2024 Long Term Development Statement

Final
October 2024

WALES&WEST UTILITIES

Foreword

Neil Henson
Director of Finance

Welcome to our Long Term Development Statement for 2024. This document provides an indication of the usage of our pipeline system and likely developments. It is intended to help companies that are contemplating connecting to our system or entering transportation arrangements to identify and evaluate opportunities. The ongoing progress towards Net Zero readiness and our plans for a transition to hydrogen and other renewable gases have presented their own challenges as well as opening exciting opportunities for the gas network.

The statement reflects our 2024 planning process and incorporates a reappraisal of our analysis of the market and of the demands on our network. As such, it contains the latest information on transportation volumes, how we develop the system, whole energy system impacts and investment in the system.

Over the past twelve months we have responded to ongoing volatility and change, as we continue to deliver an ambitious RIIO-GD2 price control programme, against an ever-changing geopolitical and economic backdrop. This instability has increased the wholesale cost of energy over the last few years, including natural gas, in turn impacting demand across Great Britain. This has been an important consideration in our forecasting process.

A major change this year has been the election of a new Government, bringing potential changes to energy policy. This includes the Clean Power Mission which has a target to achieve a decarbonised power sector by 2030. We look forward to working with the newly established National Energy System Operator as they fulfil their whole system duties. Collaborating with the incoming Regional Energy Strategic Planner (RESP) is of particular interest to us, and the opportunity this presents for considering local sensitivities in our processes.

As we prepare to submit our plans for the RIIO-3 period, it is crucial for us to continue designing and developing our long-term strategies, considering input and feedback from our stakeholders and the needs of our customers. The energy sector remains in the spotlight, and we are dedicated to supporting the delivery of net zero by 2050. This means our network will need the ability to transport green gases like hydrogen and biomethane; and play its part in decarbonising heat, power, and transport.

We are doing more to help our customers move to a more sustainable, net zero future. Our long-term Sustainability Strategy, published in April 2023, sets out our vision with clear targets to reduce the impact of our own activity, and deliver what our customers need and expect. We continue to work

with the UK and Welsh governments and other key industry stakeholders; to inform the options, and to ensure a fair choice is available to all consumers.

Our focus on putting customers and colleagues first has brought significant success again in 2024.

Here are a few of our achievements from the last 12 months:

- We continue to develop and use the Pathfinder 2050 model[1] that enables low carbon alternatives to be evaluated for regions within our network as well as at individual property level. In 2024 the tool has been used to support development of Local Area Energy Plans (LAEPs) across the network.
- Publication of the feasibility study for Hyline Cymru, a critical part of the South Wales Industrial Cluster Plan.
- We published our 2023-24 "Delivering Innovation" report, summarising the research we are leading and collaborating on to support the transition of the energy system.
- We published our 2023-24 Annual Environmental Report to share the progress we have made against our Environmental Action Plan ambitions, the report is produced as part of our regulatory requirements, but also highlights what we have achieved to make our business more sustainable for our customers, communities and colleagues.
- We received our twelfth consecutive award from Royal Society for the Prevention of Accidents (RoSPA) in 2024, once again recognised for our industry-leading health and safety performance and commitment and have retained the President's Award. We also received the Institution of Gas Engineers and Managers (IGEM) Safety Award for our work on Human Factors.
- We achieved reaccreditation to ISO 22458 Customer Vulnerability Standard and the associated Kitemark. We are one of nine companies to be the first to achieve the new standard and Kitemark.
- We continue to hold the ISO 14001 (environmental management) and ISO55001 (asset management) accreditations from the International Organisation for Standardization ("ISO") following audits of the relevant systems and processes.

We are proud of all these achievements as we continually seek to further improve the service we provide to today's customers and plan to deliver a net zero future.

N. Henson

Neil Henson
Director of Finance

[1] https://www.wwutilities.co.uk/about-us/future-of-energy/2050-energy-pathfinder/

1. Executive Summary

1.1 Context

This document contains our annual and peak demand and supply forecasts. These forecasts have been developed in conjunction with National Grid – Electricity System Operator (NG-ESO) and through our own modelling and analysis.

We are required to publish this annual statement in accordance with Standard Special Condition D3 of our Gas Transporters Licence and Section 4.1 of the Uniform Network Code (UNC) Transportation Principal Document[2].

We are continually improving our forecasting techniques using the latest information available and this year our forecasts are presented in scenarios relating to the impact of the cost of energy on temperature-sensitive load bands.

1.2 Our Long-Term Strategy

Our ambition is to be trusted to expertly serve customers and communities with safe, reliable and affordable energy services today, while investing wisely to create a sustainable, greener future.

In 2023, we published our first Sustainability Strategy which sets out our vision and targets, including our aim to develop a Net Zero-ready gas network, and to support innovation and research to develop and deliver lower carbon options for our customers.

Our activity to deliver against our strategy in the past year is summarised in Section 3. Where applicable these impacts have again been accounted for in the forecasting models and research that we have undertaken.

1.3 Demand Outlook

Our approved peak demand forecast scenario anticipates a partial recovery of domestic demand to levels seen before the cost of energy crisis, compounded by newly connected large non-domestic sites over the five years out to 2029/30. The subsequent five years of the forecast is characterised by steady reduction due to a combination of improved efficiencies and adoption of low carbon heat technologies.

Peak demands are forecast to increase by 5% out to 2029/30, before decreasing by 4% out to 2033/34.

We are seeing significant interest in distribution network connections from larger demands, including industry, power generation, compressed natural gas vehicle fuelling and data centres.

1.4 Supply Outlook

Each year having reviewed peak demand, we ensure that we have sufficient capacity booked with National Gas Transmission (NGT) at our seventeen Offtake sites to meet peak demand in our network for the coming year and over the booking period. In addition to natural gas supply, there are twenty-one biomethane sites

[2] https://www.ofgem.gov.uk/energy-policy-and-regulation/industry-licensing/licences-and-licence-conditions

connected to our network which have capacity to meet the heating needs of over 150,000 customer homes, equivalent to supplying a city the size of Cardiff. There are a further 7 biomethane sites with booked capacity on our network that would increase the customers supplied to the equivalent of nearly 200,000 homes. The count of enquiries for biomethane injection has doubled over the last twelve months, indicating increased interest from prospective customers.

We continue to support significant industry work to update regulatory standards around gas quality so that networks can transport a wider range of gases safely and in doing so support decarbonisation. We are proactively encouraging further green gas connections and are progressing innovative, pragmatic solutions to enable increased transportation of renewable gases including hydrogen, such as compression, blending tees and smart pressure control.

1.5 Investment Implications

Our stakeholders have told us that maintaining a safe, reliable gas supply is a key priority. We adopt innovative techniques to ensure efficient investment in network health through use of monetised risk models and have fed this analysis into our RIIO-GD3 business planning processes.

We are experiencing increased requirements for: network capacity, compression, storage - and smart control in the future - to accommodate increasing demands for flexible gas usage and green gas injection from our customers.

We anticipate that hydrogen uptake will be accelerated in response to the Government's net zero announcement. Our Mains Replacement Programme means that our networks are largely hydrogen ready in our low-pressure distribution networks. There will be some additional investment needed to repurpose other parts of network for hydrogen but reusing the existing network is essential if we are to deliver net zero in the UK by 2050.

That said, the volumes of hydrogen required to maintain energy demand will be greater when compared to natural gas. This, and the transition approach itself, will drive some level of investment in the network.

2. The UK Gas Network

James Earl
Chief Executive Officer
Future Energy Networks

The gas networks have long been focused on decarbonising the gas sector, prior even to 2019 when the Climate Change Act was amended to include Net Zero by 2050. A significant emphasis has always been on the contribution we can make to the wider decarbonisation of the energy system and the UK economy.

Much progress has been made over the past year. The sector saw a suite of critical hydrogen announcements from government towards the end of 2023. This included a positive strategic decision on hydrogen blending at distribution level; and the announcement of over £400million awarded to fourteen green hydrogen projects in the first allocation round of government support to electrolytic hydrogen production. The blending decision in particular was informed by a huge amount of evidence and research, in which networks played a major role, including through the HyDeploy project. Looking ahead, NGT are now delivering evidence through their FutureGrid project in support of a future government decision on extending blending to transmission level, as well as in distribution.

Recently, government made a major announcement to award funding for the first two 'Track 1' Carbon Capture and Storage (CCS) projects, one in Merseyside/Deeside and the other in Teesside. This announcement includes what will be the UK's first blue hydrogen project – Essar's blue hydrogen facility connecting to the planned HyNet Carbon Dioxide (CO2) and hydrogen pipelines, developed in consortium with Cadent. The development of this project, coupled with the progress made on electrolytic hydrogen, represents a significant step forward for the development of UK hydrogen production.

Also in 2023, the Energy Bill was passed into legislation through the 2023 Energy Act, which is the largest piece of primary energy legislation in a decade. This Act underpins legislation for new business models targeting hydrogen and CCS; and the establishing of National Energy System Operator (NESO). It therefore represents a significant moment in time for the gas networks.

On the networks side, developments continue at pace with Project Union from NGT which is developing a hydrogen backbone to transport hydrogen across the country and connect key industrial clusters. Alongside this, key industrial cluster projects at distribution level continue to progress, such as the aforementioned HyNet, East Coast Hydrogen and HyLine Cymru.

Despite the hydrogen village trials in both Whitby and Redcar in 2023 being postponed, the gas networks continue to support UK government in developing evidence to enable an informed decision on hydrogen's role in heat. The previous government had set a 2026 deadline for a decision on this. A project close to delivery, is H100 created by Southern Gas Network. Three hundred households have signed up in a neighbourhood in Fife, Scotland, to trial the use of hydrogen to heat their homes. The trial is expected to begin in 2025.The networks also continue to work closely with the wider biomethane community to inject increasing amounts of low carbon biomethane into the network. As of early 2024, there were one hundred and twenty four biomethane sites connected to the gas grid, with twenty nine further sites in the connections process. Renewable gas capacity from connected sites is now at 10.1TWh – enough to heat over 840,000 homes. This means that biomethane can decarbonise heat in more UK homes than any other low carbon source.

The recent change in government has meant a huge focus on delivery of the 'Clean Power Mission', to decarbonise the power sector by 2030. The gas networks have a critical role to play in delivery of this mission, both by transporting the natural gas that is needed to keep the lights on as the sector transitions to decarbonised power, and by transporting the low carbon gases (hydrogen, biomethane and natural gas with carbon capture and storage) needed to fuel the dispatchable power required for a truly decarbonised power system. We are committed to working with government and the newly

formed NESO to ensure that we can move towards a fully decarbonised power system as quickly as possible, while also maintaining the resilience of our energy system and security of electricity supply.

Our collective representation

In 2023 the five GB gas networks collectively undertook a review of their membership of the Energy Networks Association (ENA) and decided that, in view of the changing energy policy landscape, their interests would be best served outside the ENA. On 27th November 2023 they announced the resignation of their membership, effective at the end of 2024. Further details on the exit announcement can be found here: https://www.energynetworks.org/newsroom/ena-gas-membership

Much of the collective work carried out by the gas networks had been organised via the ENA, under the banner of the 'Gas Goes Green' programme. The gas networks have since set up a new membership organisation for their collective activities, including those previously been governed under Gas Goes Green. This organisation is called Future Energy Networks (or 'FEN') and went live on August 1st 2023, with NGT and the four Gas Distribution Networks (GDNs) as the founding members. FEN has been set up as a subsidiary company of IGEM, the professional engineering institution for the gas sector. FEN represents those in the energy industry seeking to understand and enact the changes needed to deliver the energy networks of the future.

The transition from ENA to FEN also includes the transition of a number of critical systems and processes. The previously ENA-hosted National Gas Incident Reporting Site (NGIS) will be moved over to FEN by the end of 2024, and FEN is setting up a new online portal for innovation projects to replace the portal used through ENA, known as the Smarter Networks Portal.

More information on FEN can be found on the website: https://www.igem.org.uk/future-energy-networks.html

J. Earl

James Earl
Chief Executive Officer (FEN)

3. Our Long Term Strategy

3.1 Key Messages

- Our ambition is to be trusted to expertly serve customers and communities with safe, reliable and affordable energy services today, whilst investing wisely to create a sustainable, greener future.
- The services that we provide are essential in everyday life for all our customers. We invest £2m every week in improving our gas network so that it is safe and available when people need it.
- We recognise that most of the gas transported to our customers today is a fossil fuel, and that our operations directly and indirectly impact on the environment. We support the commitment of the UK and Welsh governments to reaching Net Zero carbon emissions and believe that the investments we make in reducing emissions, decarbonising heat, power and transport can help deliver a net zero energy system.
- Our Sustainability Strategy sets our ambition and targets, including how we intend to deliver a net zero ready network which can transport low carbon hydrogen in place of natural gas.

As across the whole energy system, the gas distribution sector is going through significant change, and trends are emerging that have informed our investment proposals and activity in the short and long term:

- Energy networks are becoming much more closely integrated and are interacting in more complex and dynamic ways. Our demand data, for example, clearly shows the increase in the use of flexible generation at times when renewable generation decreases because of weather conditions. This may evolve quickly in response to the UK government's 2030 power sector decarbonisation target.
- New types of customers, with different requirements and behaviours, are having a significant impact on the use of our network. For example, we are having to increase the frequency with which we reconfigure our medium and intermediate pressure systems to enable green gas producers to continue to inject when demand is low. We also anticipate having to implement smarter systems to manage changes in network flows to support gas and electric vehicle charging. This dynamic could further increase if hydrogen is blended into our network.

These trends inform our innovation and net zero delivery activity (see 3.3). We have worked on and continue to develop projects to explore cross vector interactions, which are likely to further increase as hydrogen develops. This could include green hydrogen being produced from renewable electricity or hydrogen used to generate electricity to meet peak demands, supporting both the gas and electricity systems. The forecasts detailed in this document represent a range from low to high growth forecasts, and they consider current policy and customer trends.

3.2 Our role in the Energy System Transition

Our extensive network across Wales and the South West of England is a vital asset for our 2.5m customers across the communities we serve - and will be needed to support energy system security of supply for decades to come. We can accelerate the transition to a Net Zero energy system by maintaining a reliable and efficient network, continuing to invest in emission-reducing activities and ensuring our assets are ready to carry low-carbon gases such as hydrogen and support a fully renewable energy system. Gas distribution network assets will continue to be important to meet seasonal demands and to minimise disruption and cost.

We are confident that our gas network infrastructure has a long term role in the transition to a decarbonised energy system. As custodians of the gas distribution network in Wales and the South West of England, we need to prepare for a range of future outcomes. These include investing carefully to prepare for the transition of our assets, reducing emissions and supporting customers to ensure that no-one is left behind.

In the short term, we are continuing to connect biomethane producers to our network (see Section 5) and work with existing producers, other networks and the wider industry to support developments in green gas. We are also involved in industry wide initiatives to support the implementation of the Department for Energy Security and Net Zero (DESNZ) policy decision in favour of gas distribution network blending of hydrogen.

3.3 Energy System Transition Research, Development and Innovation

We work collaboratively with other networks, academics, innovators and other third parties to develop projects which support the Energy System Transition, and emissions reductions. Our approach to developing these projects, is presented in our annual 'Delivering Innovation' report,[3] which also includes case studies on some of our projects and their benefits.

Preparing our network assets for the net zero transition means understanding how the generation and use of energy will change in the regions we serve, so collaboration with partners in these areas is critical. We are ongoing active partners in the South Wales Industrial Cluster, publishing a feasibility study for the Hyline Cymru pipeline in early 2024[4], and continuing development of that flagship project. We are supporting development of a North East Wales Industrial Decarbonisation Plan[5] and are also engaging with a range of related projects and programmes in the South West of England, including the West of England Industrial Cluster, and through Hydrogen South West.

3.4 Local Area Energy Planning

We are heavily involved in Local Area Energy Planning, to meet the expectations of devolved government, local authorities and other stakeholders. In recent years we have worked directly on nineteen Local Area Energy Plans (LAEPs), supported by seventy runs of our bespoke 'Pathfinder' energy systems model to test different scenarios. We expect this activity to continue and grow in importance in the coming years, as local communities become more engaged in energy system developments, and as the National Energy System Operator begins the process of developing Regional Energy System Plans.

3.5 Managing Environmental Impact

As part of our commitment to sustainability, we are taking action to improve our environmental impact. This includes reducing emissions from our network and operations, managing our waste and resources, and delivering high quality management of the land we are responsible for. Progress is summarised in our Annual Environmental Report.[6]

[3] https://www.wwutilities.co.uk/media/5661/wwu-nia-report-2024.pdf
[4] https://www.wwutilities.co.uk/media/5323/wwu-hyline-public-report.pdf
[5] https://nziw.wales/north-east-wales-industrial-decarbonisation-cluster-new-id/
[6] https://www.wwutilities.co.uk/media/5722/wwu-2023-24-annual-environmental-report.pdf

4. Demand

4.1 Key messages

- Our approved **Partial Recovery** scenario anticipates a partial recovery of domestic demand to levels seen before the cost of energy crisis, compounded by newly connected large non-domestic sites over the next five years. The following five years of the forecast is characterised by steady reduction due to a combination of improved efficiencies and adoption of low carbon heat technologies.
- Network peak demands are forecast to increase by 5% out to 2029/30, before decreasing by 4% over the subsequent four years in our forecast scenarios.
- We are seeing significant interest in distribution network connection from larger demands, including industry, power generation, compressed natural gas vehicle fuelling and data centres.
- An alternative **Full Recovery** scenario assumed that the domestic load would recover to pre cost of energy crisis levels. This scenario was discounted, but we will continue to review this load band, where uncertainty is greatest.

4.2 Winter 2023/24 Review

Winter 2023/24 saw relatively low demand across our network area. This was partly due to mild weather, with the October-March period categorised as a 1-in-13 warm winter. However independent analysis of the coldest days undertaken by WWU suggests that demand has been lower than days with equivalent weather from recent years. This is thought to be due to the high cost of energy, and resultant changes in the habits of gas consumers rather than a significant decrease in customer numbers. Total throughput across the last few winters is summarised below:

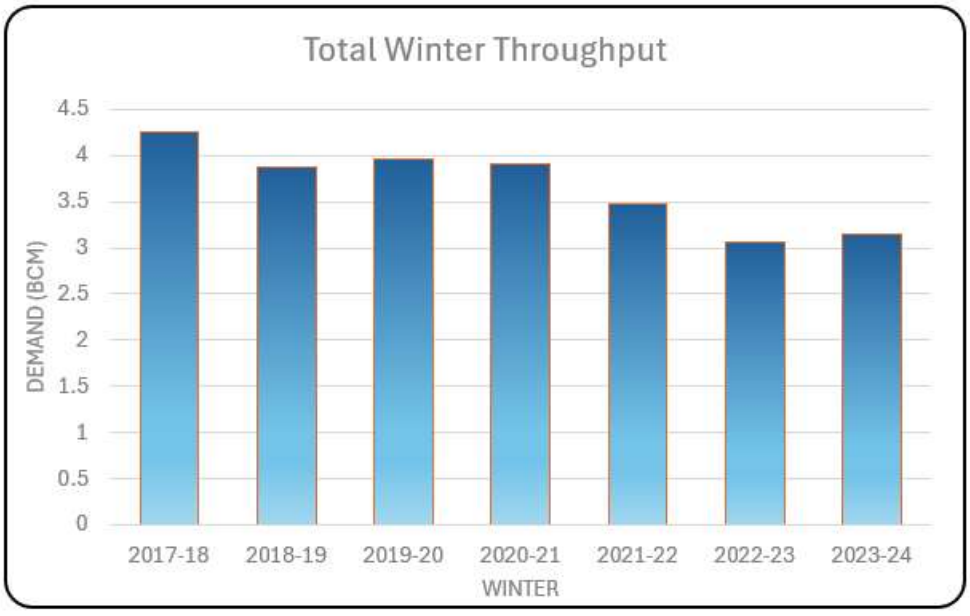


Figure 1: Comparison of winter demand from 2017-18 to 2023/24 in Billion Cubic Metres

4.2.1 Highest Demand Days

As with total demand throughout winter 2023/24, the maximum daily demand we saw was also relatively low. Again, this is largely due to mild weather but also likely compounded by the impact of high energy prices. The maximum demand day was on January 18th when 30.37 million cubic metres of gas was transported, the equivalent of boiling 1.6 billion kettles.

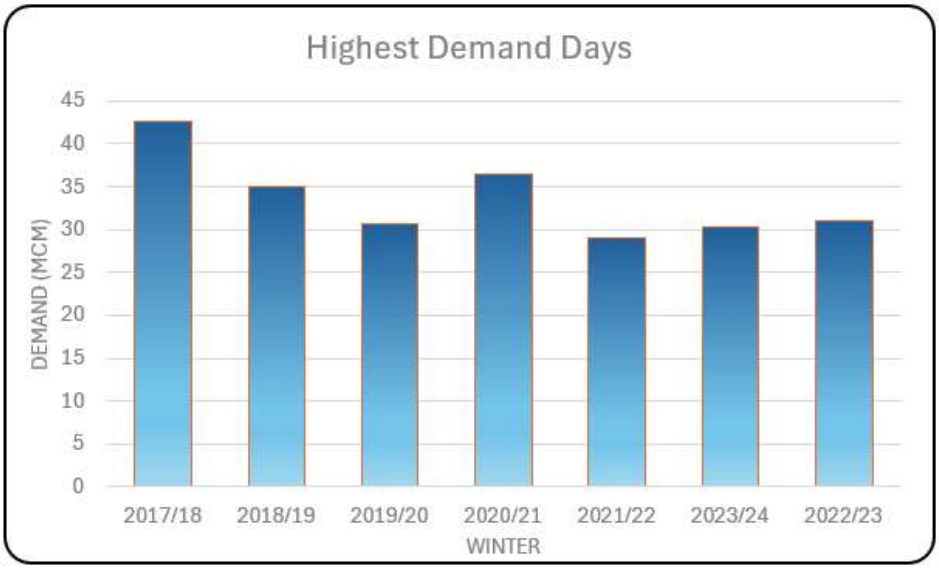


Figure 2: Comparison of highest demand days from winter 2017-18 to 2023/24 in Million Cubic Metres

4.2.2 Winter Demand Profile

In the graph below, the bold red trendline shows the variability of daily demand throughout the course of last winter, with previous winters shown for context.

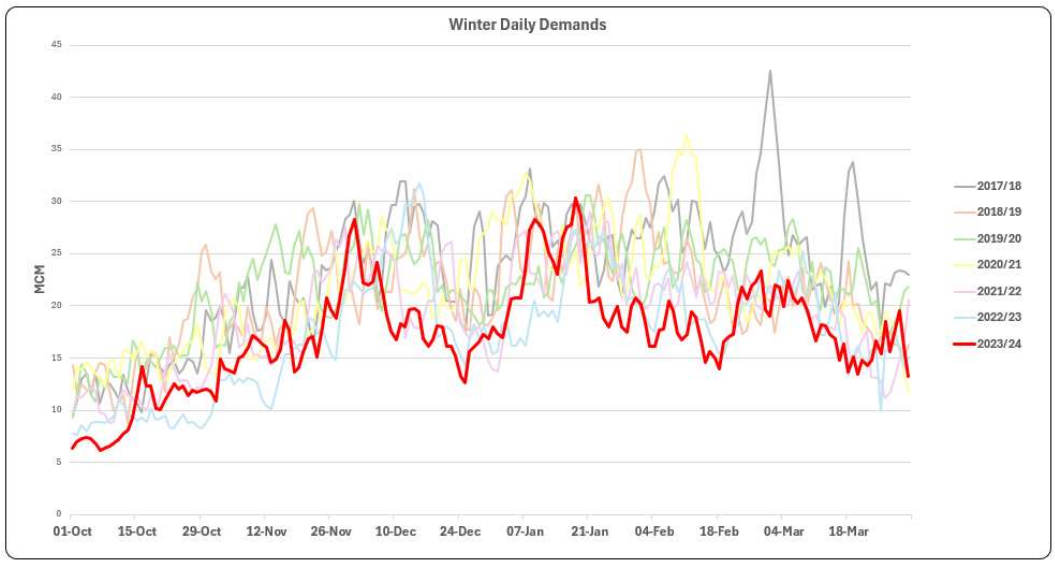


Figure 3: Comparison of winter demand profiles from 2017-18 to 2023/24 in Million Cubic Metres

4.2.3 Gas Demand and Temperature

The graph below, illustrates that over the last two winters, demand has been lower than during previous winters when similar low temperatures were experienced, or when equivalent effective temperatures were seen. This data forms the basis for our assumption that demand is reduced due to consumer behaviour which is most likely linked to high energy costs – and that some degree of demand recovery is anticipated should prices normalise, as described in the key messages above. This data shown is for our South West Local Distribution Zone (LDZ) only and is for illustrative purposes only. A useful rule of thumb for the relationship between demand and temperature is that for every 1 degree temperature drop results in a 5% demand increase.

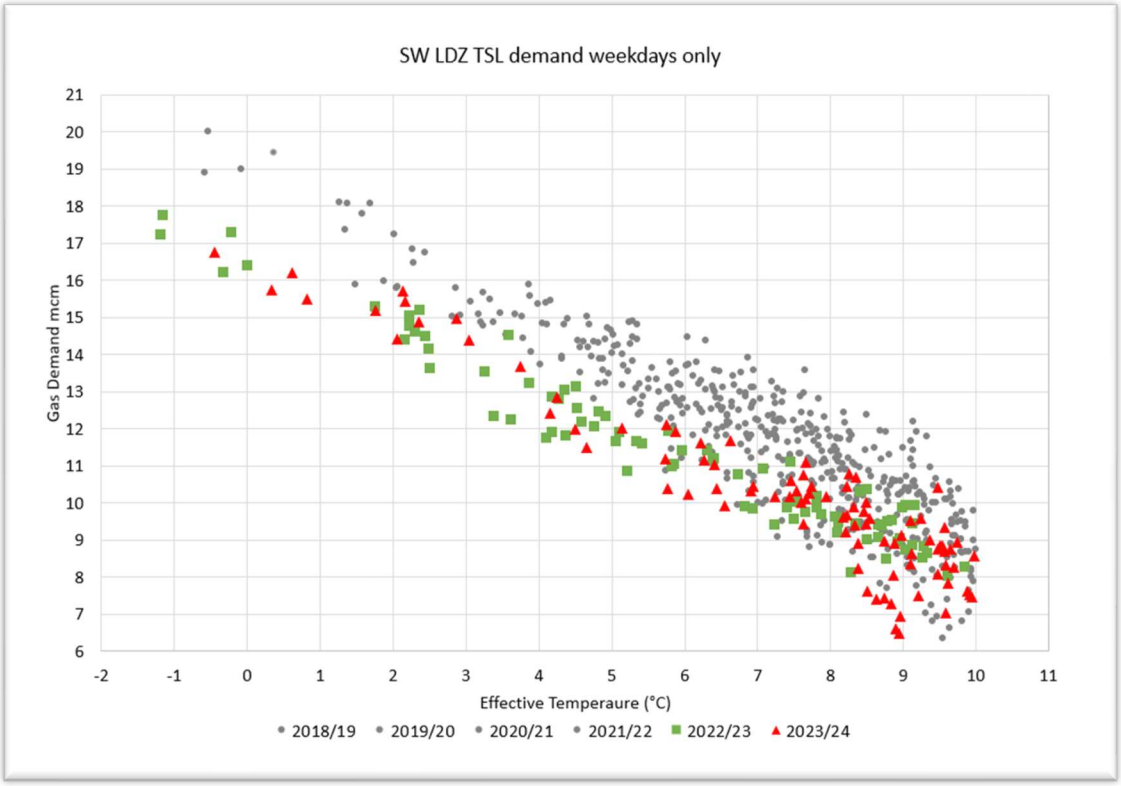


Figure 4: Relationship between demand and effective temperature since 2018/19 for SW LDZ*

**Effective Temperature is half of today's average temperature plus half of yesterday's effective temperature.*

4.3 Exit Capacity Planning Guidance

In December 2020 Ofgem published their RIIO-2 Final Determinations for the transmission and gas distribution price controls. These set out the key elements of the price control from 1 April 2021 to 31 March 2026. This included a new licence obligation for the gas transporter licence holders to comply with an enhanced obligations framework in relation to the exit capacity booking process. Standard Special Licence Condition (SSC) A57 (Exit Capacity Planning) of the gas transporter licences requires the licence holder to comply with the Exit Capacity Planning (ECP) Guidance[7]

[7] https://www.ofgem.gov.uk/publications/exit-capacity-planning-guidance

4.3.1 Forecasting approach

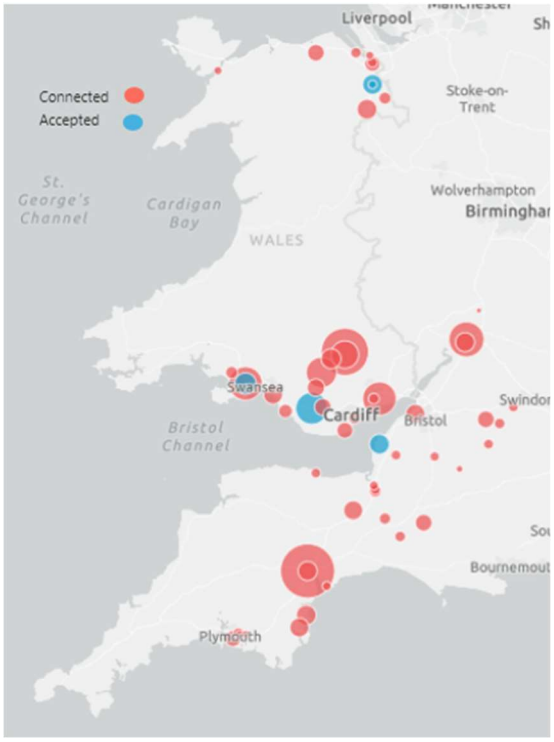
Each year we publish an Exit Capacity Planning Methodology report that sets out the process to be followed.[8]

The ECP Methodology details the end-to-end process for the process steps detailed below:

- Collection and processing of actual demand data
- Customer engagement and data collection
- Population of network analysis and other models
- Load and demand forecasting

Over recent years, the requirements of our customers and their use of our network have changed alongside the growth of renewable energy supplies in the UK, with flexible gas-fired generation growing rapidly at distribution level to support intermittent renewable generation. Other emerging demand types such as compressed natural gas vehicle fuelling and uncertainty around domestic gas demand require us to develop our long-term forecasting and modelling capability to ensure that we can continue to develop reliable and efficient networks. Data on emerging exit connections that could impact our future demand forecast are logged and tracked for inclusion in future forecasts. We have also tracked domestic demand trends by comparing weather-corrected data for the relevant load band from the days during recent winters when the weather has been most severe.

4.3.2 Flexible Gas Generation & Other Non-Typical Demands



Working in collaboration with other Distribution Networks (DNs), we have reacted to the changing ask of our customer and commercial services in relation to intermittent or unpredictable demands like flexible generation and CNG fuelling.

We draw on stakeholder engagement and public information sources like the Capacity Market Register to obtain up to date views on the potential power generation demand in our network.

The latest view on distributed power generation connected across WWU is as per Figure 5, showing the fifty seven sites connected and 9 with connection agreements. In total these sixty six sites have 1.74GW of generating capacity.

Figure 5: Power Generation Landscape at Wales & West Utilities

[8] https://www.wwutilities.co.uk/media/5329/wwu-ecpg-methodology-statement-2024.pdf

4.4 Demand Summary

This section describes the key forecast assumptions that are used in our current processes to generate the ten-year forecast demand for each of the three LDZ within our DN.

Headline outcomes are included, as well as information about how current forecasts relate to those we have published previously. Further information, including the detailed numerical tables, is provided in an accompanying workbook.

Our gas demand forecast levels are underpinned by our stakeholder engagement and analysis which suggests that natural gas will continue to play a significant role in the UK energy market beyond 2030.

To summarise:

- Peak (daily) network demand is expected to increase by approximately 4% in 2024/25 compared with last year's 2023/24 forecast – although there is no increase in domestic demand several connections agreements have been formed with large non-domestic sites.
- Annual demand is expected to recover significantly in 2025 having reduced in recent years due to high energy costs, then decline gradually over the remainder of the ten-year forecast horizon.

During the next ten years, our view is that peak day demand will recover to some extent, having decreased over the last two years due to the recent high cost of natural gas. This recovery was a feature of the forecast we received from NG-ESO. There is a degree of uncertainty as to how customers will react to price changes, but the energy price cap has reduced from 2022 levels, and we expect this to stimulate demand recovery.

Following this initial recovery, we forecast that demand will be further augmented by large gas users connecting to the network out to 2029/30, based on stakeholder engagement and many connection enquiries. From this point to 2033/34, the dominant trend of our forecast is steady decline in demand due to domestic heat demand being electrified, again this is consistent with counterfactual data from NG-ESO.

The relationship between peak and annual demand continues to change and customers continue to use gas for more diverse purposes today than historically seen. One example is gas being used for electricity generation - these loads were previously base load and varied very little day by day. More recently gas generation is being used for flexibility and therefore gas consumption significantly varies day to day, depending on the availability of renewable generation such as wind and solar. This shows the importance of gas networks in a whole energy system context, due to the reliability of gas for dispatchable generation.

4.5 Forecast Process

4.5.1 WWU peak forecasting process

A priority for 2024 was to understand and address the impact of high energy prices on demand. For domestic demand, in our standard approach, we use a model produced by LCP Delta to forecast future demands. The model considers factors including load growth; weather sensitivity; projected improvements to boiler efficiencies, and the latest Composite Weather Variables (CWV) from the Xoserve process. To ensure a robust approach, we carried out further analysis of the weather-corrected demand data considering the outcomes of the three different approaches: the forecast by NG-ESO; the LCP Delta model; and our independent analysis, to arrive at our finalised forecast.

Peak-day forecasts for larger sites are derived based on available data.

4.5.2 Capacity management

We annually assess the capacity levels required to operate the network in a safe and secure manner and to comply with the obligation to meet 1 in 20 demand conditions. There are a variety of ways in which capacity requirements can be managed. If a capacity constraint occurs on our network our main options would be to:

- Proceed with the network investment that is described in Section 6; or
- Interrupt key sites through bilateral interruption contracts with customers where available.

If interruption is not available there may also be a requirement to increase our bookings of capacity from the National Transmission System (NTS). We no longer have any interruptible customers on our network despite having regular invitations through the annual auction for interruption processed by Xoserve on behalf of the gas networks.

This year, we have increased our booked capacity at one of our NTS offtakes in response to a large site recommissioning. This increases volatility in gas demand due to the site operating intermittently. However, where demand has reduced downstream of other offtake sites we have been unable to reduce capacity bookings due to User Commitment (UC) from prior bookings.

Further information including offtake and storage capacity can be found in the network capacity section in our Long Term Development Strategy (LTDS) Workbook[9].

4.5.3 LDZ peak forecast results

This section provides the latest gas demand forecasts through to 2033/34. More detailed information is provided in our workbook published alongside this report on our website, which includes forecasts by load band for both peak and annual demand on a year-by-year basis. Our peak demand forecasts set out a range of anticipated gas demand across multiple scenarios, which feature recovery of domestic demand from low levels to varying extents by 2025/26. This is followed by growth due to large demands connecting out to 2029/30 before subsequent demand reduction due to partial electrification of heat demand. The divergence between our selected Partial Recovery and Full Recovery scenarios in 2033/34 is 33.8 GWh/d, a significant increase from 5.8 GWh/d last year, when the scenarios only differed based on growth in power generation and CNG fuelling demand.

The 2024/25 peak demand forecast for the network is 517.6 GWh/d, compared to 475.1 GWh/d for 2023/24. We project that this will increase to 545.3 GWh/d by 2029/30 under our Partial Recovery scenario, which represents a 5% increase. The increase is mainly attributed to recommissioning of the large site mentioned above. Other factors include the continued low-level demand recovery of domestic consumption, power generation, CNG fuelling sites and other large loads.

The graphs below show the gas demand forecast summation of all three of our LDZs, which, taken as a whole, is projected to increase by 28 GWh/d out to 2029/30 due to a combination of domestic demand recovery and potential future industrial and power generation demand. Subsequently demand is forecast to reduce by 22 GWh/d by 2033/34 due to some electrification of heat. This reduction will be spread evenly across the network, so we do not anticipate being able to decommission any areas of the network. As such the requirement for maintenance and emergency work remains the same.

Where the forecast peak demand exceeds our capacity booking beyond 2024/25, this is due to a single year of capacity being booked for a specific large demand where future consumption is uncertain – booking enduring capacity would result in UC and we are able to protect this capacity from substitution on the NTS though other ECPG processes in the meantime. More detailed data on the three LDZs within our network can be found in the workbook.

9 https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.wwutilities.co.uk%2Fmedia%2F5773%2Fwwu-long-term-development-statement-workbook.xlsx&wdOrigin=BROWSELINK

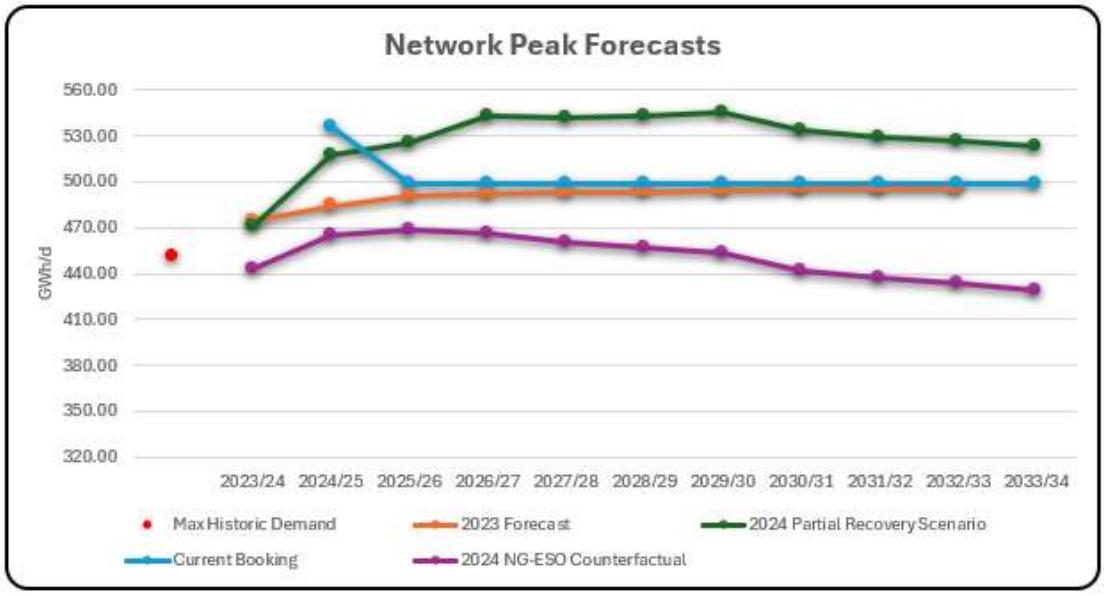


Figure 6: Peak demand forecast compared to NG-ESO's view, last year's forecast and capacity bookings

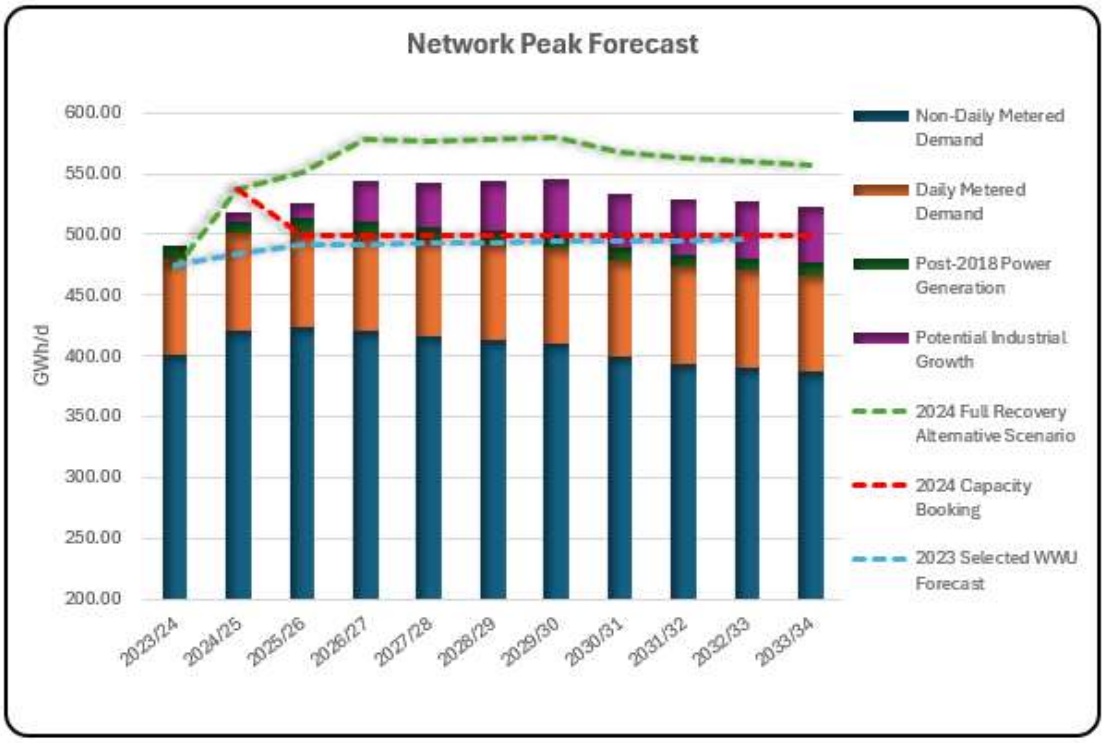


Figure 7: 2024 network demand forecast breakdown

5. Supply

5.1 Key messages

- Each year we ensure that we have sufficient capacity booked with NGT at our seventeen Offtake sites to meet peak demand in our network for the coming year and over the booking period.
- There are 21 biomethane sites connected to our network which have capacity to meet the heating needs of over 150,000 customer homes, equivalent to supplying a city the size of Cardiff.
- We have a further 7 biomethane sites with booked capacity on our network that would increase the customers supplied to the equivalent of nearly 200,000 homes. The count of enquiries for biomethane injection has doubled over the last twelve months, indicating increased interest from prospective customers.
- We are supporting significant industry work to update regulatory standards around gas quality so that networks can transport a wider range of gases safely and in doing so support decarbonisation.
- We are proactively encouraging further green gas connections and are progressing innovative, pragmatic solutions to enable increased transportation of renewable gases including hydrogen, such as compression, blending tees and smart pressure control.

5.2 Winter 2023/24 Review

During the winter period from 1st October 2023 to 31st March 2024, we transported 3.15 billion cubic metres of gas to homes and businesses in our network area. Most of this gas is supplied from the NTS into our network via our seventeen offtakes. However, 37 million cubic metres of the gas was met by our twenty one biomethane sites which equates to 402 GWh of carbon neutral energy.

We have seen a steady increase in the volume of biomethane transported in our network with a 10% increase since the previous winter period of 2022/23. This is partly due to biomethane sites becoming more robust, by increasing the number of sites connected to the network and by proactively managing network pressures to allow the entry site to inject.

Once again, we had no material supply constraints during the 2023/24 winter, and our supply points were managed as per the offtake agreements we hold with NGT and under the Network Entry Agreements (NEA) we have with each biomethane entry site. This has been true for every year since the WWU launch in 2005.

5.3 Overview

We develop the local transmission and distribution systems to meet the requirements of our customers. In turn, NGT will develop the NTS in line with supply and demand forecasts and this is then detailed within their development statement which is updated in December[10].

Most of the gas we transport is brought into the network from the NTS via the offtake sites and we have biomethane supplies contributing a proportion of gas also. As biomethane feeds are subject to customer requirements, we do not assume they will be flowing at peak, and we therefore book sufficient NTS capacity to meet peak day demand requirements.

The general principles of operation are that supply is delivered to distribution networks at a steady rate for each gas day and that storage within those networks is used to hold the gas until it is required

[10] https://www.nationalgridgas.com/insight-and-innovation/gas-ten-year-statement-gtys

by our customers. We store gas within our network of pipes in the form of 'linepack' and in High Pressure Storage Vessels (or bullets). In total, we have 53 GWh storage available in linepack and 5.2 GWh storage available in bullets. We contract with NGT to utilise 17.8 GWh of flexible storage which takes our total daily storage capability to 76 GWh.

5.4 Distributed gas

5.4.1 Green gas

We are committed to a future low carbon network and support the increasing focus on DN entry, including for gas from many sources such as biomethane, synthetic gas and hydrogen. Gas from non-fossil sources contributes to achieving the UK government's climate change targets. We have introduced distributed gas entry standards to support these connections to our network which will be provided in accordance with our licence obligations.

In addition, we support two biomethane working groups under FEN; the Gas Entry Connections Technical Working Group which is a network only group; and the Entry Customer Network Forum (ENCF) which includes customers participants from across the industry.

During 2024, we continued our collaborative work to improve capacity studies across GDNs and make the content more customer focussed based on feedback. These studies are provided to customers and contain information on available network capacity for the developer to base a business decision on and to book capacity for entry. A recent addition to the WWU studies has been the introduction of a blending study with supporting data to promote the reduction of propane addition at entry sites.

We participate in industry programmes and groups supported by IGEM Future Energy Networks which consider changes that will be needed for networks to transport hydrogen either as a blend or 100%. These programmes consider the impacts on several areas including safety, customers, billing and regulatory requirements. Work is carried out collaboratively across the UK Networks so that resources are used efficiently, and learning is shared.

5.4.2 Biomethane

We currently have twenty one biomethane sites connected and seven that are due to connect over the next few years. Once the twenty eight sites are connected, we will have 1.86 TWh of carbon neutral gas source which will enable the heating of nearly 200,000 homes in our network area.

We received eighty six enquiries in the last twelve months which is more than double received in the previous year, clearly indicating increased interest in this area. This activity has been primarily driven by the creation of the UK government's Green Gas Support Scheme (GGSS).

The graphic, figure 8 illustrates the current landscape for biomethane at WWU and highlights the difference in volume of biomethane injected along with an indication of location.

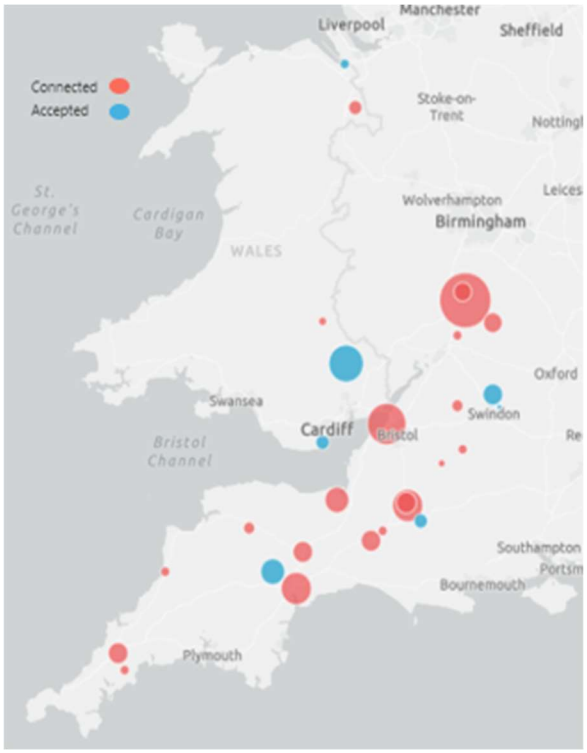


Figure 8: Biomethane landscape at Wales & West Utilities

5.4.3 Other Renewable Gas

We are pleased to report that since summer 2024, we have restarted our discussions with our first bio-SNG producer and are expecting to support their entry connection in the first part of 2025. We have worked with the HSE to renew the exemption to allow up to 1% hydrogen in the bio-SNG produced at this site using waste materials as feedstock. We have had initial discussions with new bio-SNG producers that use cutting edge technologies to produce biogas, and we continue to keep in touch with two potential landfill gas sites.

The process and equipment involved in connecting these sites are thought to be largely like biomethane plants, but there may be additional considerations to ensure that the composition of the renewable gas produced conforms to regulations. We are continuously looking into other potential sources of renewable gas to assist our progress to net zero.

5.4.4 Hydrogen

We have started to receive speculative enquiries for blending hydrogen into our network, with seventeen to date. Some initial network analysis has commenced to explore the capacity for blended hydrogen, although further work will be needed to remove commercial, regulatory and technical barriers and develop these enquiries to deliverable projects. We are working with the other DNs to provide DESNZ with the information needed to support their future decision on 100% hydrogen for heating networks.

A significant amount of research is underway to understand the relative costs and benefits of different future energy strategies. This will provide evidence to support DESNZ national decisions on hydrogen blending and the Clean Heat Appraisal in 2026.

Work is ongoing to identify, understand and address the changes to regulations, systems, and processes that will be required to accommodate hydrogen in our network. We are collaborating with all GDNs to assess the case for blending hydrogen and are fully engaged in projects to agree the strategy and functional requirements to enable a blend of up to 20%.

The following graphic gives an idea of local transmission system size and the opportunity available for decarbonising our network with blended hydrogen. Exact capacity for network entry is still geographically dependent and subject to capacity studies being undertaken.

Figure 9: Network Entry Capacity Map

5.5 Capacity impacts of distributed gas

The principles of gas distribution are challenged by increasing distributed gas entry. Where this occurs at lower pressure tiers and in less populated areas, we need to introduce new technology including compression to move this gas to the areas where our customers need it.

We are now supporting a reverse compression project to resolve a capacity constraint for an existing bio methane entry customer. The compressor facility will take gas from a medium pressure network creating the required demand; and discharge into the high-pressure system where the demand is present due to the larger customer base and wider reach of the network. Creation of this capacity will also allow for further site expansion to generate greater volumes of green gas to help decarbonise the wider gas network.

To maximise the capacity that can be made available with current technology and following the introduction of new technology, smarter control systems are now needed to provide dynamic pressure setting changes based on flows of gas into and out of key sites. Our smart pressure control solution has been trialled successfully and we are now extending this automated control more widely on a large medium pressure network. Please see Section 6.6 Investing in Decarbonisation for further information on the projects mentioned in this section.

We recognise that new commercial and regulatory frameworks will be required to make sure that associated costs are dealt with appropriately. We intend to utilise the reopeners offered by Ofgem where appropriate to allow efficient spend in facilitating more green gas into the network. Continuing to work closely with industry, other GDNs, Ofgem and DESNZ will enable us to find the right commercial solution to the current challenges faced with green gas entry.

5.6 NTS supplies

To ensure that we can meet our 1:20 licence condition it is essential that we book sufficient capacity from the NTS to meet our peak day demands. While we consider the availability of distributed gas in the locality, this is not currently treated as a firm supply and is not used to off-set our NTS capacity.

The following table shows the physical size of our Offtake sites supplying the different parts of our LTS along with the 2024/25 flat capacity bookings.

Offtake Location	Capacity		2024/25 Capacity Bookings (GWh/d)
	kWh/h	GWh/d	
South West (SW)			
Easton Grey	1,300,000	31.20	28.29
Fiddington	1,256,667	30.16	22.70
Seabank	2,383,333	57.20	57.41
Pucklechurch	1,679,167	40.30	25.37
Ilchester	1,950,000	46.80	34.53
Kenn	812,500	19.50	14.72
Choakford	3,250,000	78.00	47.67
Aylesbeare	1,321,667	31.72	20.50
Cirencester	487,500	11.70	8.21
Coffinswell	374,833	9.00	5.15
Ross SW	292,500	7.02	4.15
Littleton Drew	216,667	5.20	2.90
Evesham	401,267	9.63	6.57
Wales South (WS)			
Dowlais	4,552,714	109.27	96.16
Dyffryn Clydach	2,759,250	66.22	36.46
Gilwern	3,423,333	82.16	73.71
Wales North (WN)			
Maelor	2,708,333	65.00	52.03

Figure 10: Physical and commercial capacity through our NTS Offtake sites

5.6.1 Network Collaboration

We engage with NGT and other system Users through forums such as Transmission Workgroup which develops changes to commercial arrangements, relevant examples are given below:

- 0808 – 3rd Party ownership of Reverse Compression which WWU are in support of and has been passed.
- 0835 - Review of Gas Demand Side Response Arrangements.
- 0842 - Gas Entry onto the Total system via an Independent Gas Transporter
- 0849R - Commercial Framework Review to Enable Hydrogen Blending
- 0894 - Facilitating Biomethane entry into the GDN by exporting methane from the GDN into the NTS via Compression

Through these groups we aim to ensure that arrangements allow efficient access to and use of the Total System for our customers. The progress of all code modifications is recorded on the Joint Office website.[11]

[11] https://www.gasgovernance.co.uk/livemods

6. Investment in the Distribution Network

6.1 Key messages

- Our stakeholders have told us that maintaining a safe, reliable gas supply is a key priority.
- We adopt innovative techniques to ensure efficient investment in network health through use of monetised risk models and have fed this analysis into our business planning processes. We will achieve this through a targeted, efficient and effective investment programme, developed using predictive analytics supported by high quality data.
- We anticipate increasing requirements for network capacity, compression, storage, and smart control in the future to accommodate increasing demands for flexible gas usage and green gas injection from our customers.
- Our RIIO-GD3 planning is well underway with submissions due to go to Ofgem in December 2024.

6.2 Distribution and Transmission Networks

We manage the operation and maintenance of the Local Transmission System and below 7 Bar distribution networks in three LDZs: South West, Wales South, and Wales North.

We will continue to develop and invest in our networks to operate a safe and efficient network and to meet current and future customer requirements and operating behaviours.

We are certificated to asset management standard ISO55001 and we plan investment in line with the principles of the standard.

6.3 Network Management

To better understand the reliability and condition of our assets and to understand how this will change over time with different investment scenarios, we used Condition Based Risk Management (CBRM) models during RIIO-GD1. These decision support tools have helped us to successfully plan, justify and target future investment to maintain the current high level of safety and reliability of the gas supply network.

The established methodologies have been developed further in collaboration across the industry through the Network Asset Risk Metrics (NARMs) methodology work. This uses the principles of event tree analysis which helps us assess safety, reliability, and environmental risk for our assets and gives a monetary value of the risk on our network. We have invested in both systems and people to further enhance our assessment of asset health, consequence and risk and inform investment strategies to manage this. We have purchased and embedded an asset investment optimisation tool (AIM) and employed data scientists to ensure that we get the most out of the investment in new systems. This enables us to understand the impact of investment on risk and optimise investment decisions, targeting our asset interventions to optimally manage risk. Our RIIO-GD2 plans have been derived using these new skills and tools.

For transmission pipelines, we have implemented an ‘as low as reasonably practicable’ (ALARP) methodology in assessing the options that are available to us to identify the most cost-effective way to minimise societal risk, specifically targeting high consequence areas.

This will achieve the greatest risk reduction for the minimum expenditure in preference to wholesale replacement of pipelines which can only progress when supported by a cost benefit assessment.

6.4 Local Transmission System Investment

Construction work has started on a project to replace a 13km section of the LTS pipeline between Derwenlas and Tywyn in Snowdonia National Park during RIIO-GD2. This pipeline replacement is supported by a cost benefit assessment, and the justification for replacement based on safety, reliability and least whole life cost was accepted with funding agreed by Ofgem in the RIIO-GD2 price control review. The project will install 2km of new steel LTS pipeline, a new HP/IP Pressure Regulating Installation and 13km of new High-density Polyethylene 7bar main, to ensure the safe and reliable supply of gas to the coastal towns of Tywyn and Aberdovey. The works are planned to be completed in 2026.

6.5 General Reinforcement and Replacement

We will invest in reinforcement of our network to ensure we maintain security of supply as we connect new consumers to our gas network, planning to the peak day demand forecast described in this document. We will also continue to invest in the replacement of our transportation network assets, primarily for the renewal of mains and services within our distribution system. This includes expenditure associated with the three-tier approach initiated by the HSE for metallic mains replacement under the Iron Mains Risk Reduction Programme (IMRRP). This is our 30-year gas Mains Replacement Programme (from 2002) which requires all iron mains within 30 metres of a building to be replaced by 2032. From 2021 to 2026 we will replace around 2,125km of metallic gas mains and attached steel services, at an annual cost of £120 million.

6.6 Investing for Decarbonisation

In future years further non-demand driven investment may be required as we respond to stakeholder requirements for hydrogen injection, blending services and compression within the distribution network to facilitate biomethane injection.

Since August 2023, we have been investing time and resource into a reverse compressor project being funded by the customer with a successful completion being targeted in 2025. This will be a first of its kind on our WWU network, made possible by the approval of code mod 808 and will pave the way for further compression projects. This project avoids the needs for long lengths, with 14km of high pressure main to bring the biomethane produced at the Anaerobic Digestor (AD) to the area of higher demand. Several thousand more homes will be heated with carbon neutral energy when the compressor is being successfully operated, the AD plant will not have to flare and WWU decarbonises a wider part of the network. Although the anticipated run time is between and 10-20% of the year during the summer when demands are constrained, compressors are expensive to install and to operate.

Our first choice is to use control and monitoring devices to automate control of our networks which represents the least costly option but will only work if the demand is available all year round. We use this solution to back out our natural gas sites so that the green gas can access all the demand. We are using UIOLI funding to roll out our smart pressure control solution across a large medium pressure network in the South West LDZ. Completion of the roll out is targeted for 2025 and upon successful commissioning, will allow three more accepted biomethane sites to connect and inject.

We always analyse to see if this option is available before supporting more expensive reverse compression which is sometimes necessary to create demand on constrained networks.

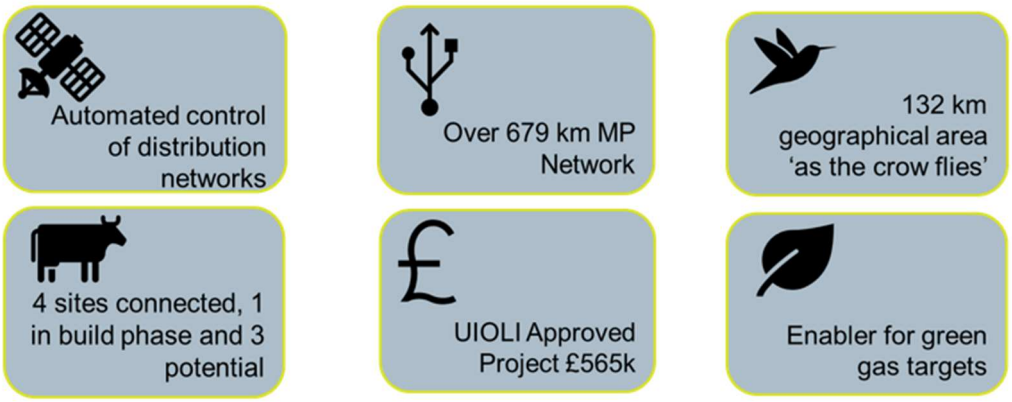


Figure 11: Smart Pressure Roll Out Project Key Facts

Appendix 1: Links to Supporting Data

Gas Transporter Licence

Link	Description
https://www.ofgem.gov.uk/energy-policy-and-regulation/industry-licensing/licences-and-licence-conditions	We are required to publish this annual statement in accordance with Standard Special Condition D3 of our Gas Transporters Licence

Long Term Strategy

Link	Description
https://www.wwutilities.co.uk/media/5673/2513-wwu-nia-report-2024_fnl_0208_sml.pdf	Wales and West Utilities 2023/24 Delivering Innovation Report
https://www.wwutilities.co.uk/media/5722/wwu-2023-24-annual-environmental-report.pdf	Wales and West Utilities 2023/24 Annual Environmental Report
https://www.wwutilities.co.uk/media/5323/wwu-hyline-public-report.pdf	HyLine Project Final Report

Demand & Supply Data

For data workbook please visit:
https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.wwutilities.co.uk%2Fmedia%2F5773%2Fwwu-long-term-development-statement-workbook.xlsx&wdOrigin=BROWSELINK

Sheet Name	Description
01. CWV's & Coldest Weather Day	12 months of recorded actual Composite Weather Variables. Tables showing the demand from the statistical "Coldest Day" and the "Highest Demand Day". Taken from National Gas - "Data Item Explorer". https://data.nationalgas.com/find-gas-data
02. Forecast Peak Demand	2024 10-year forecast of Peak Day Demand in GWh
03. Historic Max Day Demand	Highest historical actual demand days in GWh
04. Forecast Annual Demand	2024 10-year forecast of Annual Demand in GWh (Calendar Year)
05. Historical Annual Demand	Actual Historic Annual Demand in GWh (Calendar Year)
06. LT Summary Report	Long Term Summary Report showing available and secured capacities at WWU Offtakes. Taken from National Gas - "Data Item Explorer". https://data.nationalgas.com/reports/capacity
07. Offtake Capacities	Table of Offtake capacities compared to Forecast and Booked capacity for 2024/25
Link	**Description**
http://www.gasgovernance.co.uk/OAD	Transportation Principal Document section covering Demand Estimation and Demand Forecasting
https://www.ofgem.gov.uk/publications/exit-capacity-planning-guidance	Ofgem's Exit Capacity Planning Guidance document
https://www.nationalgrid.com/uk/gas-transmission/document/132516/download	National Grid ESO's Gas Demand Forecasting Methodology

The Gas Transportation System

Link	Description
https://www.nationalgas.com/our-businesses/network-route	Mapping showing the layout of the NTS

Connections at WWU

Link	Description
https://www.wwutilities.co.uk/services/gas-connections/	General Information for exit and entry connections
https://www.wwutilities.co.uk/media/5305/connections-and-other-distribution-services-charges-march-2024.pdf	General Information for exit and entry connections
https://www.wwutilities.co.uk/media/5570/4b-principles-and-methods-statement-for-connection-charging-may-2024.pdf	General Information for exit and entry connections
https://www.wwutilities.co.uk/media/2254/your-energy-our-network-usingour-gas-network-for-your-biomethane-gas.pdf	Specific Information for entry connections
https://www.wwutilities.co.uk/media/1349/wwu-distributed-gas-information-strategy.pdf	Specific Information for entry connections
https://www.wwutilities.co.uk/media/1351/wwu-distributed-gas-connections-guide.pdf	Specific Information for entry connections
https://www.legislation.gov.uk/uksi/1996/551/contents/made	Specific Information for entry connections