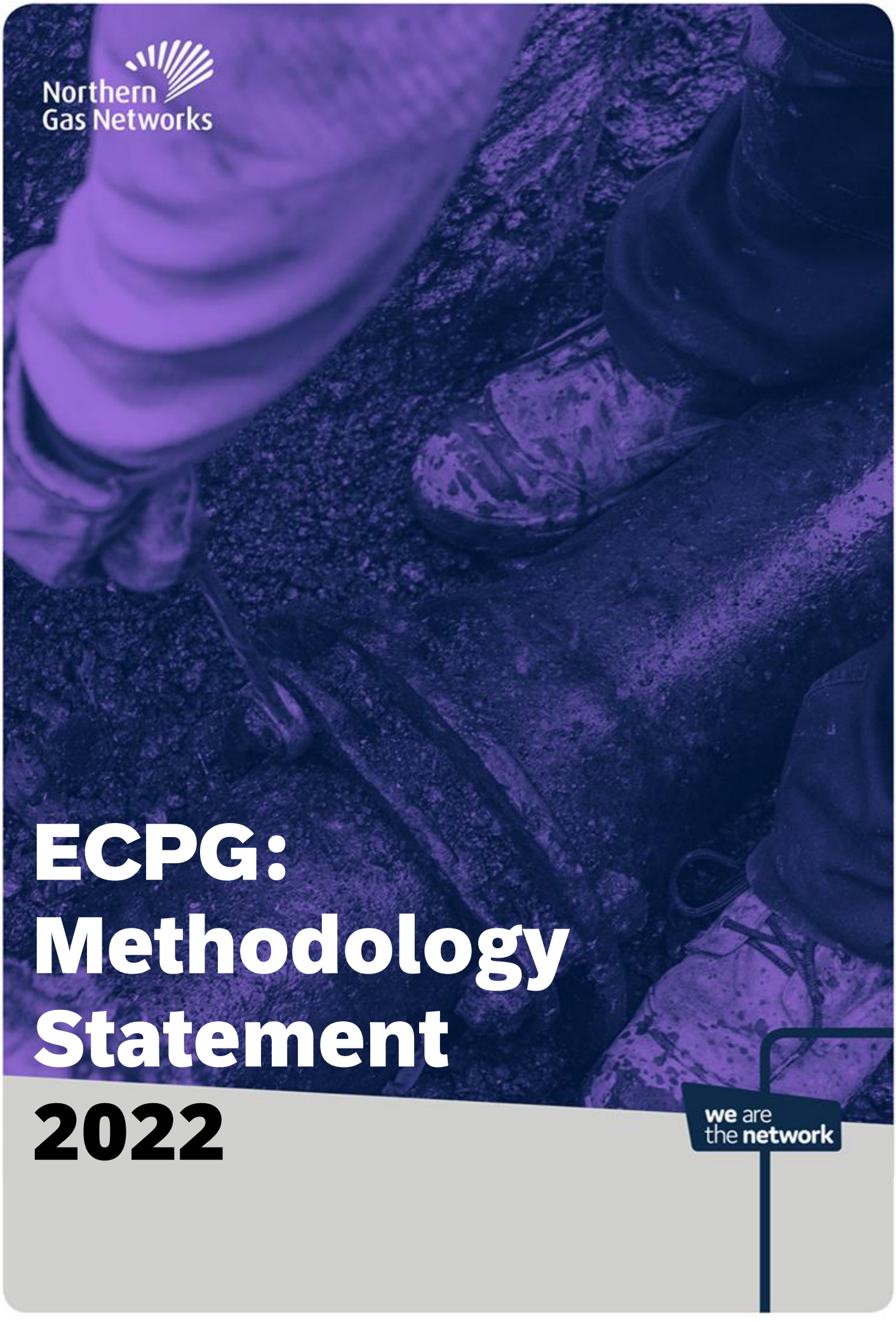


ECPG: Methodology Statement 2022

Contents

Introduction

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 ("licensee") to comply with the Exit Capacity Planning Guidance ("the Guidance") which is available here: Exit Capacity Planning Guidance

The Guidance comprises a set of requirements relating to the following areas of capacity booking activity. However, in this initial year specific transition arrangements are in place to confirm a reduced set of requirements.

- **Methodology**: Gas Distribution Networks (GDNs) must provide information on the structure of their networks known as Network Topology, and both GDNs and National Grid Gas Transmission (NGGT) must provide information on their forecasts of demand and the details of the processes in place to calculate these forecasts.

- **Engagement**: The GDNs and NGGT must collaboratively work with each other and with other stakeholders to maximise booking efficiency across the gas transportation network as a whole.

- **Reporting**: licensees must report annually to the Authority on capacity booking methodology, stakeholder engagement, decision-making and data to demonstrate efficient booking outcomes.

The purpose of this document is to satisfy the requirement comprised within the Exit Capacity Planning Guidance (ECPG) document to publish a methodology statement, setting out the process used to assess the requirements for National Transmission System (NTS) exit capacity, as set out in paragraphs 3.2-3.6

The document details the end-to-end process for the following process steps:

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

Also provided are details on the processes by which these forecasts are developed into NTS Exit Capacity bookings, the scenarios developed by the GDN and how our scenarios refer to the National Grid Electricity System Operator (NG ESO) and Future Energy Scenarios (FES).

If you have any queries or would like any further information, please contact our Supply Strategy Lead - Emma Buckton ebuckton@northerngas.co.uk.

Collection and Processing of Actual Demand Data

Pre-forecast Overview

As part of the demand forecasting process NGN are required to provide NG ESO a series of pre-forecast information on an annual basis. NGN produce two annual reports titled the **Large Loads Commentary** and the **Pre-forecast report**. Load band data from Xoserve is also sent as part of the overall pre-forecast process. As per **2.1.2 Uniform Network Code – Offtake Arrangements Document - Section H** the Distribution Network Operator (DNO) provides pre-forecast information the end of the second full week of February.

Process Overview

Each year the Central Data Services Provider (CDSP) Xoserve provide the Gas Distribution Networks with summary data to support their demand forecasting processes. The data is provided early February. It gives actual consumption and shrinkage during previous calendar year corrected to the Seasonal Normal Composite Weather Variable (SNCWV) conditions with throughput broken down into the following categories:

- Non-Daily Metered (NDM) 0 to 73.2MWh per annum
- NDM 73.2 to 732MWh per annum
- NDM >732MWh per annum
- Daily Metered (DM)
- Shrinkage
- Peaking Power Plant data for >58.6 GWh
- Total Local Distribution Zone (LDZ)

These volumes should take account of adjustments made in respect of individual site and aggregate NDM reconciliation, including (if appropriate) the re-phasing of such adjustments into earlier years.

The **Large Load Data** included in the Xoserve monthly large loads data report contains details of any large load consuming/expected to consume >58.6GWh per annum, that:

- Has been connected in the previous calendar year; or
- Is expected to be connected to LDZ networks in the ten-year forecast period
- Information concerning any known or expected changes to any existing loads consuming >58.6GWh per annum

Large Load Data Compilation

The **Pre-forecast report** includes a high-level overview of any large load consuming/expected to consume >58.6GWh per annum, that:

- Has been connected in the previous calendar year; or
- Is expected to be connected to Local Distribution Zone (LDZ) networks in the ten-year forecast period
- Information concerning any known or expected changes to any existing loads consuming >58.6GWh per annum

Using a combination of the above, NGN produce a **Large Load Commentary report** for each of our LDZs to share with NG ESO. The report provides data on a site-by-site basis to support both our and NG ESO's forecasting process for our large loads sites, and for inclusion in our internal Demand Statement table (DS8). Both our Connections and Local Transmission System (LTS) Planning teams have an input to this report to help build an accurate view of future large load demand.

A draft of the DS8 Large Load Data is then created. Significant changes highlighted through this report is needed for a) us to add these loads to our models with the appropriate demand levels. and b) for NGGT to use in their demand forecasting. The DS8 is checked to ensure that the correct data has been used and that any judgement-based decisions are defendable and appropriate to that demand.

Regarding statement 3.12 in the EPCG, NGN have not been required to, nor have they included within the pre-forecast report any financial commitment made by connectee's or network users.

Details of the Advanced Reservation Capacity Agreement (ARCA) sites which require financial commitment from the customer due to reinforcement will be kept internally. Should information on this be required it can be requested and discussed separately to the pre-forecast information.

Customer Engagement and Data Collection

Overview

Engagement is a vital part of the process to ensure that we have all the data that we need to carry out our demand forecasting, modelling and offtake bookings as accurately as possible. If we don't have accurate information on specific large loads for example, the distribution of demand on the models may be inaccurate and capacity could be booked in the wrong places.

The engagement obligations set out in the ECPG comprise requirements for both bilateral and multilateral meetings between GDNs and NGGT, in addition to this NGN will work collaboratively with connected system users.

Stakeholder Engagement

Connected Large Loads
As part of our annual review of large loads (these sites are those which typically have the most impact on the network), the capacity team will liaise with sites directly to discuss historical, current and forecast demand along with usage patterns across the day / year. This engagement can take the form of questionnaires to the user and 'face to face', virtual discussion as required. The data collected here forms the basis of the **Large Loads Commentary.**

Potential Connections Customers
An annual review is carried out by the planning and connections teams, which is used to gather data on potential connection customers. These sites include those over 0.1 mcm/d and any atypical demand such as; Power Generation (PG) and Compressed Natural Gas (CNG) Fuelling sites. Sites which are supplied via constrained areas of the network will also be included in this report. The data is held on an internal tracking spreadsheet and will include information such as location, load, accepted date, forecast connection date etc. This data also feeds into the **Large Loads Commentary report** mentioned earlier in this methodology report.

Flexible Generation & Other Non-Typical
As a group of GDNs, we have reacted to the changing demands asked of our customer and commercial services in relation to flexible generation and unregulated supplies. We have adapted/added to processes to provide a better and consistent approach across the industry and hold annual Flexible Generation conferences with increased communications to compliment the events.

NGN have a number of power generation sites connected to their network and actively engage with the sites in order to gain up to date views on current and forecast consumption behaviours and volumes. As mentioned later in the methodology, NGN will also implement Network Exit Agreements (NExAs) where appropriate, as part of this process we will be able to gain a view on daily and hourly demand from the sites metered consumption data.

Entry Customers
Although the green gas supply is not considered during the annual plan cycle with regards to reducing our Offtake bookings due to flow inconsistencies, we engage regularly with our connected entry sites throughout the year on a site-by-site basis and at several industry forums e.g., Entry Customer Forum hosted by the Energy Networks Association (ENA). We currently model our forecast offtake demand with the assumption that the green gas sites are 'off', but this approach may change in the future and therefore this engagement will become more important as and when that happens.

National Grid Gas Transmission (NGGT) & 3rd Parties

Meetings are held with NGGT at several stages of the process and third parties are invited to attend as observers to all of these discussions, as per the new ECPG requirements. The meetings cover the expectations of the Demand Forecast, the expectations of our booking requests, the likely response to the Assured Pressure Requests, the response to the booking requests and changes to accommodate rejections of the requests where needed.

National Grid Electricity System Operator (NG ESO)
Engagement with NG ESO happens outside the ECPG process regarding the development and outputs of the FES process. Network only discussions happen via Bilateral FES engagement sessions. There is also engagement with NGGT and other System Users through various Joint Office forums, such as the Transmission Workgroup which develops changes to commercial arrangements, e.g. Modification 0705R – NTS Capacity Access Review[1]. Through these groups we aim to ensure that arrangements allow efficient access to and use of the system for our customers.

GDN Collaboration
NGN actively liaise and collaborate with other GDNs when it is relevant to do so. We have more recently been working on a consistent approach to analyse the introduction of hydrogen blends and 100% hydrogen into the networks. We participate in a regular GDN planning forum to collaborate on planning activities and changes introduced such as ECPG, inviting NG to participate when it is relevant to do so.

NGN also actively liaise with external stakeholders such as Local Authorities, industry parties and those interested in future energy planning. Note this is not an exhaustive list.

[1] www.gasgovernance.co.uk/0705

Load and Demand Forecasting

Annual Demand

NGN's Demand Forecasting Methodology is based on the Demand Forecasting Methodology developed by NG. We have evolved this methodology with reviews of best practice and a gap analysis study undertaken by an independent third party. A single forecast of annual gas demand is produced, based on the analysis of history and views of the future, incorporating forecasts of economic growth, industry intelligence about new developments, and new technologies. Looking ahead to the future this may encompass decarbonisation vectors i.e. degree of electrification, hydrogen adoption, district heating, energy efficiency etc.

NGN are obliged to produce a central forecast for the purposes of calculating our required capacity bookings and in support of our investment planning. We obtain high and low sensitives of the key inputs but use the central values for our published forecasts.

Demand scenario projections are provided by NG ESO to GDNs in May each year. These are produced by NG ESO in line with the FES process for each of the 4 Future Energy Scenarios. A five-year central forecast is also supplied.

The NG ESO projections and central forecast is subject to our own internal review to ensure any significant differences can be explained. Comparisons are undertaken with data received in previous years to understand how NG ESO drivers and assumptions are changing. In addition, significant attention is paid to the large load projections. These are often different to assumptions within the GDN e.g., for peak generation figures NG ESO may apply diversity so that the national generation figure reflects national requirements whereas GDNs will book sufficient capacity for our large loads to operate on a 1 in 20 peak day demand [2]in line with its bookings.

Please refer to Appendix B for the demand forecasting processes overview.

[2] The maximum daily demand that will occur, on average, in not more than 1 winter out of 20 years.

NGN Process Background to Peak Forecasting

NGN use the same simulation methodology as NGGT, using historical weather data back to 1st October 1960 to get a full and representative range of weather. This generates the statistical distribution of possible demands to derive the level of demand you would expect to exceed once every 20 years.

NGN take an additional step of adjusting our peaks for day of the week and holiday effects. Peaks are most likely to fall on working weekdays when they will typically be 2-5% higher than the level generated by the distribution. This approach results in slightly higher peak forecasts than NGGT. This approach was validated by the 'Beast from the East' on the 1st March 2018.

Each year we conduct an internal Challenge and Review workshop to share the forecasts and background information on the various sensitivities that can be used in the forecasting process. The selection of sensitivities is discussed at length with our planning teams and then subject to executive level sign off.

The key elements of the process are as follows:

Demand Forecast Inputs

- Actual, Seasonal Normal & Weather Corrected Demand
- Historic & Seasonal Normal Composite Weather Variables
- Economic & Efficiency Factors

Actual, Seasonal Normal & Weather Corrected Demand

The demand forecasting process uses the historic demand data from each of NGN's Local Distribution Networks (LDZ's) over the relevant period. For each LDZ, North (NO) and North East (NE), the process requires daily demand as measured on three different bases and provided in kWh:

- Actual Demand (i.e. actual/ unadjusted throughput of gas on NGN's network)
- Weather Corrected Demand (i.e. Actual Demand adjusted for Seasonal Normal Weather)
- Seasonal Normal Demand (Actual Demand adjusted to fit a Seasonal Normal Demand Profile)

Each of these data sets need to be broken down into the following loadbands, which categorise customers by type and size of annual consumption. The two broad types of customer DM and NDM:

- NDM1: 0-73.2 MWh
- NDM2:>73.2-732 MWh
- NDM3:>732-2196 MWh
- NDM4:>2196-5860 MWh
- NDM5:>5860 MWh
- DM Firm
- DM Interruptible[3]

[3] This class of customer became redundant in October 2011 but historic data is required for completeness of historic demands.

Historic & Seasonal Normal Composite Weather Variables

The second key data input for the demand forecasting process is the historic weather data for each of NGN's LDZ's over the relevant time period, which is 01/10/1960 to 31st December of the previous calendar year. The historic demand data sets required are:

- Actual Composite Weather Variable (CWV)
- Seasonal Normal Composite Weather Variable (SNCWV)

Peak Forecasting

- **1 in 20 Peak Day demand** - 1 in 20 peak day demand is the level of daily demand that, in a long series of winters, with connected load held at the levels appropriate to the winter in question, would be exceeded in one out of 20 winters, with each winter counted only once. This is the Uniform Network Code (UNC) definition of the 1 in 20 peak day. It can be found in section W2.6.4(c)[4].

- **1 in 50 Peak Day demand** - 1 in 50 peak day demand is the level of daily demand that, in a long series of winters, with connected load held at the levels appropriate to the winter in question, would be exceeded in one out of 50 winters, with each winter counted only once.

[4] https://www.gasgovernance.co.uk/sites/default/files/ggf/GTC%20-%20Interpretation_28.pdf

Population of Network Analysis and Other Models

Background

Network analysis simulates the performance of gas networks to enable the effects of changes to be anticipated and understood. It provides essential information to support business cases for the operation and design of safe, economic and efficient networks alongside providing models for our capacity booking.

The Software Used

Graphical Falcon and Synergi Gas

Graphical Falcon and Synergi Gas are the network analysis software programs used by NGN to model the above and below 7 barg networks respectively. These tools are used to build our peak and forecast models to determine Offtake Capacity outputs. The tools are also used to undertake ad hoc analysis, such as connection requests, non-routine and routine operation support and inline inspection analysis.

PRISM

The PRISM application allows us to create full working schematics of all our above ground assets in order to be able to assess the capacity utilisation of an asset. This is an important tool to identify constraints of individual components within our pressure reduction stations by comparing anticipated peak flow with capacities, this then feeds into any upgrade requirements where sites are operating at or above their full capacities.

Engineering Toolbox

This programme offers an array of engineering applications such as the Diversity Calculator, Unit Converter, Service Calculator / Small Network Calculator, SNAP, Governor Capacity Assessment System (GCAS), SiteCalc, Lost Gas Calculator, Standard Sizing Module and Profile Analyser. These applications are used to facilitate analysis of the above and below 7 bar models.

HeatRec

HeatRec, one of the Engineering Toolbox applications, is a mathematical application which can be used to determine a number of factors involving gas heating. This includes the amount kilowatt hour (kWh) of pre-heating required, the time for heat to be recovered and distance for heat to be recovered. This tool is often used during project upgrade works to determine the amount of pre-heating required on site.

CONSUS Model (Storage Simulation)

Our storage simulation model, CONSUS, determines the storage requirement at a LDZ level. We use the output of this model to determine the trigger level for network storage and to feed into our planning models to determine the volume of flex required at each of our offtakes.

Model Build

Model Data

Demand data which is included in the transient analysis model comes from a variety of sources, such as the PK6 minute [5] demand data from the <7 bar network analysis models and the DS8 large load demand data. These provide the basis for the demand distribution on the LTS network analysis models.

These analysis models are a geographical representation of NGN's two LDZ and include:

- network infrastructure parameters including length, diameter, material, roughness, wall-thickness, altitude and
- balancing parameters including supply and demand nodes and behaviours

Model Validation

NGN carry out a full validation of the two LTS analysis models every year. Physical network infrastructure data is verified on an annual basis using inhouse systems, asset records and Geographic Information System (GIS) Mapping software. This is to ensure that the network analysis models are as accurate as possible and to assist the annual model validation.

LTS Pipeline data is fully reviewed every 3years however If there are any material changes such as new pipework, decommission infrastructure or any discrepancies found a partial or full validation is carried out an ad-hoc basis.

Model Strategy

On an annual basis the NGN planning team undertake a modelling operating strategy review with our Control Centre operatives. This is in place to review the offtake booking preferences, current pressure settings, network balancing points and network constraints as a minimum.

Model Builds

Once the strategy is finalised, the peak day 1 in 20 analysis models are then built, scaled to the agreed demand level and balanced as per the strategy. These models will meet the level of demand forecast for a 1 in 20 peak day and therefore ensure we meet our 1 in 20 licence obligation. Models are also then created for alternative demand days, referred to as Day 13, Day 46, Day 150 and Day 300. To do this we scale down the peak model to the relevant demand day level and balance the LDZ. The model results are stored in a specially created spreadsheet and later used to produce the offtake capacity booking figures and Section H information.

This full process is subject to detailed independent checks and sign off. Internal procedures and checklists are in place covering all aspect of network analysis and we are periodically internally audited on this process.

[5] Peak 6 minute – the maximum hourly demand that will occur, on average, in not more that 1 winter out of 20 years. This is defines as an average in any period of 6minutes, expressed as an hourly rate.

Reinforcement Modelling
NGN models are built with a view of optimising the network's storage, pressure and flow parameters in order to maintain supply to our customers. During the model build, the team will be able to identify areas of constraints and instances where network reconfiguration or reinforcement may be needed, this can also highlight the need for alternative commercial solutions such as interruption or the use of additional NTS Capacity (Flat, Flex, Pressure).

In instances where pressure or storage constraints are identified we will look to optimise and reconfigure the existing parameters of the network as an initial solution. Commercial options such as interruption can then be assessed to see if this will alleviate network constraints, alternatively a physical solution of network reinforcement (pipework upsizing/ asset upgrades) can be considered. Network investment solutions will be assessed alongside cost benefit analysis to ensure the most optimum and economic solution is chosen.

Network Planning Policies & Procedures
Analysis and planning models are built and validated in line with the following internal & industry Standards;

- IGE/GL/1 Edition 2: Planning of gas distribution systems of MOP [6]not exceeding 16 bar
- IGE/GL/2 Edition 3: Planning of gas transmission and storage systems operating at pressures exceeding 16 bar
- NGN/PM/NP/2 - Management Procedure for The Validation of High-Pressure Distribution Network Analysis Models
- NGNPL_NP4 - Above 7 bar Network Analysis
- NGNPL_NP16 - Below 7 bar Network Analysis
- NGNPL_NP18 - Network Planning
- NGN/PR/NP/29 - Validation of Networks <7bar

[6] MOP – Maximum operating pressure

Network Considerations

North East LDZ

The North East local distribution zone comprises of two large networks and three, small, independent systems. The predominant demands in the North East LDZ are mainly temperature sensitive domestic with the remaining demands being commercial and large industrial users.

The local transmission system is made up of volumetric offtakes and pressure-controlled offtakes. Volumetric offtakes are controlled by NGN's control room and can be adjusted to meet the supply, pressure and storage requirements of the network. For high pressure pipelines supplied by volumetric offtakes, linepack can be used to help match gas supply and demand. Within-day linepack flexibility can be considered as an operational storage technique. The pressure-controlled offtakes are fixed to maintain their set point and will require manual adjustment if a change is required.

NGN does not currently operate any physical storage facilities in the North East LDZ.

Northern LDZ

The Northern local distribution zone comprises of one large network and eight smaller, independent systems. The predominant demands in the Northern LDZ are mainly temperature sensitive domestic with the remaining demands being commercial and large industrial users.

The LDZ feeds two main areas of demand; the principal area being the large North East conurbation consisting of Tyneside, Wearside and Teesside. The other main concentrated area of demand is Cumbria.

The Northern local transmission system is made up of volumetric offtakes and pressure-controlled offtakes. Volumetric offtakes are controlled by NGN's control room and can be adjusted to meet the supply, pressure and storage requirements of the network. For high pressure pipelines supplied by volumetric offtakes linepack can be used to help match gas supply and demand. Within-day linepack flexibility can be considered as an operational storage technique. The pressure-controlled offtakes are fixed to maintain their set point and will require manual adjustment if a change is required.

NGN does not currently operate any physical storage facilities in the Northern LDZ.

Commercial Solutions

Interruption

Due to constraints in the North East LDZ, NGN have historically utilised a commercial solution known as an interruptible contract as an alternative to carrying out physical network reinforcement. Interruption requirements are assessed on an annual basis to ensure system supplies and pressures can be maintained. As outlined in UNC, GDNs can undertake an annual tender process, and in some instances, an Ad-hoc tender. Details on current interruption tenders can be found on NGN's webpage www.northerngasnetworks.co.uk/contracted-interruption. Interruption requirements and historical results are also published on and www.gasgovernance.co.uk/int

Network Exit Agreements (NExA)

NGN utilises and establishes NExAs with sites prior to gas connections. Within the NExA, the gas transporter sets out the technical and operational conditions of the site, such as the maximum permitted flow rates, ramp rates, pressure agreements etc. The document also details processes for communication. NGN can look to implement a NExA for industrial, commercial, power generation, Connected System Exit Point (CSEP) sites or any site that can unduly influence the network.

Production of offtake-level capacity and pressure requirements

Principles
The following principles and assumptions are applied when producing offtake level capacity and pressure requirements:

- Offtake capacity must be available to satisfy our 1 in 20 licence condition
- NTS Flat Capacity must be guaranteed through purchase of annual or enduring capacity as there are circumstances where NTS may not release capacity through daily auctions.
- NTS Flat Capacity cannot be offset by embedded biomethane supply as these supplies are not subject to flow obligations
- NTS Assured Pressure is more valuable than NTS Flex because of the notice periods / restrictions around use of NTS Flex Capacity
- NTS Assured Pressure and NTS Flex are discretionary products, so a high level of certainty is needed before it is released back to NTS on a permanent basis
- Requirements signalled through the provision of Section H to NGGT provide protection against NTS substitution
- It is appropriate to use information from modelling as well as actual flow data, operating strategies and information from stakeholders and wider industry to manage uncertainty and to determine final bookings.

Network Co-operation Requirements
We recognise the provisions of the Offtake Arrangements, Section I, and the System Flexibility Restriction Notice (SFRN) which provide for cooperation between the GDN and NTS control centres in relation to flow swaps, assured pressure adjustments and the release of additional NTS Flex capacity to support daily operation and maintenance requirements.

Assured Offtake Pressure Assessment T-4
The use of LDZ Linepack is a much better option for GDNs than the use of NTS Flex, which is subject to notice periods under the Offtake Arrangements Document, Section I and can be withdrawn through processes defined in the SFRN.

Since NTS Flex and NTS Assured Offtake Pressures (AOP) are discretionary products a high degree of certainty would be required before agreement was made for a permanent reduction of AOP, including where NTS Flex Capacity was available instead. Where NGGT request a reduction in AOP, analysis will be undertaken to determine whether this can be agreed based on our forecasts of future requirements.

AOP, Flat and / or Flex bookings for years T-3 to T-1
Our considerations for bookings for years T-3 to T-1 take account of requirements in later years and the implications of User Commitment should we need to decrease bookings at a later date. We also consider the risk of substitution of capacity away from our offtakes if we reduce capacity and subsequently need to increase our holding.

The NTS Exit Capacity Release Methodology has recently been amended to reduce the User Commitment period from 4 to 2 years, where the requirement is within baseline. The NTS substitution methodology now takes account of data provided in our Section H submission to NGGT. Despite these positive steps forward, we are still unable to fully optimise our bookings between different offtakes

given even a 2-year User Commitment could still mean we would need to retain capacity we might not need in the future.

As noted above, in considering reductions to pressure and flex capacity there is no guaranteed way to recover the capacity when the release is subject to NGGT discretion.

Cost implications of T-4 capacity booking patterns
Following the implementation of UNC Code Modification 0678 the cost implications of different (T-4) booking patterns have reduced with consistent NTS Flat Capacity prices being applied at all NTS Offtakes.

NGN book NTS Flat Capacity for T-4 to meet requirements for our 1 in 20 demand forecast, excluding any future loads which are visible e.g., through customer discussions but for which no financial commitment has been made.

Following the implementation of the ECPG and the ability to use the Section H process to set out requirements for long term demand forecasting, the forecasts shared through that process would include those sites for which no financial commitment has been made.

The key consideration of cost implications is around the 2 or 4 year User Commitment which are currently in place for capacity bookings below baseline, and the historical 4 year User Commitment, and newly implemented 2 year user commitment for increases above baseline. Changes to capacity bookings to optimise our system where not strictly required are likely to be avoided and on the day flow swap arrangements would be used instead.

Scenarios considered as part of the booking process
The key factors that would feed into booking scenarios mean that there are usually few options to consider. To summarise:

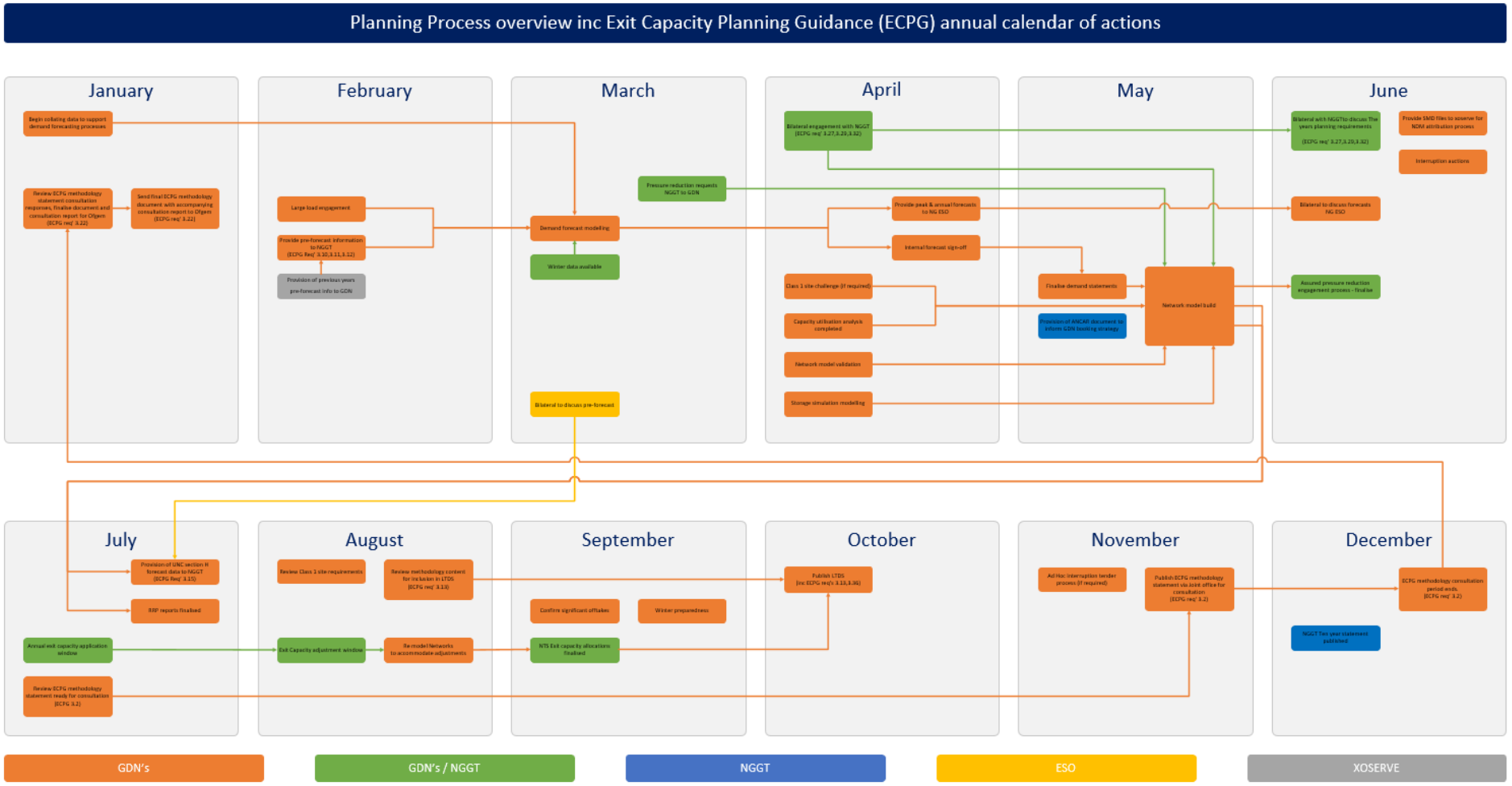
- Where User Commitment is in place at Offtakes, we are unable to reduce bookings
- The absence of a definitive way to recover Flex and / or pressure reductions means that these are avoided on an enduring basis
- AOP is valued over NTS Flex. NTS Baseline Capacity and Physical Capacity headroom will constrain bookings in some locations
- Injection from green gas sites cannot be relied upon to meet our 1 in 20 requirements as their contracts are not for firm flow.

Comparison to FES generated by NG ESO
Comparisons of NGN's central forecast are made against NG ESO FES. We note slight differences between the NG ESO FES central forecast and the Falling Short scenario with NGN's forecast being higher, this is due to the differences outlined in the Load and Demand forecasting section.

Process Control
This full process is subject to intensive levels of independent checking and sign off. Internal procedure and checklists are in place covering all aspects of analysis.

Appendix A

Planning Process Overview inc. Exit Capacity Planning Guidance (ECPG) Annual Calendar of Actions



The above process flow has been included as an illustrative example of the whole planning process and annual workload cycle, it is not solely fixed on the ECPG process.

Appendix B

NGN Demand Forecasting Process Map