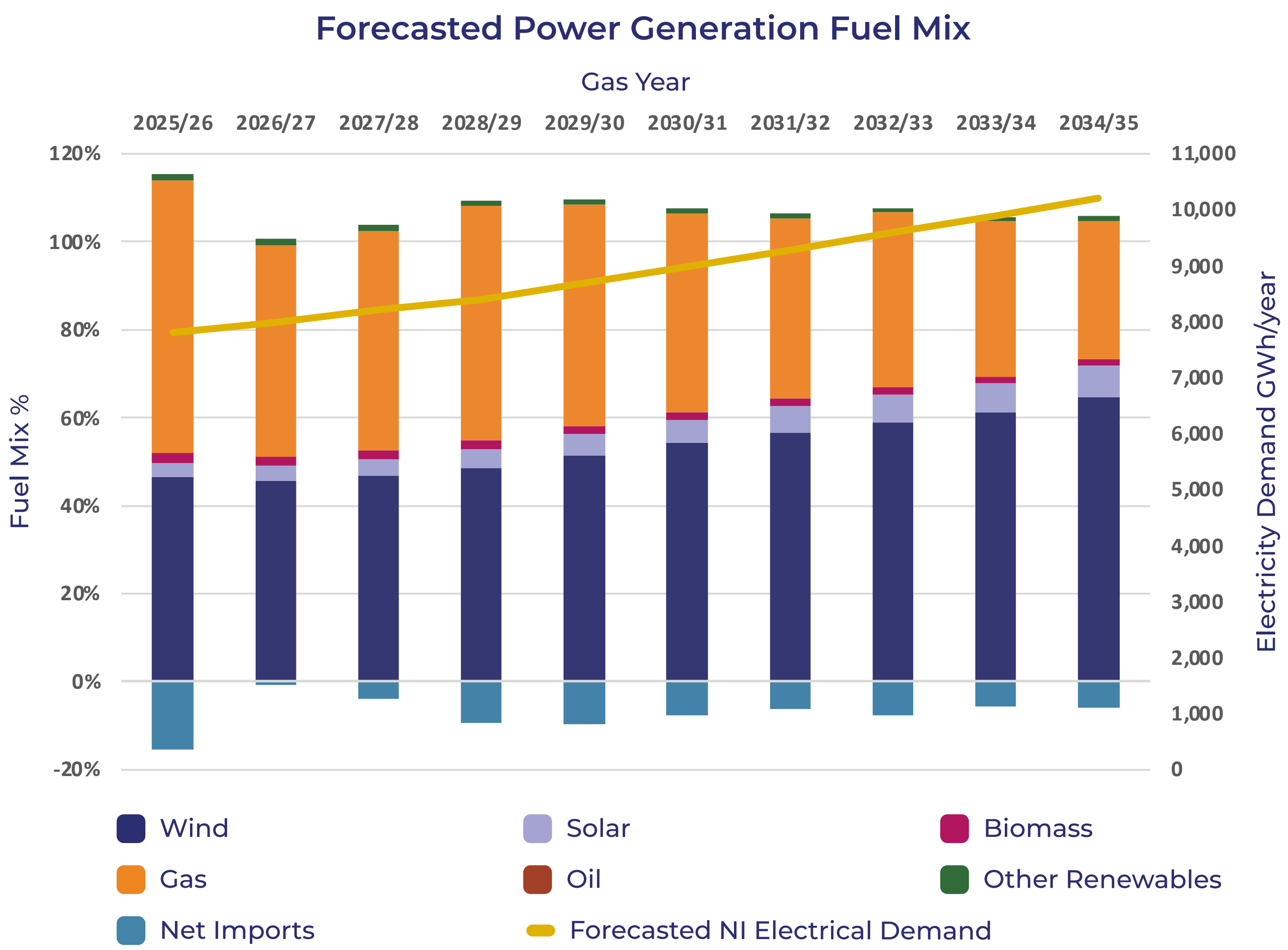


Fig. 5 – Forecasted Fuel Mix

Fig. 5 shows the equivalent fuel mix to Fig. 4 for future years, explaining the projected decrease in annual power generation gas volumes (by 33% over the next 10 years) and contextualising the role gas looks set to play in the future energy mix.

Electrical demand is predicted to surge 30% over this period, based on SONI's forecasts. The ambition to double onshore wind capacity and add 500MW of offshore wind to the energy mix means wind is forecast to generate the lion's share of this demand, rising to represent 65% of the generation mix. Conversely, the proportion of gas (consumed annually) is projected to fall to 30%. Although gas generation will contribute to a much lower proportion than today, it is nonetheless essential to facilitating increased renewables via provision of electricity network stability and meeting high proportions of demand when renewable generation is lower.

Distribution Sector

Demand in this sector is split between temperature sensitive domestic and small industrial and commercial demand (predominantly for heating) and medium and large I&C connections. Whilst far fewer in number, medium and large I&C connections account for the slight majority share of the demand (approx. 56% at present).

Fig. 3 shows that distribution demand growth can be characterised by two distinct periods in recent years. Strong growth was observed between gas years 2016/2017 and 2019/2020 with an average growth rate of 8% p.a. Since gas year 2020/2021 there has been a marked slowdown and decrease due to several extenuating factors. NI was not sheltered from the effects of Covid 19 and the Russian invasion of Ukraine which sent wholesale gas costs soaring. These events have provoked changes by businesses and households alike. This is evident in Fig. 6 where the flattening and reduction in connection numbers contributes to explaining the decline in demand. Milder than average recent winters has also reduced the demand for heating. Winter 2024/2025 for example, was 0.7 degrees warmer than the 1990-2020 long term average[17].

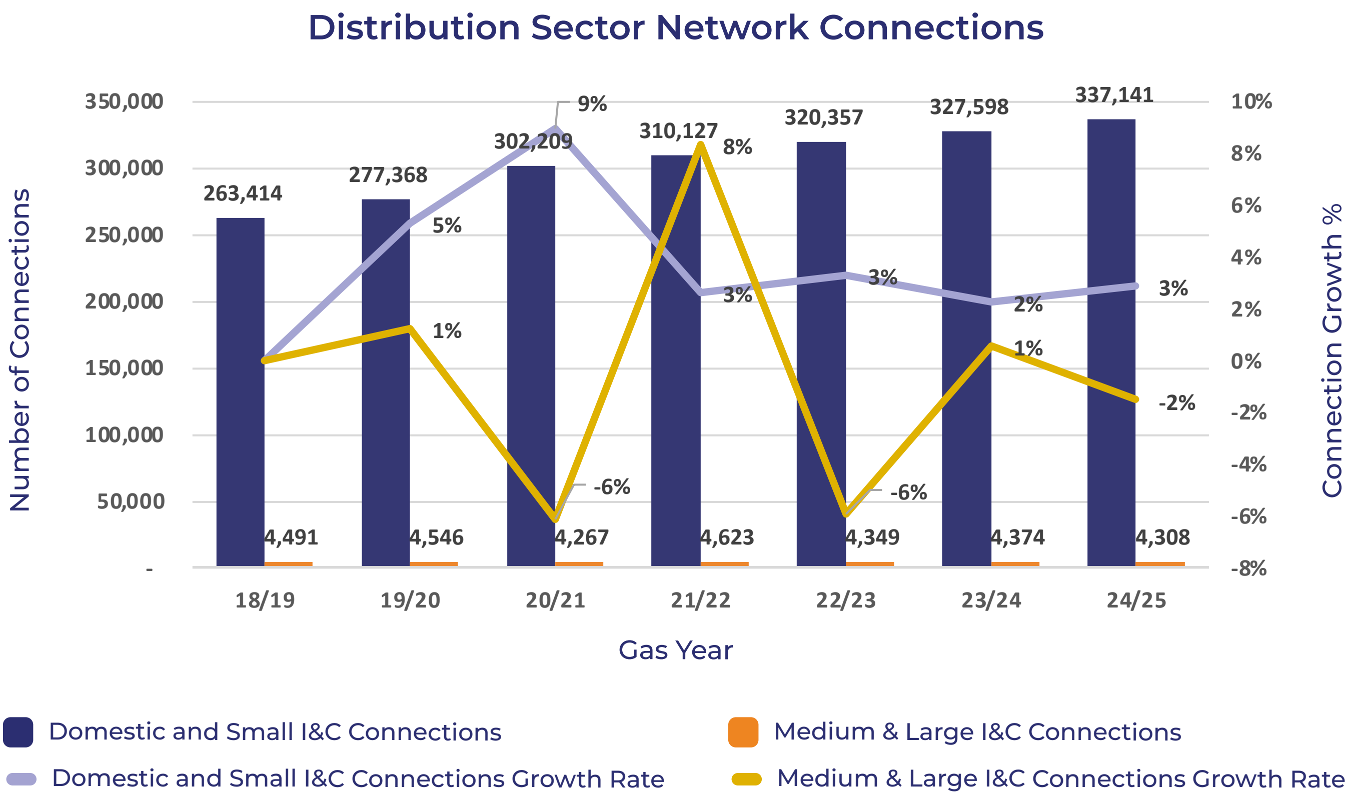


Fig. 6 – Distribution Network Connections [18]

[17] https://www.metoffice.gov.uk/blog/2025/winter-and-february-2025-weather-review
[18] https://www.uregni.gov.uk/files/uregni/documents/2025-12/Q3%202025%20QREMM%20report_1.pdf

The future forecast figures in Fig. 3 display steady distribution growth of approximately 3% p.a. but accounts for the continued curtailment of gas demand due to domestic customers response to long term high wholesale gas prices. Additional consumption for new build properties from 2030 onwards is omitted given the prevalent policy direction around the electrification of heat, further constraining the growth projections. Efficiency offsets are also included in the projection to account for reduced demand in the future as the energy efficiency of appliances and buildings improve.

5.1.2. Peak Demand

Historic

Annual demand trends are important indicators for the evolution of the NI Network but the most crucial information, and the most difficult to forecast is the absolute maximum potential “peak day” gas demands that could be observed. A myriad of factors can combine to create the conditions that can lead to a peak day. The TSOs endeavoured to capture these in the modelling assumptions, but real-life data is the most illuminating to highlight the real-life interactions:

A record peak gas demand day occurred on the network on **8th January 2025**.
This equated to 85.8 GWh of demand for the entire day:

- 42.4 GWh for the distribution sector = highest distribution sector day of the year.
- 43.4 GWh for the power sector = second highest power generation peak of the year.

For perspective, the average gas demand in gas year 2024/2025 was a little over half that total at 48.5 GWh.

Multiple conditions and factors combined to propel this level of demand beyond usual highs and almost deliver a coincidental joint power generation and distribution peak day (the peak days for both were only a few days apart):

Factor	Effect
Temperature	Average temperature = -0.9°C representing a low day below the typical January average and driving increased demand for heating. This represents 16.4 UK heating degree days[19].
Electricity Demand	Peaked at 1.5GW, representing a day of particularly high demand. The all-island electrical demand that day peaked at over 6GW for the first time[20].
Renewable Generation	Wind generation was minimal, contributing to approximately 5% of electricity demand.
Gas Generator Availability	Storm Darragh damaged a chimney at Ballylumford Power Station in December 2024[21]. This meant that Ballylumford’s CCGT generation units were unavailable, necessitating the dispatch of Kilroot Power Station’s less efficient OCGT units, further spiking gas demand.

[19] Degree day = base temperature – mean temperature (15.5- (-0.9) = 16.4)
[20] https://www.eirgrid.ie/news/new-electricity-demand-records-set-during-cold-snap
[21] https://www.bbc.co.uk/news/articles/c3e13q7n8vjo

In isolation, a cold day is typically a high demand day. Yet multiple additional factors occurring simultaneously have compounding effects and can exacerbate any system fragilities. These conditions represent a stern test for the NI Network infrastructure. Failure by the upstream infrastructure to deliver the necessary gas on that day would have potentially led to damaging consequences: electricity load shedding and gas demand load shedding whereby non-essential gas customers are switched off to free up demand. Nevertheless, the NI Network had the necessary capability to deliver despite the challenging conditions.

It should also be noted that peak demands rarely occur in isolation. The January peak was amongst a cluster of high demand days, all exceeding 80GWh of total demand.

These are the conditions the TSOs must anticipate and plan the NI Network for. Not for average demand days, but for the handful of days each year where climatic and operational conditions dictate the need for significantly higher demand. With climate change affecting weather patterns and driving decarbonisation, this is likely to increase the challenge of predicting peak levels of demand.

The addition of the second North South interconnector from 2032 will undoubtedly impact future peaks too. The quadrupling of import and export capacity to RoI from 300MW to 1250MW and 1200MW respectively means that gas generation in Northern Ireland may be increasingly used to bolster electrical demand in RoI.

Future Forecast

Power – Average Winter Peak (AWP)

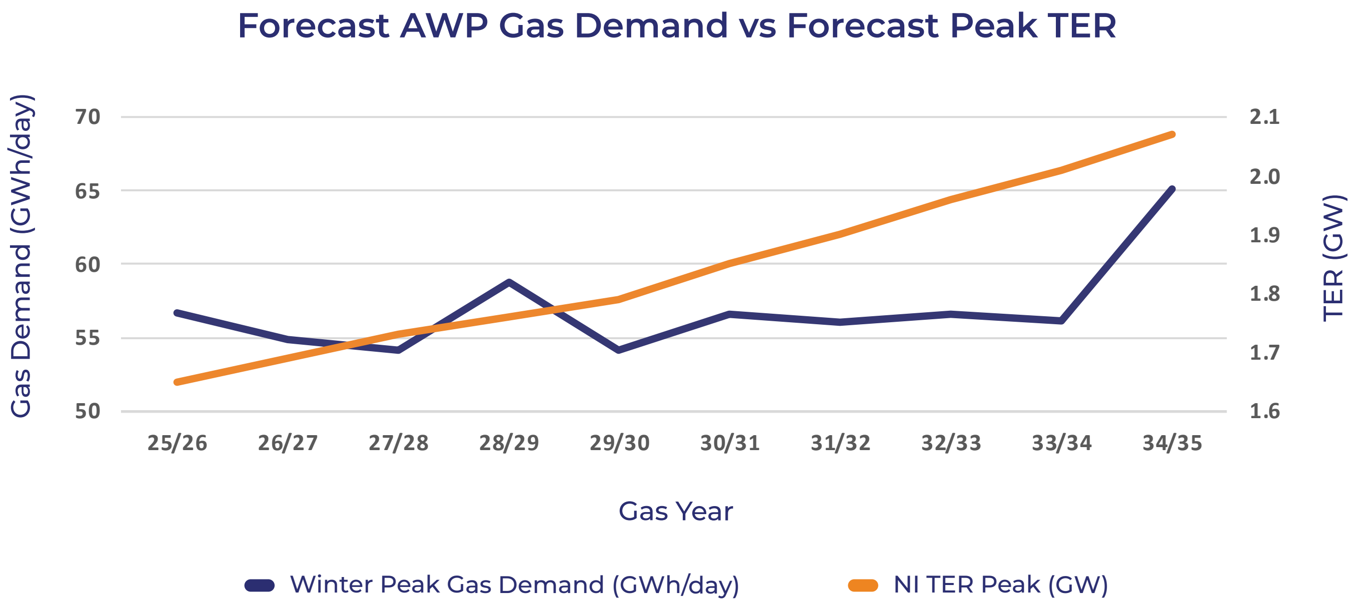


Fig. 7 – AWP vs TER

Power – AWP Summary

The forecasted average winter peak figures represent credible upper limits of demand that could typically be expected each gas year.

The gas demand projections in Fig. 7 display an upward trend with a total increase of 15% over the period, climbing from 57GWh to 65GWh. This is to be expected given the inextricable link of power generation gas demand and electrical consumption. The underlying forecasted peak TER exhibits the corresponding upward trajectory, increasing by 27% over the same period. Each additional 0.1GW increase in the electrical peak TER equates to potentially an additional 2GWh of average peak day gas demand over the 10 year span.

Where the electrical TER trend trends smoothly upwards, the annual winter peaks display a measure of variability with several noticeable spikes. This reflects the myriad of factors that will determine the extent that gas is required to satisfy electrical demand. The application of stochastic weather profiles and accounting for outages (both scheduled and forced) in the modelling helps to simulate this reality. Increased interconnector capacity driven by the completion of the new North South electrical interconnector in 2032 also contributes to the potential volatility in later years.

Comparing the forecast peaks from gas years 2034/2035 and 2031/2032 offers the best demonstration of these interactions.

- On both of these modelled future days, wind and solar renewable generation are both around the same low output level.
- Generation outages in RoI, coupled with the increased capacity of the North South electrical interconnector in GY 2034/2035 prompts an extra 6.5 GWh of gas generation in NI to export to RoI.

This highlights the volatility inherent in peak day modelling (and in reality) where compounding factors combine to spike demand.

Power – Severe Winter Peak (SWP)

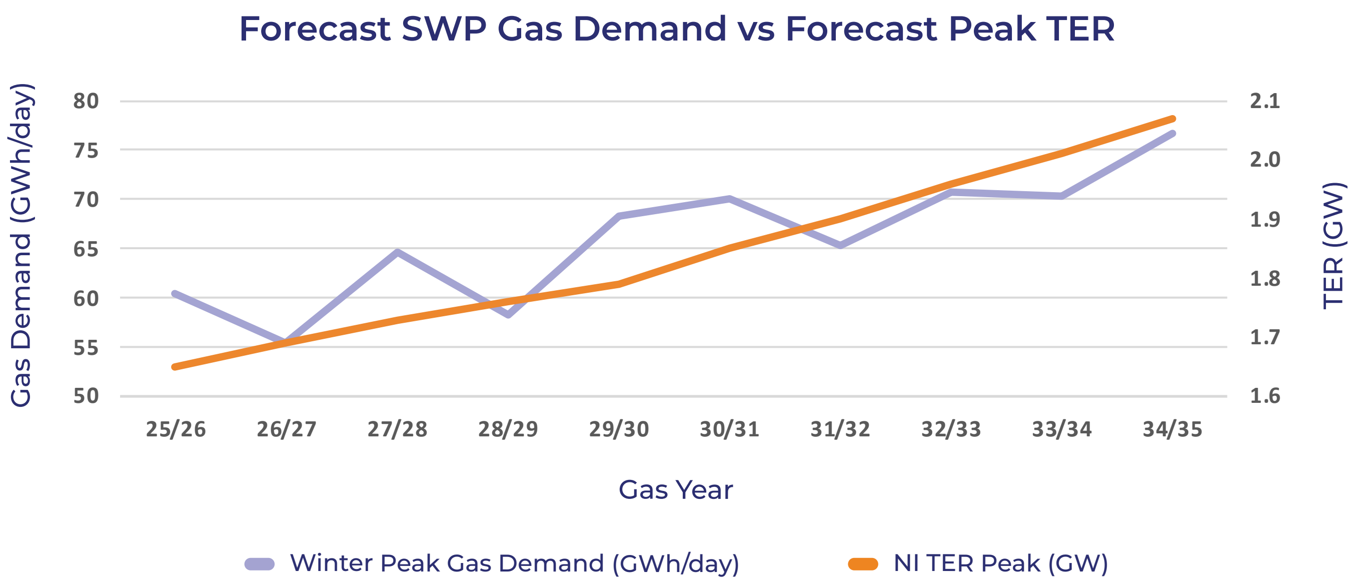


Fig. 8 – SWP vs TER

Power SWP Summary

The severe winter peak gas demand projections in Fig. 8 display an upward trend with a total increase of 27% over the period, rising from 60GWh to 77GWh. This matches the exact same 27% TER increase over the same period. Each additional 0.1GW increase in electrical peak TER equates to potentially an additional 4GWh of severe peak day gas demand over the 10 year span.

There are key fundamental drivers for the differences observed between the AWP and SWP peak levels:

1. The underlying electrical demand is anticipated to be higher on a severe winter peak day than that observed in an average winter day so assumed demand has been uplifted accordingly.

2. The wind capacity factor is set to 5% and the electrical interconnectors derated at 70%: this presents a scenario where gas plant (as the available, marginal, dispatchable generation) presents the solution to generate the necessary power. This is a very real scenario in a winter cold snap. Wind generation is characteristically low during these periods and electrical imports may not be reliable since a winter cold snap would likely affect all interconnected jurisdictions simultaneously. This would force the heaviest reliance on the gas generation assets.

Distribution Sector

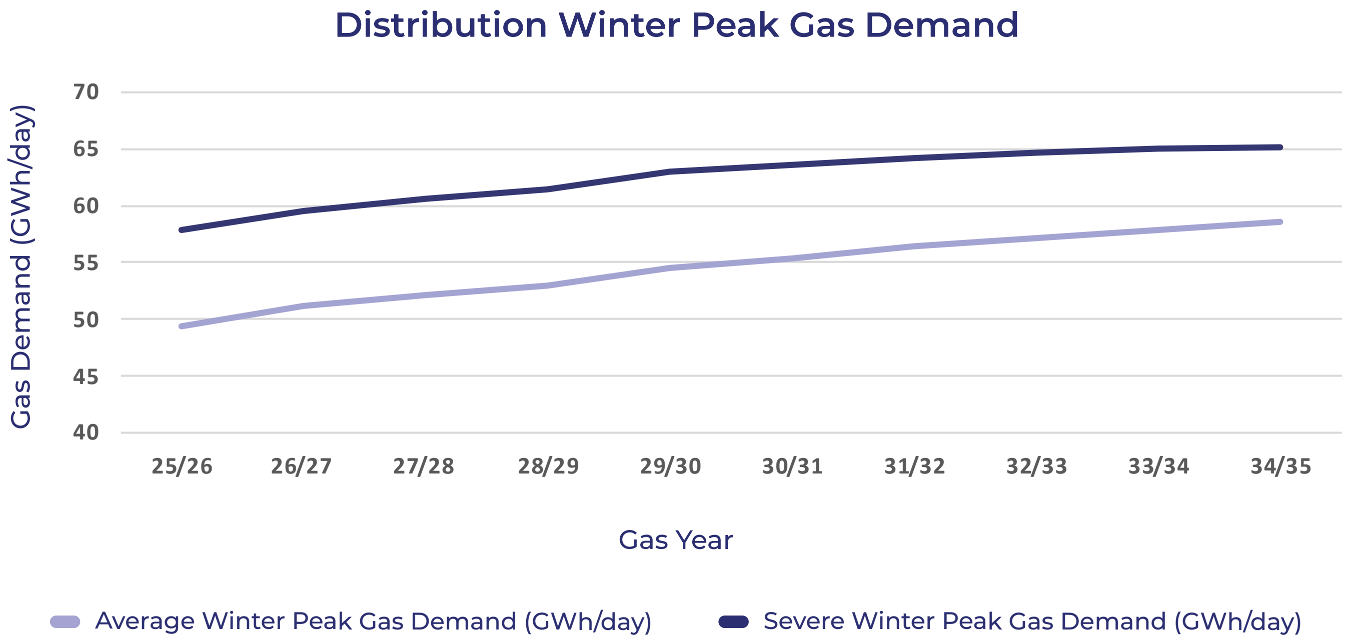


Fig. 9 – Distribution AWP & SWP

The average peak winter demands for Distribution represent typical high demands expected in winters over the projection period. On the other hand, severe winter peak demands represent the levels expected in the event of a rare “1 in 20 winter” which would mark a period of days where temperature is far below the seasonal average.

The trends for both average and severe winter scenarios mirror the forecast annual demand projections with an initial period of higher growth that diminishes as we approach gas year 2034/2035 due to the omission of gas connections from new builds along with efficiency measures and reduced usage from expected lingering higher wholesale gas costs.

Total increases for each scenario over the time period amount to 19% and 12% respectively, arriving at peaks of 59 GWh and 65GWh in 2034/35.

5.2. Hydraulic Modelling Results

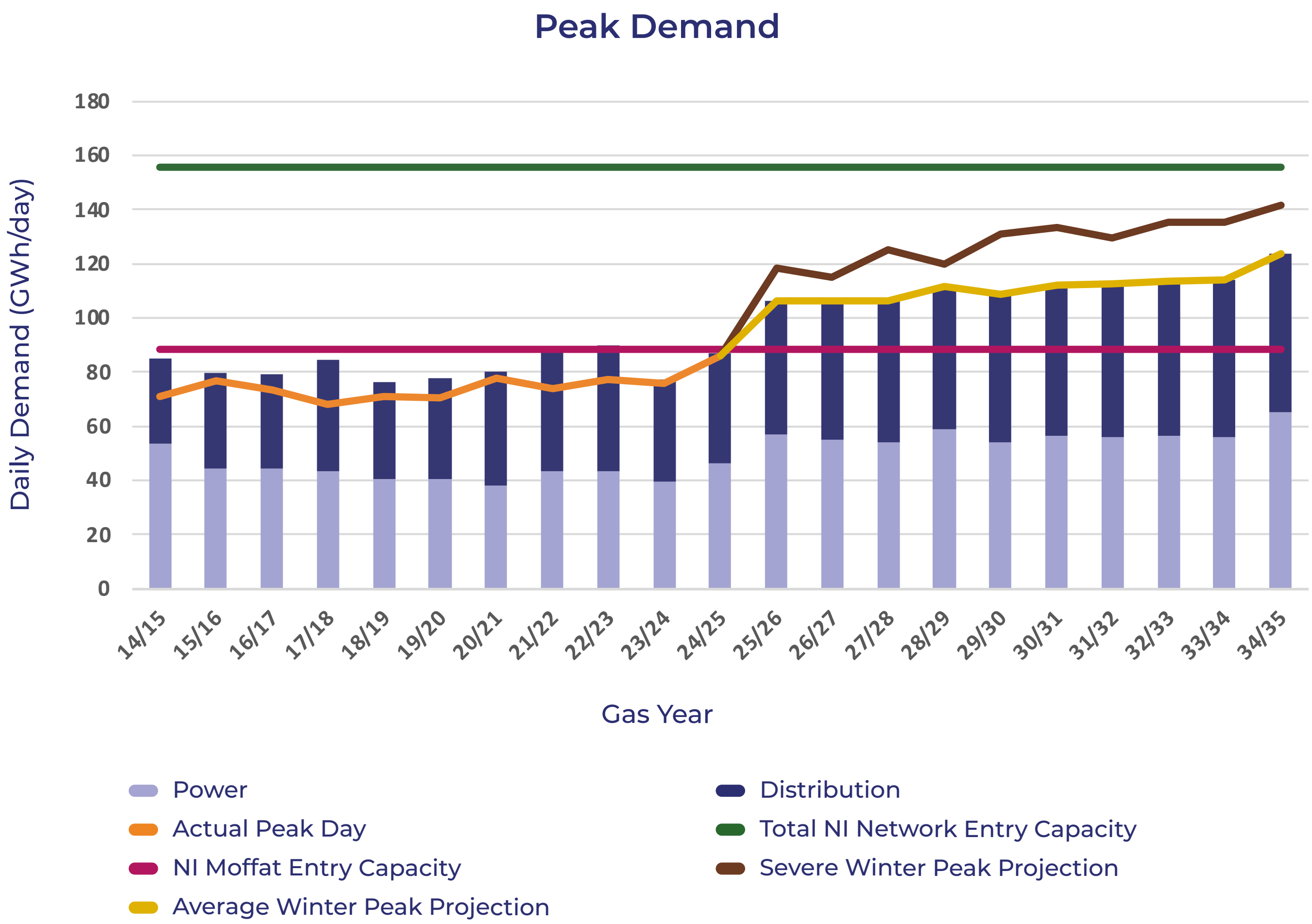


Fig. 10 – Peak Days – Past & Future

Aggregating the demand peaks determined in the modelling in Fig. 10 shows the challenges the network must be capable of responding to in the coming years. The addition of Kilroots OCGT units on the network are the primary driver of the higher forecasted peaks from gas year 2025/2026.

All future modelled winter peaks exceed the capacity available at the Moffat IP. The gas year 2024/2025 therefore represents a tipping point where demands in excess of the capacity available at the Moffat IP will become increasingly likely. These excess flows will therefore need to be routed via the South North IP to satisfy any demand deficits.

The following figures summarise the results of each demand projection across the different pressure configurations of the system:

A tick in a **green box**, representing a pass means that the level of demand can be accommodated within that particular system configuration, which includes entry pressures in adherence with the operational minimum or enhanced pressure obligations under the TA, while maintaining a 39barg minimum system pressure across all offtake points on the system.

A tick in an **orange box** still represents a pass. It means that the level of demand can be accommodated within that particular system configuration, however entry pressures are not in adherence with the operational minimum or enhanced pressure obligations under the TA. In all cases a minimum system pressure of 39barg is maintained across all offtake points on the system. In the real world, the entry operating pressures are not guaranteed and therefore may or may not be available to deliver this demand.

Hydraulic Average Winter Peak (AWP) Summary

The AWP demands passed on every year for the Operational Minimum Limit configuration except gas year 2034/2035 where the demand level was 124GWh.

At pressures closer to the typical level of 70barg, it becomes possible to flow all demand levels including the maximum demand of 124 GWh.

Approximately 25% to 45% of flows are diverted from Twynholm to Gormanston in these scenarios.

For completeness, if all demand levels pass the Enhanced Pressure configuration, then it is assumed they will also pass on Twynholm Max Flow.

The contractual minimum pressure of 12barg at the exit points was maintained in each case.

AWP Hydraulic Modelling Results

Gas Year	Demand (GWh)	Operational Min Limit	Enhanced Pressures	Twynholm Max Flow
2025/26	106	✓	✓	✓
2026/27	106	✓	✓	✓
2027/28	106	✓	✓	✓
2028/29	112	✓	✓	✓
2029/30	109	✓	✓	✓
2030/31	112	✓	✓	✓
2031/32	113	✓	✓	✓
2032/33	114	✓	✓	✓
2033/34	114	✓	✓	✓
2034/35	124	X	✓	✓

Network Configuration

X Fail ✓ Pass ✓ Pass

Fig. 11 – AWP Hydraulic Modelling Results[22]

[22] Detailed results in Appendix C

Hydraulic Severe Winter Peak (SWP) Summary

The SWP demand results for the Operational Minimum Limit are almost the direct opposite of the AWP set. Only one-year passes (2026/27) revealing that contractual minimum inlet pressures of 56barg are insufficient to satisfy these demand levels.

At pressures closer to 70barg, it becomes possible to flow all demand levels for the next 5 years, and 2031/32 given that its forecasted demand is almost identical to that of 2029/30.

Only at the highest possible pressure configurations is it possible to flow all SWP demand levels over all 10 years.

Approximately 20% to 50% of flows are diverted from Twynholm to Gormanston in these scenarios. The enhanced pressure mechanism reduces available capacity at the Moffat IP in favour of increased pressures, thus diverting capacity bookings onto the South North IP.

The contractual minimum pressure of 12barg at the exit points was maintained in each case.

The SWP results reveal that whilst the network has the capability to facilitate these projected flows; it can only do so if the reliably high inlet pressures prevalent today (see Fig. 15, pg 50) continue to be available in the future along with perfect operating conditions. This is crucial to ensure this level of demand in later years.

SWP Hydraulic Modelling Results

Gas Year	Demand (GWh)	Operational Min Limit	Enhanced Pressures	Twynholm Max Flow
2025/26	118	X	✓	✓
2026/27	115	✓	✓	✓
2027/28	125	X	✓	✓
2028/29	120	X	✓	✓
2029/30	131	X	✓	✓
2030/31	134	X	X	✓
2031/32	130	X	✓	✓
2032/33	135	X	X	✓
2033/34	135	X	X	✓
2034/35	142	X	X	✓

Network Configuration

X Fail ✓ Pass ✓ Pass

Fig. 12 – SWP Hydraulic Modelling Results[23]

[23] Detailed results in Appendix C

5.3. Hydraulic Sensitivity

There is rising electricity demand in RoI, primarily due to data centres leading to an increased requirement for gas fired generation to meet their typically flat demand. The SNP, south of the NI-ROI border therefore might be perceived as an attractive location in which to connect an OCGT unit. It is prudent that the TSOs model the effects of a potential connection on this stretch of pipeline as it will have implications for the available capacity at the South North IP. It is recognised that the GNI (UK) Gas Conveyance Licence, issued by UR states that the SNP's primary purpose is to transport gas into Northern Ireland so UR must be consulted before any potential future connections to the SNP.

For modelling purposes, the TSOs added an additional load of 12 GWh to the SNP to replicate the effects of such a connection under SWP conditions.

Power Sensitivity Hydraulic Modelling Results

Gas Year	Demand (GWh)	Operational Min Limit	Enhanced Pressures	Twynholm Max Flow
2030/31	146	X	X	✓
2031/32	142	X	✓	✓
2032/33	147	X	X	✓
2033/34	147	X	X	✓
2034/35	154	X	X	✓

Network Configuration

X Fail | ✓ Pass (green) | ✓ Pass (orange)

Fig. 13 – Power Station Sensitivity Hydraulic Modelling Results[24]

The results mirror those of the SWP, where the maximum designated flows at Twynholm are required as well as pressures in excess of typical line pressures to accommodate flows of these magnitudes. The new failure point is higher, above 142GWh. This is due to the proposed location for this offtake benefitting from the proximity to Gormanston.

Note that the contractual minimum pressure of 12barg at the exit points was maintained again in each case.

The hydraulic modelling alone does not provide a comprehensive picture of the implications of this extra demand. Aggregating the extra demand with that of the SWP figures as indicated in Fig. 14 shows total demand levels close to the maximum network capacity.

[24] Detailed results in Appendix C

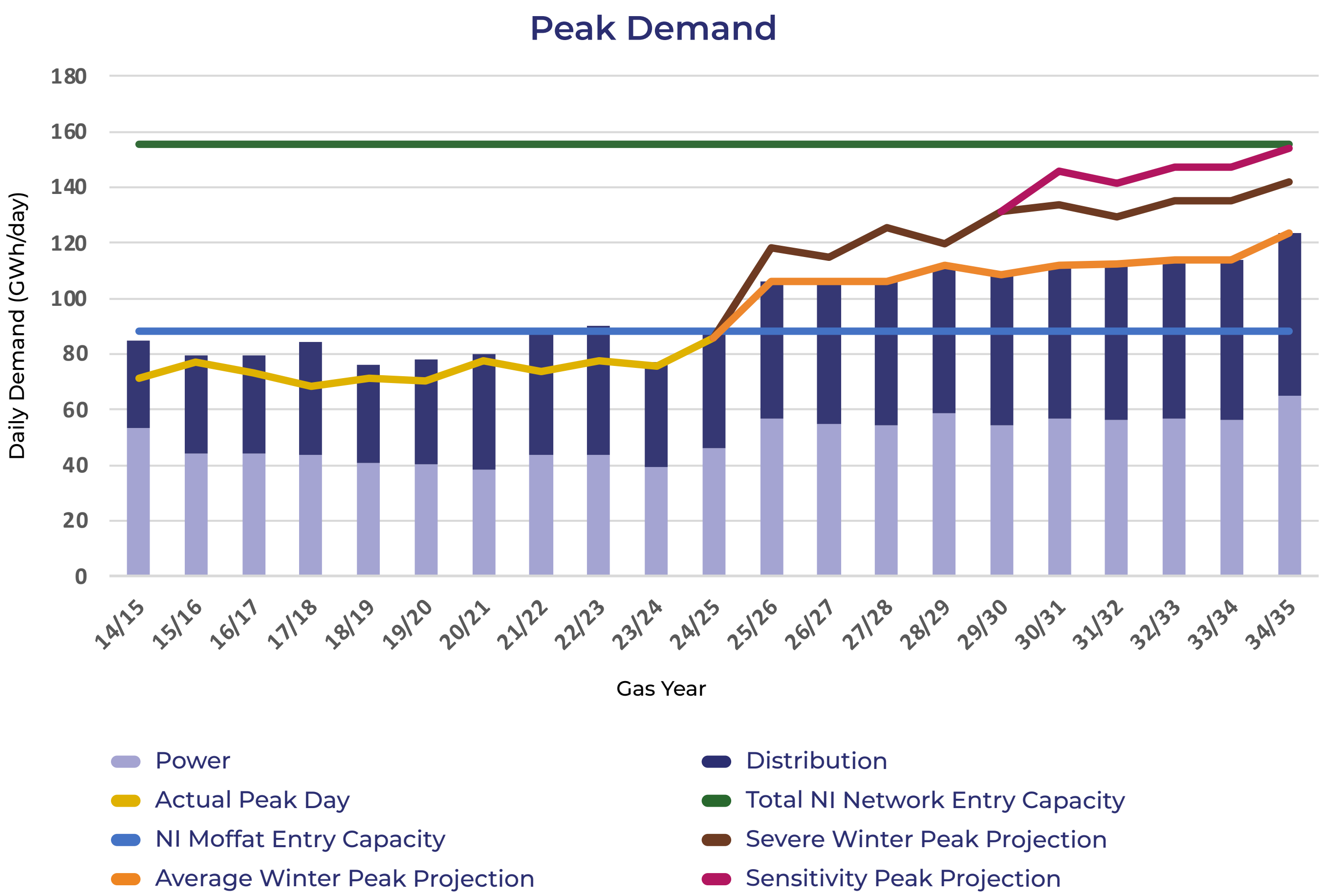


Fig. 14 – NI Peak Days – Past & Future with Sensitivity

Demand levels between 146-154 GWh bring the network extremely close to full capacity with very little remaining headroom.

Hydraulics Summary

The results indicate that the NI Network has the capability to deliver projected AWP demand levels with some margin for inlet pressures to fall below standard operating normals.

The picture is more complicated for the SWP and sensitivity results. Operating pressures higher than contractual levels are integral to delivering these demand levels and beyond gas year 2029/2030 these demands cannot be accommodated unless the system continues to be maintained at high pressures (circa 73barg) as it is today.

Reliably high historical Twynholm inlet pressures as shown in Fig. 15 support the ability of the NI Network to deliver these sustained pressures but there is limited headroom should they be unavailable during SWP demands in later years.

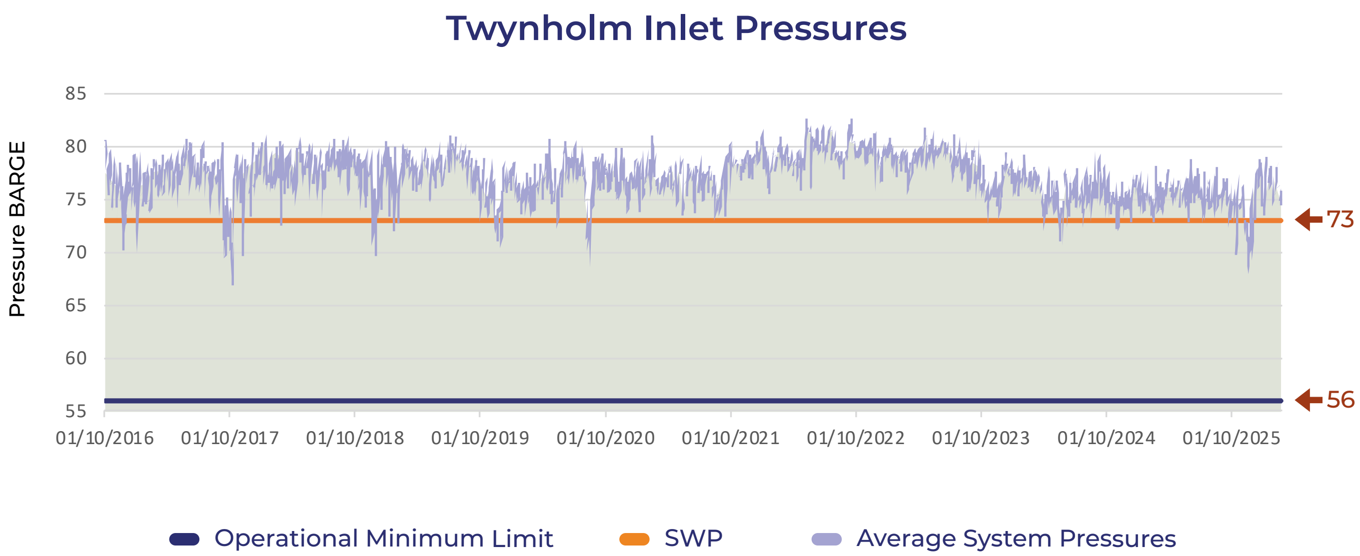
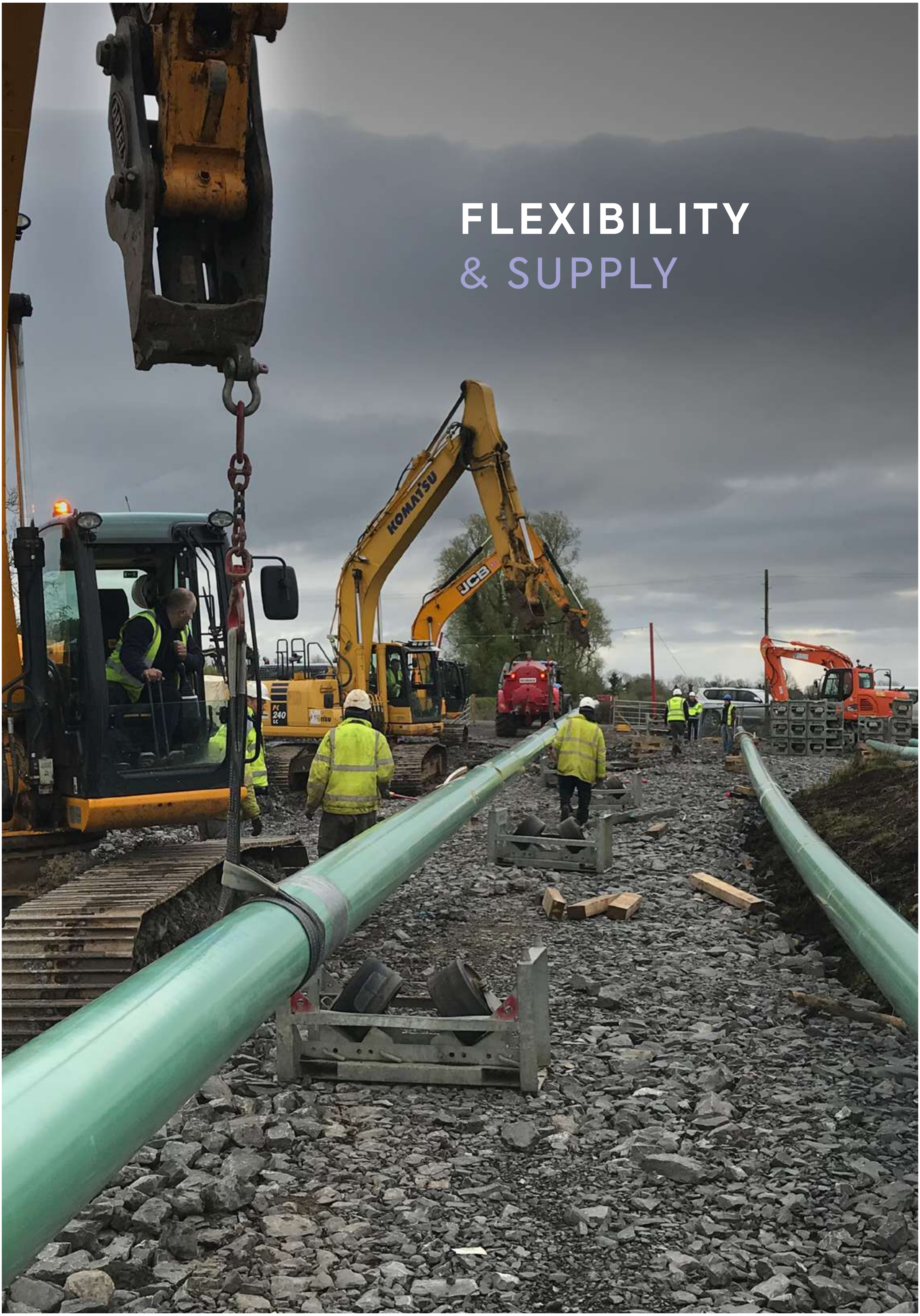


Fig. 15 – Twynholm Inlet Pressures

FLEXIBILITY
& SUPPLY



6. FLEXIBILITY & SUPPLY

6.1. Operational Flexibility

The hydraulic modelling results convey the potential capability of the NI Network to cope with different demand levels at various assumed entry pressures. This is fine when demand is forecasted, nominated, and supplied correctly according to timely and transparent, accurately forecasted nomination behaviour from Shippers. However, this capability doesn't always translate to reality when considering within day operational conditions and challenges, along with nomination discrepancies. In particular, those posed by the rapid unforeseen dispatch of flexible OCGT units can be a significant challenge, which can be compounded by delayed nomination and renomination behaviour.

The NI Network is not simply a conduit to move gas from A to B, but also a critical storage system. The pipelines are "line-packed", filling up overnight by increasing their operating pressures, such that the stored line-pack can be used, creating network flexibility. Allowing these pressures to decline allows exit point demand to exceed interconnector supply for a short period to manage a peak.

The capacity for the NI Network line-pack to 'ride through' these peaks is finite and limited by the level of line-pack and the need to maintain minimum pressures. Due to the dynamics of the gas system, a challenging scenario that has been observed is the dispatch of OCGT power generation at short notice (e.g. in reaction to wind generation or electrical interconnection imports falling away) for 4 to 6 hours over the evening electrical demand peak. If entry flow signals are not timely to allow the operator to adjust flow valves accordingly, as outlined previously, this can compound the problem reducing further the available capacity on the NI Network.

To illustrate this, the TSOs completed additional modelling to assess the pressure changes at the Maydown AGI because this point represents the extremity of the NI network where it is more challenging to maintain pressures. The modelling was conducted using:

1. Real data for distribution demand from the 8th January 2026[25] and operating conditions in typical range (circa 70barg).

2. Using the actual dispatch data for Ballylumford, Coolkeeragh and one Kilroot OCGT unit (part load).

3. Assuming:

   a. Dispatch of one Kilroot OCGT unit operating for 5 hours at full load over the evening peak.
   b. Dispatch of a second Kilroot OCGT unit operating for 5 hours at full load over the evening peak.
   c. High pressures available at inlet (circa 70barg).
   d. Healthy nomination behaviours (except for the OCGT dispatched at Short Noice).
   e. Carrickfergus operating in its "normal" mode and therefore not in free flow configuration.

[25] Coincidentally the 8th of January has been day of significant demand over the previous two winters.

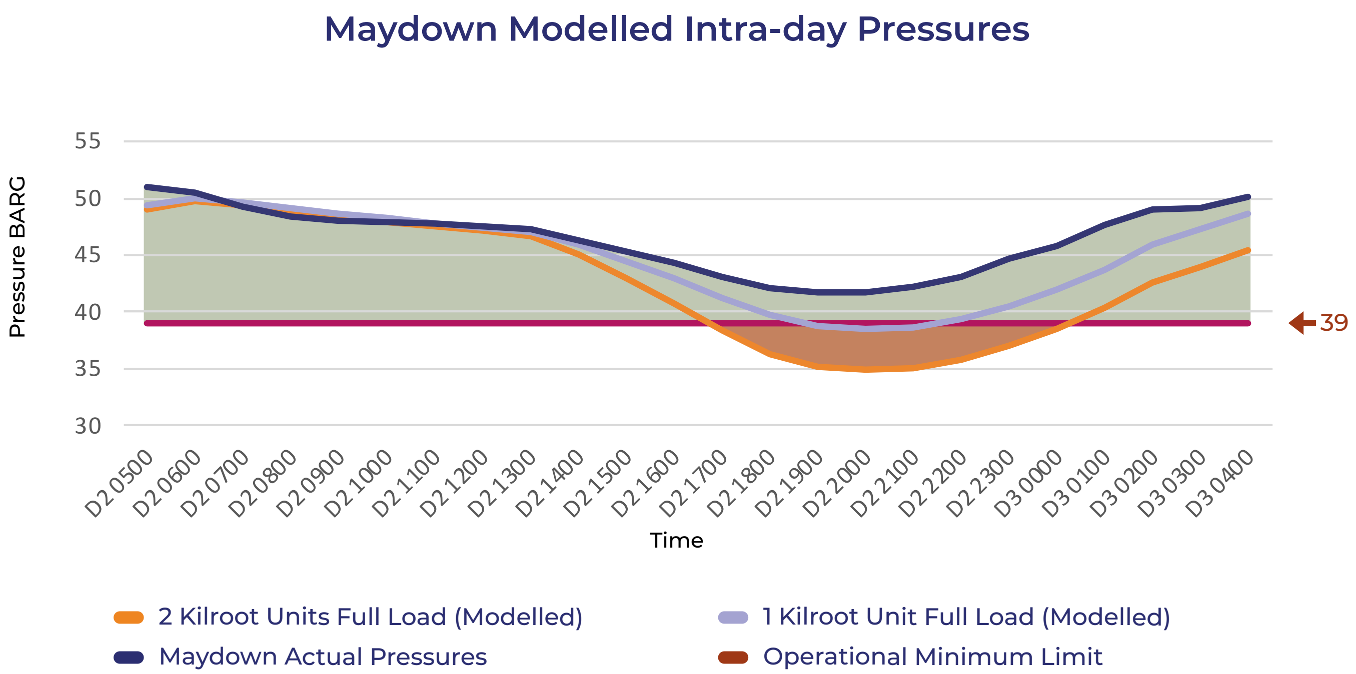


Fig.16 – Maydown Intra-day Pressures

As can be seen from Fig.16;

- The actual pressures observed at Maydown, Co. Derry/Londonderry (an extremity of the NI gas transmission network) on the 8th of January 2026. This included moderate dispatch of one Kilroot OCGT (part load) over the late afternoon /evening peak and resulted in pressures dipping to 42barg. The red line at 39barg represents the minimum operational limit, which would provoke a fuel switch to secondary fuels.

- Modelling one Kilroot unit on full load pushes pressures past the system minimum limit.

- Modelling the dispatch of both Kilroot units reveals that between 4pm to midnight, pressures at the Maydown AGI would have dipped significantly beneath the 39barg limit. These conditions would not have been sustainable for continued operation, despite gas demand for the day being 80.85GWh, well within the 89GWh total capacity available at the Moffat IP.

The ability to ramp up quickly is a valuable characteristic of OCGT plant for power generation stability. The NI Network is small and utilised currently mainly as a point-to-point network with no backfeed, meaning it is extremely sensitive with limited line-pack to ride out unexpected short and intense bursts of activity. It is imperative that this point is highlighted and understood by stakeholders in order to collectively maximise the potential network capability that can actually be availed of.

6.2. Supply Evolution

The hydraulic results emphasise the criticality of high entry pressures and system flexibility to deliver the demand levels required to guarantee demand which depends on the continuous supply from GB.

A secure supply from GB has historically been a safe assumption but the results of NESO's N-1 test[26] in the next 10 years have indicated that:

"On a very cold day (during a 1-in-20-year cold snap) and following a failure of the single largest piece of infrastructure (the N-1 test), the system would not have sufficient gas to meet demand without mitigating action(s) being taken."

This is an extremely unlikely scenario, since the test envisages the complete unavailability of the largest piece of gas transmission infrastructure in GB coinciding with a 1 in 20-year severe winter event. Such a scenario could have implications for the reliability of NI's gas supply. There are several areas where the NI Network is well placed to pivot towards to improve flexibility and security of supply whilst also boosting decarbonisation objectives: biomethane and in time, possibly storage and hydrogen.

[26] https://www.neso.energy/document/372661/download

6.2.1. Biomethane

To determine NI Network's capability for increasing biomethane supply, the TSOs evaluated whether the distribution networks attached to the transmission offtakes could accommodate the likely injection volumes of the Anaerobic Digestion (AD) plants that may seek to connect to them.

To assess this, the TSOs:

- Collaborated with the DNOs as the collective Gas Network Operators (GNOs) to acquire 10-year forecasts of potential biomethane supply. The GNOs engaged with industry by issuing a request for information (RfI)[27] to identify AD projects and ascertain estimations of plant size, location, injection volumes, start dates and determine their likelihood to operate. These were categorised as follows:

Project Classification	Description
POT 1	All projects likely to operate without any support with starting dates based on current intelligence.
POT 2	Projects likely to operate, but not until a support mechanism is in place with starting dates delayed to 2029.
POT 3	Projects less likely to operate with starting dates delayed to 2031.

Table 6 – Biomethane Project Classifications

- Assessed these biomethane injection flows against the summer minimum demand flow rates expected at DNO offtakes for each classification across the 10-year horizon.
- Identified offtakes where injection flows exceed the summer minimum demands in magnitude, indicating a potential network capability problem.

Note that these forecasts represent a snapshot of what is known currently. Biomethane is an evolving work stream, with great uncertainty and any scenarios are likely to change.

November 2023 signalled the first injection of biomethane into the distribution network and the first significant step towards greener gas playing a major part in the greener gas objectives. The Granville Eco Park plant commenced injection in 2023 into Evolve's distribution network and remains the only network connected AD injection facility in Northern Ireland at present[28]. However, the RfI responses have revealed that there exists a substantial appetite amongst developers to connect more AD facilities over the coming years. The magnitude of this potential supply is detailed below in Fig. 17:

[27] The GNO RfI results are summarised here: https://www.gasnetworks.ie/sites/default/files/docs/corporate/gas-regulation/NI-Biomethane-Northern-Irelands-Potential-Request-for-Information-Results.pdf
[28] https://www.bbc.co.uk/news/uk-northern-ireland-67469656

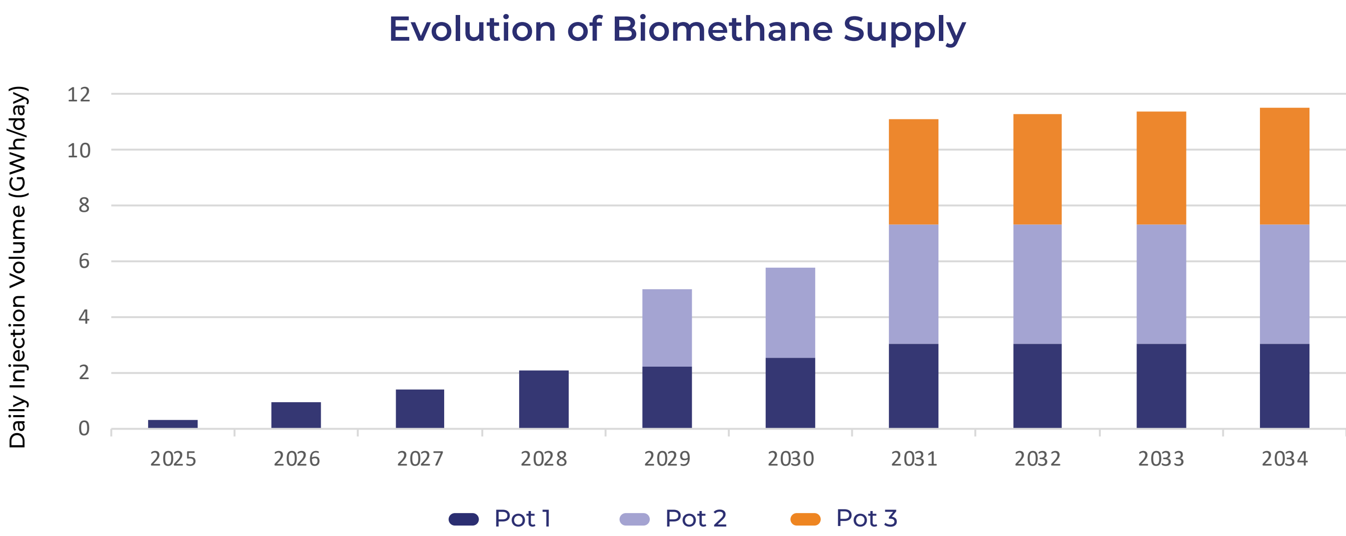


Fig. 17 – Potential Biomethane Supply

- AD plants typically inject a flat baseload level of supply connected to gas distribution networks.
- With no commercial support mechanism in place to foster the development of biomethane in the economy, only a modest 3GWh/day of supply is forecasted to be realised by 2031 (only Pot 1 projects).
- Conversely, if such enabling support mechanisms were to exist, biomethane supply levels could more than double to represent between 7-11 GWh/day of supply by 2031 (Pot 1 + Pot 2 + Pot 3 projects).

- The benefits of this fully realised supply are significant:

- Biomethane provides a valuable alternative source of gas which would alleviate system pressures on days of high demand or during short periods of system stress. This would ease the flows required from the IPs & strengthen security of supply. 7-11GWh/day represents a sizeable portion of the gap between SWP and AWP demand levels.

- Realising 10GWh/day of biomethane would represent an indigenous decarbonised gas supply of approximately 20% of average forecasted daily gas demand by 2031. This is a like for like replacement for natural gas and doesn't require large scale major infrastructure changes.

- On days where there is limited temperature driven demand on the distribution network during spring and summer, biomethane supply would actually feed the entire demand for the distribution sector, even exceeding it.

- These benefits are not without their operational challenges however:

- On these spring/summer low demand days, since injection facilities are connected to distribution networks; if biomethane supply exceeds the demand then there is nowhere for that excess supply to go and injection volumes would have to be curtailed. This represents another obstacle to developing biomethane since there must be an immediate route for the gas injected to be either consumed or stored.

- Fig. 18 details the corresponding level of distribution offtakes or AGIs that would become saturated on low demand days at the equivalent supply levels in Fig. 17:

Evolution of Biomethane Supply

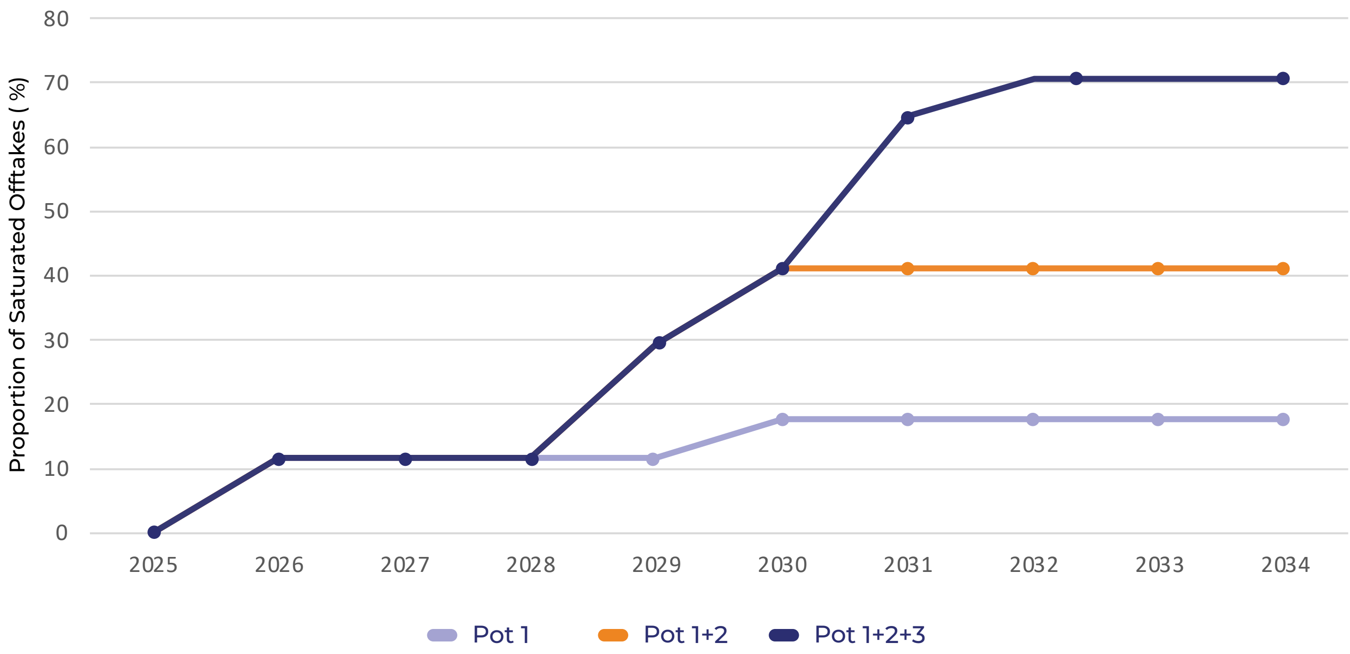


Fig. 18 – Distribution Saturation of Offtakes

This indicates that supply would exceed demand downstream for as little as 19% of offtakes for Pot 1 projects and 70% for all Pots by 2032. To realise the full supply volume potential and unlock more therefore requires measures to upgrade perhaps up to 70% of the AGI's on the network. This is not an insurmountable challenge and the TSOs can work with the DNOs to provide strategic reinforcement to remedy this as biomethane scales up. Such solutions could include:

1. **Reverse Compression**: AGI's can be upgraded to allow gas to flow in the reverse direction, from distribution networks back into the transmission network.

2. **Network Linkages:** Additional pipelines could connect multiple distribution zones.

The targeted integration of these solutions will allow uninhibited injections of biomethane that can be used anywhere else on the network and at any time of the year.

Future volumes of biomethane supply and the consideration of their network impacts will be kept under review in future iterations of the GTO as policy develops.

6.2.2. Hydrogen

Hydrogen in Northern Ireland remains in its infancy. Strong supply fundamentals exist with abundant wind generation that is often dispatched down which could instead be utilised to manufacture green hydrogen. It's notable that no Northern Ireland projects were awarded with a contract in the recent UK wide Hydrogen Allocation Rounds[29] (HAR 1 & 2). Without effective policy, more concrete indications of sector development and targets to nurture demand growth here in Northern Ireland there is likely to be minimal impact on the NI Network in the next 10 years. This is why it is not included in the analysis in the first edition of the GTO. The TSOs will actively monitor developments and include hydrogen within the modelling when appropriate.

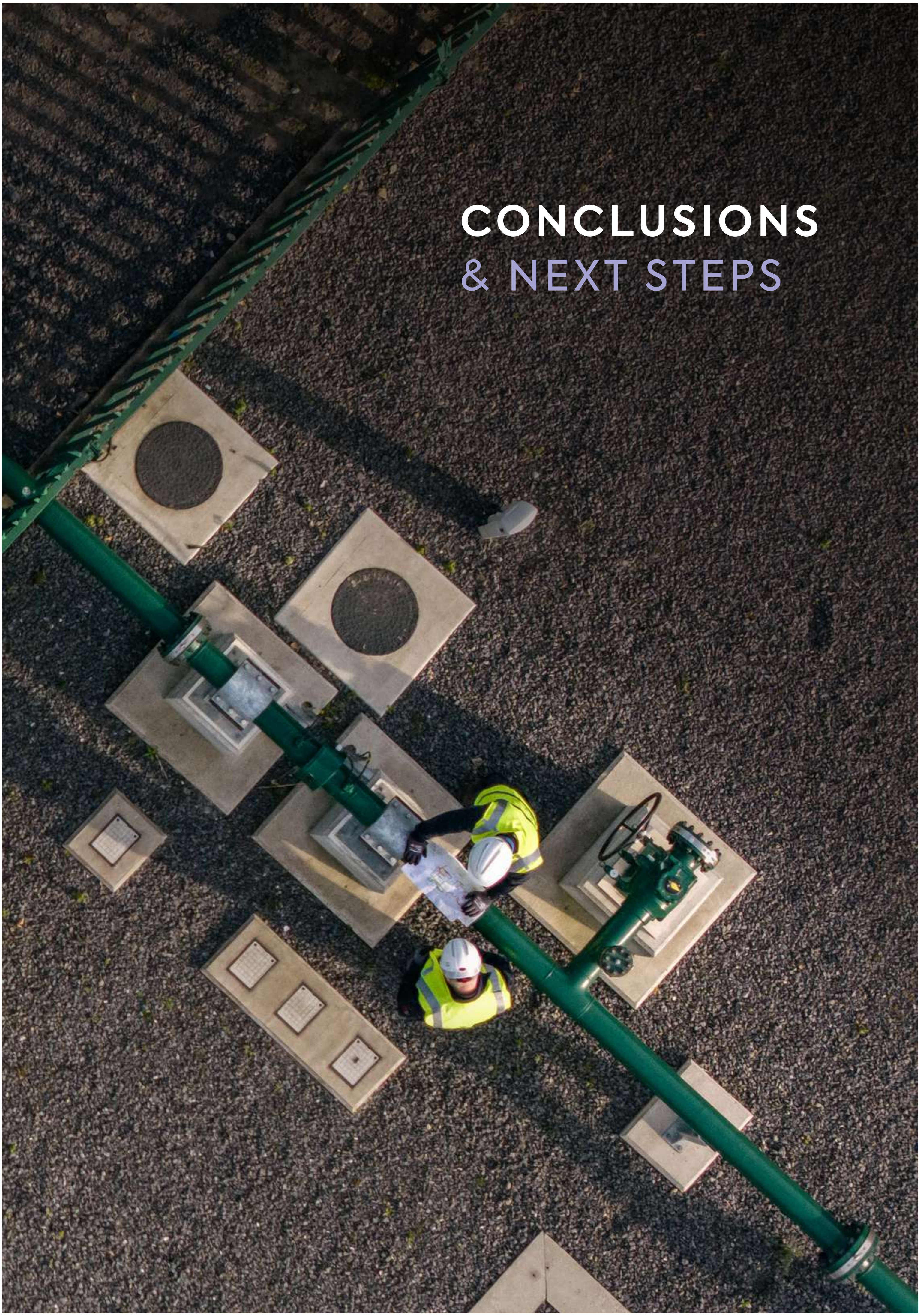
The NI Network is most likely to be affected by hydrogen development in the nearer term through linkage to GB. The Department for Energy Security and Net Zero (DESNZ) recently consulted on a minded to position to support hydrogen blends up to 2% by volume[30] which is consistent with European standards.[31] This would likely see 2% blends entering the NI Network through either IP. The TSOs are committed to working alongside National Gas in GB to ensure readiness, should hydrogen blending become a reality.

6.2.3. Storage

The Islandmagee Energy Ltd storage project envisaged using its unique geological location to develop salt cavern gas storage. The development prospects of the project are unknown at this stage. As such, whilst a gas storage site at Islandmagee would reinforce Northern Ireland's security of supply and likely address some of the challenges identified herein, the TSOs can't speculate on detailed aspects of storage gas flows in the next 10 years at present.

[29] https://www.gov.uk/government/collections/hydrogen-allocation-rounds#hydrogen-allocation-round-3-(har3)
[30] https://assets.publishing.service.gov.uk/media/689da7f5b4b6acd341133994/hydrogen-blending-consultation-document.pdf
[31] https://observatory.clean-hydrogen.europa.eu/eu-policy/hydrogen-and-decarbonised-gas-market-package

CONCLUSIONS & NEXT STEPS



7. CONCLUSIONS & NEXT STEPS

Summary of Main Findings

Annual Demand

Power generation demand is forecast to decline over the next 10 years due to the increasing penetration of renewables. Distribution sector demand is forecast to grow albeit at more reduced rates than some historic periods, potentially becoming the main demand driver over time. However total volumes remain significant compared to today, only reducing by approximately 9% in total over the 10 year period.

Peak Demand

Conversely, peak demand is forecast to increase, primarily driven by gas power generation dispatched to support renewables when climatic conditions are not conducive to sufficient wind and solar generation. The disapatch of less efficient gas OCGT units at Kilroot contributes to the potential for higher future peaks with projected AWP's and SWP's increasing by aprroximately 2% & 3% p.a. respectively.

Hydraulic Modelling

The AWP results indicate that forecasted demand levels can be accommodated with some headroom for lower inlet pressures if necessary. The SWP results show that maintaining high inlet pressures (as are available today) are essential to accommodate peak demand levels indicated over the next 5 years. Potential SWP demand levels in later years might necessitate the network operating at its maximum capability.

Hydraulic Sensitivity

The illustrative sensitivity results indicate that additional OCGT demand load on the SNP from Gas Year 2030/2031 can be accommodated subject to the same conditions as the SWP results above. However, these modelled aggregate demand totals approach full network capacity, leaving little available headroom.

Operational Flexibility

Unexpected OCGT dispatch poses operational challenges to the NI Network. Even on days where demand is below total Moffat IP entry capacity, the late dispatch of an OCGT unit can plummet network pressures to unsustainable levels which must be addressed for the optimal management of the network.

Biomethane

The evidence suggests that there is substantial interest in AD plants connecting to the distribution networks to inject biomethane. Unlocking this potential by upgrading AGI's or connecting distribution networks will remove the physical barriers to injection. This would allow possibly 7-11GWh/day of biomethane to contribute effectively towards greening NI gas and supporting greater network flexibility and security of supply, particularly given the need for it identified in the above two points.

Supply Developments

Hydrogen and storage are two areas of uncertain future development but may yet become pivotal in the Northern Ireland energy landscape. Both will have benefits for both gas and electricity sectors alike and should feature more prominently in future GTO's as their role becomes clearer in the energy transition.

Next Steps

The methodology employed to produce the GTO examined one median gas demand forecast and assessed the network's ability to supply that demand. This median demand was flexed for peak conditions. However, the cornerstone of the methodology going forward is embracing a **scenario-based approach**. This means the TSOs will no longer examine just one future forecast for gas demand.

In future GTO's, the TSOs will anticipate a **range of future gas demands under several scenarios**. This will enable the assessment of the network's capability to handle the potential range of future demands allowing for a more robust analysis of network capability.

The benefits of a scenario-based approach are:

- Considering a range of demands is a prudent approach to assessing network adequacy considering the extent of future uncertainty.
- It involves the input of other stakeholders. This collaborative nature contributes to building a better picture of the underlying factors that shape gas demand.
- It aligns with the approach of other stakeholders who carry out their own energy system modelling, therefore presenting a more compatible and cohesive strategy to informing whole energy system planning.

For power generation, SONI already produce high and low demand forecasts alongside a baseline median. The TSOs will collaborate to assist shaping the assumptions that inform these forecasts.

For the distribution sector, the future GTO publications will seek to dissect and examine the exact impact of specific demand factors on distribution demand for more precise estimations. This is particularly crucial given the important decisions to be made regarding the most effective and efficient way to decarbonise home heating and industry.

These specific factors include:

Building a more comprehensive understanding of how these dynamics interact in an evolving energy system will ultimately lead to more informed network planning insights and decisions with each iteration of the GTO.

ENERGY HORIZONS

8. ENERGY HORIZONS

To complement and build upon this new approach towards gas network planning in the first GTO; the TSOs are commencing work on a new future planning document; Energy Horizons.

Energy Horizons will analyse potential trajectories of the supply and demand dynamics for the gas network in 5-year intervals out to 2050 and beyond. It will identify potential credible pathways the NI Network could take to decarbonise on the road to net zero and their implications. This will be achieved by identifying the range of pivotal factors that will drive energy industry changes and assessing their potential impacts. These will include but not be limited to:

Infrastructure Changes

Market Dynamics

Geopolitical Events

Technological Advancements

Demand Drivers

Social Factors

Political & Regulatory Changes

Since these are ever evolving, the Energy Horizons publication needs to be evolutionary where the scenarios will be shaped and constructed with each iteration according to the observable evidence available. The TSOs intend to consult regularly on the methodology, assumptions and engagement, relying on stakeholders to inform the analysis. Continued cooperation and collaboration with SONI will be key to the process. Energy Horizons will be produced in conjunction with SONI's equivalent publication; Tomorrow's Energy Scenarios (TES). Therefore, there will be considerable alignment of scenarios, with shared assumptions across both publications to mirror the inextricable linkage of the electrical and gas networks.

Energy Horizons will be an aspirational document. However, the TSOs will strive to ensure the balance is struck to connect reality and ambition. Therefore, establishing credible pathways towards future development and targets.

This will allow the production of a publication with impact that, links with the GTO and informs across a multitude of metrics; from high level capital cost estimates to carbon costs to permit a direct and sensible comparison of each pathway.

The TSOs look forward to engaging and cooperating with partners and stakeholders in due course to produce their future gas network planning publications.

APPENDICES

9. APPENDICES

Appendix A

Gas Network Anatomy – A detailed review

Fig 19 – Shows a map of the Gas network routes into NI from Moffat.

Transmission System Overview

This appendix expands on the Network Anatomy section, providing more detail on each section of Pipeline. The Northern Ireland Gas Transmission System was constructed in stages and as a result is relatively fragmented with various TSOs owning different sections of Pipeline.

All Gas transported to Northern Ireland and Ireland, comes via the Moffat IP, which is the connection point to National Grid's National Transmission System (NTS) in Great Britain (GB). From Moffat, the Scottish onshore system (SWSOS) owned by GNI (UK) consists of a compressor station at Beattock, and two pipelines running onshore to Brighouse Bay capable of transporting gas at 85barg.

A further, two additional compressors station at Brighouse Bay compresses the imported gas into the two sub-sea interconnectors (IC1 & IC2) where they terminate in Ireland at Loughshinney and Gormanston respectively. IC1 was commissioned in 1991 and runs for 162km consisting of 600mm NB pipe with a MOP of 140barg. IC2 was commission 12 years later in 2003 and runs for 192km consisting of 750mm NB pipe with an MOP of 140barg, it also has a subsea 11km 250NB pipe that spurs off to feed the Isle of Man.

The SWSOS has an offtake to Northern Ireland, located at Twynholm. It's from here the Scotland to Northern Ireland Pipeline (SNIP) owned and operated by Premier Transmission Limited (PTL) a subsidiary of Mutual Energy Limited (MEL) provides the primary gas feed to Northern Ireland. Construction of the SNIP was completed in 1996, the 600mm Nominal Bore (NB) pipe runs 135km from Twynholm overland to the coast near Stranraer, where it crosses (subsea) the Irish Sea terminating at Ballylumford Power Station, Islandmagee. The SNIP has a Maximum Operating Pressure ("MOP") of 75barg and PTL is entitled to receive gas at the prevailing pressures available from GNI (UK)'s compressor station at Beattock. It's worth noting that should prevailing pressures at Twynholm not be sufficient, PTL has a contracted ability to pay for elevated Twynholm inlet pressures over the 56barg contractual guaranteed minimum.

The Belfast Gas Transmission Pipeline (BGTP) a subsidiary of MEL, connects at Ballylumford and runs 35km via Carrickfergus to Belfast, where it supplies the Phoenix Energy network. It consists of 600NB pipe with a MOP of 75barg. At Carrickfergus a short 3km spur connects to Kilroot Power Station.

The North-West Pipeline (NWP) commissioned in 2004 is owned and operated by GNI (UK), connects to the BGTP at Carrickfergus and extends 112km to Coolkeeragh Power Station. It consists of 450NB pipe with a MOP of 75barg. The Kinecx Energy (formally Firmus Energy) network connects several towns at distribution level to the NWP.

The South North Pipeline (SNP) commissioned in 2006 is owned and operated by GNI (UK) and runs from Gormanston, Co. Meath in ROI and connects to the NWP at Ballyalbanagh (near Ballyclare), provided a secondary supply route for Gas into Northern Ireland from Interconnector 2. The pipeline comprises of 156km of 450NB pipe with a MOP of 75barg and supplies Kinecx Energy, connecting several towns at distribution level along the Newry to Belfast corridor.

The Gas to the West (GttW) Pipeline is owned and operated by West Transmission Limited (WTL), a subsidiary of MEL, connecting at Portadown on the SNP and running 78km to Fivemiletown. This transmission system consists of both 400NB and 300NB pipe sections with a MOP of 75barg and has three main offtakes to the Evolve (formally SGN natural Gas) distribution network consisting of an additional 200km of pipe connecting towns such as Derrylin, Strabane, and Magherafelt.

Distribution System Overview

Stranraer and Haynestown

SGN (formed as Scotia Gas Networks) operate a distribution network supplying the town of Stranraer in Scotland, which is supplied via the SNIP, and GNI operate a distribution network supplying the Dundalk area in ROI, which is supplied via the SNP. As these loads feed off the transmission network between the IPs with GB and ROI, and before Northern Ireland, they have a reserved capacity on the NI Network (i.e. capacity not available to NI Shippers), as described below.

1. an offtake on the SNIP at Stranraer in Scotland, which from Gas Year 2021/22 has arrangements under the 'Stranraer Inter-operator Agreement' between PTL and SGN such that it shall have reserved capacity of 0.931 GWh/day (equating to 0.084 mscm/d) at Moffat and at the 'Stranraer Exit Point', and.

2. an offtake on the SNP near Haynestown in ROI (to supply a spur of the ROI System), which commenced operation on 19 February 2021 under a 'Use of System Agreement' between GNI (UK) and GNI such that it shall have reserved capacity of 6.6 GWh/day (equating to 0.597 mscm/d) at Gormanston and at the 'ROI System Exit Point'.

NI Distribution Network Overview

Three Distribution Networks Operators (DNOs) take gas from the Transmission Network and redistribute it to homes and businesses within NI.

Pheonix Energy own and operate the distribution network in the Greater Belfast (including Larne) and 'East Down' area. They were awarded their conveyance licence in September 1996.

Kinecx own and operate the distribution network in the area commonly referred to as the 'Ten Towns'. FeDL was awarded their conveyance licence in March 2005.

Evolve, formerly SGN Natural Gas, own and operate the distribution network in the main conurbations in the west of NI. Evolve was awarded their conveyance licence in February 2015.

Appendix B
Network Physical Parameters & Hydraulic Modelling Notes

Entry Capacity

	Moffat IP Entry Point		
	Contractual Capacity	Stranraer Reserved Capacity	Available Capacity for NI
GWh/day	89.28	0.931	88.349
mscm/day	8.08	0.084	7.996

	South North IP Entry Point		
	Contractual Capacity	Haynestown Reserved Capacity	Available Capacity for NI
GWh/day	66.3	6.6	59.7
mscm/day	6.0	0.6	5.4

Network Pressure Assumptions

Twynholm

- The capacity to be made available to NI Shippers at the Moffat IP Entry Point shall be assumed to be 89.28 GWh/day (equating to 8.08 mscm/d), minus 0.931GWh/day to be reserved for Stranraer (equating to 0.084 mscm/d). Hence, the base case analysis shall assume capacity available through Twynholm for NI deliveries shall be up to 88.349 GWh/day. A quantum equal to Stranraer demand shall always be added to the flow requirements through Twynholm for NI deliveries.

- The minimum diurnal inlet pressure at Twynholm AGI was assumed to be 56barg for each scenario, in line with the contractual obligations between the TSOs and users of the NI Network. As a sensitivity, inlet pressures at Twynholm were allowed to vary to achieve the various pressure requirements and boundary conditions.

- Twynholm AGI is modelled as a flow-control regulating AGI, with an assumed pressure drop across the AGI of 2.5barg. The daily flows through the Twynholm entry point are assumed to follow a flat flow profile, with the diurnal swing in the demand profile being absorbed by the downstream system.

- Pressures at Twynholm are inlet pressures in the diurnal cycle. The current Maximum Operating Pressure of the SNIP is 75barg, so with the 2.5barg design pressure drop across the station, the maximum permissible inlet pressure is 77.5barg.

Gormanston

- The flow through Gormanston AGI shall be that required over the capacity available via Moffat (89.285GWh/day) or a portion of the overall NI demand that is required to achieve the various target pressures of the modelling (e.g. 12 / 39barg minimum system pressure). The capacity to be made available to NI Shippers at the South North IP Entry Point shall be assumed to be 59.7 GWh/day, with a further 6.6 GWh/day to be reserved for GNI's use (via GNI (UK)) at Haynestown. A quantum equal to Haynestown demand shall always be added to the flow requirements through Gormanston AGI for NI deliveries.

- Flows in excess 59.7 GWh/day for NI deliveries, or 66.3 GWh/day in total, shall not be permitted through Gormanston AGI in the model.

- Gormanston AGI is modelled as a volumetric flow-control regulating AGI, with the daily flows through the AGI assumed to follow a flat flow profile, with the diurnal swing in the demand profile being absorbed by the downstream system.

- Pressures quoted at Gormanston are outlet pressures and were allowed to vary as necessary to achieve the various pressure requirements and boundary conditions.

- There was no minimum inlet pressure assumed at Gormanston AGI, only a Maximum Operating Pressure on the outlet of 75barg, as is currently declared MOP on the South North Pipeline.

Carrickfergus

- Where Carrickfergus is modelled in ‘free flow’ as part of the sensitivity analysis, a pressure drop across the station of 0.5barg is assumed (provided a 0.5barg differential exists in the system, otherwise no flow will be permitted).

General

- All demands were modelled as energy flows using a calorific value (CV) of 39.8 MJ/m3 (as per NG NTS).
- All scenarios simulate the 24-hour demand cycle of the NI Network repeated over a three-day period to obtain steady consistent results.

Appendix C
Detailed Hydraulic Modelling Results

Note to interpret the tables: The highest and lowest demands are assessed first. If they pass, then everything in between will pass and so are marked as ok. If a fail is encountered, then another demand level is assessed until another demand level passes.

For example, in Table 1: The lowest demand level was in Gas Year 2026/27, and it passed so the pass figures are detailed in green. The highest demand was in gas year 2034/35. It failed and so the figures are detailed in red. The next highest was assessed. It passed and so all other demand levels in between will pass and are marked "OK" without the need to test them each individually and record their figures.

Diurnal pressures for relevant years are listed in relevant columns for information. The modelled lowest and highest pressures at that network location are listed in each table.

1. Average Winter Peak - Operational Minimum Limit

	Twynholm (SNIP)		Gormanston		Ballylumford	Kilroot	Carrickfergus			Tullykeneye	Coolkeeragh	NI Tx System	
	Flow	Pressure	Flow	Pressure	Pressure	Pressure	Inlet Pressure	Flow	Outlet Pressure	Pressure	Pressure	Maximum Velocity	Demand
	(mscmd)	(barg)	(mscmd)	(barg)	(barg)	(barg)	(barg)	(mscmd)	(barg)	(barg)	(barg)	(m/s)	(mscmd)
Year	8.08 (max)	77.5 (max)	6.00 (max)	75 (max)	39 (min)	39 (min)	39 (min)	3.8 (max)	39 (min)	39 (min)	39 (min)	20 (max)	-
2025/26	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	9.60
2026/27	5.38	56 / 62.6	4.22	62.1 / 66.3	43.6 / 53.5	43.2 / 53.3	43.6 / 52.7	0.01	43.1 / 52.2	48.1 / 53.3	39 / 48.6	5.92	9.60
2027/28	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	9.62
2028/29	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	10.11
2029/30	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	9.83
2030/31	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	10.13
2031/32	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	10.18
2032/33	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	10.29
2033/34	5.6	56 / 60.6	4.75	65.1 / 68.2	43.8 / 50.4	43.4 / 50.3	43.9 / 50.3	0.25	43.4 / 49.8	48.3 / 52.2	39 / 46	5.81	10.31
2034/35	5.78	56 / 64	5.40	70.3 / 74.9	42.2 / 53.5	41.4 / 53.3	41.9 / 53.7	0.87	41.4 / 53.2	50.4 / 56.7	37.3 / 49.6	6.59	11.19

2. Average Winter Peak - Enhanced Pressures

	Twynholm (SNIP)		Gormanston		Ballylumford	Kilroot	Carrickfergus			Tullykeneye	Coolkeeragh	NI Tx System	
	Flow	Pressure	Flow	Pressure	Pressure	Pressure	Inlet Pressure	Flow	Outlet Pressure	Pressure	Pressure	Maximum Velocity	Demand
	(mscmd)	(barg)	(mscmd)	(barg)	(barg)	(barg)	(barg)	(mscmd)	(barg)	(barg)	(barg)	(m/s)	(mscmd)
Year	8.08 (max)	77.5 (max)	6.00 (max)	75 (max)	39 (min)	39 (min)	39 (min)	3.8 (max)	39 (min)	39 (min)	39 (min)	20 (max)	-
2025/26	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	9.60
2026/27	7.16	63 / 68.4	2.44	50.4 / 56.9	45.4 / 54.6	44.1 / 53.9	43.8 / 53.2	1.79	43.3 / 52.7	43.9 / 50.5	39 / 48.5	7.04	9.60
2027/28	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	9.62
2028/29	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	10.11
2029/30	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	9.83
2030/31	7.18	63.1 / 68.4	2.95	53.2 / 59.2	44.8 / 54.3	43.5 / 53.8	43.9 / 53.1	1.48	43.4 / 53.6	44.9 / 51.2	39 / 48.8	7.08	10.13
2031/32	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	10.18
2032/33	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	10.29
2033/34	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	10.31
2034/35	6.89	61.4 / 68.9	4.30	62.3 / 67.9	44.4 / 55.7	43.3 / 55.2	43.8 / 54.6	0.24	43.3 / 54.1	47.8 / 54.8	39 / 50.5	6.72	11.19

3. Severe Winter Peak - Operational Minimum Limit

	Twynholm (SNIP)		Gormanston		Ballylumford	Kilroot	Carrickfergus			Tullykeneye	Coolkeeragh	NI Tx System	
	Flow	Pressure	Flow	Pressure	Pressure	Pressure	Inlet Pressure	Flow	Outlet Pressure	Pressure	Pressure	Maximum Velocity	Demand
	(mscmd)	(barg)	(mscmd)	(barg)	(barg)	(barg)	(barg)	(mscmd)	(barg)	(barg)	(barg)	(m/s)	(mscmd)
Year	8.08 (max)	77.5 (max)	6.00 (max)	75 (max)	39 (min)	39 (min)	39 (min)	3.8 (max)	39 (min)	39 (min)	39 (min)	20 (max)	-
2025/26	5.5	56 / 65.9	5.21	69.8 / 74.9	43.5 / 56.7	42.8 / 56.4	43.3 / 55.8	0.71	42.8 / 55.3	50.9 / 57.8	38.6 / 51.3	6.27	10.70
2026/27	5.42	56 / 63.7	4.98	67.5 / 71.7	44.2 / 54.5	43.7 / 54.2	44.2 / 53.6	0.37	43.7 / 53.1	49.5 / 55.2	39 / 49.3	6.07	10.40
2027/28	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	11.33
2028/29	5.66	56 / 67.4	5.17	68.7 / 74.8	42.6 / 58.2	42.1 / 57.7	42.6 / 57	-0.48	42.1 / 57.5	49.7 / 57.6	37.6 / 52.2	6.34	10.83
2029/30	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	11.87
2030/31	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	12.09
2031/32	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	11.71
2032/33	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	12.24
2033/34	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	12.24
2034/35	7.28	56 / 64.9	5.54	66.1 / 71.3	35 / 49.4	33.7 / 48.9	34.2 / 48.2	-0.63	33.7 / 48.7	42.1 / 49.7	27.2 / 42.7	8.65	12.83

4. Severe Winter Peak - Enhanced Pressures

	Twynholm (SNIP)		Gormanston		Ballylumford	Kilroot	Carrickfergus			Tullykeneye	Coolkeeragh	NI Tx System	
	Flow	Pressure	Flow	Pressure	Pressure	Pressure	Inlet Pressure	Flow	Outlet Pressure	Pressure	Pressure	Maximum Velocity	Demand
	(mscmd)	(barg)	(mscmd)	(barg)	(barg)	(barg)	(barg)	(mscmd)	(barg)	(barg)	(barg)	(m/s)	(mscmd)
Year	8.08 (max)	77.5 (max)	6.00 (max)	75 (max)	39 (min)	39 (min)	39 (min)	3.8 (max)	39 (min)	39 (min)	39 (min)	20 (max)	-
2025/26	5.5	56 / 65.9	5.21	69.8 / 74.9	43.5 / 56.7	42.8 / 56.4	43.3 / 55.8	0.71	42.8 / 55.3	50.9 / 57.8	38.6 / 51.3	6.27	10.70
2026/27	5.42	56 / 63.7	4.98	67.5 / 71.7	44.2 / 54.5	43.7 / 54.2	44.2 / 53.6	0.37	43.7 / 53.1	49.5 / 55.2	39 / 49.3	6.07	10.40
2027/28	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	11.33
2028/29	5.66	56 / 67.4	5.17	68.7 / 74.8	42.6 / 58.2	42.1 / 57.7	42.6 / 57	-0.48	42.1 / 57.5	49.7 / 57.6	37.6 / 52.2	6.34	10.83
2029/30	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	11.87
2030/31	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	12.09
2031/32	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	11.71
2032/33	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	12.24
2033/34	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	12.24
2034/35	7.28	56 / 64.9	5.54	66.1 / 71.3	35 / 49.4	33.7 / 48.9	34.2 / 48.2	-0.63	33.7 / 48.7	42.1 / 49.7	27.2 / 42.7	8.65	12.83

5. Severe Winter Peak - Twynholm Maximum Flow

	Twynholm (SNIP)		Gormanston		Ballylumford	Kilroot	Carrickfergus			Tullykeneye	Coolkeeragh	NI Tx System	
	Flow	Pressure	Flow	Pressure	Pressure	Pressure	Inlet Pressure	Flow	Outlet Pressure	Pressure	Pressure	Maximum Velocity	Demand
	(mscmd)	(barg)	(mscmd)	(barg)	(barg)	(barg)	(barg)	(mscmd)	(barg)	(barg)	(barg)	(m/s)	(mscmd)
Year	8.08 (max)	77.5 (max)	6.00 (max)	75 (max)	39 (min)	39 (min)	39 (min)	3.8 (max)	39 (min)	39 (min)	39 (min)	20 (max)	-
2025/26	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	10.70
2026/27	8.08	67 / 72.5	2.32	49.5 / 57.2	46.8 / 56.1	45.4 / 55	44.7 / 54.2	2.28	45.2 / 54.7	42.8 / 50.4	39 / 49.2	7.34	10.40
2027/28	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	11.33
2028/29	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	10.83
2029/30	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	11.87
2030/31	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	12.09
2031/32	8.08	66.2/73.1	4.16	60.6/66.9	45.2 / 56.7	43.7 / 56	44.2 / 55.3	0.73	43.7 / 55.8	46 / 53.3	39 / 50.9	7.34	11.71
2032/33	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	12.24
2033/34	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	12.24
2034/35	8.08	65.8 / 74.3	4.74	64.9 / 71.5	45.2 / 58.2	43.9 / 57.6	44.4 / 56.9	0.17	43.9 / 57.4	47.6 / 55.9	39 / 52.3	7.23	12.83

6. Power Station Sensitivity – Enhanced Pressures

	Twynholm (SNIP)		Gormanston		Ballylumford	Kilroot	Carrickfergus			Tullykeneye	Coolkeeragh	NI Tx System	
	Flow	Pressure	Flow	Pressure	Pressure	Pressure	Inlet Pressure	Flow	Outlet Pressure	Pressure	Pressure	Maximum Velocity	Demand
	(mscmd)	(barg)	(mscmd)	(barg)	(barg)	(barg)	(barg)	(mscmd)	(barg)	(barg)	(barg)	(m/s)	(mscmd)
Year	8.08 (max)	77.5 (max)	6.00 (max)	75 (max)	39 (min)	39 (min)	39 (min)	3.8 (max)	39 (min)	39 (min)	39 (min)	20 (max)	-
2030/31	6.79	59.5 / 69	5.69	69.3 / 74.9	42.3 / 56.2	41.4 / 55.8	41.9 / 55.2	-0.45	41.4 / 55.7	48.4 / 56.1	36.7 / 50.8	6.82	12.48
2031/32	6.58	60.4 / 69.4	5.53	69.3 / 74.6	44.6 / 57.7	43.5 / 57.2	44 / 56.6	-0.49	43.5 / 57.1	49.6 / 56.6	39 / 52.1	6.47	12.10
2032/33	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	12.63
2033/34	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	12.63
2034/35	7.28	59.1 / 68.2	5.93	69.4 / 74.8	39.8 / 53.6	38.7 / 53.1	39.2 / 52.5	-0.77	38.7 / 53	46.2 / 53.8	33.2 / 47.5	7.58	13.22

7. Power Station Sensitivity – Twynholm Maximum Flow

	Twynholm (SNIP)		Gormanston		Ballylumford	Kilroot	Carrickfergus			Tullykeneye	Coolkeeragh	NI Tx System	
	Flow	Pressure	Flow	Pressure	Pressure	Pressure	Inlet Pressure	Flow	Outlet Pressure	Pressure	Pressure	Maximum Velocity	Demand
	(mscmd)	(barg)	(mscmd)	(barg)	(barg)	(barg)	(barg)	(mscmd)	(barg)	(barg)	(barg)	(m/s)	(mscmd)
Year	8.08 (max)	77.5 (max)	6.00 (max)	75 (max)	39 (min)	39 (min)	39 (min)	3.8 (max)	39 (min)	39 (min)	39 (min)	20 (max)	-
2030/31	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	12.09
2031/32	8.08	66.7 / 74.3	4.02	57.8 / 65.4	45.7 / 58.4	44.1 / 57.5	44.5 / 56.8	-0.07	44 / 57.3	45 / 53.6	39 / 52	7.46	11.71
2032/33	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	12.24
2033/34	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	12.24
2034/35	8.08	65.7 / 74.2	5.14	65.6 / 72.1	45.2 / 58.2	43.8 / 57.6	44.3 / 56.9	-0.34	43.8 / 57.4	47.6 / 55.8	39 / 52.3	7.24	12.83

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GAS TRANSMISSION OUTLOOK

2025 – 2026